

Design Settings

Rainfall Methodology	FEH-22	Maximum Time of Concentration (mins)	30.00	Preferred Cover Depth (m)	1.200
Return Period (years)	100	Maximum Rainfall (mm/hr)	0.0	Include Intermediate Ground	✓
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00	Enforce best practice design rules	x
CV	1.000	Connection Type	Level Soffits		
Time of Entry (mins)	5.00	Minimum Backdrop Height (m)	0.200		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
1.0	0.192	5.00	104.750	600		522509.554	228683.473	0.900
1.1	0.007	5.00	96.700	600		522240.376	228768.552	0.900
2.0	0.132	5.00	98.250	600		522270.205	228918.344	0.900
2.1	0.036	5.00	97.600	600		522212.810	228790.358	0.900
1.2			95.950	600		522204.307	228732.475	0.900
3.0	0.047	5.00	94.250	600		522218.790	228561.427	0.600
1.3	0.101	5.00	93.400	600		522186.910	228585.800	0.600
1.4			93.350	1200	675	522177.467	228582.210	1.200
1.5			92.600	1500		522087.467	228582.077	1.650
1.6			91.750	1500		521997.468	228581.943	1.650
1.7			91.000	1500		521962.136	228578.842	1.650
HW1			90.000	1		521952.212	228568.102	1.000
HW2		5.00	90.000	1		521930.884	228554.575	1.000
1.8/FC			90.000	1200	675	521921.601	228554.297	1.100
Outfall			87.000	1		521848.189	228555.041	0.100

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	1.0	1.1	282.400	0.600	103.850	95.800	8.050	35.1	300	6.77	0.0
1.001	1.1	1.2	51.000	0.600	95.800	95.050	0.750	68.0	300	7.21	0.0
2.000	2.0	2.1	144.400	0.600	97.350	96.700	0.650	222.2	300	7.29	0.0
2.001	2.1	1.2	58.500	0.600	96.700	95.050	1.650	35.5	300	7.66	0.0
1.002	1.2	1.3	149.400	0.600	95.050	92.800	2.250	66.4	300	8.95	0.0
3.000	3.0	1.3	45.500	0.600	93.650	92.800	0.850	53.5	300	5.35	0.0
1.003	1.3	1.4	11.500	0.600	92.800	92.300	0.500	23.0	300	9.01	0.0
1.004	1.4	1.5	90.000	0.600	92.150	90.950	1.200	75.0	450	9.64	0.0
1.005	1.5	1.6	90.000	0.600	90.950	90.100	0.850	105.9	450	10.40	0.0
1.006	1.6	1.7	35.300	0.600	90.100	89.350	0.750	47.1	450	10.60	0.0
1.007	1.7	HW1	13.700	0.600	89.350	89.000	0.350	39.1	450	10.67	0.0

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	2.663	188.2	0.0	0.600	0.600	0.192	0.0	0	0.000
1.001	1.909	134.9	0.0	0.600	0.600	0.199	0.0	0	0.000
2.000	1.051	74.3	0.0	0.600	0.600	0.132	0.0	0	0.000
2.001	2.649	187.2	0.0	0.600	0.600	0.168	0.0	0	0.000
1.002	1.932	136.6	0.0	0.600	0.300	0.367	0.0	0	0.000
3.000	2.153	152.2	0.0	0.300	0.300	0.047	0.0	0	0.000
1.003	3.292	232.7	0.0	0.300	0.750	0.515	0.0	0	0.000
1.004	2.349	373.6	0.0	0.750	1.200	0.515	0.0	0	0.000
1.005	1.975	314.1	0.0	1.200	1.200	0.515	0.0	0	0.000
1.006	2.969	472.2	0.0	1.200	1.200	0.515	0.0	0	0.000
1.007	3.257	518.0	0.0	1.200	0.550	0.515	0.0	0	0.000

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)
HW2	HW2	1.8/FC	8.400	0.600	89.000	88.900	0.100	84.0	450	5.06	0.0
1.008	1.8/FC	Outfall	71.500	0.600	88.900	86.900	2.000	35.8	100	5.98	0.0

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)
HW2	2.219	352.9	0.0	0.550	0.650	0.000	0.0	0	0.000
1.008	1.294	10.2	0.0	1.000	0.000	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	282.400	35.1	300	Circular	104.750	103.850	0.600	96.700	95.800	0.600
1.001	51.000	68.0	300	Circular	96.700	95.800	0.600	95.950	95.050	0.600
2.000	144.400	222.2	300	Circular	98.250	97.350	0.600	97.600	96.700	0.600
2.001	58.500	35.5	300	Circular	97.600	96.700	0.600	95.950	95.050	0.600
1.002	149.400	66.4	300	Circular	95.950	95.050	0.600	93.400	92.800	0.300
3.000	45.500	53.5	300	Circular	94.250	93.650	0.300	93.400	92.800	0.300

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
1.000	1.0	600		Manhole	Adoptable	1.1	600		Manhole	Adoptable
1.001	1.1	600		Manhole	Adoptable	1.2	600		Manhole	Adoptable
2.000	2.0	600		Manhole	Adoptable	2.1	600		Manhole	Adoptable
2.001	2.1	600		Manhole	Adoptable	1.2	600		Manhole	Adoptable
1.002	1.2	600		Manhole	Adoptable	1.3	600		Manhole	Adoptable
3.000	3.0	600		Manhole	Adoptable	1.3	600		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)
1.003	11.500	23.0	300	Circular	93.400	92.800	0.300	93.350	92.300	0.750
1.004	90.000	75.0	450	Circular	93.350	92.150	0.750	92.600	90.950	1.200
1.005	90.000	105.9	450	Circular	92.600	90.950	1.200	91.750	90.100	1.200
1.006	35.300	47.1	450	Circular	91.750	90.100	1.200	91.000	89.350	1.200
1.007	13.700	39.1	450	Circular	91.000	89.350	1.200	90.000	89.000	0.550
HW2	8.400	84.0	450	Circular	90.000	89.000	0.550	90.000	88.900	0.650
1.008	71.500	35.8	100	Circular	90.000	88.900	1.000	87.000	86.900	0.000

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
1.003	1.3	600		Manhole	Adoptable	1.4	1200	675	Manhole	Adoptable
1.004	1.4	1200	675	Manhole	Adoptable	1.5	1500		Manhole	Adoptable
1.005	1.5	1500		Manhole	Adoptable	1.6	1500		Manhole	Adoptable
1.006	1.6	1500		Manhole	Adoptable	1.7	1500		Manhole	Adoptable
1.007	1.7	1500		Manhole	Adoptable	HW1	1		Manhole	Adoptable
HW2	HW2	1		Manhole	Adoptable	1.8/FC	1200	675	Manhole	Adoptable
1.008	1.8/FC	1200	675	Manhole	Adoptable	Outfall	1		Manhole	Adoptable

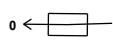
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
1.0	522509.554	228683.473	104.750	0.900	600						
							0	1.000	103.850	300	
1.1	522240.376	228768.552	96.700	0.900	600			1	1.000	95.800	300
							0	1.001	95.800	300	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
2.0	522270.205	228918.344	98.250	0.900	600			0	2.000	97.350	300
2.1	522212.810	228790.358	97.600	0.900	600			1	2.000	96.700	300
1.2	522204.307	228732.475	95.950	0.900	600			0	2.001	96.700	300
								1	2.001	95.050	300
								2	1.001	95.050	300
								0	1.002	95.050	300
3.0	522218.790	228561.427	94.250	0.600	600			0	3.000	93.650	300
1.3	522186.910	228585.800	93.400	0.600	600			1	3.000	92.800	300
								2	1.002	92.800	300
								0	1.003	92.800	300
1.4	522177.467	228582.210	93.350	1.200	1200	675		1	1.003	92.300	300
1.5	522087.467	228582.077	92.600	1.650	1500			0	1.004	92.150	450
								1	1.004	90.950	450
1.6	521997.468	228581.943	91.750	1.650	1500			0	1.005	90.950	450
								1	1.005	90.100	450
								0	1.006	90.100	450

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
1.7	521962.136	228578.842	91.000	1.650	1500		1 	1.006	89.350	450
							0 	1.007	89.350	450
HW1	521952.212	228568.102	90.000	1.000	1		1 	1.007	89.000	450
HW2	521930.884	228554.575	90.000	1.000	1		0 			
							0 	HW2	89.000	450
1.8/FC	521921.601	228554.297	90.000	1.100	1200	675	1 	HW2	88.900	450
							0 	1.008	88.900	100
Outfall	521848.189	228555.041	87.000	0.100	1		1 	1.008	86.900	100

Simulation Settings

Rainfall Methodology	FEH-22	Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Rate(s)	x
Rainfall Events	Singular	Analysis Speed	Detailed	Additional Storage (m³/ha)	20.0	Check Discharge Volume	x
Summer CV	1.000	Skip Steady State	x	Starting Level (m)			

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 %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	25	0	0
30	25	0	0				

Node 1.8/FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	88.900	Product Number	CTL-SHE-0074-2500-1100-2500
Design Depth (m)	1.100	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.5	Min Node Diameter (mm)	1200

Node HW2 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	30.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	89.000	Main Channel Slope (1:X)	9999.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.050

Inlets HW1

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	280.7	0.0	1.000	507.9	0.0	1.001	0.0	0.0

Node 1.1 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	95.800	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	0	Diameter (mm)	1000

Node 1.2 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Link	2.001
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	95.050	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	7	Diameter (mm)	1000

Node 1.3 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.002
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	92.800	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	0	Diameter (mm)	1000

Node 2.1 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	2.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	96.700	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	0	Diameter (mm)	1000

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1.0	11	103.932	0.082	32.2	0.3719	0.0000	OK
15 minute summer	1.1	12	95.894	0.094	32.1	0.0781	0.0000	OK
15 minute summer	2.0	11	97.465	0.115	22.2	0.3707	0.0000	OK
15 minute summer	2.1	12	96.774	0.074	26.7	0.2307	0.0000	OK
15 minute summer	1.2	13	95.179	0.129	54.6	0.2660	0.0000	OK
15 minute summer	3.0	10	93.696	0.046	7.9	0.0845	0.0000	OK
15 minute summer	1.3	13	92.923	0.123	68.8	0.5649	0.0000	OK
15 minute summer	1.4	13	92.277	0.127	66.6	0.1029	0.0000	OK
15 minute summer	1.5	14	91.095	0.145	67.1	0.2556	0.0000	OK
15 minute summer	1.6	14	90.214	0.114	65.7	0.2007	0.0000	OK
15 minute summer	1.7	14	89.477	0.127	64.9	0.2252	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	1.0	1.000	1.1	31.0	1.961	0.165	4.7337	
15 minute summer	1.1	1.001	1.2	29.1	1.286	0.216	1.2044	
15 minute summer	2.0	2.000	2.1	20.9	1.104	0.281	2.7545	
15 minute summer	2.1	2.001	1.2	25.5	1.438	0.136	1.2186	
15 minute summer	1.2	1.002	1.3	51.9	1.847	0.380	4.1944	
15 minute summer	3.0	3.000	1.3	7.7	0.734	0.051	0.7407	
15 minute summer	1.3	1.003	1.4	66.6	2.656	0.286	0.2887	
15 minute summer	1.4	1.004	1.5	67.1	1.676	0.180	3.6064	
15 minute summer	1.5	1.005	1.6	65.7	1.751	0.209	3.3894	
15 minute summer	1.6	1.006	1.7	64.9	1.929	0.137	1.2039	
15 minute summer	1.7	1.007	HW1	65.1	2.766	0.126	0.3539	

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	HW1	344	89.269	0.269	14.7	0.0000	0.0000	OK
360 minute winter	HW2	352	89.269	0.269	17.2	0.0000	0.0000	OK
360 minute winter	1.8/FC	344	89.284	0.384	12.6	0.3108	0.0000	SURCHARGED
15 minute summer	Outfall	1	86.900	0.000	2.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	HW1	Flow through Pond	HW2	9.3	0.019	0.005	83.3358	
360 minute winter	HW2	HW2	1.8/FC	12.6	0.377	0.036	1.0200	
360 minute winter	1.8/FC	Hydro-Brake®	Outfall	2.5				127.5

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 98.36%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1.0	11	104.010	0.160	109.8	0.7264	0.0000	OK
15 minute summer	1.1	12	96.001	0.201	110.1	0.2470	0.0000	OK
15 minute summer	2.0	11	97.604	0.254	75.5	0.8177	0.0000	OK
15 minute summer	2.1	11	96.844	0.144	91.8	0.6895	0.0000	OK
15 minute summer	1.2	14	95.677	0.627	193.2	6.3626	0.0000	FLOOD RISK
15 minute summer	3.0	10	93.734	0.084	26.9	0.1557	0.0000	OK
15 minute summer	1.3	12	93.165	0.365	215.6	2.4028	0.0000	FLOOD RISK
15 minute winter	1.4	11	92.385	0.235	196.7	0.1900	0.0000	OK
15 minute summer	1.5	13	91.224	0.274	200.0	0.4834	0.0000	OK
15 minute summer	1.6	13	90.315	0.215	200.5	0.3799	0.0000	OK
480 minute winter	1.7	480	89.763	0.413	32.5	0.7301	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	1.0	1.000	1.1	106.3	2.602	0.565	12.3119	
15 minute summer	1.1	1.001	1.2	104.0	1.675	0.771	3.0734	
15 minute summer	2.0	2.000	2.1	72.1	1.464	0.971	7.0188	
15 minute summer	2.1	2.001	1.2	89.2	1.818	0.476	3.0410	
15 minute summer	1.2	1.002	1.3	146.9	2.096	1.076	10.5206	
15 minute summer	3.0	3.000	1.3	26.6	0.845	0.175	1.9637	
15 minute summer	1.3	1.003	1.4	200.8	3.222	0.863	0.7113	
15 minute winter	1.4	1.004	1.5	197.1	2.202	0.527	8.1602	
15 minute summer	1.5	1.005	1.6	200.5	2.282	0.638	7.9023	
15 minute summer	1.6	1.006	1.7	200.0	2.558	0.424	2.8123	
480 minute winter	1.7	1.007	HW1	65.7	1.296	0.127	2.1291	

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 98.36%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	HW1	480	89.763	0.763	65.7	0.0000	0.0000	OK
480 minute winter	HW2	480	89.763	0.763	45.8	0.0000	0.0000	FLOOD RISK
600 minute winter	1.8/FC	600	89.764	0.864	12.7	0.7001	0.0000	FLOOD RISK
15 minute summer	Outfall	1	86.900	0.000	2.5	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)
480 minute winter	HW1	Flow through Pond	HW2	45.8	0.026	0.023	279.8063	
480 minute winter	HW2	HW2	1.8/FC	13.5	0.359	0.038	1.3309	
600 minute winter	1.8/FC	Hydro-Brake®	Outfall	2.5				261.6

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 97.03%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1.0	11	104.035	0.185	138.7	0.8425	0.0000	OK
15 minute summer	1.1	13	96.199	0.399	139.1	0.8648	0.0000	SURCHARGED
15 minute summer	2.0	12	97.776	0.426	95.3	1.3691	0.0000	SURCHARGED
15 minute summer	2.1	12	96.858	0.158	104.4	0.8007	0.0000	OK
15 minute summer	1.2	14	95.917	0.867	211.5	12.4921	0.0000	FLOOD RISK
15 minute summer	3.0	10	93.745	0.095	34.0	0.1758	0.0000	OK
15 minute summer	1.3	12	93.302	0.502	240.6	3.9925	0.0000	FLOOD RISK
15 minute summer	1.4	12	92.400	0.250	221.8	0.2027	0.0000	OK
15 minute summer	1.5	13	91.242	0.292	221.8	0.5166	0.0000	OK
15 minute summer	1.6	13	90.329	0.229	221.5	0.4050	0.0000	OK
480 minute winter	1.7	488	89.926	0.576	37.3	1.0179	0.0000	SURCHARGED

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	1.0	1.000	1.1	134.3	2.732	0.714	15.9004	
15 minute summer	1.1	1.001	1.2	111.1	1.683	0.823	3.5914	
15 minute summer	2.0	2.000	2.1	80.8	1.508	1.088	7.7907	
15 minute summer	2.1	2.001	1.2	102.5	1.886	0.548	3.1562	
15 minute summer	1.2	1.002	1.3	150.2	2.156	1.100	10.5206	
15 minute summer	3.0	3.000	1.3	33.6	0.861	0.221	2.0377	
15 minute summer	1.3	1.003	1.4	221.8	3.240	0.953	0.7392	
15 minute summer	1.4	1.004	1.5	221.8	2.229	0.594	8.9489	
15 minute summer	1.5	1.005	1.6	221.5	2.326	0.705	8.5557	
15 minute summer	1.6	1.006	1.7	221.0	2.609	0.468	3.0274	
480 minute winter	1.7	1.007	HW1	61.6	1.365	0.119	2.1707	

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 97.03%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	HW1	488	89.926	0.926	61.6	0.0000	0.0000	OK
480 minute winter	HW2	488	89.926	0.926	41.2	0.0000	0.0000	FLOOD RISK
480 minute winter	1.8/FC	488	89.932	1.032	12.8	0.8357	0.0000	FLOOD RISK
15 minute summer	Outfall	1	86.900	0.000	2.5	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)
480 minute winter	HW1	Flow through Pond	HW2	41.2	0.026	0.021	356.6680	
480 minute winter	HW2	HW2	1.8/FC	12.8	0.228	0.036	1.3309	
480 minute winter	1.8/FC	Hydro-Brake®	Outfall	2.5				250.2