

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)	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)	Width (mm)	Depth (m)
RE1	0.005	5.00	5.900	150		0.500
SIC2	0.005	5.00	5.900	450		0.600
DRIVE	0.007	5.00	5.800	708	708	0.550
RE3	0.005	5.00	5.900	150		0.400
SIC4	0.005	5.00	5.900	450		0.500
SOAKAWAY	0.000		6.000	150		0.650

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	RE1	SIC2	10.000	0.600	5.400	5.300	0.100	100.0	150	5.17	50.0
1.001	SIC2	DRIVE	4.000	0.600	5.300	5.250	0.050	80.0	150	5.23	50.0
1.002	DRIVE	SIC4	19.000	0.600	5.550	5.400	0.150	126.7	150	5.58	50.0
2.000	RE3	SIC4	11.000	0.600	5.500	5.400	0.100	110.0	150	5.19	50.0
1.003	SIC4	SOAKAWAY	2.000	0.600	5.400	5.350	0.050	40.0	150	5.60	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	1.005	17.8	0.9	0.350	0.450	0.005	0.0	23	0.527
1.001	1.125	19.9	1.8	0.450	0.400	0.010	0.0	31	0.704
1.002	0.891	15.7	3.1	0.100	0.350	0.017	0.0	45	0.692
2.000	0.957	16.9	0.9	0.250	0.350	0.005	0.0	24	0.510
1.003	1.596	28.2	4.9	0.350	0.500	0.027	0.0	42	1.195

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	10.000	100.0	150	Circular	5.900	5.400	0.350	5.900	5.300	0.450
1.001	4.000	80.0	150	Circular	5.900	5.300	0.450	5.800	5.250	0.400
1.002	19.000	126.7	150	Circular	5.800	5.550	0.100	5.900	5.400	0.350
2.000	11.000	110.0	150	Circular	5.900	5.500	0.250	5.900	5.400	0.350

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
1.000	RE1	150		Manhole	Adoptable	SIC2	450		Manhole	Adoptable
1.001	SIC2	450		Manhole	Adoptable	DRIVE	708	708	Manhole	Adoptable
1.002	DRIVE	708	708	Manhole	Adoptable	SIC4	450		Manhole	Adoptable
2.000	RE3	150		Manhole	Adoptable	SIC4	450		Manhole	Adoptable

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)
1.003	2.000	40.0	150	Circular	5.900	5.400	0.350	6.000	5.350	0.500
Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
1.003	SIC4	450		Manhole	Adoptable	SOAKAWAY	150		Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
RE1	5.900	0.500	150						
					0	1.000	5.400	150	
SIC2	5.900	0.600	450			1	1.000	5.300	150
					0	1.001	5.300	150	
DRIVE	5.800	0.550	708	708		1	1.001	5.250	150
					0	1.002	5.550	150	
RE3	5.900	0.400	150						
					0	2.000	5.500	150	
SIC4	5.900	0.500	450			1	2.000	5.400	150
					2	1.002	5.400	150	
					0	1.003	5.400	150	
SOAKAWAY	6.000	0.650	150			1	1.003	5.350	150

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)	10080	Check Discharge Volume	x

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 %)
100	45	0	0

Node SOAKAWAY Online Head/Flow Control

Flap Valve x | Replaces Downstream Link ✓ | Invert Level (m) 5.350

Head (m) 0.001
Flow (l/s) 0.000

Node DRIVE Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.01348	Invert Level (m)	5.250	Slope (1:X)	5000.0
Side Inf Coefficient (m/hr)	0.01348	Time to half empty (mins)	420	Depth (m)	
Safety Factor	2.0	Width (m)	5.000	Inf Depth (m)	5.450
Porosity	0.30	Length (m)	14.000		

Node SOAKAWAY Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.01348	Invert Level (m)	5.350	Depth (m)	0.300
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	1335	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	6.000	Number Required	1
Porosity	0.95	Pit Length (m)	10.000		

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m³)	
Full Bore Velocity	✓		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 15 minute summer	523.875	148.239
100 year +45% CC 15 minute winter	367.632	148.239
100 year +45% CC 30 minute summer	350.076	99.059
100 year +45% CC 30 minute winter	245.667	99.059
100 year +45% CC 60 minute summer	240.414	63.534
100 year +45% CC 60 minute winter	159.725	63.534
100 year +45% CC 120 minute summer	144.075	38.075
100 year +45% CC 120 minute winter	95.720	38.075
100 year +45% CC 180 minute summer	108.706	27.974
100 year +45% CC 180 minute winter	70.662	27.974

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 240 minute summer	84.714	22.387
100 year +45% CC 240 minute winter	56.282	22.387
100 year +45% CC 360 minute summer	63.163	16.254
100 year +45% CC 360 minute winter	41.058	16.254
100 year +45% CC 480 minute summer	48.786	12.893
100 year +45% CC 480 minute winter	32.412	12.893
100 year +45% CC 600 minute summer	39.291	10.747
100 year +45% CC 600 minute winter	26.846	10.747
100 year +45% CC 720 minute summer	34.509	9.249
100 year +45% CC 720 minute winter	23.192	9.249
100 year +45% CC 960 minute summer	27.641	7.279
100 year +45% CC 960 minute winter	18.310	7.279
100 year +45% CC 1440 minute summer	19.360	5.189
100 year +45% CC 1440 minute winter	13.011	5.189
100 year +45% CC 2160 minute summer	13.431	3.712
100 year +45% CC 2160 minute winter	9.254	3.712
100 year +45% CC 2880 minute summer	10.976	2.942
100 year +45% CC 2880 minute winter	7.377	2.942
100 year +45% CC 4320 minute summer	8.215	2.148
100 year +45% CC 4320 minute winter	5.410	2.148
100 year +45% CC 5760 minute summer	6.784	1.737
100 year +45% CC 5760 minute winter	4.391	1.737
100 year +45% CC 7200 minute summer	5.827	1.486
100 year +45% CC 7200 minute winter	3.761	1.486
100 year +45% CC 8640 minute summer	5.162	1.317
100 year +45% CC 8640 minute winter	3.331	1.317
100 year +45% CC 10080 minute summer	4.681	1.194
100 year +45% CC 10080 minute winter	3.021	1.194

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.05%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	RE1	585	5.608	0.208	0.4	0.0038	0.0000	FLOOD RISK
600 minute winter	SIC2	585	5.608	0.308	0.8	0.0490	0.0000	FLOOD RISK
600 minute winter	DRIVE	585	5.608	0.358	2.3	7.6745	0.0000	OK
600 minute winter	RE3	585	5.608	0.108	0.9	0.0020	0.0000	OK
600 minute winter	SIC4	585	5.608	0.208	11.0	0.0331	0.0000	FLOOD RISK
600 minute winter	SOAKAWAY	585	5.608	0.258	9.4	14.7341	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)
600 minute winter	RE1	1.000	SIC2	0.4	0.219	0.023	0.1760	
600 minute winter	SIC2	1.001	DRIVE	1.4	0.360	0.069	0.0704	
600 minute winter	DRIVE	1.002	SIC4	11.0	0.686	0.700	0.2748	
600 minute winter	DRIVE	Infiltration		0.2				
600 minute winter	RE3	2.000	SIC4	-0.9	0.375	-0.054	0.1718	
600 minute winter	SIC4	1.003	SOAKAWAY	9.4	0.666	0.335	0.0352	
600 minute winter	SOAKAWAY	Head/Flow		0.0				0.0
600 minute winter	SOAKAWAY	Infiltration		0.1				