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)	0.650
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	x
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	100.0		

Nodes

	Name	Area (ha)	T of E (mins)	Cover Level (m)	Node Type	Manhole Type	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
✓	10	0.137	5.00	24.850	Manhole	Adoptable	1800	342714.707	392749.312	1.599
✓	11	0.093	5.00	24.550	Manhole	Adoptable	1800	342694.623	392785.364	1.356
✓	9			24.700	Manhole	Adoptable	1800	342688.753	392773.799	1.538
✓	8	0.124	5.00	24.450	Manhole	Adoptable	1800	342662.729	392780.444	1.355
✓	7	0.000		24.450	Manhole	Adoptable	1050	342655.566	392772.332	1.732
✓	6	0.000	5.00	24.450	Manhole	Adoptable	1050	342661.396	392754.350	1.877
✓	5	0.050	5.00	24.550	Manhole	Adoptable	1800	342665.281	392748.422	1.995
✓	4	0.360	5.00	24.700	Manhole	Adoptable	1800	342641.340	392722.539	2.233
✓	14	0.175	5.00	24.920	Manhole	Adoptable	1800	342713.427	392722.890	2.316
✓	13	0.158	5.00	24.700	Manhole	Adoptable	1800	342650.276	392653.650	2.330
✓	12	0.112	5.00	24.600	Manhole	Adoptable	1800	342642.041	392652.661	2.251
✓	3	0.219	5.00	24.130	Manhole	Adoptable	2100	342607.047	392685.174	1.975
✓	2	0.121	5.00	23.880	Manhole	Adoptable	2400	342569.549	392644.659	1.863
✓	1			23.718	Manhole	Adoptable	1800	342560.632	392638.233	2.109

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	35.682	400.0	450	Circular_Default Sewer Type	24.850	23.251	1.149	24.700	23.162	1.088
2.000	12.969	400.0	450	Circular_Default Sewer Type	24.550	23.194	0.906	24.700	23.162	1.088
1.001	26.859	400.0	450	Circular_Default Sewer Type	24.700	23.162	1.088	24.450	23.095	0.905
1.002	10.822	400.0	450	Circular_Default Sewer Type	24.450	23.095	0.905	24.450	23.068	0.932
1.004	7.088	400.0	675	Circular_Default Sewer Type	24.450	22.573	1.202	24.550	22.555	1.320
1.005	35.258	400.0	675	Circular_Default Sewer Type	24.550	22.555	1.320	24.700	22.467	1.558
1.006	50.716	162.6	675	Circular_Default Sewer Type	24.700	22.467	1.558	24.130	22.155	1.300
3.000	93.714	400.0	600	Circular_Default Sewer Type	24.920	22.604	1.716	24.700	22.370	1.730
3.001	8.294	400.0	600	Circular_Default Sewer Type	24.700	22.370	1.730	24.600	22.349	1.651
3.002	47.767	400.0	600	Circular_Default Sewer Type	24.600	22.349	1.651	24.130	22.230	1.300

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	10	1800	Manhole	Adoptable	9	1800	Manhole	Adoptable
2.000	11	1800	Manhole	Adoptable	9	1800	Manhole	Adoptable
1.001	9	1800	Manhole	Adoptable	8	1800	Manhole	Adoptable
1.002	8	1800	Manhole	Adoptable	7	1050	Manhole	Adoptable
1.004	6	1050	Manhole	Adoptable	5	1800	Manhole	Adoptable
1.005	5	1800	Manhole	Adoptable	4	1800	Manhole	Adoptable
1.006	4	1800	Manhole	Adoptable	3	2100	Manhole	Adoptable
3.000	14	1800	Manhole	Adoptable	13	1800	Manhole	Adoptable
3.001	13	1800	Manhole	Adoptable	12	1800	Manhole	Adoptable
3.002	12	1800	Manhole	Adoptable	3	2100	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)
1.007	55.205	400.0	675	Circular_Default Sewer Type	24.130	22.155	1.300	23.880	22.017	1.188
1.008	10.991	26.9	225	Circular_Default Sewer Type	23.880	22.017	1.638	23.718	21.609	1.884

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.007	3	2100	Manhole	Adoptable	2	2400	Manhole	Adoptable
1.008	2	2400	Manhole	Adoptable	1	1800	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	✓	100 year (l/s)	38.6
Rainfall Events	Singular	Drain Down Time (mins)	240	Check Discharge Volume	✓
Summer CV	0.750	Additional Storage (m³/ha)	20.0	100 year 360 minute (m³)	626
Winter CV	0.840	Starting Level (m)			
Analysis Speed	Detailed	Check Discharge Rate(s)	✓		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440	2160

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	40	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	QBar/QMed conversion factor	1.075
Greenfield Method	FEH	Growth Factor 100 year	2.08
Positively Drained Area (ha)	2.383	Betterment (%)	0
SAAR (mm)	866	QMed	17.3
Host	1	QBar	18.6
BFIHost	0.351	Q 100 year (l/s)	38.6
Region	10		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)	2.383	Storm Duration (mins)	360
Soil Index	4	Betterment (%)	0
SPR	0.49	PR	0.514
CWI	124.665	Runoff Volume (m³)	626

Node 2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	22.017	Product Number	CTL-SHE-0173-1860-2300-1860
Design Depth (m)	2.300	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	18.6	Min Node Diameter (mm)	2100

Node 6 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Main Channel Length (m)	58.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	22.573	Main Channel Slope (1:X)	400.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.025

Inlets

7

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	714.0	714.0	0.800	714.0	789.8	0.801	0.0	789.8

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	10	11	23.337	0.086	14.0	0.3680	0.0000	OK
15 minute winter	11	11	23.281	0.087	9.5	0.3426	0.0000	OK
15 minute winter	9	11	23.276	0.114	22.1	0.2901	0.0000	OK
15 minute winter	8	11	23.237	0.142	33.3	0.6222	0.0000	OK
15 minute winter	7	14	22.740	0.022	32.6	0.0188	0.0000	OK
120 minute winter	6	92	22.641	0.068	12.2	0.0585	0.0000	OK
120 minute winter	5	86	22.638	0.083	7.1	0.2531	0.0000	OK
120 minute winter	4	86	22.636	0.169	16.8	0.9761	0.0000	OK
15 minute winter	14	11	22.692	0.088	17.8	0.3569	0.0000	OK
120 minute winter	13	84	22.637	0.267	11.8	1.0417	0.0000	OK
120 minute winter	12	84	22.637	0.288	14.0	1.0188	0.0000	OK
120 minute winter	3	82	22.637	0.482	35.2	2.7373	0.0000	OK
120 minute winter	2	84	22.636	0.619	23.9	3.6045	0.0000	SURCHARGED
120 minute winter	1	86	21.674	0.065	18.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	10	1.000	9	13.4	0.539	0.084	0.9410	
15 minute winter	11	2.000	9	8.7	0.409	0.054	0.3444	
15 minute winter	9	1.001	8	21.4	0.581	0.133	0.9996	
15 minute winter	8	1.002	7	32.6	0.839	0.203	0.4217	
15 minute winter	7	Flow through Pond	6	31.9	0.143	0.003	15.5452	
120 minute winter	6	1.004	5	6.8	0.431	0.015	0.1535	
120 minute winter	5	1.005	4	7.4	0.425	0.016	1.6738	
120 minute winter	4	1.006	3	16.8	0.378	0.023	8.6764	
15 minute winter	14	3.000	13	16.6	0.469	0.048	5.4381	
120 minute winter	13	3.001	12	10.3	0.474	0.030	1.0564	
120 minute winter	12	3.002	3	13.6	0.552	0.040	8.0327	
120 minute winter	3	1.007	2	19.8	0.318	0.042	16.9807	
120 minute winter	2	1.008	1	18.5	1.855	0.183	0.1094	154.5

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	10	10	23.352	0.101	18.9	0.4287	0.0000	OK
15 minute winter	11	11	23.305	0.111	12.9	0.4331	0.0000	OK
15 minute winter	9	11	23.300	0.138	30.0	0.3506	0.0000	OK
15 minute winter	8	11	23.263	0.168	45.3	0.7345	0.0000	OK
15 minute winter	7	13	22.745	0.027	44.6	0.0232	0.0000	OK
120 minute winter	6	96	22.707	0.134	29.0	0.1162	0.0000	OK
120 minute winter	5	96	22.706	0.151	16.0	0.4611	0.0000	OK
30 minute winter	4	24	22.715	0.248	42.2	1.4287	0.0000	OK
30 minute winter	14	25	22.720	0.116	18.4	0.4705	0.0000	OK
30 minute winter	13	23	22.711	0.341	39.0	1.3309	0.0000	OK
30 minute winter	12	23	22.709	0.360	45.8	1.2738	0.0000	OK
120 minute winter	3	92	22.707	0.552	37.9	3.1334	0.0000	OK
15 minute winter	2	14	22.734	0.717	77.0	4.1762	0.0000	SURCHARGED
15 minute winter	1	14	21.674	0.065	18.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	10	1.000	9	18.3	0.575	0.114	1.2024	
15 minute winter	11	2.000	9	11.8	0.423	0.073	0.4620	
15 minute winter	9	1.001	8	29.2	0.622	0.182	1.2751	
15 minute winter	8	1.002	7	44.6	0.914	0.278	0.5291	
15 minute winter	7	Flow through Pond	6	48.0	0.168	0.005	28.4214	
120 minute winter	6	1.004	5	-15.1	0.481	-0.032	0.3894	
120 minute winter	5	1.005	4	-14.4	0.430	-0.031	3.0428	
30 minute winter	4	1.006	3	40.5	0.537	0.055	10.8547	
30 minute winter	14	3.000	13	17.8	0.459	0.052	9.3389	
30 minute winter	13	3.001	12	35.8	0.603	0.104	1.4175	
30 minute winter	12	3.002	3	41.5	0.615	0.121	9.9331	
120 minute winter	3	1.007	2	21.3	0.346	0.046	18.4721	
15 minute winter	2	1.008	1	18.6	1.858	0.185	0.1100	94.0

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	10	11	23.480	0.229	59.8	0.9740	0.0000	OK
15 minute winter	11	11	23.464	0.270	40.6	1.0570	0.0000	OK
15 minute winter	9	11	23.459	0.297	93.7	0.7560	0.0000	OK
15 minute winter	8	11	23.417	0.322	143.0	1.4107	0.0000	OK
180 minute winter	7	176	23.156	0.438	67.5	0.3794	0.0000	OK
180 minute winter	6	176	23.157	0.584	79.2	0.5055	0.0000	OK
180 minute winter	5	176	23.157	0.602	81.4	1.8329	0.0000	OK
15 minute winter	4	12	23.222	0.755	429.4	4.3574	0.0000	SURCHARGED
15 minute winter	14	11	23.557	0.953	168.0	3.8634	0.0000	SURCHARGED
15 minute winter	13	11	23.486	1.116	169.0	4.3520	0.0000	SURCHARGED
15 minute winter	12	11	23.447	1.098	205.5	3.8856	0.0000	SURCHARGED
15 minute summer	3	12	23.333	1.178	321.3	6.6899	0.0000	SURCHARGED
15 minute winter	2	11	23.343	1.326	101.3	7.7195	0.0000	SURCHARGED
15 minute winter	1	8	21.674	0.065	18.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	10	1.000	9	55.7	0.671	0.347	3.4240	
15 minute winter	11	2.000	9	38.1	0.560	0.237	1.3634	
15 minute winter	9	1.001	8	92.1	0.804	0.573	3.1232	
15 minute winter	8	1.002	7	142.2	1.299	0.885	1.1817	
180 minute winter	7	Flow through Pond	6	-34.1	0.077	-0.004	346.5790	
180 minute winter	6	1.004	5	-79.2	-0.669	-0.170	2.3534	
180 minute winter	5	1.005	4	-76.6	-0.426	-0.164	12.2163	
15 minute winter	4	1.006	3	-306.7	0.865	-0.417	18.1045	
15 minute winter	14	3.000	13	102.1	0.596	0.298	26.3971	
15 minute winter	13	3.001	12	159.5	0.700	0.466	2.3362	
15 minute winter	12	3.002	3	207.1	0.759	0.605	13.4549	
15 minute summer	3	1.007	2	104.7	0.630	0.224	19.7070	
15 minute winter	2	1.008	1	18.6	1.858	0.185	0.1100	276.8

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.55%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	10	11	23.543	0.292	76.3	1.2426	0.0000	OK
15 minute winter	11	11	23.527	0.333	51.8	1.3046	0.0000	OK
15 minute winter	9	11	23.522	0.360	119.0	0.9169	0.0000	OK
15 minute winter	8	11	23.473	0.378	182.7	1.6534	0.0000	OK
180 minute winter	7	180	23.407	0.689	84.2	0.5964	0.0000	OK
180 minute winter	6	180	23.407	0.834	108.7	0.7219	0.0000	SURCHARGED
180 minute winter	5	180	23.407	0.852	111.9	2.5938	0.0000	SURCHARGED
15 minute summer	4	11	23.480	1.013	608.7	5.8448	0.0000	SURCHARGED
15 minute winter	14	10	23.850	1.246	183.5	5.0526	0.0000	SURCHARGED
15 minute winter	13	11	23.743	1.373	193.0	5.3550	0.0000	SURCHARGED
15 minute winter	12	11	23.724	1.375	227.2	4.8675	0.0000	SURCHARGED
15 minute summer	3	11	23.640	1.485	420.1	8.4386	0.0000	SURCHARGED
15 minute summer	2	11	23.726	1.709	72.1	9.9531	0.0000	FLOOD RISK
15 minute summer	1	188	21.674	0.065	18.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	10	1.000	9	70.7	0.680	0.440	4.3677	
15 minute winter	11	2.000	9	48.3	0.578	0.301	1.6981	
15 minute winter	9	1.001	8	117.7	0.859	0.733	3.7356	
15 minute winter	8	1.002	7	181.8	1.418	1.132	1.3777	
180 minute winter	7	Flow through Pond	6	-44.2	0.079	-0.005	507.3295	
180 minute winter	6	1.004	5	-108.7	-0.684	-0.233	2.5303	
180 minute winter	5	1.005	4	-105.8	-0.464	-0.227	12.5863	
15 minute summer	4	1.006	3	-426.9	-1.196	-0.581	18.1045	
15 minute winter	14	3.000	13	105.0	0.618	0.307	26.3971	
15 minute winter	13	3.001	12	178.5	0.722	0.521	2.3362	
15 minute winter	12	3.002	3	251.0	0.891	0.733	13.4549	
15 minute summer	3	1.007	2	-93.5	0.638	-0.200	19.7070	
15 minute summer	2	1.008	1	18.6	1.859	0.185	0.1100	277.5