Design Settings

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

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		4.00	34.150	450	65.842	140.150	0.750
S2			34.000	450	74.840	132.039	1.000
S3			33.500	450	95.035	147.883	1.000
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

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	S1	S2	12.114	0.600	33.400	33.000	0.400	30.3	100	4.14	54.4
1.001	S2	S3	25.668	0.600	33.000	32.500	0.500	51.3	100	4.54	54.4
1.002	S3	ATT	6.100	0.600	32.500	31.800	0.700	8.7	100	4.58	54.4
2.000	S4	ATT	10.273	0.600	32.500	31.800	0.700	14.7	100	4.08	54.4
1.003	ATT	S7	2.335	0.600	31.600	31.550	0.050	46.7	100	4.61	54.4

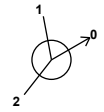
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.407	11.1	0.0	0.650	0.900	0.000	0.0	0	0.000
1.001	1.078	8.5	0.0	0.900	0.900	0.000	0.0	0	0.000
1.002	2.634	20.7	0.0	0.900	1.600	0.000	0.0	0	0.000
2.000	2.027	15.9	0.0	0.900	1.600	0.000	0.0	0	0.000
1.003	1.131	8.9	7.7	1.800	1.850	0.039	0.0	71	1.270

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	12.114	30.3	100	Circular	34.150	33.400	0.650	34.000	33.000	0.900
1.001	25.668	51.3	100	Circular	34.000	33.000	0.900	33.500	32.500	0.900
1.002	6.100	8.7	100	Circular	33.500	32.500	0.900	33.500	31.800	1.600
2.000	10.273	14.7	100	Circular	33.500	32.500	0.900	33.500	31.800	1.600
1.003	2.335	46.7	100	Circular	33.500	31.600	1.800	33.500	31.550	1.850

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
1.001	S2	450	Manhole	Adoptable	S3	450	Manhole	Adoptable
1.002	S3	450	Manhole	Adoptable	ATT	450	Manhole	Adoptable
2.000	S4	450	Manhole	Adoptable	ATT	450	Manhole	Adoptable
1.003	ATT	450	Manhole	Adoptable	S7	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 2.000 2 1.002 0 1.003	31.800 31.800 31.600	100 100 100
PP	48.758	117.626	34.500	0.480	450				
S1	65.842	140.150	34.150	0.750	450		0 1.000	33.400	100
S2	74.840	132.039	34.000	1.000	450		1 1.000 0 1.001	33.000 33.000	100 100
S3	95.035	147.883	33.500	1.000	450		1 1.001 0 1.002	32.500 32.500	100 100
S4	100.045	166.794	33.500	1.000	450		0 2.000	32.500	100
S7	107.736	160.048	33.500	1.950	450		1 1.003	31.550	100
OHA	78.529	157.261	33.500	0.500	450				

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	0.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x

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

Node S7 Online Orifice Control

Flap Valve	x	Invert Level (m)	31.550	Design Flow (l/s)	2.0	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Depth (m)	1.600	Diameter (m)	0.027		

Node PP Carpark Storage Structure

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

Node ATT Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Pit Width (m)	7.000	Inf Depth (m)	
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	31.600	Pit Length (m)	3.000	Number Required	1
Safety Factor	2.0	Time to half empty (mins)	206	Depth (m)	0.800		

Node OHA Carpark Storage Structure

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

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
120 minute summer	ATT	90	31.985	0.385	6.7	7.7506	0.0000	SURCHARGED
240 minute winter	PP	196	34.307	0.287	13.6	55.3449	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S2	1	33.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S3	1	32.500	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S4	1	32.500	0.000	0.0	0.0000	0.0000	OK
120 minute summer	S7	90	31.984	0.434	1.6	0.0691	0.0000	OK
240 minute winter	OHA	192	33.245	0.245	6.9	27.6526	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 summer	ATT	1.003	S7	1.6	0.416	0.186	0.0183	
240 minute winter	PP	Infiltration		2.5				
15 minute summer	S1	1.000	S2	0.0	0.000	0.000	0.0000	
15 minute summer	S2	1.001	S3	0.0	0.000	0.000	0.0000	
15 minute summer	S3	1.002	ATT	0.0	0.000	0.000	0.0134	
15 minute summer	S4	2.000	ATT	0.0	0.000	0.000	0.0225	
120 minute summer	S7	Orifice		1.0				12.6
240 minute winter	OHA	Infiltration		1.4				

Results for 30 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 summer	ATT	94	32.115	0.515	8.5	10.3600	0.0000	SURCHARGED
240 minute winter	PP	224	34.348	0.328	17.0	71.9235	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S2	1	33.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S3	1	32.500	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S4	1	32.500	0.000	0.0	0.0000	0.0000	OK
120 minute summer	S7	94	32.114	0.564	1.4	0.0896	0.0000	OK
240 minute winter	OHA	208	33.278	0.278	8.7	35.7462	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 summer	ATT	1.003	S7	1.4	0.441	0.154	0.0183	
240 minute winter	PP	Infiltration		2.8				
15 minute summer	S1	1.000	S2	0.0	0.000	0.000	0.0000	
15 minute summer	S2	1.001	S3	0.0	0.000	0.000	0.0000	
15 minute summer	S3	1.002	ATT	0.0	0.000	0.000	0.0239	
15 minute summer	S4	2.000	ATT	0.0	0.000	0.000	0.0402	
120 minute summer	S7	Orifice		1.1				15.9
240 minute winter	OHA	Infiltration		1.5				

Results for 30 year +40% CC 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
180 minute summer	ATT	132	32.363	0.763	9.1	15.3373	0.0000	SURCHARGED
240 minute winter	PP	228	34.417	0.397	23.9	105.4513	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S2	1	33.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S3	1	32.500	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S4	1	32.500	0.000	0.0	0.0000	0.0000	OK
180 minute summer	S7	132	32.361	0.811	1.7	0.1289	0.0000	OK
240 minute winter	OHA	228	33.340	0.340	12.2	53.0886	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	1.003	S7	1.7	0.430	0.190	0.0183	
240 minute winter	PP	Infiltration		3.4				
15 minute summer	S1	1.000	S2	0.0	0.000	0.000	0.0000	
15 minute summer	S2	1.001	S3	0.0	0.000	0.000	0.0000	
15 minute summer	S3	1.002	ATT	0.0	0.000	0.000	0.0239	
15 minute summer	S4	2.000	ATT	0.0	0.000	0.000	0.0402	
180 minute summer	S7	Orifice		1.4				23.2
240 minute winter	OHA	Infiltration		1.7				

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	108	32.275	0.675	7.1	13.5660	0.0000	SURCHARGED
240 minute winter	PP	228	34.391	0.371	21.2	92.1048	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S2	1	33.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S3	1	32.500	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S4	1	32.500	0.000	0.0	0.0000	0.0000	OK
120 minute winter	S7	108	32.273	0.723	1.6	0.1149	0.0000	OK
240 minute winter	OHA	224	33.315	0.315	10.8	45.9082	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	1.003	S7	1.6	0.437	0.175	0.0183	
240 minute winter	PP	Infiltration		3.2				
15 minute summer	S1	1.000	S2	0.0	0.000	0.000	0.0000	
15 minute summer	S2	1.001	S3	0.0	0.000	0.000	0.0000	
15 minute summer	S3	1.002	ATT	0.0	0.000	0.000	0.0239	
15 minute summer	S4	2.000	ATT	0.0	0.000	0.000	0.0402	
120 minute winter	S7	Orifice		1.3				18.9
240 minute winter	OHA	Infiltration		1.7				

Results for 100 year +45% CC 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	98	33.271	1.671	10.3	16.2356	0.0000	FLOOD RISK
360 minute winter	PP	344	34.488	0.468	22.6	142.8033	0.0000	OK
15 minute summer	S1	1	33.400	0.000	0.0	0.0000	0.0000	OK
120 minute winter	S2	98	33.271	0.271	1.6	0.0431	0.0000	SURCHARGED
120 minute winter	S3	98	33.271	0.771	2.1	0.1225	0.0000	FLOOD RISK
120 minute winter	S4	98	33.271	0.771	1.4	0.1225	0.0000	FLOOD RISK
120 minute winter	S7	98	33.266	1.716	4.0	0.2729	0.0000	OK
240 minute winter	OHA	232	33.407	0.407	15.7	72.2745	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	1.003	S7	4.0	0.516	0.455	0.0183	
360 minute winter	PP	Infiltration		3.4				
15 minute summer	S1	1.000	S2	0.0	0.000	0.000	0.0000	
120 minute winter	S2	1.001	S3	-1.6	-0.230	-0.186	0.2008	
120 minute winter	S3	1.002	ATT	-2.1	-0.265	-0.100	0.0477	
120 minute winter	S4	2.000	ATT	-1.4	-0.181	-0.089	0.0804	
120 minute winter	S7	Orifice		2.0				25.2
240 minute winter	OHA	Infiltration		1.7				