

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	1	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	✓
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)	Invert Level (m)
SP3	0.008	5.00	7.840	1200	11.446	7.786	1.170	6.670
SP101	0.060	5.00	8.110	450	-20.589	32.490	1.125	6.985
SP102	0.038	5.00	8.030	450	-18.183	17.684	1.112	6.918
SP103	0.031	5.00	8.030	450	-16.926	9.953	1.222	6.808
SP104			7.830	1200	10.264	14.372	1.114	6.716
SP105	0.020	5.00	7.970	450	-16.124	5.018	1.065	6.905

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)	Design Flow (l/s)
100	SP101	SP102	15.000	0.600	6.985	6.918	0.067	225.0	225	5.29	36.4	
101	SP102	SP103	7.833	0.600	6.918	6.883	0.035	225.0	225	5.44	35.9	
102	SP103	SP104	27.547	0.600	6.808	6.716	0.092	300.0	300	5.95	34.5	
103	SP104	SP3	6.691	0.600	6.716	6.670	0.046	145.5	225	6.05	34.2	10.0
104	SP105	SP103	5.000	0.600	6.905	6.883	0.022	225.0	225	5.10	36.9	

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)
100	0.867	34.5	7.9	0.900	0.887	0.060	0.0	74	0.712
101	0.867	34.5	12.7	0.887	0.922	0.098	0.0	97	0.813
102	0.902	63.8	18.6	0.922	0.814	0.149	0.0	114	0.871
103	1.082	43.0	10.0	0.889	0.945	0.149	0.0	73	0.883
104	0.867	34.5	2.7	0.840	0.922	0.020	0.0		

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)
100	15.000	225.0	225	Circular_Default Sewer Type	8.110	6.985	0.900	8.030	6.918	0.887
101	7.833	225.0	225	Circular_Default Sewer Type	8.030	6.918	0.887	8.030	6.883	0.922
102	27.547	300.0	300	Circular_Default Sewer Type	8.030	6.808	0.922	7.830	6.716	0.814
103	6.691	145.5	225	Circular_Default Sewer Type	7.830	6.716	0.889	7.840	6.670	0.945
104	5.000	225.0	225	Circular_Default Sewer Type	7.970	6.905	0.840	8.030	6.883	0.922

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
100	SP101	450	Manhole	Adoptable	SP102	450	Manhole	Adoptable
101	SP102	450	Manhole	Adoptable	SP103	450	Manhole	Adoptable
102	SP103	450	Manhole	Adoptable	SP104	1200	Manhole	Adoptable
103	SP104	1200	Manhole	Adoptable	SP3	1200	Manhole	Adoptable
104	SP105	450	Manhole	Adoptable	SP103	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
SP3	11.446	7.786	7.840	1.170	1200		1	103	6.670	225
SP101	-20.589	32.490	8.110	1.125	450		0	100	6.985	225
SP102	-18.183	17.684	8.030	1.112	450		1	100	6.918	225
							0	101	6.918	225
SP103	-16.926	9.953	8.030	1.222	450		1	104	6.883	225
							2	101	6.883	225
							0	102	6.808	300
SP104	10.264	14.372	7.830	1.114	1200		1	102	6.716	300
							0	103	6.716	225
SP105	-16.124	5.018	7.970	1.065	450					
							0	104	6.905	225

Simulation Settings

Rainfall Methodology	FEH-22	Drain Down Time (mins)	2880	30 year (l/s)	0.2
Rainfall Events	Singular	Additional Storage (m³/ha)	20.0	100 year (l/s)	0.3
Winter CV	1.000	Starting Level (m)		Check Discharge Volume	x
Analysis Speed	Detailed	Check Discharge Rate(s)	✓		
Skip Steady State	x	1 year (l/s)	0.1		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	40	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)	0.050	Betterment (%)	0
SAAR (mm)	719	QBar	0.1
Soil Index	2	Q 1 year (l/s)	
SPR	0.30	Q 30 year (l/s)	
Region	7	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Node SP104 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	6.716	Product Number	CTL-SHE-0067-2000-1000-2000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node SP104 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	6.716
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	536

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	306.3	306.3	0.400	306.3	331.1	0.401	0.0	331.1

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	SP3	420	6.693	0.023	1.0	0.0000	0.0000	OK
15 minute winter	SP101	10	7.080	0.095	6.8	0.1165	0.0000	OK
15 minute winter	SP102	10	7.074	0.156	10.8	0.1314	0.0000	OK
15 minute winter	SP103	10	7.068	0.260	18.9	0.1734	0.0000	OK
600 minute winter	SP104	420	6.794	0.078	2.4	22.7109	0.0000	OK
15 minute winter	SP105	10	7.071	0.166	2.3	0.0890	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 winter	SP101	100	SP102	6.8	0.478	0.198	0.3400	33.7
15 minute winter	SP102	101	SP103	12.7	0.773	0.368	0.2522	
15 minute winter	SP103	102	SP104	26.0	1.446	0.408	0.8984	
600 minute winter	SP104	103	SP3	0.9	0.436	0.022	0.0144	
15 minute winter	SP105	104	SP103	2.9	0.433	0.085	0.1661	

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	SP3	344	6.702	0.032	2.6	0.0000	0.0000	OK
15 minute winter	SP101	9	7.642	0.657	38.6	0.8059	0.0000	SURCHARGED
15 minute winter	SP102	8	7.545	0.627	63.4	0.5279	0.0000	SURCHARGED
15 minute winter	SP103	8	7.436	0.628	97.5	0.4180	0.0000	SURCHARGED
360 minute winter	SP104	344	7.021	0.305	13.6	88.9505	0.0000	SURCHARGED
15 minute winter	SP105	8	7.440	0.535	12.9	0.2862	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)
15 minute winter	SP101	100	SP102	39.0	0.980	1.131	0.5966	114.6
15 minute winter	SP102	101	SP103	63.9	1.607	1.853	0.3115	
15 minute winter	SP103	102	SP104	99.8	2.067	1.565	1.2452	
360 minute winter	SP104	103	SP3	2.0	0.539	0.045	0.0242	
15 minute winter	SP105	104	SP103	13.7	0.453	0.399	0.1989	

Results for 100 year +45% 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
360 minute winter	SP3	352	6.703	0.033	2.9	0.0000	0.0000	OK
15 minute winter	SP101	10	8.010	1.025	50.3	1.2570	0.0000	FLOOD RISK
15 minute winter	SP102	10	7.829	0.911	80.9	0.7671	0.0000	FLOOD RISK
360 minute winter	SP103	352	7.702	0.894	17.6	0.5952	0.0000	SURCHARGED
360 minute winter	SP104	352	7.702	0.986	17.4	117.6541	0.0000	FLOOD RISK
360 minute winter	SP105	352	7.702	0.797	2.4	0.4262	0.0000	FLOOD RISK

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 winter	SP101	100	SP102	49.7	1.249	1.440	0.5966	
15 minute winter	SP102	101	SP103	81.3	2.045	2.358	0.3115	
360 minute winter	SP103	102	SP104	17.4	0.811	0.273	1.9398	
360 minute winter	SP104	103	SP3	2.0	0.540	0.045	0.0243	148.0
360 minute winter	SP105	104	SP103	2.4	0.481	0.068	0.1989	