

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	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)
RE1	0.016	5.00	48.900		388906.280	166003.574	0.600	48.300
S2	0.020	5.00	48.000	450	388916.492	165987.769	0.700	47.300
RE3	0.031	5.00	47.400		388935.495	165961.505	0.600	46.800
S4			47.400	450	388926.835	165956.318	0.750	46.650
S5			47.250	450	388911.644	165962.943	0.850	46.400
S6			47.400	450	388900.758	165977.755	1.300	46.100
S7	0.196	5.00	46.630	1200	388863.980	165954.890	0.830	45.800
Outfall			46.100		388860.860	165952.677	0.380	45.720

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	S2	18.817	0.600	48.300	47.300	1.000	18.8	150	5.13	50.0
1.001	S2	S6	18.650	0.600	47.300	46.100	1.200	15.5	150	5.26	50.0
2.000	RE3	S4	10.095	0.600	46.800	46.650	0.150	67.3	150	5.14	50.0
2.001	S4	S5	16.573	0.600	46.650	46.400	0.250	66.3	150	5.36	50.0
2.002	S5	S6	18.382	0.600	46.400	46.100	0.300	61.3	150	5.60	50.0
1.002	S6	S7	43.306	0.600	46.100	45.800	0.300	144.4	150	6.46	50.0
1.003	S7	Outfall	3.825	0.600	45.800	45.720	0.080	47.8	225	6.50	50.0

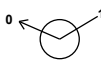
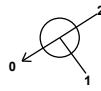
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	2.332	41.2	2.9	0.450	0.550	0.016	0.0	27	1.343
1.001	2.568	45.4	6.5	0.550	1.150	0.036	0.0	38	1.833
2.000	1.227	21.7	5.6	0.450	0.600	0.031	0.0	52	1.031
2.001	1.237	21.9	5.6	0.600	0.700	0.031	0.0	52	1.039
2.002	1.287	22.7	5.6	0.700	1.150	0.031	0.0	51	1.068
1.002	0.834	14.7	12.1	1.150	0.680	0.067	0.0	103	0.929
1.003	1.896	75.4	47.5	0.605	0.155	0.263	0.0	130	2.001

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	18.817	18.8	150	Circular	48.900	48.300	0.450	48.000	47.300	0.550
1.001	18.650	15.5	150	Circular	48.000	47.300	0.550	47.400	46.100	1.150
2.000	10.095	67.3	150	Circular	47.400	46.800	0.450	47.400	46.650	0.600
2.001	16.573	66.3	150	Circular	47.400	46.650	0.600	47.250	46.400	0.700
2.002	18.382	61.3	150	Circular	47.250	46.400	0.700	47.400	46.100	1.150
1.002	43.306	144.4	150	Circular	47.400	46.100	1.150	46.630	45.800	0.680
1.003	3.825	47.8	225	Circular	46.630	45.800	0.605	46.100	45.720	0.155

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	RE1		Junction		S2	450	Manhole	Adoptable
1.001	S2	450	Manhole	Adoptable	S6	450	Manhole	Adoptable
2.000	RE3		Junction		S4	450	Manhole	Adoptable
2.001	S4	450	Manhole	Adoptable	S5	450	Manhole	Adoptable
2.002	S5	450	Manhole	Adoptable	S6	450	Manhole	Adoptable
1.002	S6	450	Manhole	Adoptable	S7	1200	Manhole	Adoptable
1.003	S7	1200	Manhole	Adoptable	Outfall		Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
RE1	388906.280	166003.574	48.900	0.600			0	1.000	48.300	150
S2	388916.492	165987.769	48.000	0.700	450		1	1.000	47.300	150
							0	1.001	47.300	150
RE3	388935.495	165961.505	47.400	0.600			0	2.000	46.800	150
S4	388926.835	165956.318	47.400	0.750	450		1	2.000	46.650	150
							0	2.001	46.650	150
S5	388911.644	165962.943	47.250	0.850	450		1	2.001	46.400	150
							0	2.002	46.400	150
S6	388900.758	165977.755	47.400	1.300	450		1	2.002	46.100	150
							2	1.001	46.100	150
							0	1.002	46.100	150
S7	388863.980	165954.890	46.630	0.830	1200		1	1.002	45.800	150
							0	1.003	45.800	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Outfall	388860.860	165952.677	46.100	0.380		1	1.003	45.720	225

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	2 year (l/s)	1.8
Rainfall Events	Singular	Drain Down Time (mins)	1440	30 year (l/s)	3.8
Summer CV	1.000	Additional Storage (m³/ha)	0.0	100 year (l/s)	4.9
Winter CV	1.000	Starting Level (m)		Check Discharge Volume	x
Analysis Speed	Normal	Check Discharge Rate(s)	✓		

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 %)
2	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	FEH	Growth Factor 100 year	2.48
Positively Drained Area (ha)	0.263	Betterment (%)	0
SAAR (mm)	801	QMed	1.8
Host	8	QBar	2.0
BFIHost	0.302	Q 2 year (l/s)	1.8
Region	1	Q 30 year (l/s)	3.8
QBar/QMed conversion factor	1.111	Q 100 year (l/s)	4.9
Growth Factor 2 year	0.90		

Node S7 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	45.800	Product Number	CTL-SHE-0060-1400-0700-1400
Design Depth (m)	0.700	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.4	Min Node Diameter (mm)	1200

Node S7 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	45.920	Slope (1:X)	9999.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.540
Safety Factor	2.0	Width (m)	48.000	Inf Depth (m)	
Porosity	0.30	Length (m)	31.000		

Node S6 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	46.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	990

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	202.5	202.5	0.400	202.5	222.7	0.401	0.0	222.7

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.47%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE1	10	48.326	0.026	2.6	0.0000	0.0000	OK
15 minute summer	S2	9	47.346	0.046	5.8	0.0073	0.0000	OK
15 minute summer	RE3	10	46.850	0.050	5.0	0.0000	0.0000	OK
15 minute summer	S4	10	46.698	0.048	5.0	0.0077	0.0000	OK
15 minute summer	S5	10	46.462	0.062	4.9	0.0098	0.0000	OK
240 minute summer	S6	144	46.136	0.036	3.7	6.9267	0.0000	OK
480 minute summer	S7	384	46.001	0.201	8.3	34.6662	0.0000	OK
15 minute summer	Outfall	1	45.720	0.000	1.4	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE1	1.000	S2	2.6	0.833	0.063	0.0611	
15 minute summer	S2	1.001	S6	5.8	2.624	0.128	0.0465	
15 minute summer	RE3	2.000	S4	5.0	0.987	0.229	0.0508	
15 minute summer	S4	2.001	S5	4.9	0.864	0.226	0.0972	
15 minute summer	S5	2.002	S6	5.0	1.562	0.221	0.0670	
240 minute summer	S6	1.002	S7	1.9	0.149	0.127	0.4513	
480 minute summer	S7	Hydro-Brake®	Outfall	1.4				70.8

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
15 minute summer	RE1	10	48.350	0.050	9.8	0.0000	0.0000	OK
15 minute summer	S2	9	47.389	0.089	22.0	0.0142	0.0000	OK
15 minute summer	RE3	10	46.916	0.116	19.0	0.0000	0.0000	OK
15 minute summer	S4	10	46.766	0.116	18.9	0.0184	0.0000	OK
15 minute summer	S5	10	46.530	0.130	18.7	0.0207	0.0000	OK
960 minute winter	S6	945	46.264	0.164	2.8	31.5322	0.0000	SURCHARGED
960 minute winter	S7	930	46.264	0.464	11.0	149.8406	0.0000	SURCHARGED
15 minute summer	Outfall	1	45.720	0.000	1.4	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE1	1.000	S2	9.8	1.282	0.237	0.1492	
15 minute summer	S2	1.001	S6	22.1	3.258	0.488	0.1400	
15 minute summer	RE3	2.000	S4	18.9	1.294	0.870	0.1472	
15 minute summer	S4	2.001	S5	18.7	1.237	0.856	0.2556	
15 minute summer	S5	2.002	S6	18.9	1.857	0.830	0.1899	
60 minute summer	S6	1.002	S7	9.5	0.601	0.644	0.6137	
15 minute summer	S7	Hydro-Brake®	Outfall	1.4				69.3

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.10%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE1	10	48.358	0.058	13.0	0.0000	0.0000	OK
15 minute summer	S2	9	47.406	0.106	29.2	0.0168	0.0000	OK
15 minute summer	RE3	11	47.191	0.391	25.1	0.0000	0.0000	FLOOD RISK
15 minute summer	S4	11	46.976	0.326	23.6	0.0519	0.0000	SURCHARGED
15 minute summer	S5	12	46.633	0.233	23.0	0.0370	0.0000	SURCHARGED
1440 minute winter	S6	1410	46.412	0.312	3.2	60.0333	0.0000	SURCHARGED
1440 minute winter	S7	1410	46.412	0.612	9.9	215.6010	0.0000	FLOOD RISK
15 minute summer	Outfall	1	45.720	0.000	1.4	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	RE1	1.000	S2	12.9	1.387	0.314	0.1828	
15 minute summer	S2	1.001	S6	29.3	3.322	0.645	0.1792	
15 minute summer	RE3	2.000	S4	23.6	1.341	1.089	0.1777	
15 minute summer	S4	2.001	S5	23.0	1.307	1.052	0.2918	
15 minute summer	S5	2.002	S6	23.2	1.824	1.022	0.2600	
30 minute summer	S6	1.002	S7	10.3	0.630	0.696	0.6893	
15 minute summer	S7	Hydro-Brake®	Outfall	1.4				93.0