

**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	0.750	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	x
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)
1	0.016	4.00	59.780	1200	476775.572	164659.979	1.851
2	0.032	4.00	59.930	1200	476792.670	164657.160	2.073
PCP2	0.134	4.00	59.840	1200	476806.716	164634.996	1.000
8	0.008	4.00	60.090	1200	476807.492	164638.643	2.308
3	0.029	4.00	59.880	1350	476810.026	164651.980	2.154
PCP1	0.089	4.00	59.500	1200	476825.748	164653.436	1.000
4	0.042	4.00	59.680	1350	476827.972	164649.463	2.030
TANK1	0.032	4.00	59.200	1200	476866.789	164659.803	1.400
9	0.009	4.00	59.100	1200	476866.427	164656.358	1.478
5	0.018	4.00	59.215	1500	476865.151	164644.967	1.662
TANK2	0.070	4.00	58.900	1500	476860.513	164605.590	1.450
6			59.050	1350	476859.785	164598.794	1.650
7			58.450	1200	476855.834	164560.698	1.350
13_OUT			57.950		476876.735	164536.695	1.100

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	1	2	17.328	0.600	57.929	57.857	0.072	240.7	300	4.29	50.0
1.001	2	3	18.113	0.600	57.857	57.782	0.075	241.5	300	4.59	50.0
2.000	PCP2	8	3.728	0.600	58.840	58.782	0.058	64.3	150	4.05	50.0
2.001	8	3	13.576	0.600	57.782	57.726	0.056	242.4	300	4.27	50.0
1.002	3	4	18.121	0.600	57.726	57.650	0.076	238.4	300	4.88	50.0
3.000	PCP1	4	4.554	0.600	58.500	58.054	0.446	10.2	150	4.02	50.0
1.003	4	5	37.449	0.600	57.650	57.553	0.097	386.1	450	5.49	50.0
4.000	TANK1	9	3.465	0.600	57.800	57.622	0.178	19.5	150	4.03	50.0
4.001	9	5	11.462	0.600	57.622	57.553	0.069	166.1	225	4.21	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)
1.000	1.009	71.3	2.2	1.551	1.773	0.016	0.0
1.001	1.007	71.2	6.5	1.773	1.798	0.048	0.0
2.000	1.256	22.2	18.2	0.850	1.158	0.134	0.0
2.001	1.005	71.0	19.2	2.008	1.854	0.142	0.0
1.002	1.014	71.6	29.7	1.854	1.730	0.219	0.0
3.000	3.171	56.0	12.1	0.850	1.476	0.089	0.0
1.003	1.028	163.6	47.4	1.580	1.212	0.350	0.0
4.000	2.293	40.5	4.3	1.250	1.328	0.032	0.0
4.001	1.011	40.2	5.6	1.253	1.437	0.041	0.0

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)
1.004	5	TANK2	39.649	0.600	57.553	57.450	0.103	384.9	450	6.13	49.3
1.005	TANK2	6	6.835	0.600	57.450	57.400	0.050	136.7	150	6.27	48.8
1.006	6	7	38.301	0.600	57.400	57.100	0.300	127.7	150	6.98	46.2
1.007	7	13_OUT	31.828	0.600	57.100	56.850	0.250	127.3	150	7.58	44.4

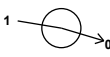
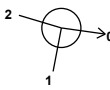
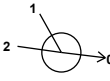
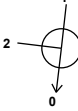
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.004	1.030	163.8	54.6	1.212	1.000	0.409	0.0
1.005	0.857	15.2	63.3	1.300	1.500	0.479	0.0
1.006	0.888	15.7	60.0	1.500	1.200	0.479	0.0
1.007	0.889	15.7	57.6	1.200	0.950	0.479	0.0

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)
1.000	17.328	240.7	300	1 STANDARD	59.780	57.929	1.551	59.930	57.857	1.773
1.001	18.113	241.5	300	1 STANDARD	59.930	57.857	1.773	59.880	57.782	1.798
2.000	3.728	64.3	150	1 STANDARD	59.840	58.840	0.850	60.090	58.782	1.158
2.001	13.576	242.4	300	1 STANDARD	60.090	57.782	2.008	59.880	57.726	1.854
1.002	18.121	238.4	300	1 STANDARD	59.880	57.726	1.854	59.680	57.650	1.730
3.000	4.554	10.2	150	1 STANDARD	59.500	58.500	0.850	59.680	58.054	1.476
1.003	37.449	386.1	450	1 STANDARD	59.680	57.650	1.580	59.215	57.553	1.212
4.000	3.465	19.5	150	1 STANDARD	59.200	57.800	1.250	59.100	57.622	1.328
4.001	11.462	166.1	225	1 STANDARD	59.100	57.622	1.253	59.215	57.553	1.437
1.004	39.649	384.9	450	1 STANDARD	59.215	57.553	1.212	58.900	57.450	1.000
1.005	6.835	136.7	150	1 STANDARD	58.900	57.450	1.300	59.050	57.400	1.500
1.006	38.301	127.7	150	1 STANDARD	59.050	57.400	1.500	58.450	57.100	1.200
1.007	31.828	127.3	150	1 STANDARD	58.450	57.100	1.200	57.950	56.850	0.950

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1200	Manhole	1 STANDARD	2	1200	Manhole	1 STANDARD
1.001	2	1200	Manhole	1 STANDARD	3	1350	Manhole	1 STANDARD
2.000	PCP2	1200	Manhole	1 STANDARD	8	1200	Manhole	1 STANDARD
2.001	8	1200	Manhole	1 STANDARD	3	1350	Manhole	1 STANDARD
1.002	3	1350	Manhole	1 STANDARD	4	1350	Manhole	1 STANDARD
3.000	PCP1	1200	Manhole	1 STANDARD	4	1350	Manhole	1 STANDARD
1.003	4	1350	Manhole	1 STANDARD	5	1500	Manhole	1 STANDARD
4.000	TANK1	1200	Manhole	1 STANDARD	9	1200	Manhole	1 STANDARD
4.001	9	1200	Manhole	1 STANDARD	5	1500	Manhole	1 STANDARD
1.004	5	1500	Manhole	1 STANDARD	TANK2	1500	Manhole	1 STANDARD
1.005	TANK2	1500	Manhole	1 STANDARD	6	1350	Manhole	1 STANDARD
1.006	6	1350	Manhole	1 STANDARD	7	1200	Manhole	1 STANDARD
1.007	7	1200	Manhole	1 STANDARD	13_OUT		Manhole	1 STANDARD

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1	476775.572	164659.979	59.780	1.851	1200		0	1.000	57.929	300
2	476792.670	164657.160	59.930	2.073	1200		1	1.000	57.857	300
							0	1.001	57.857	300
PCP2	476806.716	164634.996	59.840	1.000	1200		0	2.000	58.840	150
8	476807.492	164638.643	60.090	2.308	1200		1	2.000	58.782	150
							0	2.001	57.782	300
3	476810.026	164651.980	59.880	2.154	1350		1	2.001	57.726	300
							2	1.001	57.782	300
							0	1.002	57.726	300
PCP1	476825.748	164653.436	59.500	1.000	1200		0	3.000	58.500	150
4	476827.972	164649.463	59.680	2.030	1350		1	3.000	58.054	150
							2	1.002	57.650	300
							0	1.003	57.650	450
TANK1	476866.789	164659.803	59.200	1.400	1200		0	4.000	57.800	150
9	476866.427	164656.358	59.100	1.478	1200		1	4.000	57.622	150
							0	4.001	57.622	225
5	476865.151	164644.967	59.215	1.662	1500		1	4.001	57.553	225
							2	1.003	57.553	450
							0	1.004	57.553	450
TANK2	476860.513	164605.590	58.900	1.450	1500		1	1.004	57.450	450
							0	1.005	57.450	150
6	476859.785	164598.794	59.050	1.650	1350		1	1.005	57.400	150
							0	1.006	57.400	150
7	476855.834	164560.698	58.450	1.350	1200		1	1.006	57.100	150
							0	1.007	57.100	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
13_OUT	476876.735	164536.695	57.950	1.100		1 	1	1.007	56.850	150

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m ³ /ha)	20.0		

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 %)
2	0	10	0
30	0	10	0
100	40	10	0

Node 6 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	57.400	Product Number	CTL-SHE-0060-2000-1648-2000
Design Depth (m)	1.648	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node PCP1 Online Orifice Control

Flap Valve	x	Design Depth (m)	1.000	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	5.0		
Invert Level (m)	58.500	Diameter (m)	0.032		

Node PCP2 Online Orifice Control

Flap Valve	x	Design Depth (m)	1.000	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	5.0		
Invert Level (m)	58.840	Diameter (m)	0.032		

Node PCP2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	58.840	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.35	Length (m)	73.000		

Node PCP1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	58.500	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	
Safety Factor	2.0	Width (m)	10.000	Inf Depth (m)	
Porosity	0.35	Length (m)	49.700		

Node TANK1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	57.800
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

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	55.0	0.0	0.800	55.0	0.0	0.801	0.0	0.0

Node TANK1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	58.600	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.600
Safety Factor	2.0	Width (m)	12.600	Inf Depth (m)	
Porosity	0.35	Length (m)	10.000		

Node TANK2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	57.450
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

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	144.0	0.0	0.800	144.0	0.0	0.801	0.0	0.0

Node TANK2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	58.250	Slope (1:X)	500.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.650
Safety Factor	2.0	Width (m)	26.000	Inf Depth (m)	
Porosity	0.35	Length (m)	10.000		



Results for 2 year +10% A Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	57.968	0.039	2.6	0.0512	0.0000	OK
15 minute winter	2	10	57.925	0.068	7.7	0.0997	0.0000	OK
240 minute winter	PCP2	224	58.988	0.148	4.8	19.8424	0.0000	OK
15 minute winter	8	10	57.819	0.037	1.8	0.0451	0.0000	OK
15 minute winter	3	10	57.818	0.092	13.8	0.1582	0.0000	OK
240 minute winter	PCP1	188	58.617	0.117	3.2	11.9998	0.0000	OK
600 minute winter	4	600	57.806	0.156	3.5	0.2952	0.0000	OK
30 minute winter	TANK1	21	57.826	0.026	3.8	1.3767	0.0000	OK
600 minute winter	9	600	57.806	0.184	0.8	0.2333	0.0000	OK
600 minute winter	5	600	57.806	0.253	4.6	0.5082	0.0000	OK
600 minute winter	TANK2	600	57.806	0.356	5.5	49.7728	0.0000	SURCHARGED
600 minute winter	6	600	57.806	0.406	1.5	0.5807	0.0000	SURCHARGED
120 minute summer	7	98	57.131	0.031	1.5	0.0354	0.0000	OK
120 minute summer	13_OUT	98	56.881	0.031	1.5	0.0000	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	1	1.000	2	2.6	0.307	0.036	0.1492	
15 minute winter	2	1.001	3	7.5	0.651	0.106	0.2095	
240 minute winter	PCP2	Orifice	8	0.8				
15 minute winter	8	2.001	3	1.8	0.308	0.026	0.1575	
15 minute winter	3	1.002	4	13.6	0.672	0.189	0.3679	
240 minute winter	PCP1	Orifice	4	0.7				
600 minute winter	4	1.003	5	3.5	0.382	0.022	2.6387	
30 minute winter	TANK1	4.000	9	2.5	0.846	0.063	0.0107	
600 minute winter	9	4.001	5	0.8	0.186	0.020	0.4276	
600 minute winter	5	1.004	TANK2	4.3	0.436	0.026	4.4932	
600 minute winter	TANK2	1.005	6	1.5	0.230	0.100	0.1203	
600 minute winter	6	Hydro-Brake®	7	1.5				
120 minute summer	7	1.007	13_OUT	1.5	0.559	0.094	0.0839	28.5

Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.69%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	1	1170	58.224	0.295	0.4	0.3895	0.0000	OK
960 minute winter	2	1185	58.224	0.367	1.2	0.5396	0.0000	SURCHARGED
240 minute winter	PCP2	236	59.114	0.274	11.1	52.4378	0.0000	SURCHARGED
960 minute winter	8	1185	58.224	0.442	1.2	0.5334	0.0000	SURCHARGED
960 minute winter	3	1185	58.224	0.498	2.9	0.8603	0.0000	SURCHARGED
240 minute winter	PCP1	232	58.733	0.233	7.3	32.4582	0.0000	SURCHARGED
960 minute winter	4	1185	58.224	0.574	4.5	1.0829	0.0000	SURCHARGED
960 minute winter	TANK1	1170	58.224	0.424	1.6	22.8370	0.0000	SURCHARGED
960 minute winter	9	1170	58.224	0.602	1.0	0.7613	0.0000	SURCHARGED
960 minute winter	5	1170	58.224	0.671	5.4	1.3450	0.0000	SURCHARGED
960 minute winter	TANK2	1170	58.224	0.774	6.5	108.0460	0.0000	SURCHARGED
960 minute winter	6	1170	58.223	0.823	1.5	1.1779	0.0000	SURCHARGED
360 minute winter	7	152	57.131	0.031	1.5	0.0354	0.0000	OK
360 minute winter	13_OUT	152	56.881	0.031	1.5	0.0000	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)
960 minute winter	1	1.000	2	0.4	0.182	0.006	1.2179	
960 minute winter	2	1.001	3	1.2	0.395	0.017	1.2755	
240 minute winter	PCP2	Orifice	8	1.1				
960 minute winter	8	2.001	3	1.1	0.245	0.015	0.9560	
960 minute winter	3	1.002	4	2.9	0.401	0.040	1.2761	
240 minute winter	PCP1	Orifice	4	1.0				
960 minute winter	4	1.003	5	4.2	0.369	0.026	5.9335	
960 minute winter	TANK1	4.000	9	-0.8	0.502	-0.021	0.0610	
960 minute winter	9	4.001	5	0.9	0.150	0.022	0.4559	
960 minute winter	5	1.004	TANK2	4.7	0.444	0.029	6.2821	
960 minute winter	TANK2	1.005	6	1.5	0.231	0.100	0.1203	
960 minute winter	6	Hydro-Brake®	7	1.5				
360 minute winter	7	1.007	13_OUT	1.5	0.559	0.094	0.0839	45.8

**Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 99.69%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	1	945	58.900	0.971	0.7	1.2827	0.0000	SURCHARGED
960 minute winter	2	945	58.900	1.043	1.9	1.5342	0.0000	SURCHARGED
360 minute winter	PCP2	352	59.293	0.453	14.0	98.9034	0.0000	SURCHARGED
960 minute winter	8	945	58.900	1.118	1.6	1.3494	0.0000	SURCHARGED
960 minute winter	3	945	58.900	1.174	4.6	2.0286	0.0000	SURCHARGED
360 minute winter	PCP1	352	58.898	0.398	9.3	61.6101	0.0000	SURCHARGED
960 minute winter	4	945	58.900	1.250	7.3	2.3586	0.0000	SURCHARGED
960 minute winter	TANK1	945	58.900	1.100	3.7	56.4130	0.0000	SURCHARGED
960 minute winter	9	945	58.900	1.278	2.5	1.6166	0.0000	FLOOD RISK
960 minute winter	5	945	58.900	1.347	7.9	2.7006	0.0000	SURCHARGED
960 minute winter	TANK2	945	58.900	1.450	9.5	171.8444	0.0000	FLOOD RISK
960 minute winter	6	945	58.899	1.499	1.9	2.1447	0.0000	FLOOD RISK
960 minute winter	7	945	57.136	0.036	1.9	0.0404	0.0000	OK
960 minute winter	13_OUT	945	56.885	0.035	1.9	0.0000	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)
960 minute winter	1	1.000	2	0.6	0.207	0.009	1.2202	
960 minute winter	2	1.001	3	1.9	0.410	0.027	1.2755	
360 minute winter	PCP2	Orifice	8	1.4				
960 minute winter	8	2.001	3	1.5	0.249	0.021	0.9560	
960 minute winter	3	1.002	4	4.5	0.401	0.063	1.2761	
360 minute winter	PCP1	Orifice	4	1.3				
960 minute winter	4	1.003	5	7.1	0.353	0.044	5.9335	
960 minute winter	TANK1	4.000	9	-2.4	0.501	-0.060	0.0610	
960 minute winter	9	4.001	5	-2.1	0.149	-0.053	0.4559	
960 minute winter	5	1.004	TANK2	6.4	0.488	0.039	6.2821	
960 minute winter	TANK2	1.005	6	1.9	0.237	0.127	0.1203	
960 minute winter	6	Hydro-Brake®	7	1.9				
960 minute winter	7	1.007	13_OUT	1.9	0.603	0.122	0.1012	112.0