

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	✓
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)
5	0.061	5.00	57.855	1500	477625.796	164586.940	1.555
6	0.029	5.00	58.125	1500	477599.115	164589.414	1.975
7	0.044	5.00	57.890	1500	477594.911	164569.255	2.070
8	0.028	5.00	57.450	1500	477590.143	164547.707	1.730
MH202A			57.108		477590.808	164534.993	1.443

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	5	6	26.795	0.600	56.300	56.150	0.150	178.6	300	5.38	50.0
1.001	6	7	20.593	0.600	56.150	55.820	0.330	62.4	300	5.55	50.0
1.002	7	8	22.069	0.600	55.820	55.720	0.100	220.7	300	5.90	50.0
1.003	8	MH202A	12.731	0.600	55.720	55.665	0.055	231.5	300	6.11	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	1.173	82.9	9.1	1.255	1.675	0.061	0.0	67	0.776
1.001	1.993	140.9	13.4	1.675	1.770	0.090	0.0	62	1.267
1.002	1.054	74.5	20.0	1.770	1.430	0.134	0.0	106	0.897
1.003	1.029	72.7	24.2	1.430	1.143	0.162	0.0	119	0.927

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 8 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	55.720	Product Number	CTL-SHE-0077-3300-1730-3300
Design Depth (m)	1.730	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.3	Min Node Diameter (mm)	1200

Node 7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	55.820
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	140.0	0.0	0.800	140.0	0.0	0.801	0.0	0.0

Node 5 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.300	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	52	Depth (m)	0.600
Safety Factor	2.0	Width (m)	4.000	Inf Depth (m)	
Porosity	0.30	Length (m)	10.000		

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
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

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
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
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

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
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: 97.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	5	11	56.375	0.075	11.8	0.9191	0.0000	OK
15 minute summer	6	10	56.227	0.077	16.3	0.1369	0.0000	OK
240 minute summer	7	164	55.958	0.138	8.5	18.5455	0.0000	OK
240 minute summer	8	168	55.957	0.237	2.8	0.4196	0.0000	OK
240 minute summer	MH202A	164	55.702	0.037	2.6	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 summer	5	1.000	6	11.1	0.802	0.133	0.3776	
15 minute summer	6	1.001	7	16.7	1.789	0.118	0.2204	
240 minute summer	7	1.002	8	2.3	0.126	0.031	1.0075	
240 minute summer	8	1.003	MH202A	2.6	0.495	0.035	0.0659	39.0

Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 97.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	5	11	56.437	0.137	34.0	1.7706	0.0000	OK
15 minute summer	6	10	56.281	0.131	48.5	0.2317	0.0000	OK
180 minute winter	7	176	56.253	0.433	16.8	58.3031	0.0000	SURCHARGED
180 minute winter	8	176	56.252	0.532	3.4	0.9409	0.0000	SURCHARGED
120 minute summer	MH202A	68	55.703	0.038	2.7	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	5	1.000	6	33.2	1.107	0.400	0.8144	
15 minute summer	6	1.001	7	49.3	2.028	0.350	0.7210	
180 minute winter	7	1.002	8	2.7	0.112	0.036	1.5541	
180 minute winter	8	1.003	MH202A	2.7	0.500	0.037	0.0683	61.0

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 97.57%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	5	236	57.306	1.006	10.6	8.8642	0.0000	SURCHARGED
240 minute winter	6	236	57.306	1.156	15.6	2.0419	0.0000	SURCHARGED
240 minute winter	7	236	57.305	1.485	23.6	109.0911	0.0000	SURCHARGED
240 minute winter	8	236	57.305	1.585	5.2	2.8008	0.0000	FLOOD RISK
240 minute winter	MH202A	236	55.707	0.042	3.1	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	5	1.000	6	10.6	0.825	0.128	1.8869	
240 minute winter	6	1.001	7	14.7	1.081	0.104	1.4501	
240 minute winter	7	1.002	8	3.8	0.108	0.051	1.5541	
240 minute winter	8	1.003	MH202A	3.1	0.523	0.043	0.0764	66.9