

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	10	Minimum Backdrop Height (m)	0.200
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	x
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)
9	0.073	5.00	57.650	1500	477657.346	164536.107	1.386
MH201			57.540	1200	477654.133	164521.287	1.429
5	0.047	5.00	57.840	1500	477600.452	164588.610	1.145
6	0.084	5.00	57.640	1500	477597.701	164573.935	1.006
7	0.017	5.00	57.500	1500	477656.172	164562.171	1.110
8			57.150	1500	477663.712	164554.838	0.804

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	9	MH201	15.164	0.600	56.264	56.111	0.153	99.1	150	6.99	50.0
1.000_1	5	6	14.931	0.600	56.695	56.634	0.061	244.8	300	5.25	50.0
1.001	6	7	59.643	0.600	56.634	56.390	0.244	244.4	300	6.24	50.0
1.002	7	8	10.518	0.600	56.390	56.346	0.044	239.0	300	6.42	50.0
1.003	8	9	19.783	0.600	56.346	56.264	0.082	241.3	300	6.74	50.0

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	1.009	17.8	32.9	1.236	1.279	0.221	0.0	150	1.028
1.000_1	1.000	70.7	7.0	0.845	0.706	0.047	0.0	64	0.644
1.001	1.001	70.8	19.5	0.706	0.810	0.131	0.0	108	0.859
1.002	1.012	71.6	22.1	0.810	0.504	0.148	0.0	114	0.894
1.003	1.008	71.2	22.1	0.504	1.086	0.148	0.0	115	0.892

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	15.164	99.1	150	Circular_Default Sewer Type	57.650	56.264	1.236	57.540	56.111	1.279
1.000_1	14.931	244.8	300	Circular_Default Sewer Type	57.840	56.695	0.845	57.640	56.634	0.706
1.001	59.643	244.4	300	Circular_Default Sewer Type	57.640	56.634	0.706	57.500	56.390	0.810
1.002	10.518	239.0	300	Circular_Default Sewer Type	57.500	56.390	0.810	57.150	56.346	0.504

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	9	1500	Manhole	Adoptable	MH201	1200	Manhole	Adoptable
1.000_1	5	1500	Manhole	Adoptable	6	1500	Manhole	Adoptable
1.001	6	1500	Manhole	Adoptable	7	1500	Manhole	Adoptable
1.002	7	1500	Manhole	Adoptable	8	1500	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	19.783	241.3	300	Circular_Default Sewer Type	57.150	56.346	0.504	57.650	56.264	1.086

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.003	8	1500	Manhole	Adoptable	9	1500	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
9	477657.346	164536.107	57.650	1.386	1500		1.003	56.264	300
MH201	477654.133	164521.287	57.540	1.429	1200		1.000	56.111	150
5	477600.452	164588.610	57.840	1.145	1500		1.000_1	56.695	300
6	477597.701	164573.935	57.640	1.006	1500		1.000_1	56.634	300
7	477656.172	164562.171	57.500	1.110	1500		1.001	56.634	300
8	477663.712	164554.838	57.150	0.804	1500		1.002	56.390	300
							1.002	56.346	300
							1.003	56.346	300

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)
Rainfall Events	Singular	Skip Steady State	✓	Check Discharge Rate(s) x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume x
Winter CV	1.000	Additional Storage (m³/ha)	0.0	

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	10	0
30	0	10	0
100	40	10	0

Node 9 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	56.264	Product Number	CTL-SHE-0100-5000-1384-5000
Design Depth (m)	1.384	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 9 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.264	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.700
Safety Factor	2.0	Width (m)	41.500	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node 6 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	56.634
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	196

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	171.0	0.0	0.400	171.0	0.0	0.401	0.0	0.0

Node 5 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.695	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	160	Depth (m)	0.600
Safety Factor	2.0	Width (m)	4.000	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 98.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	9	168	56.444	0.180	11.1	21.5199	0.0000	SURCHARGED
15 minute summer	MH201	1	56.111	0.000	2.5	0.0000	0.0000	OK
15 minute summer	5	11	56.769	0.074	9.1	0.8961	0.0000	OK
120 minute summer	6	72	56.699	0.065	12.3	10.6625	0.0000	OK
120 minute summer	7	72	56.463	0.073	8.4	0.1281	0.0000	OK
240 minute summer	8	168	56.445	0.099	7.2	0.1743	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)
240 minute summer	9	Hydro-Brake®	MH201	4.5				52.0
15 minute summer	5	1.000_1	6	8.7	1.045	0.123	0.1379	
120 minute summer	6	1.001	7	7.4	0.612	0.105	0.7246	
120 minute summer	7	1.002	8	8.4	0.663	0.117	0.1327	
240 minute summer	8	1.003	9	7.2	0.393	0.101	0.6366	

Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 98.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	9	144	56.737	0.473	30.1	58.4359	0.0000	SURCHARGED
15 minute summer	MH201	1	56.111	0.000	4.9	0.0000	0.0000	OK
15 minute summer	5	11	56.820	0.125	26.2	1.6033	0.0000	OK
30 minute summer	6	22	56.769	0.135	64.1	22.1438	0.0000	OK
180 minute summer	7	144	56.737	0.347	21.7	0.6130	0.0000	SURCHARGED
180 minute summer	8	144	56.737	0.391	19.5	0.6906	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)
180 minute summer	9	Hydro-Brake®	MH201	5.0				103.0
15 minute summer	5	1.000_1	6	25.1	1.282	0.355	0.3765	
30 minute summer	6	1.001	7	30.1	0.855	0.426	2.2615	
180 minute summer	7	1.002	8	19.5	0.709	0.272	0.7407	
180 minute summer	8	1.003	9	18.4	0.435	0.259	1.3931	

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 98.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	9	180	57.035	0.771	40.0	87.3314	0.0000	SURCHARGED
15 minute summer	MH201	1	56.111	0.000	5.0	0.0000	0.0000	OK
180 minute winter	5	176	57.034	0.339	10.1	4.5484	0.0000	SURCHARGED
180 minute winter	6	180	57.034	0.400	28.0	65.7030	0.0000	SURCHARGED
180 minute winter	7	180	57.035	0.645	25.7	1.1399	0.0000	SURCHARGED
180 minute winter	8	180	57.035	0.689	24.6	1.2179	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	9	Hydro-Brake®	MH201	5.0				106.9
180 minute winter	5	1.000_1	6	9.9	0.635	0.141	1.0514	
180 minute winter	6	1.001	7	22.2	0.667	0.314	4.2000	
180 minute winter	7	1.002	8	24.6	0.694	0.344	0.7407	
180 minute winter	8	1.003	9	24.3	0.413	0.341	1.3931	