



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)
1	0.027	5.00	55.342	2050	359755.382	430354.898	0.160
2	0.027	5.00	55.963	2500	359750.502	430316.127	1.051
3	0.027	5.00	55.099	2500	359745.780	430278.629	0.376
4	0.027	5.00	55.100	2500	359738.701	430268.019	0.441
5	0.000		55.100	2500	359724.803	430256.754	0.530
6			55.100	2500	359720.659	430255.485	0.559

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	39.077	0.032	55.182	54.987	0.195	200.0	150	6.49	43.6
1.001	2	3	37.794	0.032	54.912	54.723	0.189	200.0	225	7.64	40.5
1.002	3	4	12.755	0.032	54.723	54.659	0.064	200.0	225	8.02	39.5
1.003	4	5	17.890	0.032	54.659	54.570	0.089	200.0	225	8.57	38.3
1.004	5	6	4.334	0.032	54.570	54.541	0.029	150.0	225	8.68	38.1

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	0.436	45.8	3.2	0.010	0.826	0.027	0.0	41	0.213
1.001	0.551	114.6	5.9	0.826	0.151	0.054	0.0	56	0.253
1.002	0.551	114.6	8.7	0.151	0.216	0.081	0.0	68	0.281
1.003	0.551	114.6	11.2	0.216	0.305	0.108	0.0	77	0.301
1.004	0.636	132.3	11.2	0.305	0.334	0.108	0.0	72	0.334

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	39.077	200.0	150	1:3 swale	55.342	55.182	0.010	55.963	54.987	0.826
1.001	37.794	200.0	225	1:3 swale	55.963	54.912	0.826	55.099	54.723	0.151
1.002	12.755	200.0	225	1:3 swale	55.099	54.723	0.151	55.100	54.659	0.216
1.003	17.890	200.0	225	1:3 swale	55.100	54.659	0.216	55.100	54.570	0.305

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	2050	Manhole	Adoptable	2	2500	Manhole	Adoptable
1.001	2	2500	Manhole	Adoptable	3	2500	Manhole	Adoptable
1.002	3	2500	Manhole	Adoptable	4	2500	Manhole	Adoptable
1.003	4	2500	Manhole	Adoptable	5	2500	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	4.334	150.0	225	1:3 swale	55.100	54.570	0.305	55.100	54.541	0.334

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.004	5	2500	Manhole	Adoptable	6	2500	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1	359755.382	430354.898	55.342	0.160	2050					
						0	1.000	55.182	150	
2	359750.502	430316.127	55.963	1.051	2500		1	1.000	54.987	150
						0	1.001	54.912	225	
3	359745.780	430278.629	55.099	0.376	2500		1	1.001	54.723	225
						0	1.002	54.723	225	
4	359738.701	430268.019	55.100	0.441	2500		1	1.002	54.659	225
						0	1.003	54.659	225	
5	359724.803	430256.754	55.100	0.530	2500		1	1.003	54.570	225
						0	1.004	54.570	225	
6	359720.659	430255.485	55.100	0.559	2500		1	1.004	54.541	225

Simulation Settings

Rainfall Methodology	FEH-22	Drain Down Time (mins)	240	30 year (l/s)	1.4
Summer CV	0.750	Additional Storage (m ³ /ha)	20.0	100 year (l/s)	1.7
Winter CV	0.840	Check Discharge Rate(s)	✓	Check Discharge Volume	✓
Analysis Speed	Normal	5 year (l/s)	1.0	100 year 360 minute (m ³)	
Skip Steady State	✓	10 year (l/s)	1.1		

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	1.70
Greenfield Method	IH124	Growth Factor 100 year	2.08
Positively Drained Area (ha)	0.110	Betterment (%)	0
SAAR (mm)	999	QBar	0.8
Soil Index	4	Q 5 year (l/s)	1.0
SPR	0.47	Q 10 year (l/s)	1.1
Region	10	Q 30 year (l/s)	1.4
Growth Factor 5 year	1.19	Q 100 year (l/s)	1.7
Growth Factor 10 year	1.38		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)	0.110	Storm Duration (mins)	360
Soil Index	4	Betterment (%)	0
SPR	0.47	PR	
CWI		Runoff Volume (m ³)	

Node 5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	54.570	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 5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	54.570
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

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	15.0	0.0	0.600	75.0	0.0	0.605	75.4	0.0



Results for 100 year +50% CC Critical Storm Duration. Lowest mass balance: 99.19%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	1	12	55.288	0.106	16.4	0.7057	0.0000	OK
240 minute winter	2	236	55.071	0.159	6.6	0.8608	0.0000	OK
240 minute winter	3	236	55.071	0.348	9.9	2.2063	0.0000	SURCHARGED
240 minute winter	4	236	55.071	0.412	10.0	2.5251	0.0000	SURCHARGED
240 minute winter	5	236	55.071	0.501	7.3	22.5058	0.0000	SURCHARGED
15 minute summer	6	1	54.541	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	1	1.000	2	12.8	0.333	0.279	1.5829	
240 minute winter	2	1.001	3	6.6	0.183	0.057	10.6768	
240 minute winter	3	1.002	4	6.7	0.170	0.059	6.7684	
240 minute winter	4	1.003	5	7.3	0.189	0.064	13.3195	
240 minute winter	5	Hydro-Brake [®]	6	1.4				35.6



Results for 100 year +50% CC 15 minute summer. 255 minute analysis at 1 minute timestep. Mass balance: 99.73%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	1	12	55.284	0.102	15.6	0.6836	0.0000	OK
15 minute summer	2	12	55.025	0.113	25.9	0.6122	0.0000	OK
15 minute summer	3	27	54.898	0.175	38.9	1.1109	0.0000	OK
15 minute summer	4	27	54.898	0.239	49.7	1.4662	0.0000	SURCHARGED
15 minute summer	5	26	54.898	0.328	48.0	11.9146	0.0000	SURCHARGED
15 minute summer	6	1	54.541	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	1	1.000	2	11.9	0.327	0.260	1.5041	
15 minute summer	2	1.001	3	24.7	0.314	0.216	2.9914	
15 minute summer	3	1.002	4	36.9	0.354	0.322	2.3405	
15 minute summer	4	1.003	5	48.0	0.448	0.419	5.6914	
15 minute summer	5	Hydro-Brake®	6	1.4				21.3



Results for 100 year +50% CC 15 minute winter. 255 minute analysis at 1 minute timestep. Mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	1	12	55.288	0.106	16.4	0.7057	0.0000	OK
15 minute winter	2	12	55.028	0.116	27.5	0.6308	0.0000	OK
15 minute winter	3	26	54.920	0.197	41.3	1.2486	0.0000	OK
15 minute winter	4	27	54.920	0.261	53.1	1.5994	0.0000	SURCHARGED
15 minute winter	5	27	54.920	0.350	50.2	13.0831	0.0000	SURCHARGED
15 minute winter	6	1	54.541	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	1	1.000	2	12.8	0.333	0.279	1.5829	
15 minute winter	2	1.001	3	26.4	0.320	0.230	3.4643	
15 minute winter	3	1.002	4	38.5	0.363	0.336	2.7718	
15 minute winter	4	1.003	5	50.2	0.449	0.438	6.4750	
15 minute winter	5	Hydro-Brake®	6	1.4				21.3



Results for 100 year +50% CC 30 minute summer. 270 minute analysis at 1 minute timestep. Mass balance: 99.44%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
30 minute summer	1	19	55.285	0.103	14.7	0.6879	0.0000	OK
30 minute summer	2	19	55.026	0.114	25.7	0.6165	0.0000	OK
30 minute summer	3	35	54.958	0.235	38.4	1.4906	0.0000	SURCHARGED
30 minute summer	4	37	54.958	0.299	47.9	1.8328	0.0000	SURCHARGED
30 minute summer	5	34	54.958	0.388	36.8	15.2488	0.0000	SURCHARGED
30 minute summer	6	1	54.541	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	1	1.000	2	12.1	0.328	0.263	1.5187	
30 minute summer	2	1.001	3	25.0	0.316	0.219	4.5792	
30 minute summer	3	1.002	4	33.2	0.341	0.289	3.6157	
30 minute summer	4	1.003	5	36.8	0.315	0.321	7.9712	
30 minute summer	5	Hydro-Brake®	6	1.4				22.2



Results for 100 year +50% CC 30 minute winter. 270 minute analysis at 1 minute timestep. Mass balance: 99.19%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
30 minute winter	1	20	55.284	0.102	13.3	0.6792	0.0000	OK
30 minute winter	2	19	55.023	0.111	24.2	0.6026	0.0000	OK
30 minute winter	3	36	54.981	0.258	36.5	1.6400	0.0000	SURCHARGED
30 minute winter	4	36	54.981	0.322	43.2	1.9778	0.0000	SURCHARGED
30 minute winter	5	36	54.981	0.411	32.4	16.6585	0.0000	SURCHARGED
30 minute winter	6	1	54.541	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	1	1.000	2	11.7	0.325	0.256	1.4894	
30 minute winter	2	1.001	3	23.9	0.306	0.208	5.6108	
30 minute winter	3	1.002	4	29.9	0.332	0.261	4.1946	
30 minute winter	4	1.003	5	32.4	0.338	0.282	8.9769	
30 minute winter	5	Hydro-Brake®	6	1.4				22.1



Results for 100 year +50% CC 60 minute summer. 300 minute analysis at 1 minute timestep. Mass balance: 99.29%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute summer	1	35	55.277	0.095	11.5	0.6374	0.0000	OK
60 minute summer	2	34	55.016	0.104	21.1	0.5635	0.0000	OK
60 minute summer	3	65	55.008	0.285	31.6	1.8061	0.0000	SURCHARGED
60 minute summer	4	64	55.008	0.349	33.5	2.1386	0.0000	SURCHARGED
60 minute summer	5	64	55.008	0.438	23.9	18.2967	0.0000	SURCHARGED
60 minute summer	6	1	54.541	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	1	1.000	2	10.2	0.312	0.223	1.3468	
60 minute summer	2	1.001	3	20.7	0.277	0.181	6.9100	
60 minute summer	3	1.002	4	22.0	0.257	0.192	4.8867	
60 minute summer	4	1.003	5	23.9	0.249	0.208	10.1650	
60 minute summer	5	Hydro-Brake®	6	1.4				24.0



Results for 100 year +50% CC 60 minute winter. 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 winter	1	35	55.271	0.089	9.3	0.5974	0.0000	OK
60 minute winter	2	64	55.034	0.122	17.9	0.6612	0.0000	OK
60 minute winter	3	63	55.034	0.311	26.9	1.9723	0.0000	SURCHARGED
60 minute winter	4	63	55.034	0.375	27.3	2.2992	0.0000	SURCHARGED
60 minute winter	5	63	55.034	0.464	19.3	19.9983	0.0000	SURCHARGED
60 minute winter	6	1	54.541	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	1	1.000	2	8.8	0.300	0.193	1.2166	
60 minute winter	2	1.001	3	17.8	0.262	0.155	8.3658	
60 minute winter	3	1.002	4	18.0	0.266	0.157	5.6315	
60 minute winter	4	1.003	5	19.3	0.266	0.168	11.4244	
60 minute winter	5	Hydro-Brake®	6	1.4				23.6



Results for 100 year +50% CC 120 minute summer. 360 minute analysis at 2 minute timestep. Mass balance: 99.28%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
120 minute summer	1	66	55.261	0.079	7.3	0.5295	0.0000	OK
120 minute summer	2	122	55.029	0.117	14.0	0.6358	0.0000	OK
120 minute summer	3	124	55.029	0.306	20.9	1.9435	0.0000	SURCHARGED
120 minute summer	4	124	55.029	0.370	21.3	2.2711	0.0000	SURCHARGED
120 minute summer	5	124	55.029	0.459	15.1	19.6936	0.0000	SURCHARGED
120 minute summer	6	2	54.541	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 summer	1	1.000	2	6.8	0.278	0.148	1.0104	
120 minute summer	2	1.001	3	13.6	0.220	0.119	8.0998	
120 minute summer	3	1.002	4	14.0	0.199	0.122	5.4981	
120 minute summer	4	1.003	5	15.1	0.208	0.132	11.1981	
120 minute summer	5	Hydro-Brake®	6	1.4				28.0



Results for 100 year +50% CC 120 minute winter. 360 minute analysis at 2 minute timestep. Mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
120 minute winter	1	66	55.254	0.072	5.6	0.4788	0.0000	OK
120 minute winter	2	122	55.058	0.146	11.0	0.7919	0.0000	OK
120 minute winter	3	122	55.058	0.335	16.5	2.1257	0.0000	SURCHARGED
120 minute winter	4	122	55.058	0.399	16.7	2.4472	0.0000	SURCHARGED
120 minute winter	5	122	55.058	0.488	11.9	21.6257	0.0000	SURCHARGED
120 minute winter	6	2	54.541	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	1	1.000	2	5.5	0.260	0.120	0.8679	
120 minute winter	2	1.001	3	11.0	0.216	0.096	9.8452	
120 minute winter	3	1.002	4	11.1	0.209	0.096	6.3647	
120 minute winter	4	1.003	5	11.9	0.223	0.104	12.6496	
120 minute winter	5	Hydro-Brake®	6	1.4				27.4



Results for 100 year +50% CC 180 minute summer. 420 minute analysis at 4 minute timestep. Mass balance: 99.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
180 minute summer	1	96	55.251	0.069	5.3	0.4627	0.0000	OK
180 minute summer	2	184	55.035	0.123	10.4	0.6681	0.0000	OK
180 minute summer	3	184	55.035	0.312	15.6	1.9809	0.0000	SURCHARGED
180 minute summer	4	184	55.035	0.376	15.8	2.3072	0.0000	SURCHARGED
180 minute summer	5	184	55.035	0.465	11.3	20.0828	0.0000	SURCHARGED
180 minute summer	6	4	54.541	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	1	1.000	2	5.1	0.255	0.111	0.8245	
180 minute summer	2	1.001	3	10.3	0.195	0.089	8.4436	
180 minute summer	3	1.002	4	10.5	0.177	0.091	5.6707	
180 minute summer	4	1.003	5	11.3	0.182	0.098	11.4883	
180 minute summer	5	Hydro-Brake®	6	1.4				32.1



Results for 100 year +50% CC 180 minute winter. 420 minute analysis at 4 minute timestep. Mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
180 minute winter	1	96	55.244	0.062	4.1	0.4140	0.0000	OK
180 minute winter	2	180	55.069	0.157	8.1	0.8502	0.0000	OK
180 minute winter	3	180	55.069	0.346	12.2	2.1940	0.0000	SURCHARGED
180 minute winter	4	180	55.069	0.410	12.3	2.5132	0.0000	SURCHARGED
180 minute winter	5	180	55.069	0.499	8.9	22.3697	0.0000	SURCHARGED
180 minute winter	6	4	54.541	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	1	1.000	2	4.0	0.238	0.088	0.8770	
180 minute winter	2	1.001	3	8.1	0.195	0.071	10.5471	
180 minute winter	3	1.002	4	8.2	0.187	0.072	6.7058	
180 minute winter	4	1.003	5	8.9	0.200	0.077	13.2157	
180 minute winter	5	Hydro-Brake®	6	1.4				31.4



Results for 100 year +50% CC 240 minute summer. 480 minute analysis at 4 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
240 minute summer	1	128	55.246	0.064	4.5	0.4252	0.0000	OK
240 minute summer	2	240	55.036	0.124	8.6	0.6737	0.0000	OK
240 minute summer	3	240	55.036	0.313	12.9	1.9873	0.0000	SURCHARGED
240 minute summer	4	240	55.036	0.377	13.3	2.3134	0.0000	SURCHARGED
240 minute summer	5	240	55.036	0.466	9.6	20.1487	0.0000	SURCHARGED
240 minute summer	6	4	54.541	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	1	1.000	2	4.3	0.242	0.093	0.7282	
240 minute summer	2	1.001	3	8.5	0.184	0.075	8.5034	
240 minute summer	3	1.002	4	8.8	0.169	0.076	5.7004	
240 minute summer	4	1.003	5	9.6	0.173	0.083	11.5378	
240 minute summer	5	Hydro-Brake®	6	1.4				36.4



Results for 100 year +50% CC 240 minute winter. 480 minute analysis at 4 minute timestep. Mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
240 minute winter	1	128	55.238	0.056	3.3	0.3745	0.0000	OK
240 minute winter	2	236	55.071	0.159	6.6	0.8608	0.0000	OK
240 minute winter	3	236	55.071	0.348	9.9	2.2063	0.0000	SURCHARGED
240 minute winter	4	236	55.071	0.412	10.0	2.5251	0.0000	SURCHARGED
240 minute winter	5	236	55.071	0.501	7.3	22.5058	0.0000	SURCHARGED
240 minute winter	6	4	54.541	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	1	1.000	2	3.3	0.223	0.072	0.8984	
240 minute winter	2	1.001	3	6.6	0.183	0.057	10.6768	
240 minute winter	3	1.002	4	6.7	0.170	0.059	6.7684	
240 minute winter	4	1.003	5	7.3	0.189	0.064	13.3195	
240 minute winter	5	Hydro-Brake [®]	6	1.4				35.6



Results for 100 year +50% CC 360 minute summer. 600 minute analysis at 8 minute timestep. Mass balance: 99.41%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
360 minute summer	1	184	55.237	0.055	3.4	0.3670	0.0000	OK
360 minute summer	2	312	55.033	0.121	6.5	0.6543	0.0000	OK
360 minute summer	3	312	55.033	0.310	9.7	1.9647	0.0000	SURCHARGED
360 minute summer	4	312	55.033	0.374	10.1	2.2916	0.0000	SURCHARGED
360 minute summer	5	312	55.033	0.463	7.4	19.9133	0.0000	SURCHARGED
360 minute summer	6	8	54.541	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	1	1.000	2	3.1	0.220	0.069	0.5886	
360 minute summer	2	1.001	3	6.3	0.174	0.055	8.2947	
360 minute summer	3	1.002	4	6.7	0.163	0.059	5.5958	
360 minute summer	4	1.003	5	7.4	0.148	0.065	11.3620	
360 minute summer	5	Hydro-Brake®	6	1.4				44.9



Results for 100 year +50% CC 360 minute winter. 600 minute analysis at 8 minute timestep. Mass balance: 99.48%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
360 minute winter	1	184	55.230	0.048	2.5	0.3237	0.0000	OK
360 minute winter	2	352	55.070	0.158	4.9	0.8589	0.0000	OK
360 minute winter	3	352	55.070	0.347	7.4	2.2042	0.0000	SURCHARGED
360 minute winter	4	352	55.070	0.411	7.7	2.5230	0.0000	SURCHARGED
360 minute winter	5	352	55.070	0.500	5.7	22.4815	0.0000	SURCHARGED
360 minute winter	6	8	54.541	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	1	1.000	2	2.4	0.204	0.053	0.8829	
360 minute winter	2	1.001	3	4.9	0.168	0.043	10.6541	
360 minute winter	3	1.002	4	5.2	0.163	0.045	6.7574	
360 minute winter	4	1.003	5	5.7	0.170	0.050	13.3011	
360 minute winter	5	Hydro-Brake®	6	1.4				44.2



Results for 100 year +50% CC 480 minute summer. 720 minute analysis at 8 minute timestep. Mass balance: 99.46%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
480 minute summer	1	248	55.232	0.050	2.6	0.3322	0.0000	OK
480 minute summer	2	376	55.022	0.110	5.2	0.5956	0.0000	OK
480 minute summer	3	376	55.022	0.299	7.8	1.8960	0.0000	SURCHARGED
480 minute summer	4	376	55.022	0.363	8.0	2.2252	0.0000	SURCHARGED
480 minute summer	5	376	55.022	0.452	6.0	19.2024	0.0000	SURCHARGED
480 minute summer	6	8	54.541	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 summer	1	1.000	2	2.6	0.207	0.056	0.5115	
480 minute summer	2	1.001	3	5.2	0.164	0.045	7.6772	
480 minute summer	3	1.002	4	5.4	0.156	0.047	5.2824	
480 minute summer	4	1.003	5	6.0	0.139	0.052	10.8336	
480 minute summer	5	Hydro-Brake®	6	1.4				53.4



Results for 100 year +50% CC 480 minute winter. 720 minute analysis at 8 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
480 minute winter	1	248	55.225	0.043	2.0	0.2903	0.0000	OK
480 minute winter	2	408	55.062	0.150	4.0	0.8143	0.0000	OK
480 minute winter	3	408	55.062	0.339	6.0	2.1519	0.0000	SURCHARGED
480 minute winter	4	408	55.062	0.403	6.2	2.4725	0.0000	SURCHARGED
480 minute winter	5	408	55.062	0.492	4.7	21.9094	0.0000	SURCHARGED
480 minute winter	6	8	54.541	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	1	1.000	2	2.0	0.191	0.043	0.7659	
480 minute winter	2	1.001	3	4.0	0.161	0.035	10.1116	
480 minute winter	3	1.002	4	4.2	0.162	0.037	6.4945	
480 minute winter	4	1.003	5	4.7	0.142	0.041	12.8651	
480 minute winter	5	Hydro-Brake®	6	1.4				52.8

**Results for 100 year +50% CC 600 minute summer. 840 minute analysis at 15 minute timestep. Mass balance: 99.63%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
600 minute summer	1	315	55.227	0.045	2.1	0.2980	0.0000	OK
600 minute summer	2	450	55.014	0.102	4.2	0.5522	0.0000	OK
600 minute summer	3	450	55.014	0.291	6.3	1.8453	0.0000	SURCHARGED
600 minute summer	4	450	55.014	0.355	6.6	2.1761	0.0000	SURCHARGED
600 minute summer	5	450	55.014	0.444	5.0	18.6855	0.0000	SURCHARGED
600 minute summer	6	15	54.541	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	1	1.000	2	2.1	0.194	0.046	0.4429	
600 minute summer	2	1.001	3	4.2	0.160	0.037	7.2383	
600 minute summer	3	1.002	4	4.5	0.157	0.039	5.0569	
600 minute summer	4	1.003	5	5.0	0.112	0.043	10.4518	
600 minute summer	5	Hydro-Brake®	6	1.4				61.1



Results for 100 year +50% CC 600 minute winter. 840 minute analysis at 15 minute timestep. Mass balance: 99.51%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
600 minute winter	1	315	55.221	0.039	1.6	0.2597	0.0000	OK
600 minute winter	2	480	55.050	0.138	3.2	0.7458	0.0000	OK
600 minute winter	3	480	55.050	0.327	4.8	2.0717	0.0000	SURCHARGED
600 minute winter	4	480	55.050	0.391	5.1	2.3950	0.0000	SURCHARGED
600 minute winter	5	480	55.050	0.480	3.9	21.0435	0.0000	SURCHARGED
600 minute winter	6	15	54.541	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	1	1.000	2	1.6	0.178	0.035	0.6036	
600 minute winter	2	1.001	3	3.2	0.156	0.028	9.3093	
600 minute winter	3	1.002	4	3.5	0.152	0.030	6.1014	
600 minute winter	4	1.003	5	3.9	0.143	0.034	12.2097	
600 minute winter	5	Hydro-Brake®	6	1.4				61.8



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	1	375	55.224	0.042	1.9	0.2833	0.0000	OK
720 minute summer	2	510	55.013	0.101	3.8	0.5486	0.0000	OK
720 minute summer	3	510	55.013	0.290	5.7	1.8411	0.0000	SURCHARGED
720 minute summer	4	510	55.013	0.354	6.0	2.1721	0.0000	SURCHARGED
720 minute summer	5	510	55.013	0.443	4.6	18.6431	0.0000	SURCHARGED
720 minute summer	6	15	54.541	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	1	1.000	2	1.9	0.188	0.041	0.4134	
720 minute summer	2	1.001	3	3.8	0.159	0.033	7.2027	
720 minute summer	3	1.002	4	4.1	0.157	0.036	5.0386	
720 minute summer	4	1.003	5	4.6	0.112	0.040	10.4206	
720 minute summer	5	Hydro-Brake®	6	1.4				69.1



Results for 100 year +50% CC 720 minute winter. 960 minute analysis at 15 minute timestep. Mass balance: 99.51%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
720 minute winter	1	390	55.218	0.036	1.4	0.2426	0.0000	OK
720 minute winter	2	555	55.039	0.127	2.8	0.6887	0.0000	OK
720 minute winter	3	555	55.039	0.316	4.2	2.0049	0.0000	SURCHARGED
720 minute winter	4	555	55.039	0.380	4.5	2.3304	0.0000	SURCHARGED
720 minute winter	5	555	55.039	0.469	3.6	20.3339	0.0000	SURCHARGED
720 minute winter	6	15	54.541	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	1	1.000	2	1.4	0.170	0.031	0.4798	
720 minute winter	2	1.001	3	2.8	0.153	0.024	8.6681	
720 minute winter	3	1.002	4	3.1	0.157	0.027	5.7829	
720 minute winter	4	1.003	5	3.6	0.112	0.031	11.6764	
720 minute winter	5	Hydro-Brake [®]	6	1.4				70.0



Results for 100 year +50% CC 960 minute summer. 1200 minute analysis at 15 minute timestep. Mass balance: 99.87%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
960 minute summer	1	495	55.220	0.038	1.5	0.2511	0.0000	OK
960 minute summer	2	645	54.990	0.078	3.0	0.4232	0.0000	OK
960 minute summer	3	645	54.990	0.267	4.5	1.6943	0.0000	SURCHARGED
960 minute summer	4	645	54.990	0.331	4.8	2.0302	0.0000	SURCHARGED
960 minute summer	5	645	54.990	0.420	3.8	17.1833	0.0000	SURCHARGED
960 minute summer	6	15	54.541	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 summer	1	1.000	2	1.5	0.174	0.033	0.3513	
960 minute summer	2	1.001	3	3.0	0.152	0.026	6.0185	
960 minute summer	3	1.002	4	3.3	0.152	0.029	4.4148	
960 minute summer	4	1.003	5	3.8	0.108	0.033	9.3554	
960 minute summer	5	Hydro-Brake®	6	1.4				83.9



Results for 100 year +50% CC 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 (m ³)	Flood (m ³)	Status
960 minute winter	1	525	55.214	0.032	1.1	0.2141	0.0000	OK
960 minute winter	2	705	55.015	0.103	2.2	0.5585	0.0000	OK
960 minute winter	3	705	55.015	0.292	3.3	1.8526	0.0000	SURCHARGED
960 minute winter	4	705	55.015	0.356	3.7	2.1832	0.0000	SURCHARGED
960 minute winter	5	705	55.015	0.445	3.0	18.7601	0.0000	SURCHARGED
960 minute winter	6	15	54.541	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	1	1.000	2	1.1	0.157	0.024	0.2847	
960 minute winter	2	1.001	3	2.2	0.143	0.019	7.3010	
960 minute winter	3	1.002	4	2.6	0.152	0.022	5.0893	
960 minute winter	4	1.003	5	3.0	0.111	0.026	10.5068	
960 minute winter	5	Hydro-Brake®	6	1.4				86.2



Results for 100 year +50% CC 1440 minute summer. 1680 minute analysis at 30 minute timestep. Mass balance: 99.62%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
1440 minute summer	1	750	55.214	0.032	1.1	0.2141	0.0000	OK
1440 minute summer	2	930	54.959	0.047	2.2	0.2542	0.0000	OK
1440 minute summer	3	930	54.959	0.236	3.3	1.4965	0.0000	SURCHARGED
1440 minute summer	4	930	54.959	0.300	3.7	1.8390	0.0000	SURCHARGED
1440 minute summer	5	930	54.959	0.389	3.0	15.3017	0.0000	SURCHARGED
1440 minute summer	6	30	54.541	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	1	1.000	2	1.1	0.157	0.024	0.2847	
1440 minute summer	2	1.001	3	2.2	0.147	0.019	4.6143	
1440 minute summer	3	1.002	4	2.6	0.150	0.022	3.6390	
1440 minute summer	4	1.003	5	3.0	0.108	0.026	8.0113	
1440 minute summer	5	Hydro-Brake®	6	1.4				99.9



Results for 100 year +50% CC 1440 minute winter. 1680 minute analysis at 30 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
1440 minute winter	1	780	55.209	0.027	0.8	0.1811	0.0000	OK
1440 minute winter	2	1020	54.970	0.058	1.6	0.3164	0.0000	OK
1440 minute winter	3	1020	54.970	0.247	2.4	1.5693	0.0000	SURCHARGED
1440 minute winter	4	1020	54.970	0.311	2.8	1.9094	0.0000	SURCHARGED
1440 minute winter	5	1020	54.970	0.400	2.4	15.9841	0.0000	SURCHARGED
1440 minute winter	6	30	54.541	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	1	1.000	2	0.8	0.142	0.017	0.2296	
1440 minute winter	2	1.001	3	1.6	0.136	0.014	5.1058	
1440 minute winter	3	1.002	4	2.0	0.142	0.017	3.9161	
1440 minute winter	4	1.003	5	2.4	0.077	0.021	8.4945	
1440 minute winter	5	Hydro-Brake®	6	1.4				111.7