

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)
1	0.143	5.00	58.375	1500	477561.798	164600.082	2.250
2	0.112	5.00	58.360	1500	477521.348	164609.017	2.373
3	0.226	5.00	58.030	1500	477493.130	164627.007	2.234
4	0.030	5.00	57.845	1500	477476.867	164629.818	2.149
MH208			57.810		477452.891	164634.083	2.299

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	41.425	0.600	56.125	55.987	0.138	300.0	375	5.66	50.0
1.001	2	3	33.465	0.600	55.987	55.875	0.112	300.0	375	6.20	50.0
1.002	3	4	16.504	0.600	55.796	55.696	0.100	165.0	450	6.37	50.0
1.003	4	MH208	24.352	0.600	55.696	55.511	0.185	131.6	150	6.84	50.0

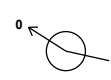
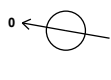
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.041	114.9	21.3	1.875	1.998	0.143	0.0	109	0.801
1.001	1.041	114.9	38.0	1.998	1.780	0.255	0.0	148	0.938
1.002	1.579	251.2	71.7	1.784	1.699	0.481	0.0	164	1.370
1.003	0.874	15.4	76.2	1.999	2.149	0.511	0.0	150	0.890

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	41.425	300.0	375	Circular_Default Sewer Type	58.375	56.125	1.875	58.360	55.987	1.998
1.001	33.465	300.0	375	Circular_Default Sewer Type	58.360	55.987	1.998	58.030	55.875	1.780
1.002	16.504	165.0	450	Circular_Default Sewer Type	58.030	55.796	1.784	57.845	55.696	1.699
1.003	24.352	131.6	150	Circular_Default Sewer Type	57.845	55.696	1.999	57.810	55.511	2.149

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1500	Manhole	Adoptable	2	1500	Manhole	Adoptable
1.001	2	1500	Manhole	Adoptable	3	1500	Manhole	Adoptable
1.002	3	1500	Manhole	Adoptable	4	1500	Manhole	Adoptable
1.003	4	1500	Manhole	Adoptable	MH208		Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1	477561.798	164600.082	58.375	2.250	1500		0	1.000	56.125	375
2	477521.348	164609.017	58.360	2.373	1500		1	1.000	55.987	375
3	477493.130	164627.007	58.030	2.234	1500		1	1.001	55.987	375
4	477476.867	164629.818	57.845	2.149	1500		0	1.002	55.796	450
							1	1.002	55.696	450
							0	1.003	55.696	150
MH208	477452.891	164634.083	57.810	2.299			1	1.003	55.511	150

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 4 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	55.696	Product Number	CTL-SHE-0090-5000-2149-5000
Design Depth (m)	2.149	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.125	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.900
Safety Factor	2.0	Width (m)	14.600	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node 3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	55.796
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	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	300.0	0.0	1.200	300.0	0.0	1.201	0.0	0.0

Node 3 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	55.796	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.900
Safety Factor	2.0	Width (m)	18.400	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Node 2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	55.987	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.900
Safety Factor	2.0	Width (m)	15.200	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 99.03%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	12	56.235	0.110	27.6	4.5610	0.0000	OK
30 minute summer	2	21	56.122	0.135	37.5	5.9403	0.0000	OK
360 minute summer	3	272	56.035	0.239	22.5	81.2603	0.0000	OK
240 minute winter	4	228	56.044	0.348	11.2	0.6141	0.0000	SURCHARGED
360 minute summer	MH208	272	55.562	0.051	3.9	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	1	1.000	2	21.6	0.728	0.188	1.2459	
30 minute summer	2	1.001	3	30.4	0.897	0.265	1.1341	
360 minute summer	3	1.002	4	11.0	0.260	0.044	1.7867	
240 minute winter	4	1.003	MH208	3.9	0.730	0.253	0.1305	92.4

**Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.03%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	236	56.384	0.259	14.0	11.3567	0.0000	OK
240 minute winter	2	240	56.384	0.397	24.9	18.3438	0.0000	SURCHARGED
240 minute winter	3	240	56.384	0.588	44.4	200.5213	0.0000	SURCHARGED
240 minute winter	4	240	56.384	0.688	8.7	1.2156	0.0000	SURCHARGED
30 minute summer	MH208	119	55.563	0.052	4.0	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)
240 minute winter	1	1.000	2	13.9	0.575	0.121	3.9649	
240 minute winter	2	1.001	3	22.6	0.753	0.196	3.6911	
240 minute winter	3	1.002	4	6.0	0.125	0.024	2.6150	
240 minute winter	4	1.003	MH208	4.0	0.734	0.257	0.1320	100.7

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.03%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	472	56.950	0.825	13.9	37.1614	0.0000	SURCHARGED
480 minute winter	2	472	56.950	0.963	20.0	42.3097	0.0000	SURCHARGED
480 minute winter	3	472	56.950	1.154	36.3	380.1306	0.0000	SURCHARGED
480 minute winter	4	472	56.950	1.254	10.4	2.2160	0.0000	SURCHARGED
2880 minute winter	MH208	3120	55.563	0.052	4.0	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)
480 minute winter	1	1.000	2	11.1	0.503	0.097	4.5691	
480 minute winter	2	1.001	3	14.6	0.601	0.127	3.6911	
480 minute winter	3	1.002	4	9.5	0.199	0.038	2.6150	
480 minute winter	4	1.003	MH208	4.0	0.734	0.257	0.1320	147.7