



Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	1.000
CV	0.950	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)	150.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	EasAng (m)	Northing (m)	Depth (m)
re1	0.042	5.00	10.400	150	565672.154	173781.038	0.750
S2	0.019	5.00	9.300	600	565692.832	173774.660	1.300
S3	0.028	5.00	8.400	600	565709.192	173764.412	1.400
S21	0.048	5.00	7.700	600	565731.151	173753.047	1.550
S24	0.000	5.00	7.720	600	565741.825	173740.898	1.690
re7	0.013	5.00	8.100	150	565706.228	173791.209	0.850
S8	0.021	5.00	8.000	500	565705.789	173778.607	1.040
S11	0.021	5.00	8.270	600	565714.754	173765.521	1.920
S13	0.012	5.00	7.500	600	565770.699	173735.483	1.050
S12	0.025	5.00	7.510	600	565775.927	173780.672	1.060
S14	0.012	5.00	7.550	600	565773.391	173758.751	1.250
re16	0.013	5.00	7.700	500	565718.741	173793.208	0.980
re15	0.013	5.00	7.500	500	565766.499	173787.683	0.800
S17	0.013	5.00	7.500	1200	565745.000	173790.170	1.200
S18	0.020	5.00	8.000	1200	565741.788	173762.407	1.880
S25		5.00	7.500	1200	565763.960	173726.136	1.490
S26			8.700	1200	565762.334	173720.199	2.715
S27			9.000	1200	565772.742	173712.986	3.060
7702			9.300	1	565771.224	173702.801	3.450

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	re1	S2	21.639	0.600	9.650	8.000	1.650	13.1	150	5.13	150.0
1.001	S2	S3	19.305	0.600	8.000	7.000	1.000	19.3	150	5.27	150.0
1.002	S3	S21	24.726	0.600	7.000	6.500	0.500	49.5	225	5.49	150.0
1.003	S21	S24	16.172	0.600	6.150	6.030	0.120	134.8	300	5.69	150.0
2.000	re7	S8	12.610	0.600	7.250	6.960	0.290	43.5	150	5.14	150.0
2.001	S8	S11	15.862	0.600	6.960	6.800	0.160	99.1	150	5.40	150.0
2.002	S11	S18	27.213	0.600	6.350	6.150	0.200	136.1	225	5.80	150.0

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	2.796	49.4	21.6	0.600	1.150	0.042	0.0	69	2.706
1.001	2.303	40.7	31.4	1.150	1.250	0.061	0.0	99	2.537
1.002	1.864	74.1	45.8	1.175	0.975	0.089	0.0	128	1.958
1.003	1.352	95.6	70.6	1.250	1.390	0.137	0.0	192	1.475
2.000	1.530	27.0	6.7	0.700	0.890	0.013	0.0	51	1.270
2.001	1.009	17.8	17.5	0.890	1.320	0.034	0.0	121	1.147
2.002	1.119	44.5	28.3	1.695	1.625	0.055	0.0	131	1.184

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)
3.000	S13	S14	23.423	0.600	6.450	6.300	0.150	156.2	225	5.37	150.0
4.000	S12	S14	22.067	0.600	6.450	6.300	0.150	147.1	225	5.34	150.0
3.001	S14	S18	31.814	0.600	6.300	6.150	0.150	212.1	300	5.87	150.0
5.000	re16	S17	26.434	0.600	6.720	6.450	0.270	97.9	150	5.43	150.0
6.000	re15	S17	21.642	0.600	6.700	6.450	0.250	86.6	150	5.33	150.0
5.001	S17	S18	27.948	0.600	6.300	6.150	0.150	186.3	375	5.79	150.0
7.000	S25	S26	6.156	0.600	6.010	5.985	0.025	246.2	375	5.09	150.0
7.001	S26	S27	12.663	0.600	5.985	5.940	0.045	281.4	375	5.29	150.0
7.002	S27	7702	10.298	0.600	5.940	5.850	0.090	114.4	150	5.47	150.0

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)
3.000	1.044	41.5	6.2	0.825	1.025	0.012	0.0	58	0.753
4.000	1.076	42.8	12.9	0.835	1.025	0.025	0.0	85	0.945
3.001	1.075	76.0	25.2	0.950	1.550	0.049	0.0	119	0.969
5.000	1.015	17.9	6.7	0.830	0.900	0.013	0.0	64	0.943
6.000	1.081	19.1	6.7	0.650	0.900	0.013	0.0	61	0.986
5.001	1.324	146.2	20.1	0.825	1.475	0.039	0.0	93	0.938
7.000	1.150	127.0	0.0	1.115	2.340	0.000	0.0	0	0.000
7.001	1.075	118.7	0.0	2.340	2.685	0.000	0.0	0	0.000
7.002	0.938	16.6	0.0	2.910	3.300	0.000	0.0	0	0.000

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	21.639	13.1	150	Circular	10.400	9.650	0.600	9.300	8.000	1.150
1.001	19.305	19.3	150	Circular	9.300	8.000	1.150	8.400	7.000	1.250
1.002	24.726	49.5	225	Circular	8.400	7.000	1.175	7.700	6.500	0.975
1.003	16.172	134.8	300	Circular	7.700	6.150	1.250	7.720	6.030	1.390
2.000	12.610	43.5	150	Circular	8.100	7.250	0.700	8.000	6.960	0.890
2.001	15.862	99.1	150	Circular	8.000	6.960	0.890	8.270	6.800	1.320
2.002	27.213	136.1	225	Circular	8.270	6.350	1.695	8.000	6.150	1.625
3.000	23.423	156.2	225	Circular	7.500	6.450	0.825	7.550	6.300	1.025
4.000	22.067	147.1	225	Circular	7.510	6.450	0.835	7.550	6.300	1.025
3.001	31.814	212.1	300	Circular	7.550	6.300	0.950	8.000	6.150	1.550
5.000	26.434	97.9	150	Circular	7.700	6.720	0.830	7.500	6.450	0.900

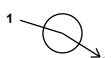
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	re1	150	Manhole	Adoptable	S2	600	Manhole	Adoptable
1.001	S2	600	Manhole	Adoptable	S3	600	Manhole	Adoptable
1.002	S3	600	Manhole	Adoptable	S21	600	Manhole	Adoptable
1.003	S21	600	Manhole	Adoptable	S24	600	Manhole	Adoptable
2.000	re7	150	Manhole	Adoptable	S8	500	Manhole	Adoptable
2.001	S8	500	Manhole	Adoptable	S11	600	Manhole	Adoptable
2.002	S11	600	Manhole	Adoptable	S18	1200	Manhole	Adoptable
3.000	S13	600	Manhole	Adoptable	S14	600	Manhole	Adoptable
4.000	S12	600	Manhole	Adoptable	S14	600	Manhole	Adoptable
3.001	S14	600	Manhole	Adoptable	S18	1200	Manhole	Adoptable
5.000	re16	500	Manhole	Adoptable	S17	1200	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)
6.000	21.642	86.6	150	Circular	7.500	6.700	0.650	7.500	6.450	0.900
5.001	27.948	186.3	375	Circular	7.500	6.300	0.825	8.000	6.150	1.475
7.000	6.156	246.2	375	Circular	7.500	6.010	1.115	8.700	5.985	2.340
7.001	12.663	281.4	375	Circular	8.700	5.985	2.340	9.000	5.940	2.685
7.002	10.298	114.4	150	Circular	9.000	5.940	2.910	9.300	5.850	3.300

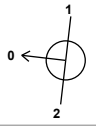
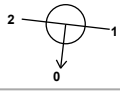
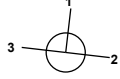
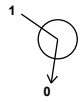
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
6.000	re15	500	Manhole	Adoptable	S17	1200	Manhole	Adoptable
5.001	S17	1200	Manhole	Adoptable	S18	1200	Manhole	Adoptable
7.000	S25	1200	Manhole	Adoptable	S26	1200	Manhole	Adoptable
7.001	S26	1200	Manhole	Adoptable	S27	1200	Manhole	Adoptable
7.002	S27	1200	Manhole	Adoptable	7702	1	Manhole	Adoptable

Manhole Schedule

Node	EasAng (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
re1	565672.154	173781.038	10.400	0.750	150		0	1.000	9.650	150
S2	565692.832	173774.660	9.300	1.300	600		1	1.000	8.000	150
							0	1.001	8.000	150
S3	565709.192	173764.412	8.400	1.400	600		1	1.001	7.000	150
							0	1.002	7.000	225
S21	565731.151	173753.047	7.700	1.550	600		1	1.002	6.500	225
							0	1.003	6.150	300
S24	565741.825	173740.898	7.720	1.690	600		1	1.003	6.030	300
re7	565706.228	173791.209	8.100	0.850	150		0	2.000	7.250	150
S8	565705.789	173778.607	8.000	1.040	500		1	2.000	6.960	150
							0	2.001	6.960	150
S11	565714.754	173765.521	8.270	1.920	600		1	2.001	6.800	150
							0	2.002	6.350	225



Manhole Schedule

Node	EasAng (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S13	565770.699	173735.483	7.500	1.050	600		0	3.000	6.450 225
S12	565775.927	173780.672	7.510	1.060	600		0	4.000	6.450 225
S14	565773.391	173758.751	7.550	1.250	600		1 2 0	4.000 3.000 3.001	6.300 225 6.300 225 6.300 300
re16	565718.741	173793.208	7.700	0.980	500		0	5.000	6.720 150
re15	565766.499	173787.683	7.500	0.800	500		0	6.000	6.700 150
S17	565745.000	173790.170	7.500	1.200	1200		1 2 0	6.000 5.000 5.001	6.450 150 6.450 150 6.300 375
S18	565741.788	173762.407	8.000	1.880	1200		1 2 3	5.001 3.001 2.002	6.150 375 6.150 300 6.150 225
S25	565763.960	173726.136	7.500	1.490	1200		0	7.000	6.010 375
S26	565762.334	173720.199	8.700	2.715	1200		1 0	7.000 7.001	5.985 375 5.985 375
S27	565772.742	173712.986	9.000	3.060	1200		1 0	7.001 7.002	5.940 375 5.940 150
7702	565771.224	173702.801	9.300	3.450	1		1	7.002	5.850 150

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	2 year (l/s)	1.3
Rainfall Events	Singular	Drain Down Time (mins)	10080	30 year (l/s)	3.4
Summer CV	0.950	Additional Storage (m³/ha)	20.0	100 year (l/s)	4.6
Winter CV	0.950	Starting Level (m)		Check Discharge Volume	x
Analysis Speed	Normal	Check Discharge Rate(s)	✓		



Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
30	35	0	0
100	0	0	0
100	40	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	2.40
Greenfield Method	IH124	Growth Factor 100 year	3.19
Positively Drained Area (ha)	0.300	Betterment (%)	0
SAAR (mm)	555	QBar	1.4
Soil Index	5	Q 2 year (l/s)	1.3
SPR	0.53	Q 30 year (l/s)	3.4
Region	6	Q 100 year (l/s)	4.6
Growth Factor 2 year	0.88		

Node S26 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	5.985	Product Number	CTL-SHE-0051-1400-1450-1400
Design Depth (m)	1.450	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.4	Min Node Diameter (mm)	1200

Node S25 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Main Channel Length (m)	17.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.060	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)	60	Main Channel n	0.030

Inlets S24

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	125.0	0.0	0.420	125.0	0.0	0.631	0.0	0.0
0.210	125.0	0.0	0.630	125.0	0.0			

Node S24 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Main Channel Length (m)	20.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	6.100	Main Channel Slope (1:X)	1000.0
Safety Factor	2.0	Time to half empty (mins)	15	Main Channel n	0.030

Inlets S18



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	229.5	0.0	0.420	229.5	0.0	0.631	0.0	0.0
0.210	229.5	0.0	0.630	229.5	0.0			

Node re1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	9.790	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.33	Length (m)	28.000		

Node S2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	8.690	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.33	Length (m)	19.000		

Node S3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.790	Slope (1:X)	40.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.33	Length (m)	28.000		

Node S21 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	7.090	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.33	Length (m)	45.000		



Results for 2 year Critical Storm Duration. Lowest mass balance: 97.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	re1	10	9.688	0.038	6.8	0.0428	0.0000	OK
15 minute summer	S2	10	8.050	0.050	9.9	0.0288	0.0000	OK
15 minute summer	S3	10	7.068	0.068	14.3	0.0466	0.0000	OK
15 minute summer	S21	10	6.253	0.103	21.7	0.0926	0.0000	OK
360 minute winter	S24	352	6.228	0.198	5.4	0.0562	0.0000	OK
15 minute summer	re7	10	7.278	0.028	2.1	0.0091	0.0000	OK
15 minute summer	S8	10	7.018	0.058	5.5	0.0350	0.0000	OK
15 minute summer	S11	11	6.419	0.069	8.7	0.0344	0.0000	OK
15 minute summer	S13	10	6.482	0.032	1.9	0.0165	0.0000	OK
15 minute summer	S12	10	6.496	0.046	4.0	0.0346	0.0000	OK
15 minute summer	S14	11	6.364	0.064	7.7	0.0304	0.0000	OK
15 minute summer	re16	11	6.754	0.034	2.1	0.0159	0.0000	OK
15 minute summer	re15	10	6.734	0.034	2.1	0.0175	0.0000	OK
15 minute summer	S17	11	6.353	0.053	6.1	0.0710	0.0000	OK
360 minute winter	S18	352	6.228	0.108	3.9	0.1458	0.0000	OK
360 minute winter	S25	352	6.228	0.218	2.2	0.2471	0.0000	OK
360 minute winter	S26	352	6.228	0.243	1.1	0.2753	0.0000	OK
180 minute summer	S27	132	5.966	0.026	1.0	0.0291	0.0000	OK
180 minute summer	7702	132	5.875	0.025	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	re1	1.000	S2	6.8	1.578	0.137	0.0930	
15 minute summer	S2	1.001	S3	9.8	1.512	0.240	0.1249	
15 minute summer	S3	1.002	S21	14.0	1.417	0.189	0.2446	
15 minute summer	S21	1.003	S24	21.6	1.229	0.226	0.3148	
360 minute winter	S24	Flow through pond	S25	2.2	0.039	0.001	18.9949	
15 minute summer	re7	2.000	S8	2.1	0.495	0.077	0.0544	
15 minute summer	S8	2.001	S11	5.3	0.868	0.299	0.0978	
15 minute summer	S11	2.002	S18	8.7	0.863	0.195	0.2733	
15 minute summer	S13	3.000	S14	1.9	0.318	0.045	0.1490	
15 minute summer	S12	4.000	S14	3.9	0.568	0.092	0.1651	
15 minute summer	S14	3.001	S18	7.4	0.684	0.097	0.3429	
15 minute summer	re16	5.000	S17	2.0	0.673	0.114	0.0800	
15 minute summer	re15	6.000	S17	2.0	0.703	0.107	0.0628	
15 minute summer	S17	5.001	S18	6.1	0.659	0.042	0.2584	
360 minute winter	S18	Flow through pond	S24	2.6	0.034	0.001	25.8279	
360 minute winter	S25	7.000	S26	1.1	0.137	0.008	0.4380	
360 minute winter	S26	Hydro-Brake®	S27	1.0				
180 minute summer	S27	7.002	7702	1.0	0.516	0.062	0.0204	52.5



Results for 30 year Critical Storm Duration. Lowest mass balance: 97.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	re1	10	9.712	0.062	17.8	0.0708	0.0000	OK
15 minute summer	S2	10	8.087	0.087	25.8	0.0498	0.0000	OK
15 minute summer	S3	10	7.119	0.119	37.6	0.0812	0.0000	OK
960 minute winter	S21	930	6.454	0.304	3.5	0.2740	0.0000	SURCHARGED
960 minute winter	S24	930	6.454	0.424	5.2	0.1199	0.0000	OK
15 minute summer	re7	10	7.296	0.046	5.5	0.0148	0.0000	OK
15 minute summer	S8	10	7.068	0.108	14.4	0.0647	0.0000	OK
15 minute summer	S11	11	6.469	0.119	23.0	0.0594	0.0000	OK
15 minute summer	S13	10	6.503	0.053	5.1	0.0269	0.0000	OK
15 minute summer	S12	10	6.525	0.075	10.6	0.0569	0.0000	OK
960 minute winter	S14	930	6.454	0.154	1.3	0.0731	0.0000	OK
15 minute summer	re16	10	6.778	0.058	5.5	0.0266	0.0000	OK
15 minute summer	re15	10	6.756	0.056	5.5	0.0292	0.0000	OK
960 minute winter	S17	930	6.454	0.154	0.9	0.2074	0.0000	OK
960 minute winter	S18	930	6.454	0.334	4.0	0.4486	0.0000	OK
960 minute winter	S25	930	6.454	0.444	2.2	0.5019	0.0000	SURCHARGED
960 minute winter	S26	930	6.454	0.469	1.1	0.5302	0.0000	SURCHARGED
15 minute summer	S27	237	5.966	0.026	1.0	0.0291	0.0000	OK
15 minute summer	7702	237	5.875	0.025	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	re1	1.000	S2	17.7	2.036	0.359	0.1885	
15 minute summer	S2	1.001	S3	25.7	1.996	0.631	0.2462	
15 minute summer	S3	1.002	S21	37.1	1.814	0.501	0.5063	
960 minute winter	S21	1.003	S24	3.4	0.143	0.036	1.1388	
960 minute winter	S24	Flow through pond	S25	2.2	0.033	0.001	45.7541	
15 minute summer	re7	2.000	S8	5.5	0.612	0.202	0.1141	
15 minute summer	S8	2.001	S11	14.1	1.085	0.791	0.2066	
15 minute summer	S11	2.002	S18	22.9	1.110	0.514	0.5607	
15 minute summer	S13	3.000	S14	5.0	0.410	0.121	0.3032	
15 minute summer	S12	4.000	S14	10.5	0.714	0.246	0.3347	
960 minute winter	S14	3.001	S18	1.3	0.372	0.017	1.6984	
15 minute summer	re16	5.000	S17	5.4	0.882	0.300	0.1618	
15 minute summer	re15	6.000	S17	5.4	0.919	0.284	0.1276	
960 minute winter	S17	5.001	S18	0.9	0.334	0.006	1.9311	
960 minute winter	S18	Flow through pond	S24	1.9	0.028	0.001	74.9597	
960 minute winter	S25	7.000	S26	1.1	0.129	0.008	0.6790	
960 minute winter	S26	Hydro-Brake®	S27	1.0				
15 minute summer	S27	7.002	7702	1.0	0.516	0.062	0.0204	56.3



Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 97.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	re1	10	9.724	0.074	24.0	0.0839	0.0000	OK
15 minute summer	S2	10	8.109	0.109	34.8	0.0624	0.0000	OK
15 minute summer	S3	10	7.145	0.145	50.5	0.0990	0.0000	OK
1440 minute winter	S21	1380	6.621	0.471	3.5	0.4250	0.0000	SURCHARGED
1440 minute winter	S24	1380	6.621	0.591	5.1	0.1673	0.0000	OK
15 minute summer	re7	10	7.304	0.054	7.4	0.0173	0.0000	OK
15 minute summer	S8	11	7.127	0.167	19.4	0.1004	0.0000	SURCHARGED
1440 minute winter	S11	1380	6.621	0.271	1.3	0.1359	0.0000	SURCHARGED
1440 minute winter	S13	1380	6.621	0.171	0.3	0.0875	0.0000	OK
1440 minute winter	S12	1380	6.621	0.171	0.6	0.1291	0.0000	OK
1440 minute winter	S14	1380	6.621	0.321	1.2	0.1526	0.0000	SURCHARGED
15 minute summer	re16	10	6.788	0.068	7.4	0.0315	0.0000	OK
15 minute summer	re15	10	6.766	0.066	7.4	0.0346	0.0000	OK
1440 minute winter	S17	1380	6.621	0.321	0.9	0.4329	0.0000	OK
1440 minute winter	S18	1380	6.621	0.501	3.9	0.6736	0.0000	OK
1440 minute winter	S25	1380	6.621	0.611	2.1	0.6912	0.0000	SURCHARGED
1440 minute winter	S26	1380	6.621	0.636	1.0	0.7195	0.0000	SURCHARGED
15 minute summer	S27	550	5.966	0.026	1.0	0.0291	0.0000	OK
15 minute summer	7702	550	5.875	0.025	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	re1	1.000	S2	23.9	2.137	0.484	0.2408	
15 minute summer	S2	1.001	S3	34.5	2.175	0.849	0.3000	
15 minute summer	S3	1.002	S21	50.0	1.936	0.675	0.6396	
1440 minute winter	S21	1.003	S24	3.5	0.130	0.036	1.1388	
1440 minute winter	S24	Flow through pond	S25	2.1	0.037	0.001	65.6269	
15 minute summer	re7	2.000	S8	7.4	0.634	0.272	0.1465	
15 minute summer	S8	2.001	S11	18.8	1.100	1.054	0.2649	
1440 minute winter	S11	2.002	S18	1.3	0.429	0.029	1.0823	
1440 minute winter	S13	3.000	S14	0.3	0.182	0.007	0.8454	
1440 minute winter	S12	4.000	S14	0.6	0.294	0.014	0.7964	
1440 minute winter	S14	3.001	S18	1.2	0.337	0.016	2.2403	
15 minute summer	re16	5.000	S17	7.2	0.952	0.404	0.2017	
15 minute summer	re15	6.000	S17	7.3	0.992	0.382	0.1589	
1440 minute winter	S17	5.001	S18	0.9	0.322	0.006	2.9458	
1440 minute winter	S18	Flow through pond	S24	1.8	0.029	0.001	111.4475	
1440 minute winter	S25	7.000	S26	1.0	0.123	0.008	0.6790	
1440 minute winter	S26	Hydro-Brake®	S27	1.0				
15 minute summer	S27	7.002	7702	1.0	0.516	0.062	0.0204	75.3



Results for 100 year Critical Storm Duration. Lowest mass balance: 97.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	re1	10	9.722	0.072	22.8	0.0814	0.0000	OK
15 minute summer	S2	10	8.103	0.103	33.0	0.0595	0.0000	OK
15 minute summer	S3	10	7.140	0.140	47.9	0.0955	0.0000	OK
1440 minute winter	S21	1380	6.647	0.497	3.6	0.4484	0.0000	SURCHARGED
1440 minute winter	S24	1380	6.647	0.617	5.2	0.1746	0.0000	OK
15 minute summer	re7	10	7.302	0.052	7.1	0.0169	0.0000	OK
15 minute summer	S8	11	7.101	0.141	18.4	0.0848	0.0000	OK
1440 minute winter	S11	1380	6.647	0.297	1.5	0.1488	0.0000	SURCHARGED
1440 minute winter	S13	1380	6.647	0.197	0.3	0.1007	0.0000	OK
1440 minute winter	S12	1380	6.647	0.197	0.7	0.1486	0.0000	OK
1440 minute winter	S14	1380	6.647	0.347	1.3	0.1649	0.0000	SURCHARGED
15 minute summer	re16	10	6.786	0.066	7.1	0.0307	0.0000	OK
15 minute summer	re15	10	6.765	0.065	7.1	0.0337	0.0000	OK
1440 minute winter	S17	1380	6.647	0.347	0.9	0.4679	0.0000	OK
1440 minute winter	S18	1380	6.647	0.527	3.9	0.7084	0.0000	OK
1440 minute winter	S25	1380	6.647	0.637	2.1	0.7205	0.0000	SURCHARGED
1440 minute winter	S26	1380	6.647	0.662	1.0	0.7488	0.0000	SURCHARGED
15 minute summer	S27	489	5.966	0.026	1.0	0.0291	0.0000	OK
15 minute summer	7702	489	5.875	0.025	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	re1	1.000	S2	22.7	2.131	0.460	0.2298	
15 minute summer	S2	1.001	S3	32.8	2.142	0.805	0.2901	
15 minute summer	S3	1.002	S21	47.5	1.916	0.640	0.6135	
1440 minute winter	S21	1.003	S24	3.6	0.130	0.037	1.1388	
1440 minute winter	S24	Flow through pond	S25	2.1	0.037	0.001	68.6904	
15 minute summer	re7	2.000	S8	7.1	0.629	0.261	0.1417	
15 minute summer	S8	2.001	S11	18.0	1.115	1.007	0.2594	
1440 minute winter	S11	2.002	S18	1.5	0.394	0.034	1.0823	
1440 minute winter	S13	3.000	S14	0.3	0.175	0.007	0.8978	
1440 minute winter	S12	4.000	S14	0.7	0.295	0.016	0.8458	
1440 minute winter	S14	3.001	S18	1.2	0.321	0.016	2.2403	
15 minute summer	re16	5.000	S17	6.9	0.940	0.385	0.1946	
15 minute summer	re15	6.000	S17	6.9	0.980	0.364	0.1535	
1440 minute winter	S17	5.001	S18	0.9	0.330	0.006	3.0303	
1440 minute winter	S18	Flow through pond	S24	1.8	0.029	0.001	117.0980	
1440 minute winter	S25	7.000	S26	1.0	0.123	0.008	0.6790	
1440 minute winter	S26	Hydro-Brake®	S27	1.0				
15 minute summer	S27	7.002	7702	1.0	0.516	0.062	0.0204	71.7



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 97.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	re1	10	9.738	0.088	31.9	0.0997	0.0000	OK
15 minute summer	S2	11	8.527	0.527	46.2	0.3032	0.0000	SURCHARGED
15 minute summer	S3	11	7.173	0.173	63.0	0.1185	0.0000	OK
360 minute summer	S21	288	6.776	0.626	21.3	0.5646	0.0000	SURCHARGED
600 minute winter	S24	405	6.705	0.675	76.5	0.1911	0.0000	OK
15 minute summer	re7	11	7.329	0.079	9.9	0.0256	0.0000	OK
15 minute summer	S8	11	7.299	0.339	25.3	0.2034	0.0000	SURCHARGED
360 minute summer	S11	288	6.758	0.408	8.6	0.2046	0.0000	SURCHARGED
960 minute summer	S13	570	6.748	0.298	10.7	0.1525	0.0000	SURCHARGED
960 minute summer	S12	570	6.748	0.298	9.7	0.2246	0.0000	SURCHARGED
960 minute summer	S14	570	6.750	0.450	20.1	0.2138	0.0000	SURCHARGED
15 minute summer	re16	10	6.801	0.081	9.9	0.0375	0.0000	OK
15 minute summer	re15	10	6.779	0.079	9.9	0.0411	0.0000	OK
360 minute summer	S17	288	6.745	0.445	6.0	0.6001	0.0000	SURCHARGED
600 minute winter	S18	405	6.706	0.586	10.3	0.7872	0.0000	OK
360 minute summer	S25	288	7.031	1.021	15.5	1.1543	0.0000	SURCHARGED
360 minute summer	S26	288	6.896	0.911	2.1	1.0305	0.0000	SURCHARGED
360 minute summer	S27	288	5.967	0.027	1.1	0.0302	0.0000	OK
360 minute summer	7702	288	5.876	0.026	1.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	re1	1.000	S2	31.8	2.170	0.644	0.3060	
15 minute summer	S2	1.001	S3	42.7	2.428	1.050	0.3399	
15 minute summer	S3	1.002	S21	63.0	2.011	0.850	0.7737	
360 minute summer	S21	1.003	S24	21.1	0.327	0.220	1.1388	
600 minute winter	S24	Flow through pond	S25	50.8	0.044	0.027	74.7626	
15 minute summer	re7	2.000	S8	9.4	0.654	0.346	0.1702	
15 minute summer	S8	2.001	S11	24.6	1.396	1.378	0.2744	
360 minute summer	S11	2.002	S18	7.9	0.528	0.176	1.0823	
960 minute summer	S13	3.000	S14	-10.3	-0.266	-0.249	0.9316	
960 minute summer	S12	4.000	S14	-8.9	0.380	-0.207	0.8776	
960 minute summer	S14	3.001	S18	-19.7	0.537	-0.259	2.2403	
15 minute summer	re16	5.000	S17	9.7	1.020	0.539	0.2510	
15 minute summer	re15	6.000	S17	9.7	1.064	0.509	0.1977	
360 minute summer	S17	5.001	S18	5.6	0.381	0.038	3.0826	
600 minute winter	S18	Flow through pond	S24	73.7	0.041	0.024	129.6784	
360 minute summer	S25	7.000	S26	2.1	0.200	0.017	0.6790	
360 minute summer	S26	Hydro-Brake®	S27	1.1				
360 minute summer	S27	7.002	7702	1.1	0.524	0.066	0.0214	187.5



Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 97.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	re1	11	9.743	0.093	33.1	0.1059	0.0000	OK
15 minute summer	S2	11	8.620	0.620	47.6	0.3565	0.0000	SURCHARGED
15 minute summer	S3	11	7.179	0.179	65.0	0.1221	0.0000	OK
720 minute summer	S21	435	6.783	0.633	13.1	0.5712	0.0000	SURCHARGED
720 minute winter	S24	465	6.902	0.872	573.3	0.2469	0.0000	OK
15 minute summer	re7	11	7.351	0.101	10.2	0.0329	0.0000	OK
15 minute summer	S8	11	7.320	0.360	25.6	0.2158	0.0000	SURCHARGED
480 minute winter	S11	416	6.778	0.428	13.8	0.2144	0.0000	SURCHARGED
480 minute summer	S13	352	6.812	0.362	2.2	0.1848	0.0000	SURCHARGED
480 minute summer	S12	352	6.805	0.355	3.2	0.2677	0.0000	SURCHARGED
480 minute summer	S14	352	6.789	0.489	11.8	0.2324	0.0000	SURCHARGED
15 minute summer	re16	10	6.803	0.083	10.2	0.0383	0.0000	OK
480 minute summer	re15	352	6.792	0.092	1.7	0.0481	0.0000	OK
480 minute winter	S17	416	6.772	0.472	41.1	0.6366	0.0000	SURCHARGED
480 minute winter	S18	416	6.819	0.699	391.8	0.9393	0.0000	OK
720 minute winter	S25	465	7.176	1.166	121.3	1.3185	0.0000	SURCHARGED
480 minute winter	S26	328	7.086	1.101	149.5	1.2456	0.0000	SURCHARGED
480 minute winter	S27	328	5.967	0.027	1.2	0.0300	0.0000	OK
480 minute winter	7702	328	5.876	0.026	1.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	re1	1.000	S2	32.6	2.179	0.660	0.3146	
15 minute summer	S2	1.001	S3	44.1	2.504	1.083	0.3399	
15 minute summer	S3	1.002	S21	65.0	2.017	0.877	0.7958	
720 minute summer	S21	1.003	S24	13.0	0.226	0.136	1.1388	
720 minute winter	S24	Flow through pond	S25	-568.4	-0.128	-0.301	75.5714	
15 minute summer	re7	2.000	S8	9.6	0.673	0.357	0.1909	
15 minute summer	S8	2.001	S11	25.2	1.433	1.414	0.2748	
480 minute winter	S11	2.002	S18	-13.0	0.499	-0.293	1.0823	
480 minute summer	S13	3.000	S14	5.7	0.268	0.137	0.9316	
480 minute summer	S12	4.000	S14	5.9	0.452	0.139	0.8776	
480 minute summer	S14	3.001	S18	19.3	0.395	0.253	2.2403	
15 minute summer	re16	5.000	S17	10.0	1.029	0.558	0.2577	
480 minute summer	re15	6.000	S17	1.7	0.666	0.089	0.3138	
480 minute winter	S17	5.001	S18	-40.9	0.381	-0.280	3.0826	
480 minute winter	S18	Flow through pond	S24	474.9	0.071	0.155	138.7186	
720 minute winter	S25	7.000	S26	201.7	1.829	1.588	0.6790	
480 minute winter	S26	Hydro-Brake®	S27	1.2				
480 minute winter	S27	7.002	7702	1.1	0.522	0.065	0.0212	240.2