

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)
ATT	0.039	4.00	33.500	450	101.941	156.697	1.900
PP	0.196		34.500	450	48.758	117.626	0.480
S1			34.150	450	66.076	139.707	0.750
S2			34.000	450	74.840	132.039	1.000
S3			33.500	450	95.035	147.883	0.932
S4		4.00	33.500	450	100.045	166.794	1.000
S7			33.500	450	107.736	160.048	1.950
OHA	0.100		33.500	450	78.529	157.261	0.500
S5		4.00	35.000	450	51.293	123.635	0.800
S03	0.000	4.00	34.500	450	41.589	79.400	0.863
S01	0.005	4.00	35.250	450	33.500	82.137	0.750
S02	0.005	4.00	34.250	450	45.825	72.372	0.531

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)
3.001	S1	S2	11.645	0.600	33.400	33.000	0.400	29.1	100	4.38	54.4
1.002	S2	S3	25.668	0.600	33.000	32.568	0.432	59.4	100	5.94	50.4
1.003	S3	ATT	6.100	0.600	32.568	31.600	0.968	6.3	100	5.97	50.3
4.000	S4	ATT	10.273	0.600	32.500	31.600	0.900	11.4	100	4.07	54.4
1.004	ATT	S7	2.335	0.600	31.600	31.550	0.050	46.7	150	6.00	50.2
3.000	S5	S1	21.837	0.600	34.200	33.400	0.800	27.3	100	4.25	54.4
1.001	S03	S2	62.261	0.600	33.637	33.000	0.637	97.7	100	5.51	52.2
1.000	S01	S03	8.540	0.600	34.500	33.637	0.863	9.9	100	4.06	54.4
2.000	S02	S03	8.206	0.600	33.719	33.637	0.082	100.1	100	4.18	54.4

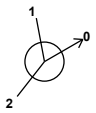
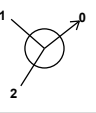
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.001	1.435	11.3	0.0	0.650	0.900	0.000	0.0	0	0.000
1.002	1.001	7.9	1.8	0.900	0.832	0.010	0.0	32	0.810
1.003	3.100	24.3	1.8	0.832	1.800	0.010	0.0	18	1.806
4.000	2.300	18.1	0.0	0.900	1.800	0.000	0.0	0	0.000
1.004	1.476	26.1	8.9	1.750	1.800	0.049	0.0	60	1.335
3.000	1.483	11.6	0.0	0.700	0.650	0.000	0.0	0	0.000
1.001	0.778	6.1	1.9	0.763	0.900	0.010	0.0	38	0.683
1.000	2.471	19.4	1.0	0.650	0.763	0.005	0.0	15	1.280
2.000	0.768	6.0	1.0	0.431	0.763	0.005	0.0	27	0.560

Pipeline Schedule

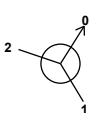
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
3.001	11.645	29.1	100	Circular	34.150	33.400	0.650	34.000	33.000	0.900
1.002	25.668	59.4	100	Circular	34.000	33.000	0.900	33.500	32.568	0.832
1.003	6.100	6.3	100	Circular	33.500	32.568	0.832	33.500	31.600	1.800
4.000	10.273	11.4	100	Circular	33.500	32.500	0.900	33.500	31.600	1.800
1.004	2.335	46.7	150	Circular	33.500	31.600	1.750	33.500	31.550	1.800
3.000	21.837	27.3	100	Circular	35.000	34.200	0.700	34.150	33.400	0.650
1.001	62.261	97.7	100	Circular	34.500	33.637	0.763	34.000	33.000	0.900
1.000	8.540	9.9	100	Circular	35.250	34.500	0.650	34.500	33.637	0.763
2.000	8.206	100.1	100	Circular	34.250	33.719	0.431	34.500	33.637	0.763

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
3.001	S1	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
1.002	S2	450	Manhole	Adoptable	S3	450	Manhole	Adoptable
1.003	S3	450	Manhole	Adoptable	ATT	450	Manhole	Adoptable
4.000	S4	450	Manhole	Adoptable	ATT	450	Manhole	Adoptable
1.004	ATT	450	Manhole	Adoptable	S7	450	Manhole	Adoptable
3.000	S5	450	Manhole	Adoptable	S1	450	Manhole	Adoptable
1.001	S03	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
1.000	S01	450	Manhole	Adoptable	S03	450	Manhole	Adoptable
2.000	S02	450	Manhole	Adoptable	S03	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
ATT	101.941	156.697	33.500	1.900	450		1 2 0	4.000 1.003 1.004	31.600 31.600 31.600	100 100 150
PP	48.758	117.626	34.500	0.480	450					
S1	66.076	139.707	34.150	0.750	450		1 0	3.000 3.001	33.400 33.400	100 100
S2	74.840	132.039	34.000	1.000	450		1 2 0	3.001 1.001 1.002	33.000 33.000 33.000	100 100 100
S3	95.035	147.883	33.500	0.932	450		1 0	1.002 1.003	32.568 32.568	100 100
S4	100.045	166.794	33.500	1.000	450		0	4.000	32.500	100

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S7	107.736	160.048	33.500	1.950	450		1	1.004	31.550	150
OHA	78.529	157.261	33.500	0.500	450					
S5	51.293	123.635	35.000	0.800	450		0	3.000	34.200	100
S03	41.589	79.400	34.500	0.863	450		1 2 0	2.000 1.000 1.001	33.637 33.637 33.637	100 100 100
S01	33.500	82.137	35.250	0.750	450		0	1.000	34.500	100
S02	45.825	72.372	34.250	0.531	450		0	2.000	33.719	100

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	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	0	0

Node S7 Online Orifice Control

Flap Valve	x	Design Depth (m)	1.550	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	31.550	Diameter (m)	0.027		

Node PP Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.01228	Invert Level (m)	34.020	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.01228	Time to half empty (mins)	232	Depth (m)	0.350
Safety Factor	2.0	Width (m)	50.000	Inf Depth (m)	
Porosity	0.30	Length (m)	39.200		

Node ATT Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	31.600	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	180	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	9.000	Number Required	1
Porosity	0.95	Pit Length (m)	3.500		

Node OHA Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.01228	Invert Level (m)	33.000	Slope (1:X)	80.0
Side Inf Coefficient (m/hr)	0.01228	Time to half empty (mins)	277	Depth (m)	0.300
Safety Factor	2.0	Width (m)	40.000	Inf Depth (m)	
Porosity	0.30	Length (m)	25.000		

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.93%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	ATT	132	31.969	0.369	6.4	11.0863	0.0000	SURCHARGED
240 minute winter	PP	196	34.307	0.287	13.6	55.3618	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S2	11	33.055	0.055	3.9	0.0087	0.0000	OK
15 minute summer	S3	11	32.595	0.027	3.8	0.0042	0.0000	OK
15 minute summer	S4	1	32.500	0.000	0.0	0.0000	0.0000	OK
180 minute summer	S7	132	31.968	0.418	2.1	0.0665	0.0000	OK
240 minute winter	OHA	192	33.245	0.245	6.9	27.6609	0.0000	OK
15 minute summer	S5	1	34.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S03	10	33.697	0.060	4.0	0.0096	0.0000	OK
15 minute summer	S01	10	34.522	0.022	2.0	0.0035	0.0000	OK
15 minute summer	S02	10	33.759	0.040	2.0	0.0063	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)
180 minute summer	ATT	1.004	S7	2.1	0.290	0.079	0.0411	
240 minute winter	PP	Infiltration		2.5				
15 minute summer	S1	3.001	S2	0.0	0.000	0.000	0.0257	
15 minute summer	S2	1.002	S3	3.8	1.256	0.480	0.0781	
15 minute summer	S3	1.003	ATT	3.8	0.660	0.154	0.0290	
15 minute summer	S4	4.000	ATT	0.0	0.000	0.000	0.0402	
180 minute summer	S7	Orifice		1.0				17.0
240 minute winter	OHA	Infiltration		1.4				
15 minute summer	S5	3.000	S1	0.0	0.000	0.000	0.0000	
15 minute summer	S03	1.001	S2	3.9	0.867	0.638	0.2816	
15 minute summer	S01	1.000	S03	2.0	0.954	0.103	0.0263	
15 minute summer	S02	2.000	S03	2.0	0.534	0.331	0.0320	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	ATT	168	32.085	0.485	6.5	14.5938	0.0000	SURCHARGED
240 minute winter	PP	224	34.348	0.328	17.0	71.9414	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S2	11	33.065	0.065	5.1	0.0104	0.0000	OK
15 minute summer	S3	11	32.599	0.031	4.9	0.0049	0.0000	OK
15 minute summer	S4	1	32.500	0.000	0.0	0.0000	0.0000	OK
240 minute summer	S7	168	32.085	0.535	1.7	0.0851	0.0000	OK
240 minute winter	OHA	208	33.278	0.278	8.7	35.7553	0.0000	OK
15 minute summer	S5	1	34.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S03	10	33.709	0.072	5.2	0.0115	0.0000	OK
15 minute summer	S01	10	34.525	0.025	2.6	0.0039	0.0000	OK
15 minute summer	S02	10	33.765	0.046	2.6	0.0073	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	ATT	1.004	S7	1.7	0.281	0.064	0.0411	22.1
240 minute winter	PP	Infiltration		2.8				
15 minute summer	S1	3.001	S2	0.0	0.000	0.000	0.0316	
15 minute summer	S2	1.002	S3	4.9	1.329	0.627	0.0956	
15 minute summer	S3	1.003	ATT	4.9	0.837	0.202	0.0300	
15 minute summer	S4	4.000	ATT	0.0	0.000	0.000	0.0402	
240 minute summer	S7	Orifice		1.1				
240 minute winter	OHA	Infiltration		1.5				
15 minute summer	S5	3.000	S1	0.0	0.000	0.000	0.0000	
15 minute summer	S03	1.001	S2	5.1	0.910	0.828	0.3471	
15 minute summer	S01	1.000	S03	2.6	0.954	0.134	0.0323	
15 minute summer	S02	2.000	S03	2.6	0.566	0.431	0.0392	

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	ATT	180	32.313	0.713	8.9	21.4595	0.0000	SURCHARGED
240 minute winter	PP	228	34.417	0.397	23.9	105.4664	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S2	12	33.079	0.079	6.5	0.0126	0.0000	OK
15 minute summer	S3	12	32.603	0.035	6.4	0.0056	0.0000	OK
15 minute summer	S4	1	32.500	0.000	0.0	0.0000	0.0000	OK
240 minute summer	S7	180	32.313	0.763	2.0	0.1213	0.0000	OK
240 minute winter	OHA	228	33.340	0.340	12.2	53.0967	0.0000	OK
15 minute summer	S5	1	34.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S03	11	33.762	0.125	7.1	0.0198	0.0000	SURCHARGED
15 minute summer	S01	10	34.529	0.029	3.6	0.0047	0.0000	OK
15 minute summer	S02	11	33.781	0.062	3.6	0.0099	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	ATT	1.004	S7	2.0	0.353	0.078	0.0411	27.4
240 minute winter	PP	Infiltration		3.4				
15 minute summer	S1	3.001	S2	0.0	0.000	0.000	0.0388	
15 minute summer	S2	1.002	S3	6.4	1.375	0.809	0.1168	
15 minute summer	S3	1.003	ATT	6.4	1.047	0.261	0.0313	
15 minute summer	S4	4.000	ATT	0.0	0.000	0.000	0.0402	
240 minute summer	S7	Orifice		1.3				
240 minute winter	OHA	Infiltration		1.7				
15 minute summer	S5	3.000	S1	0.0	0.000	0.000	0.0000	
15 minute summer	S03	1.001	S2	6.5	0.934	1.056	0.4500	
15 minute summer	S01	1.000	S03	3.6	1.057	0.185	0.0416	
15 minute summer	S02	2.000	S03	3.5	0.597	0.579	0.0531	

Results for 100 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
120 minute winter	ATT	116	32.231	0.631	8.9	18.9736	0.0000	SURCHARGED
240 minute winter	PP	228	34.391	0.371	21.2	92.1214	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S2	11	33.077	0.077	6.3	0.0123	0.0000	OK
15 minute summer	S3	11	32.602	0.034	6.1	0.0054	0.0000	OK
15 minute summer	S4	1	32.500	0.000	0.0	0.0000	0.0000	OK
120 minute winter	S7	116	32.230	0.680	2.3	0.1082	0.0000	OK
240 minute winter	OHA	224	33.315	0.315	10.8	45.9165	0.0000	OK
15 minute summer	S5	1	34.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S03	10	33.728	0.091	6.6	0.0145	0.0000	OK
15 minute summer	S01	10	34.528	0.028	3.3	0.0045	0.0000	OK
15 minute summer	S02	10	33.772	0.053	3.3	0.0084	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)
120 minute winter	ATT	1.004	S7	2.3	0.382	0.087	0.0411	
240 minute winter	PP	Infiltration		3.2				
15 minute summer	S1	3.001	S2	0.0	0.000	0.000	0.0377	
15 minute summer	S2	1.002	S3	6.1	1.373	0.780	0.1135	
15 minute summer	S3	1.003	ATT	6.1	1.011	0.251	0.0311	
15 minute summer	S4	4.000	ATT	0.0	0.000	0.000	0.0402	
120 minute winter	S7	Orifice		1.2				19.9
240 minute winter	OHA	Infiltration		1.7				
15 minute summer	S5	3.000	S1	0.0	0.000	0.000	0.0000	
15 minute summer	S03	1.001	S2	6.3	0.937	1.025	0.4299	
15 minute summer	S01	1.000	S03	3.3	0.954	0.170	0.0396	
15 minute summer	S02	2.000	S03	3.3	0.591	0.547	0.0479	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.81%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	ATT	144	33.310	1.710	9.7	24.2268	0.0000	FLOOD RISK
360 minute winter	PP	344	34.488	0.468	22.6	142.8167	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
180 minute winter	S2	144	33.312	0.312	2.0	0.0496	0.0000	SURCHARGED
180 minute winter	S3	144	33.310	0.742	2.0	0.1180	0.0000	FLOOD RISK
180 minute winter	S4	144	33.310	0.810	2.6	0.1287	0.0000	FLOOD RISK
180 minute winter	S7	144	33.309	1.759	2.9	0.2797	0.0000	OK
240 minute winter	OHA	232	33.407	0.407	15.7	72.2839	0.0000	OK
15 minute summer	S5	1	34.200	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S03	11	33.904	0.267	8.1	0.0425	0.0000	SURCHARGED
15 minute summer	S01	10	34.534	0.034	4.7	0.0053	0.0000	OK
15 minute summer	S02	11	33.940	0.221	4.7	0.0351	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 winter	ATT	1.004	S7	2.9	0.264	0.110	0.0411	
360 minute winter	PP	Infiltration		3.4				
15 minute summer	S1	3.001	S2	0.0	0.000	0.000	0.0426	
180 minute winter	S2	1.002	S3	2.0	1.070	0.254	0.2008	
180 minute winter	S3	1.003	ATT	2.0	0.426	0.082	0.0477	
180 minute winter	S4	4.000	ATT	-2.6	-0.395	-0.142	0.0804	
180 minute winter	S7	Orifice		2.0				30.5
240 minute winter	OHA	Infiltration		1.7				
15 minute summer	S5	3.000	S1	0.0	0.000	0.000	0.0000	
15 minute summer	S03	1.001	S2	7.1	0.939	1.167	0.4716	
15 minute summer	S01	1.000	S03	4.7	1.087	0.242	0.0433	
15 minute summer	S02	2.000	S03	3.6	0.627	0.602	0.0642	