

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	58.490	1500	477561.632	164599.454	2.365
2	0.112	5.00	58.360	1500	477521.199	164608.504	2.373
3	0.226	5.00	58.015	1500	477491.692	164627.094	2.219
4	0.030	5.00	57.845	1500	477476.854	164629.854	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	41.433	0.600	56.125	55.987	0.138	300.0	375	5.66	50.0
1.001	2	3	34.875	0.600	55.987	55.871	0.116	300.0	375	6.22	50.0
1.002	3	4	15.093	0.600	55.796	55.696	0.100	150.9	450	6.37	50.0
1.003	4	MH208	24.333	0.600	55.696	55.511	0.185	131.5	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	1.990	1.998	0.143	0.0	109	0.801
1.001	1.041	114.9	38.0	1.998	1.769	0.255	0.0	148	0.938
1.002	1.652	262.8	71.7	1.769	1.699	0.481	0.0	160	1.414
1.003	0.874	15.5	76.2	1.999	2.149	0.511	0.0	150	0.891

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)	15.000	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 (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
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)	10.000	Inf Depth (m)	
Porosity	0.30	Length (m)	20.300		

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)	10.000	Inf Depth (m)	
Porosity	0.30	Length (m)	15.000		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year +10% A 15 minute summer	107.269	30.354
2 year +10% A 15 minute winter	75.277	30.354
2 year +10% A 30 minute summer	68.871	19.488
2 year +10% A 30 minute winter	48.330	19.488
2 year +10% A 60 minute summer	45.364	11.988
2 year +10% A 60 minute winter	30.139	11.988
2 year +10% A 120 minute summer	32.376	8.556
2 year +10% A 120 minute winter	21.510	8.556
2 year +10% A 180 minute summer	26.144	6.728
2 year +10% A 180 minute winter	16.994	6.728
2 year +10% A 240 minute summer	21.096	5.575
2 year +10% A 240 minute winter	14.016	5.575
2 year +10% A 360 minute summer	16.228	4.176
2 year +10% A 360 minute winter	10.549	4.176

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year +10% A 480 minute summer	12.715	3.360
2 year +10% A 480 minute winter	8.447	3.360
2 year +10% A 600 minute summer	10.333	2.826
2 year +10% A 600 minute winter	7.060	2.826
2 year +10% A 720 minute summer	9.135	2.448
2 year +10% A 720 minute winter	6.139	2.448
2 year +10% A 960 minute summer	7.393	1.947
2 year +10% A 960 minute winter	4.897	1.947
2 year +10% A 1440 minute summer	5.274	1.413
2 year +10% A 1440 minute winter	3.544	1.413
2 year +10% A 2160 minute summer	3.739	1.033
2 year +10% A 2160 minute winter	2.576	1.033
2 year +10% A 2880 minute summer	3.112	0.834
2 year +10% A 2880 minute winter	2.091	0.834
2 year +10% A 4320 minute summer	2.410	0.630
2 year +10% A 4320 minute winter	1.587	0.630
2 year +10% A 5760 minute summer	2.049	0.524
2 year +10% A 5760 minute winter	1.326	0.524
2 year +10% A 7200 minute summer	1.803	0.460
2 year +10% A 7200 minute winter	1.164	0.460
2 year +10% A 8640 minute summer	1.632	0.416
2 year +10% A 8640 minute winter	1.053	0.416
2 year +10% A 10080 minute summer	1.508	0.385
2 year +10% A 10080 minute winter	0.974	0.385
30 year +10% A 15 minute summer	309.903	87.692
30 year +10% A 15 minute winter	217.476	87.692
30 year +10% A 30 minute summer	201.605	57.047
30 year +10% A 30 minute winter	141.477	57.047
30 year +10% A 60 minute summer	134.629	35.578
30 year +10% A 60 minute winter	89.444	35.578
30 year +10% A 120 minute summer	82.152	21.710
30 year +10% A 120 minute winter	54.580	21.710
30 year +10% A 180 minute summer	62.218	16.011
30 year +10% A 180 minute winter	40.443	16.011
30 year +10% A 240 minute summer	48.395	12.789
30 year +10% A 240 minute winter	32.153	12.789
30 year +10% A 360 minute summer	35.710	9.189
30 year +10% A 360 minute winter	23.212	9.189
30 year +10% A 480 minute summer	27.314	7.218
30 year +10% A 480 minute winter	18.147	7.218
30 year +10% A 600 minute summer	21.826	5.970
30 year +10% A 600 minute winter	14.913	5.970
30 year +10% A 720 minute summer	19.047	5.105
30 year +10% A 720 minute winter	12.801	5.105
30 year +10% A 960 minute summer	15.114	3.980
30 year +10% A 960 minute winter	10.012	3.980
30 year +10% A 1440 minute summer	10.473	2.807
30 year +10% A 1440 minute winter	7.038	2.807
30 year +10% A 2160 minute summer	7.195	1.988
30 year +10% A 2160 minute winter	4.957	1.988
30 year +10% A 2880 minute summer	5.842	1.566
30 year +10% A 2880 minute winter	3.926	1.566

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year +10% A 4320 minute summer	4.343	1.135
30 year +10% A 4320 minute winter	2.860	1.135
30 year +10% A 5760 minute summer	3.574	0.915
30 year +10% A 5760 minute winter	2.313	0.915
30 year +10% A 7200 minute summer	3.062	0.781
30 year +10% A 7200 minute winter	1.976	0.781
30 year +10% A 8640 minute summer	2.708	0.691
30 year +10% A 8640 minute winter	1.748	0.691
30 year +10% A 10080 minute summer	2.454	0.626
30 year +10% A 10080 minute winter	1.584	0.626
100 year +40% CC +10% A 15 minute summer	558.488	158.033
100 year +40% CC +10% A 15 minute winter	391.921	158.033
100 year +40% CC +10% A 30 minute summer	367.311	103.936
100 year +40% CC +10% A 30 minute winter	257.762	103.936
100 year +40% CC +10% A 60 minute summer	245.915	64.988
100 year +40% CC +10% A 60 minute winter	163.380	64.988
100 year +40% CC +10% A 120 minute summer	146.828	38.802
100 year +40% CC +10% A 120 minute winter	97.549	38.802
100 year +40% CC +10% A 180 minute summer	110.109	28.335
100 year +40% CC +10% A 180 minute winter	71.574	28.335
100 year +40% CC +10% A 240 minute summer	85.217	22.520
100 year +40% CC +10% A 240 minute winter	56.616	22.520
100 year +40% CC +10% A 360 minute summer	62.647	16.121
100 year +40% CC +10% A 360 minute winter	40.722	16.121
100 year +40% CC +10% A 480 minute summer	47.778	12.626
100 year +40% CC +10% A 480 minute winter	31.742	12.626
100 year +40% CC +10% A 600 minute summer	38.083	10.416
100 year +40% CC +10% A 600 minute winter	26.020	10.416
100 year +40% CC +10% A 720 minute summer	33.163	8.888
100 year +40% CC +10% A 720 minute winter	22.287	8.888
100 year +40% CC +10% A 960 minute summer	26.220	6.904
100 year +40% CC +10% A 960 minute winter	17.369	6.904
100 year +40% CC +10% A 1440 minute summer	18.044	4.836
100 year +40% CC +10% A 1440 minute winter	12.127	4.836
100 year +40% CC +10% A 2160 minute summer	12.279	3.394
100 year +40% CC +10% A 2160 minute winter	8.461	3.394
100 year +40% CC +10% A 2880 minute summer	9.891	2.651
100 year +40% CC +10% A 2880 minute winter	6.647	2.651
100 year +40% CC +10% A 4320 minute summer	7.250	1.895
100 year +40% CC +10% A 4320 minute winter	4.774	1.895
100 year +40% CC +10% A 5760 minute summer	5.899	1.510
100 year +40% CC +10% A 5760 minute winter	3.818	1.510
100 year +40% CC +10% A 7200 minute summer	5.007	1.277
100 year +40% CC +10% A 7200 minute winter	3.232	1.277
100 year +40% CC +10% A 8640 minute summer	4.395	1.121
100 year +40% CC +10% A 8640 minute winter	2.837	1.121
100 year +40% CC +10% A 10080 minute summer	3.956	1.009
100 year +40% CC +10% A 10080 minute winter	2.553	1.009

Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 99.01%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	12	56.234	0.109	27.6	4.6289	0.0000	OK
30 minute summer	2	21	56.122	0.135	37.2	5.6275	0.0000	OK
360 minute summer	3	272	56.033	0.237	25.6	81.1827	0.0000	OK
360 minute summer	4	264	56.041	0.345	11.5	0.6100	0.0000	SURCHARGED
360 minute summer	MH208	256	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	21.3	0.721	0.185	1.2416	
30 minute summer	2	1.001	3	30.3	0.896	0.263	1.1780	
360 minute summer	3	1.002	4	11.5	0.246	0.044	1.6233	
360 minute summer	4	1.003	MH208	3.9	0.730	0.253	0.1303	112.2

Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.01%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	240	56.378	0.253	14.0	11.3740	0.0000	OK
240 minute winter	2	240	56.378	0.391	24.9	17.6070	0.0000	SURCHARGED
240 minute winter	3	240	56.378	0.582	45.2	201.0883	0.0000	SURCHARGED
240 minute winter	4	240	56.378	0.682	8.5	1.2050	0.0000	SURCHARGED
30 minute summer	MH208	115	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	0.576	0.121	3.9221	
240 minute winter	2	1.001	3	23.3	0.746	0.203	3.8466	
240 minute winter	3	1.002	4	6.6	0.174	0.025	2.3914	
240 minute winter	4	1.003	MH208	4.0	0.734	0.257	0.1319	101.0

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.01%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	1	472	56.936	0.811	13.9	37.4922	0.0000	SURCHARGED
480 minute winter	2	472	56.936	0.949	20.0	41.5264	0.0000	SURCHARGED
480 minute winter	3	472	56.936	1.140	36.4	380.5995	0.0000	SURCHARGED
480 minute winter	4	472	56.936	1.240	10.5	2.1916	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	0.502	0.096	4.5699	
480 minute winter	2	1.001	3	14.7	0.593	0.128	3.8466	
480 minute winter	3	1.002	4	9.4	0.251	0.036	2.3914	
480 minute winter	4	1.003	MH208	4.0	0.734	0.257	0.1319	147.5