



**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)	1.200
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)
200	0.018	5.00	55.120	2500	359754.787	430365.449	0.281
201	0.018	5.00	54.639	2500	359735.795	430389.060	0.281
202	0.018	5.00	53.911	2500	359706.042	430407.402	0.281
203			52.955	2500	359684.518	430402.764	1.455
204			52.498	2500	359679.031	430402.764	1.455

**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	200	201	30.301	0.032	54.839	54.358	0.481	63.0	225	5.51	46.6
1.001	201	202	34.952	0.032	54.358	53.630	0.728	48.0	225	6.03	45.0
1.002	202	203	22.018	0.032	53.630	52.674	0.956	23.0	225	6.26	44.3
1.003	203	204	5.487	0.032	51.500	51.043	0.457	12.0	225	6.30	44.2

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	0.981	204.2	2.3	0.056	0.056	0.018	0.0	24	0.284
1.001	1.124	233.9	4.4	0.056	0.056	0.036	0.0	33	0.386
1.002	1.623	337.7	6.5	0.056	0.056	0.054	0.0	33	0.558
1.003	2.247	467.7	6.5	1.230	1.230	0.054	0.0	28	0.701

**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	30.301	63.0	225	1:3 swale	55.120	54.839	0.056	54.639	54.358	0.056
1.001	34.952	48.0	225	1:3 swale	54.639	54.358	0.056	53.911	53.630	0.056
1.002	22.018	23.0	225	1:3 swale	53.911	53.630	0.056	52.955	52.674	0.056
1.003	5.487	12.0	225	1:3 swale	52.955	51.500	1.230	52.498	51.043	1.230

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	200	2500	Manhole	Adoptable	201	2500	Manhole	Adoptable
1.001	201	2500	Manhole	Adoptable	202	2500	Manhole	Adoptable
1.002	202	2500	Manhole	Adoptable	203	2500	Manhole	Adoptable
1.003	203	2500	Manhole	Adoptable	204	2500	Manhole	Adoptable



**Manhole Schedule**

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
200	359754.787	430365.449	55.120	0.281	2500					
							0	1.000	54.839	225
201	359735.795	430389.060	54.639	0.281	2500					
							1	1.000	54.358	225
							0	1.001	54.358	225
202	359706.042	430407.402	53.911	0.281	2500					
							1	1.001	53.630	225
							0	1.002	53.630	225
203	359684.518	430402.764	52.955	1.455	2500					
							1	1.002	52.674	225
							0	1.003	51.500	225
204	359679.031	430402.764	52.498	1.455	2500					
							1	1.003	51.043	225

**Simulation Settings**

Rainfall Methodology	FEH-22	Drain Down Time (mins)	240	100 year (l/s)	0.0
Summer CV	0.750	Additional Storage (m <sup>3</sup> /ha)	20.0	Check Discharge Volume	✓
Winter CV	0.840	Check Discharge Rate(s)	✓	100 year 360 minute (m <sup>3</sup> )	
Analysis Speed	Normal	10 year (l/s)	0.0		
Skip Steady State	✓	30 year (l/s)	0.0		

**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 10 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 10 year	1.45		



**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 <sup>3</sup> )	

**Node 203 Online Hydro-Brake® Control**

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	51.500	Product Number	CTL-SHE-0064-1500-0600-1500
Design Depth (m)	0.600	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	1.5	Min Node Diameter (mm)	1200

**Node 203 Depth/Area Storage Structure**

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	51.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf Area (m <sup>2</sup> )
0.000	20.0	0.0	0.600	58.7	0.0	0.605	59.1	0.0



**Results for 100 year +50% CC Critical Storm Duration. Lowest mass balance: 99.78%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute winter	200	11	54.895	0.056	10.9	0.3453	0.0000	OK
15 minute winter	201	11	54.431	0.073	21.1	0.4544	0.0000	OK
15 minute winter	202	11	53.704	0.074	30.8	0.4560	0.0000	OK
120 minute winter	203	120	52.054	0.554	11.1	23.6694	0.0000	SURCHARGED
15 minute summer	204	1	51.043	0.000	1.5	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 <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute winter	200	1.000	201	10.5	0.369	0.051	0.8757	
15 minute winter	201	1.001	202	20.5	0.594	0.088	1.2097	
15 minute winter	202	1.002	203	29.6	0.859	0.088	0.7592	
120 minute winter	203	Hydro-Brake®	204	1.5				28.1



**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 <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute summer	200	11	54.894	0.055	10.4	0.3375	0.0000	OK
15 minute summer	201	11	54.430	0.072	20.1	0.4439	0.0000	OK
15 minute summer	202	12	53.702	0.072	29.4	0.4443	0.0000	OK
15 minute summer	203	23	51.829	0.329	28.2	11.6854	0.0000	SURCHARGED
15 minute summer	204	1	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute summer	200	1.000	201	10.0	0.366	0.049	0.8471	
15 minute summer	201	1.001	202	19.5	0.587	0.084	1.1632	
15 minute summer	202	1.002	203	28.2	0.848	0.084	0.7333	
15 minute summer	203	Hydro-Brake®	204	1.5				13.2



**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 <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
15 minute winter	200	11	54.895	0.056	10.9	0.3453	0.0000	OK
15 minute winter	201	11	54.431	0.073	21.1	0.4544	0.0000	OK
15 minute winter	202	11	53.704	0.074	30.8	0.4560	0.0000	OK
15 minute winter	203	23	51.864	0.364	29.6	13.3609	0.0000	SURCHARGED
15 minute winter	204	1	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
15 minute winter	200	1.000	201	10.5	0.369	0.051	0.8757	
15 minute winter	201	1.001	202	20.5	0.594	0.088	1.2097	
15 minute winter	202	1.002	203	29.6	0.859	0.088	0.7592	
15 minute winter	203	Hydro-Brake®	204	1.5				14.9



**Results for 100 year +50% CC 30 minute summer. 270 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 <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
30 minute summer	200	18	54.892	0.053	9.8	0.3303	0.0000	OK
30 minute summer	201	19	54.428	0.070	19.4	0.4329	0.0000	OK
30 minute summer	202	19	53.701	0.071	28.1	0.4399	0.0000	OK
30 minute summer	203	37	51.918	0.418	27.6	16.0335	0.0000	SURCHARGED
30 minute summer	204	1	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
30 minute summer	200	1.000	201	9.6	0.360	0.047	0.8147	
30 minute summer	201	1.001	202	18.8	0.577	0.080	1.1374	
30 minute summer	202	1.002	203	27.6	0.843	0.082	0.7217	
30 minute summer	203	Hydro-Brake®	204	1.5				18.2



**Results for 100 year +50% CC 30 minute winter. 270 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 <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
30 minute winter	200	18	54.890	0.051	8.9	0.3154	0.0000	OK
30 minute winter	201	19	54.425	0.067	17.7	0.4157	0.0000	OK
30 minute winter	202	19	53.699	0.069	26.0	0.4241	0.0000	OK
30 minute winter	203	37	51.959	0.459	25.7	18.2325	0.0000	SURCHARGED
30 minute winter	204	1	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
30 minute winter	200	1.000	201	8.8	0.349	0.043	0.7675	
30 minute winter	201	1.001	202	17.3	0.563	0.074	1.0754	
30 minute winter	202	1.002	203	25.7	0.826	0.076	0.6843	
30 minute winter	203	Hydro-Brake®	204	1.5				20.2





**Results for 100 year +50% CC 60 minute summer. 300 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 <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
60 minute summer	200	33	54.886	0.047	7.7	0.2922	0.0000	OK
60 minute summer	201	34	54.420	0.062	15.3	0.3863	0.0000	OK
60 minute summer	202	34	53.694	0.064	22.4	0.3937	0.0000	OK
60 minute summer	203	65	51.990	0.490	22.2	19.9438	0.0000	SURCHARGED
60 minute summer	204	1	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
60 minute summer	200	1.000	201	7.6	0.336	0.037	0.6909	
60 minute summer	201	1.001	202	15.0	0.541	0.064	0.9670	
60 minute summer	202	1.002	203	22.2	0.794	0.066	0.6150	
60 minute summer	203	Hydro-Brake®	204	1.5				23.3



**Results for 100 year +50% CC 60 minute winter. 300 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 <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
60 minute winter	200	33	54.881	0.042	6.2	0.2618	0.0000	OK
60 minute winter	201	34	54.414	0.056	12.4	0.3492	0.0000	OK
60 minute winter	202	34	53.688	0.058	18.4	0.3569	0.0000	OK
60 minute winter	203	65	52.037	0.537	18.3	22.6911	0.0000	SURCHARGED
60 minute winter	204	1	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
60 minute winter	200	1.000	201	6.2	0.315	0.030	0.5994	
60 minute winter	201	1.001	202	12.3	0.511	0.052	0.8397	
60 minute winter	202	1.002	203	18.3	0.753	0.054	0.5351	
60 minute winter	203	Hydro-Brake®	204	1.5				23.8



**Results for 100 year +50% CC 120 minute summer. 360 minute analysis at 2 minute timestep. Mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
120 minute summer	200	64	54.876	0.037	4.8	0.2284	0.0000	OK
120 minute summer	201	64	54.407	0.049	9.6	0.3051	0.0000	OK
120 minute summer	202	64	53.680	0.050	14.2	0.3108	0.0000	OK
120 minute summer	203	122	52.000	0.500	14.0	20.4946	0.0000	SURCHARGED
120 minute summer	204	2	51.043	0.000	1.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
120 minute summer	200	1.000	201	4.8	0.292	0.023	0.4988	
120 minute summer	201	1.001	202	9.4	0.476	0.040	0.6943	
120 minute summer	202	1.002	203	14.0	0.699	0.041	0.4413	
120 minute summer	203	Hydro-Brake®	204	1.5				27.6



**Results for 100 year +50% CC 120 minute winter. 360 minute analysis at 2 minute timestep. Mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
120 minute winter	200	66	54.871	0.032	3.7	0.1988	0.0000	OK
120 minute winter	201	66	54.401	0.043	7.4	0.2682	0.0000	OK
120 minute winter	202	66	53.674	0.044	11.1	0.2746	0.0000	OK
120 minute winter	203	120	52.054	0.554	11.1	23.6694	0.0000	SURCHARGED
120 minute winter	204	2	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
120 minute winter	200	1.000	201	3.7	0.271	0.018	0.4181	
120 minute winter	201	1.001	202	7.4	0.442	0.032	0.5849	
120 minute winter	202	1.002	203	11.1	0.654	0.033	0.3733	
120 minute winter	203	Hydro-Brake®	204	1.5				28.1



**Results for 100 year +50% CC 180 minute summer. 420 minute analysis at 4 minute timestep. Mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
180 minute summer	200	96	54.871	0.032	3.6	0.1958	0.0000	OK
180 minute summer	201	96	54.401	0.043	7.2	0.2639	0.0000	OK
180 minute summer	202	96	53.674	0.044	10.8	0.2697	0.0000	OK
180 minute summer	203	152	51.992	0.492	10.7	20.0626	0.0000	SURCHARGED
180 minute summer	204	4	51.043	0.000	1.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
180 minute summer	200	1.000	201	3.6	0.268	0.018	0.4094	
180 minute summer	201	1.001	202	7.2	0.439	0.031	0.5715	
180 minute summer	202	1.002	203	10.7	0.648	0.032	0.3643	
180 minute summer	203	Hydro-Brake®	204	1.5				31.0



**Results for 100 year +50% CC 180 minute winter. 420 minute analysis at 4 minute timestep. Mass balance: 99.78%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
180 minute winter	200	96	54.866	0.027	2.7	0.1671	0.0000	OK
180 minute winter	201	96	54.395	0.037	5.4	0.2266	0.0000	OK
180 minute winter	202	96	53.667	0.037	8.1	0.2319	0.0000	OK
180 minute winter	203	172	52.039	0.539	8.1	22.7832	0.0000	SURCHARGED
180 minute winter	204	4	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
180 minute winter	200	1.000	201	2.7	0.246	0.013	0.3350	
180 minute winter	201	1.001	202	5.4	0.403	0.023	0.4674	
180 minute winter	202	1.002	203	8.1	0.597	0.024	0.2982	
180 minute winter	203	Hydro-Brake®	204	1.5				32.3



**Results for 100 year +50% CC 240 minute summer. 480 minute analysis at 4 minute timestep. Mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
240 minute summer	200	124	54.867	0.028	3.0	0.1754	0.0000	OK
240 minute summer	201	124	54.396	0.038	5.9	0.2358	0.0000	OK
240 minute summer	202	128	53.669	0.039	8.8	0.2407	0.0000	OK
240 minute summer	203	184	51.982	0.482	8.7	19.4714	0.0000	SURCHARGED
240 minute summer	204	4	51.043	0.000	1.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
240 minute summer	200	1.000	201	2.9	0.253	0.014	0.3540	
240 minute summer	201	1.001	202	5.8	0.413	0.025	0.4910	
240 minute summer	202	1.002	203	8.7	0.609	0.026	0.3133	
240 minute summer	203	Hydro-Brake®	204	1.5				33.8



**Results for 100 year +50% CC 240 minute winter. 480 minute analysis at 4 minute timestep. Mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
240 minute winter	200	128	54.863	0.024	2.2	0.1491	0.0000	OK
240 minute winter	201	128	54.391	0.033	4.4	0.2029	0.0000	OK
240 minute winter	202	128	53.664	0.034	6.6	0.2077	0.0000	OK
240 minute winter	203	196	52.028	0.528	6.6	22.1198	0.0000	SURCHARGED
240 minute winter	204	4	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
240 minute winter	200	1.000	201	2.2	0.231	0.011	0.2907	
240 minute winter	201	1.001	202	4.4	0.380	0.019	0.4052	
240 minute winter	202	1.002	203	6.6	0.562	0.020	0.2586	
240 minute winter	203	Hydro-Brake®	204	1.5				36.2





**Results for 100 year +50% CC 360 minute summer. 600 minute analysis at 8 minute timestep. Mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
360 minute summer	200	184	54.863	0.024	2.2	0.1474	0.0000	OK
360 minute summer	201	184	54.390	0.032	4.4	0.1991	0.0000	OK
360 minute summer	202	184	53.663	0.033	6.4	0.2029	0.0000	OK
360 minute summer	203	248	51.946	0.446	6.3	17.5019	0.0000	SURCHARGED
360 minute summer	204	8	51.043	0.000	1.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
360 minute summer	200	1.000	201	2.2	0.230	0.011	0.2848	
360 minute summer	201	1.001	202	4.2	0.376	0.018	0.3943	
360 minute summer	202	1.002	203	6.3	0.555	0.019	0.2509	
360 minute summer	203	Hydro-Brake®	204	1.5				36.5



**Results for 100 year +50% CC 360 minute winter. 600 minute analysis at 8 minute timestep. Mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
360 minute winter	200	192	54.859	0.020	1.6	0.1247	0.0000	OK
360 minute winter	201	192	54.386	0.028	3.2	0.1703	0.0000	OK
360 minute winter	202	192	53.658	0.028	4.8	0.1744	0.0000	OK
360 minute winter	203	272	51.996	0.496	4.8	20.3169	0.0000	SURCHARGED
360 minute winter	204	8	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
360 minute winter	200	1.000	201	1.6	0.209	0.008	0.2334	
360 minute winter	201	1.001	202	3.2	0.345	0.014	0.3247	
360 minute winter	202	1.002	203	4.8	0.510	0.014	0.2072	
360 minute winter	203	Hydro-Brake®	204	1.5				41.7



**Results for 100 year +50% CC 480 minute summer. 720 minute analysis at 8 minute timestep. Mass balance: 99.88%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
480 minute summer	200	248	54.860	0.021	1.7	0.1290	0.0000	OK
480 minute summer	201	248	54.386	0.028	3.4	0.1761	0.0000	OK
480 minute summer	202	248	53.659	0.029	5.1	0.1803	0.0000	OK
480 minute summer	203	328	51.924	0.424	5.1	16.3733	0.0000	SURCHARGED
480 minute summer	204	8	51.043	0.000	1.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
480 minute summer	200	1.000	201	1.7	0.213	0.008	0.2433	
480 minute summer	201	1.001	202	3.4	0.351	0.015	0.3385	
480 minute summer	202	1.002	203	5.1	0.520	0.015	0.2160	
480 minute summer	203	Hydro-Brake®	204	1.5				40.3



**Results for 100 year +50% CC 480 minute winter. 720 minute analysis at 8 minute timestep. Mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
480 minute winter	200	248	54.857	0.018	1.3	0.1108	0.0000	OK
480 minute winter	201	256	54.383	0.025	2.6	0.1518	0.0000	OK
480 minute winter	202	256	53.655	0.025	3.9	0.1554	0.0000	OK
480 minute winter	203	344	51.951	0.451	3.9	17.8085	0.0000	SURCHARGED
480 minute winter	204	8	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
480 minute winter	200	1.000	201	1.3	0.195	0.006	0.2026	
480 minute winter	201	1.001	202	2.6	0.323	0.011	0.2814	
480 minute winter	202	1.002	203	3.9	0.478	0.012	0.1795	
480 minute winter	203	Hydro-Brake®	204	1.5				43.6



**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 <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
600 minute summer	200	315	54.858	0.019	1.4	0.1156	0.0000	OK
600 minute summer	201	315	54.384	0.026	2.8	0.1582	0.0000	OK
600 minute summer	202	315	53.656	0.026	4.2	0.1619	0.0000	OK
600 minute summer	203	390	51.877	0.377	4.2	13.9678	0.0000	SURCHARGED
600 minute summer	204	15	51.043	0.000	1.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
600 minute summer	200	1.000	201	1.4	0.200	0.007	0.2130	
600 minute summer	201	1.001	202	2.8	0.331	0.012	0.2961	
600 minute summer	202	1.002	203	4.2	0.489	0.012	0.1889	
600 minute summer	203	Hydro-Brake®	204	1.5				40.2



**Results for 100 year +50% CC 600 minute winter. 840 minute analysis at 15 minute timestep. Mass balance: 99.85%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
600 minute winter	200	315	54.855	0.016	1.1	0.1007	0.0000	OK
600 minute winter	201	315	54.380	0.022	2.2	0.1382	0.0000	OK
600 minute winter	202	315	53.653	0.023	3.3	0.1415	0.0000	OK
600 minute winter	203	420	51.885	0.385	3.3	14.3867	0.0000	SURCHARGED
600 minute winter	204	15	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
600 minute winter	200	1.000	201	1.1	0.185	0.005	0.1809	
600 minute winter	201	1.001	202	2.2	0.306	0.009	0.2510	
600 minute winter	202	1.002	203	3.3	0.454	0.010	0.1601	
600 minute winter	203	Hydro-Brake®	204	1.5				45.2



**Results for 100 year +50% CC 720 minute summer. 960 minute analysis at 15 minute timestep. Mass balance: 99.86%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
720 minute summer	200	375	54.857	0.018	1.3	0.1108	0.0000	OK
720 minute summer	201	375	54.383	0.025	2.6	0.1518	0.0000	OK
720 minute summer	202	375	53.655	0.025	3.9	0.1554	0.0000	OK
720 minute summer	203	465	51.869	0.369	3.9	13.5671	0.0000	SURCHARGED
720 minute summer	204	15	51.043	0.000	1.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
720 minute summer	200	1.000	201	1.3	0.195	0.006	0.2026	
720 minute summer	201	1.001	202	2.6	0.323	0.011	0.2814	
720 minute summer	202	1.002	203	3.9	0.478	0.012	0.1795	
720 minute summer	203	Hydro-Brake®	204	1.5				43.5



**Results for 100 year +50% CC 720 minute winter. 960 minute analysis at 15 minute timestep. Mass balance: 99.79%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
720 minute winter	200	360	54.854	0.014	0.9	0.0897	0.0000	OK
720 minute winter	201	360	54.378	0.020	1.8	0.1234	0.0000	OK
720 minute winter	202	360	53.650	0.020	2.7	0.1263	0.0000	OK
720 minute winter	203	495	51.861	0.361	2.7	13.1979	0.0000	SURCHARGED
720 minute winter	204	15	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
720 minute winter	200	1.000	201	0.9	0.173	0.004	0.1580	
720 minute winter	201	1.001	202	1.8	0.287	0.008	0.2190	
720 minute winter	202	1.002	203	2.7	0.426	0.008	0.1397	
720 minute winter	203	Hydro-Brake®	204	1.5				50.0





**Results for 100 year +50% CC 960 minute summer. 1200 minute analysis at 15 minute timestep. Mass balance: 99.89%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
960 minute summer	200	495	54.854	0.015	1.0	0.0953	0.0000	OK
960 minute summer	201	495	54.379	0.021	2.0	0.1310	0.0000	OK
960 minute summer	202	495	53.652	0.022	3.0	0.1341	0.0000	OK
960 minute summer	203	570	51.804	0.304	3.0	10.5515	0.0000	SURCHARGED
960 minute summer	204	15	51.043	0.000	1.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
960 minute summer	200	1.000	201	1.0	0.179	0.005	0.1696	
960 minute summer	201	1.001	202	2.0	0.297	0.009	0.2352	
960 minute summer	202	1.002	203	3.0	0.440	0.009	0.1500	
960 minute summer	203	Hydro-Brake®	204	1.5				46.2



**Results for 100 year +50% CC 960 minute winter. 1200 minute analysis at 15 minute timestep. Mass balance: 99.86%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
960 minute winter	200	495	54.853	0.014	0.8	0.0838	0.0000	OK
960 minute winter	201	495	54.377	0.019	1.6	0.1154	0.0000	OK
960 minute winter	202	495	53.649	0.019	2.4	0.1181	0.0000	OK
960 minute winter	203	585	51.758	0.258	2.4	8.5761	0.0000	SURCHARGED
960 minute winter	204	15	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
960 minute winter	200	1.000	201	0.8	0.167	0.004	0.1461	
960 minute winter	201	1.001	202	1.6	0.277	0.007	0.2022	
960 minute winter	202	1.002	203	2.4	0.410	0.007	0.1290	
960 minute winter	203	Hydro-Brake®	204	1.5				51.2



**Results for 100 year +50% CC 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 (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
1440 minute summer	200	750	54.852	0.013	0.7	0.0776	0.0000	OK
1440 minute summer	201	750	54.375	0.017	1.4	0.1070	0.0000	OK
1440 minute summer	202	750	53.648	0.018	2.1	0.1095	0.0000	OK
1440 minute summer	203	810	51.684	0.184	2.1	5.6781	0.0000	OK
1440 minute summer	204	30	51.043	0.000	1.5	0.0000	0.0000	OK

  

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
1440 minute summer	200	1.000	201	0.7	0.159	0.003	0.1337	
1440 minute summer	201	1.001	202	1.4	0.265	0.006	0.1848	
1440 minute summer	202	1.002	203	2.1	0.392	0.006	0.1179	
1440 minute summer	203	Hydro-Brake®	204	1.5				52.6



**Results for 100 year +50% CC 1440 minute winter. 1680 minute analysis at 30 minute timestep. Mass balance: 99.89%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m <sup>3</sup> )	Flood (m <sup>3</sup> )	Status
1440 minute winter	200	750	54.850	0.011	0.6	0.0709	0.0000	OK
1440 minute winter	201	750	54.374	0.016	1.2	0.0979	0.0000	OK
1440 minute winter	202	750	53.646	0.016	1.8	0.1002	0.0000	OK
1440 minute winter	203	780	51.634	0.134	1.8	3.9268	0.0000	OK
1440 minute winter	204	30	51.043	0.000	1.5	0.0000	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m <sup>3</sup> )	Discharge Vol (m <sup>3</sup> )
1440 minute winter	200	1.000	201	0.6	0.151	0.003	0.1207	
1440 minute winter	201	1.001	202	1.2	0.252	0.005	0.1667	
1440 minute winter	202	1.002	203	1.8	0.373	0.005	0.1064	
1440 minute winter	203	Hydro-Brake®	204	1.5				57.1