

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	75.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
AT			60.050	450	190.432	449.282	2.200
S1	0.009	4.00	60.090	450	180.424	415.016	0.690
S2	0.058	4.00	60.050	450	175.827	440.766	1.525
S3	0.048	4.00	60.090	450	197.152	445.426	0.490
S4	0.052	4.00	60.285	450	209.003	449.758	1.630
S7	0.019	4.00	60.090	450	206.393	419.260	0.690
S8			60.000	1200	175.477	445.951	2.157
S6	0.009	4.00	60.090	450	225.327	424.324	0.932
PP1	0.017	4.00	60.130	450	187.626	455.741	0.510
PP2	0.012	4.00	59.945	450	172.519	428.578	0.530
EX SW 5			60.200	1200	162.370	424.240	2.410

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)
2.000	S1	S2	28.600	0.600	59.400	58.700	0.700	40.9	225	4.23	48.1
1.003	AT	S8	2.000	0.600	57.850	57.843	0.007	300.0	375	4.79	48.1
1.000	S7	S6	19.600	0.600	59.400	59.223	0.177	110.7	150	4.34	48.1
1.001	S6	S4	30.222	0.600	59.158	58.730	0.428	70.6	225	4.67	48.1
1.002	S4	AT	18.577	0.600	58.655	57.850	0.805	23.1	300	4.76	48.1
4.000	S3	AT	7.748	0.600	59.600	57.850	1.750	4.4	225	4.02	48.1
2.001	S2	AT	16.906	0.600	58.525	57.850	0.675	25.0	300	4.32	48.1

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)
2.000	2.052	81.6	1.6	0.465	1.125	0.009	0.0	22	0.808
1.003	1.041	114.9	39.0	1.825	1.782	0.224	0.0	151	0.944
1.000	0.954	16.9	3.3	0.540	0.717	0.019	0.0	45	0.741
1.001	1.558	61.9	4.9	0.707	1.330	0.028	0.0	43	0.938
1.002	3.286	232.3	13.9	1.330	1.900	0.080	0.0	50	1.836
4.000	6.261	248.9	8.4	0.265	1.975	0.048	0.0	28	2.908
2.001	3.154	222.9	13.7	1.225	1.900	0.079	0.0	50	1.774

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)
3.000	PP2	S2	1.000	0.600	59.415	58.900	0.515	1.9	150	4.00	48.1
5.000	PP1	AT	1.000	0.600	59.620	58.900	0.720	1.4	100	4.00	48.1
1.004	S8	EX SW 5	10.400	0.600	57.843	57.790	0.053	196.2	225	4.98	0.0

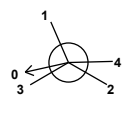
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.000	7.289	128.8	2.1	0.380	1.000	0.012	0.0	13	2.691
5.000	6.618	52.0	3.0	0.410	1.050	0.017	0.0	16	3.549
1.004	0.930	37.0	0.0	1.932	2.185	0.224	0.0	0	0.000

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)
2.000	28.600	40.9	225	Circular	60.090	59.400	0.465	60.050	58.700	1.125
1.003	2.000	300.0	375	Circular	60.050	57.850	1.825	60.000	57.843	1.782
1.000	19.600	110.7	150	Circular	60.090	59.400	0.540	60.090	59.223	0.717
1.001	30.222	70.6	225	Circular	60.090	59.158	0.707	60.285	58.730	1.330
1.002	18.577	23.1	300	Circular	60.285	58.655	1.330	60.050	57.850	1.900
4.000	7.748	4.4	225	Circular	60.090	59.600	0.265	60.050	57.850	1.975
2.001	16.906	25.0	300	Circular	60.050	58.525	1.225	60.050	57.850	1.900
3.000	1.000	1.9	150	Circular	59.945	59.415	0.380	60.050	58.900	1.000
5.000	1.000	1.4	100	Circular	60.130	59.620	0.410	60.050	58.900	1.050
1.004	10.400	196.2	225	Circular	60.000	57.843	1.932	60.200	57.790	2.185

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.000	S1	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
1.003	AT	450	Manhole	Adoptable	S8	1200	Manhole	Adoptable
1.000	S7	450	Manhole	Adoptable	S6	450	Manhole	Adoptable
1.001	S6	450	Manhole	Adoptable	S4	450	Manhole	Adoptable
1.002	S4	450	Manhole	Adoptable	AT	450	Manhole	Adoptable
4.000	S3	450	Manhole	Adoptable	AT	450	Manhole	Adoptable
2.001	S2	450	Manhole	Adoptable	AT	450	Manhole	Adoptable
3.000	PP2	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
5.000	PP1	450	Manhole	Adoptable	AT	450	Manhole	Adoptable
1.004	S8	1200	Manhole	Adoptable	EX SW 5	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
AT	190.432	449.282	60.050	2.200	450		1	5.000	58.900	100
					2		4.000	57.850	225	
					3		2.001	57.850	300	
					4		1.002	57.850	300	
					0		1.003	57.850	375	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S1	180.424	415.016	60.090	0.690	450		0	2.000	59.400	225
S2	175.827	440.766	60.050	1.525	450		1 2 0	3.000 2.000 2.001	58.900 58.700 58.525	150 225 300
S3	197.152	445.426	60.090	0.490	450		0	4.000	59.600	225
S4	209.003	449.758	60.285	1.630	450		1 0	1.001 1.002	58.730 58.655	225 300
S7	206.393	419.260	60.090	0.690	450		0	1.000	59.400	150
S8	175.477	445.951	60.000	2.157	1200		1 0	1.003 1.004	57.843 57.843	375 225
S6	225.327	424.324	60.090	0.932	450		1 0	1.000 1.001	59.223 59.158	150 225
PP1	187.626	455.741	60.130	0.510	450		0	5.000	59.620	100
PP2	172.519	428.578	59.945	0.530	450		0	3.000	59.415	150
EX SW 5	162.370	424.240	60.200	2.410	1200		1	1.004	57.790	225

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	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 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	45	10	0

Node S8 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	57.843	Product Number	CTL-SHE-0055-1900-2000-1900
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.9	Min Node Diameter (mm)	1200

Node AT Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	57.850	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	8.000	Number Required	1
Porosity	0.95	Pit Length (m)	25.000		

Node PP1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	59.620	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	0	Depth (m)	0.400
Safety Factor	2.0	Width (m)	33.800	Inf Depth (m)	
Porosity	0.30	Length (m)	5.000		

Node PP2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	59.415	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	180	Depth (m)	0.400
Safety Factor	2.0	Width (m)	18.000	Inf Depth (m)	
Porosity	0.30	Length (m)	6.800		

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	AT	570	58.221	0.371	9.4	70.5522	0.0000	OK
15 minute summer	S1	10	59.430	0.030	3.1	0.0048	0.0000	OK
15 minute summer	S2	9	58.601	0.076	27.0	0.0120	0.0000	OK
15 minute summer	S3	10	59.639	0.039	16.5	0.0062	0.0000	OK
15 minute summer	S4	9	58.729	0.074	27.5	0.0117	0.0000	OK
15 minute summer	S7	10	59.467	0.067	6.5	0.0106	0.0000	OK
720 minute summer	S8	570	58.221	0.378	1.3	0.4275	0.0000	SURCHARGED
15 minute summer	S6	10	59.219	0.061	9.6	0.0097	0.0000	OK
15 minute summer	PP1	11	59.644	0.024	5.8	0.6007	0.0000	OK
15 minute summer	PP2	10	59.436	0.021	4.1	0.1274	0.0000	OK
120 minute summer	EX SW 5	96	57.818	0.028	1.2	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)
720 minute summer	AT	1.003	S8	1.3	0.050	0.011	0.2203	
15 minute summer	S1	2.000	S2	3.1	0.987	0.038	0.0896	
15 minute summer	S2	2.001	AT	27.2	2.422	0.122	0.3060	
15 minute summer	S3	4.000	AT	16.5	3.157	0.066	0.1084	
15 minute summer	S4	1.002	AT	27.6	2.455	0.119	0.3376	
15 minute summer	S7	1.000	S6	6.5	0.879	0.386	0.1449	
720 minute summer	S8	1.004	EX SW 5	1.2	0.430	0.034	0.0301	54.3
15 minute summer	S6	1.001	S4	9.6	1.124	0.154	0.2571	
15 minute summer	PP1	5.000	AT	4.6	3.753	0.088	0.0012	
15 minute summer	PP2	3.000	S2	4.0	3.015	0.031	0.0013	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.65%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute summer	AT	825	58.383	0.532	9.9	101.2588	0.0000	SURCHARGED
15 minute summer	S1	10	59.435	0.035	4.1	0.0055	0.0000	OK
15 minute summer	S2	9	58.610	0.085	35.5	0.0136	0.0000	OK
15 minute summer	S3	10	59.644	0.044	21.6	0.0071	0.0000	OK
15 minute summer	S4	9	58.738	0.083	36.1	0.0132	0.0000	OK
15 minute summer	S7	10	59.479	0.079	8.6	0.0125	0.0000	OK
960 minute summer	S8	825	58.382	0.539	1.3	0.6102	0.0000	SURCHARGED
15 minute summer	S6	10	59.229	0.071	12.7	0.0112	0.0000	OK
15 minute summer	PP1	11	59.648	0.028	7.7	0.8153	0.0000	OK
15 minute summer	PP2	10	59.440	0.025	5.4	0.1725	0.0000	OK
120 minute summer	EX SW 5	70	57.818	0.028	1.2	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)
960 minute summer	AT	1.003	S8	1.3	0.050	0.011	0.2206	
15 minute summer	S1	2.000	S2	4.1	1.072	0.050	0.1092	
15 minute summer	S2	2.001	AT	35.6	2.465	0.160	0.4253	
15 minute summer	S3	4.000	AT	21.6	3.244	0.087	0.1434	
15 minute summer	S4	1.002	AT	36.3	2.499	0.156	0.4681	
15 minute summer	S7	1.000	S6	8.6	0.942	0.510	0.1790	
960 minute summer	S8	1.004	EX SW 5	1.2	0.430	0.034	0.0301	63.2
15 minute summer	S6	1.001	S4	12.7	1.215	0.205	0.3153	
15 minute summer	PP1	5.000	AT	6.0	3.977	0.115	0.0015	
15 minute summer	PP2	3.000	S2	5.3	3.209	0.041	0.0017	

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	AT	915	58.654	0.804	9.3	152.8827	0.0000	SURCHARGED
15 minute summer	S1	10	59.441	0.041	5.7	0.0065	0.0000	OK
960 minute winter	S2	915	58.654	0.129	3.3	0.0205	0.0000	OK
15 minute summer	S3	10	59.653	0.053	30.3	0.0084	0.0000	OK
15 minute summer	S4	9	58.752	0.097	50.5	0.0154	0.0000	OK
15 minute summer	S7	10	59.498	0.098	12.0	0.0156	0.0000	OK
960 minute winter	S8	915	58.654	0.811	1.3	0.9172	0.0000	SURCHARGED
15 minute summer	S6	10	59.243	0.085	17.7	0.0134	0.0000	OK
15 minute summer	PP1	11	59.655	0.035	10.7	1.1586	0.0000	OK
15 minute summer	PP2	10	59.445	0.030	7.6	0.2541	0.0000	OK
960 minute winter	EX SW 5	915	57.818	0.028	1.2	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)
960 minute winter	AT	1.003	S8	1.3	0.094	0.011	0.2206	
15 minute summer	S1	2.000	S2	5.7	1.179	0.070	0.1382	
960 minute winter	S2	2.001	AT	3.3	0.771	0.015	0.8399	
15 minute summer	S3	4.000	AT	30.3	3.413	0.122	0.1686	
15 minute summer	S4	1.002	AT	50.5	2.536	0.217	0.6542	
15 minute summer	S7	1.000	S6	12.0	1.013	0.712	0.2322	
960 minute winter	S8	1.004	EX SW 5	1.2	0.431	0.034	0.0301	73.1
15 minute summer	S6	1.001	S4	17.7	1.328	0.285	0.4023	
15 minute summer	PP1	5.000	AT	8.4	4.251	0.162	0.0020	
15 minute summer	PP2	3.000	S2	7.4	3.454	0.057	0.0021	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	AT	930	58.609	0.759	8.9	144.2997	0.0000	SURCHARGED
15 minute summer	S1	10	59.439	0.039	5.2	0.0062	0.0000	OK
15 minute summer	S2	9	58.621	0.096	45.5	0.0152	0.0000	OK
15 minute summer	S3	10	59.650	0.050	27.8	0.0080	0.0000	OK
15 minute summer	S4	9	58.748	0.093	46.3	0.0148	0.0000	OK
15 minute summer	S7	10	59.492	0.092	11.0	0.0147	0.0000	OK
960 minute winter	S8	930	58.609	0.766	1.3	0.8662	0.0000	SURCHARGED
15 minute summer	S6	10	59.238	0.080	16.2	0.0128	0.0000	OK
15 minute summer	PP1	11	59.653	0.033	9.8	1.0564	0.0000	OK
15 minute summer	PP2	10	59.444	0.029	6.9	0.2274	0.0000	OK
120 minute summer	EX SW 5	64	57.818	0.028	1.2	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)
960 minute winter	AT	1.003	S8	1.3	0.107	0.011	0.2206	
15 minute summer	S1	2.000	S2	5.2	1.148	0.064	0.1294	
15 minute summer	S2	2.001	AT	45.7	2.491	0.205	0.5516	
15 minute summer	S3	4.000	AT	27.8	3.356	0.112	0.1628	
15 minute summer	S4	1.002	AT	46.3	2.531	0.199	0.6068	
15 minute summer	S7	1.000	S6	11.0	0.995	0.653	0.2167	
960 minute winter	S8	1.004	EX SW 5	1.2	0.430	0.034	0.0301	71.6
15 minute summer	S6	1.001	S4	16.2	1.298	0.261	0.3769	
15 minute summer	PP1	5.000	AT	7.7	4.177	0.148	0.0018	
15 minute summer	PP2	3.000	S2	6.7	3.384	0.052	0.0020	

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 99.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	AT	1320	59.669	1.819	10.4	228.3842	0.0000	SURCHARGED
1440 minute winter	S1	1320	59.669	0.269	0.4	0.0427	0.0000	SURCHARGED
1440 minute winter	S2	1320	59.669	1.144	3.7	0.1818	0.0000	SURCHARGED
1440 minute winter	S3	1320	59.669	0.069	2.2	0.0109	0.0000	OK
1440 minute winter	S4	1320	59.669	1.014	3.7	0.1612	0.0000	SURCHARGED
1440 minute winter	S7	1320	59.669	0.269	0.9	0.0427	0.0000	SURCHARGED
1440 minute winter	S8	1320	59.669	1.826	1.8	2.0648	0.0000	SURCHARGED
1440 minute winter	S6	1320	59.669	0.511	1.3	0.0812	0.0000	SURCHARGED
1440 minute winter	PP1	1320	59.669	0.049	0.8	1.8439	0.0000	OK
1440 minute winter	PP2	1320	59.669	0.254	1.7	8.1112	0.0000	FLOOD RISK
1440 minute winter	EX SW 5	1320	57.824	0.034	1.8	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)
1440 minute winter	AT	1.003	S8	1.8	0.103	0.016	0.2206	
1440 minute winter	S1	2.000	S2	0.4	0.531	0.005	1.1375	
1440 minute winter	S2	2.001	AT	3.7	0.790	0.017	1.1905	
1440 minute winter	S3	4.000	AT	2.2	0.861	0.009	0.1937	
1440 minute winter	S4	1.002	AT	3.7	0.697	0.016	1.3082	
1440 minute winter	S7	1.000	S6	0.9	0.507	0.053	0.3451	
1440 minute winter	S8	1.004	EX SW 5	1.8	0.479	0.049	0.0393	130.0
1440 minute winter	S6	1.001	S4	1.3	0.628	0.021	1.2020	
1440 minute winter	PP1	5.000	AT	0.8	2.420	0.015	0.0058	
1440 minute winter	PP2	3.000	S2	-1.5	1.814	-0.012	0.0176	