

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)	0.750
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	3.00	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)
SW01	0.034	3.00	25.550	1200	341208.932	398944.882	1.300
SW02	0.034	3.00	25.150	1200	341191.004	398941.656	1.157
SW11	0.036	3.00	24.400	1200	341155.845	398929.364	1.152
SW03	0.083	3.00	24.120	1200	341141.334	398924.290	1.254
SW04	0.157	3.00	25.000	1200	341169.273	398903.616	1.125
SW05	0.084	3.00	25.710	1200	341156.655	398884.992	2.060
SW06			25.400	1200	341143.438	398891.917	1.920
SW07	0.011	3.00	24.700	1200	341142.575	398905.514	1.492
SW10	0.032	3.00	24.400	1200	341139.621	398911.598	2.150
Attenuation tank	0.000	3.00	24.400	1200	341130.322	398908.555	2.200
SW08 HB	0.000	3.00	24.200	1200	341124.066	398906.321	2.110
EX SW	0.000		23.940	1200	341109.151	398899.423	2.000

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	SW01	SW02	18.216	0.600	24.250	24.068	0.182	100.0	150	3.30	50.0
1.001	SW02	SW11	37.246	0.600	23.993	23.248	0.745	50.0	225	3.64	50.0
1.002	SW11	SW03	15.373	0.600	23.248	22.941	0.307	50.0	225	3.78	50.0
1.003	SW03	SW10	12.807	0.600	22.866	22.250	0.616	20.8	300	3.84	50.0
2.001	SW04	SW05	22.496	0.600	23.875	23.650	0.225	100.0	300	3.24	50.0
2.002	SW05	SW06	14.921	0.600	23.650	23.480	0.170	87.8	300	3.39	50.0
2.003	SW06	SW07	13.624	0.600	23.480	23.208	0.272	50.0	300	3.49	50.0
2.004	SW07	SW10	6.763	0.600	23.208	22.250	0.958	7.1	300	3.51	50.0
Petrol interceptor	SW10	Attenuation tank	9.784	0.600	22.250	22.200	0.050	195.7	300	3.98	50.0
3.000	Attenuation tank	SW08 HB	6.643	0.600	22.200	22.090	0.110	60.4	300	4.04	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	4.6	1.150	0.932	0.034	0.0	52	0.843
1.001	1.854	73.7	9.2	0.932	0.927	0.068	0.0	53	1.270
1.002	1.854	73.7	14.1	0.927	0.954	0.104	0.0	66	1.436
1.003	3.463	244.8	25.3	0.954	1.850	0.187	0.0	65	2.264
2.001	1.572	111.1	21.3	0.825	1.760	0.157	0.0	89	1.223
2.002	1.679	118.7	32.7	1.760	1.620	0.241	0.0	107	1.438
2.003	2.228	157.5	32.7	1.620	1.192	0.241	0.0	92	1.770
2.004	5.952	420.7	34.2	1.192	1.850	0.252	0.0	57	3.624
Petrol interceptor	1.120	79.2	63.8	1.850	1.900	0.471	0.0	205	1.241
3.000	2.026	143.2	63.8	1.900	1.810	0.471	0.0	140	1.971

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)
3.001	SW08 HB	EX SW	16.433	0.600	22.090	21.940	0.150	109.6	300	4.22	50.0

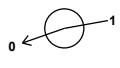
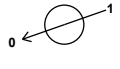
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.001	1.501	106.1	63.8	1.810	1.700	0.471	0.0	168	1.567

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	18.216	100.0	150	Circular	25.550	24.250	1.150	25.150	24.068	0.932
1.001	37.246	50.0	225	Circular	25.150	23.993	0.932	24.400	23.248	0.927
1.002	15.373	50.0	225	Circular	24.400	23.248	0.927	24.120	22.941	0.954
1.003	12.807	20.8	300	Circular	24.120	22.866	0.954	24.400	22.250	1.850
2.001	22.496	100.0	300	Circular	25.000	23.875	0.825	25.710	23.650	1.760
2.002	14.921	87.8	300	Circular	25.710	23.650	1.760	25.400	23.480	1.620
2.003	13.624	50.0	300	Circular	25.400	23.480	1.620	24.700	23.208	1.192
2.004	6.763	7.1	300	Circular	24.700	23.208	1.192	24.400	22.250	1.850
Petrol interceptor	9.784	195.7	300	Circular	24.400	22.250	1.850	24.400	22.200	1.900
3.000	6.643	60.4	300	Circular	24.400	22.200	1.900	24.200	22.090	1.810
3.001	16.433	109.6	300	Circular	24.200	22.090	1.810	23.940	21.940	1.700

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SW01	1200	Manhole	Adoptable	SW02	1200	Manhole	Adoptable
1.001	SW02	1200	Manhole	Adoptable	SW11	1200	Manhole	Adoptable
1.002	SW11	1200	Manhole	Adoptable	SW03	1200	Manhole	Adoptable
1.003	SW03	1200	Manhole	Adoptable	SW10	1200	Manhole	Adoptable
2.001	SW04	1200	Manhole	Adoptable	SW05	1200	Manhole	Adoptable
2.002	SW05	1200	Manhole	Adoptable	SW06	1200	Manhole	Adoptable
2.003	SW06	1200	Manhole	Adoptable	SW07	1200	Manhole	Adoptable
2.004	SW07	1200	Manhole	Adoptable	SW10	1200	Manhole	Adoptable
Petrol interceptor	SW10	1200	Manhole	Adoptable	Attenuation tank	1200	Manhole	Adoptable
3.000	Attenuation tank	1200	Manhole	Adoptable	SW08 HB	1200	Manhole	Adoptable
3.001	SW08 HB	1200	Manhole	Adoptable	EX SW	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW01	341208.932	398944.882	25.550	1.300	1200				
						0	1.000	24.250	150
SW02	341191.004	398941.656	25.150	1.157	1200				
						0	1.001	23.993	225
						1	1.001	23.248	225
SW11	341155.845	398929.364	24.400	1.152	1200				
						0	1.002	23.248	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW03	341141.334	398924.290	24.120	1.254	1200		1.002	22.941	225
SW04	341169.273	398903.616	25.000	1.125	1200		1.003	22.866	300
SW05	341156.655	398884.992	25.710	2.060	1200		2.001	23.875	300
SW06	341143.438	398891.917	25.400	1.920	1200		2.001	23.650	300
SW07	341142.575	398905.514	24.700	1.492	1200		2.002	23.650	300
SW10	341139.621	398911.598	24.400	2.150	1200		2.002	23.480	300
Attenuation tank	341130.322	398908.555	24.400	2.200	1200		2.003	23.480	300
SW08 HB	341124.066	398906.321	24.200	2.110	1200		2.003	23.208	300
EX SW	341109.151	398899.423	23.940	2.000	1200		2.004	23.208	300
							2.004	22.250	300
							1.003	22.250	300
							Petrol interceptor	22.250	300
							Petrol interceptor	22.200	300
							3.000	22.200	300
							3.000	22.090	300
							3.001	22.090	300
							3.001	21.940	300

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	2 year (l/s)	1.4
Rainfall Events	Singular	Drain Down Time (mins)	240	30 year (l/s)	3.0
Summer CV	0.750	Additional Storage (m³/ha)	0.0	100 year (l/s)	3.9
Winter CV	0.840	Starting Level (m)		Check Discharge Volume	x
Analysis Speed	Normal	Check Discharge Rate(s)	✓		

Storm Durations

15	60	180	360	600	960	2160	4320
30	120	240	480	720	1440	2880	5760

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Brownfield	Growth Factor 2 year	0.90
Brownfield Method	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	FEH	Growth Factor 100 year	2.48
Positively Drained Area (ha)	0.470	Betterment (%)	0
SAAR (mm)	854	QMed	1.4
Host	1	QBar	1.6
BFIHost	0.633	Q 2 year (l/s)	1.4
Region	1	Q 30 year (l/s)	3.0
QBar/QMed conversion factor	1.111	Q 100 year (l/s)	3.9

Node SW08 HB Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	22.090	Product Number	CTL-SHE-0053-1600-1600-1600
Design Depth (m)	1.600	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.6	Min Node Diameter (mm)	1200

Node Attenuation tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	22.200
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	300.0	0.0	1.125	300.0	0.0	1.126	0.0	0.0

Results for 1 year 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
15 minute summer	SW01	9	24.298	0.048	4.0	0.0545	0.0000	OK
15 minute summer	SW02	9	24.041	0.048	7.7	0.0543	0.0000	OK
15 minute summer	SW11	10	23.310	0.062	11.6	0.0697	0.0000	OK
15 minute summer	SW03	9	22.924	0.058	20.3	0.0654	0.0000	OK
15 minute summer	SW04	9	23.958	0.083	18.3	0.0939	0.0000	OK
15 minute summer	SW05	9	23.754	0.104	27.6	0.1178	0.0000	OK
15 minute summer	SW06	9	23.574	0.094	26.8	0.1069	0.0000	OK
15 minute summer	SW07	10	23.260	0.052	27.6	0.0585	0.0000	OK
15 minute winter	SW10	8	22.840	0.590	49.1	0.6676	0.0000	SURCHARGED
720 minute winter	Attenuation tank	600	22.397	0.197	6.1	56.4543	0.0000	OK
960 minute winter	SW08 HB	735	22.396	0.306	4.2	0.3466	0.0000	SURCHARGED
180 minute winter	EX SW	132	21.962	0.022	1.1	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 summer	SW01	1.000	SW02	3.7	0.784	0.210	0.0867	
15 minute summer	SW02	1.001	SW11	7.4	1.005	0.100	0.2773	
15 minute summer	SW11	1.002	SW03	11.3	1.316	0.153	0.1318	
15 minute summer	SW03	1.003	SW10	20.1	0.671	0.082	0.5117	
15 minute summer	SW04	2.001	SW05	17.8	0.953	0.161	0.4224	
15 minute summer	SW05	2.002	SW06	26.8	1.319	0.226	0.3036	
15 minute summer	SW06	2.003	SW07	26.3	2.006	0.167	0.1841	
15 minute summer	SW07	2.004	SW10	27.6	0.938	0.066	0.2653	
15 minute winter	SW10	Petrol interceptor	Attenuation tank	63.6	1.988	0.803	0.3566	
720 minute winter	Attenuation tank	3.000	SW08 HB	4.7	0.248	0.033	0.3971	
960 minute winter	SW08 HB	3.001	EX SW	1.1	0.494	0.011	0.0378	69.6

Results for 30 year 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
15 minute summer	SW01	9	24.348	0.098	13.0	0.1109	0.0000	OK
15 minute summer	SW02	9	24.082	0.089	25.4	0.1010	0.0000	OK
15 minute summer	SW11	9	23.370	0.122	38.4	0.1384	0.0000	OK
15 minute winter	SW03	6	23.093	0.227	64.6	0.2563	0.0000	OK
15 minute summer	SW04	9	24.046	0.171	59.8	0.1928	0.0000	OK
15 minute summer	SW05	9	23.869	0.219	90.7	0.2480	0.0000	OK
15 minute summer	SW06	9	23.665	0.185	88.3	0.2090	0.0000	OK
15 minute summer	SW07	9	23.335	0.127	91.3	0.1436	0.0000	OK
15 minute winter	SW10	6	23.081	0.831	160.9	0.9394	0.0000	SURCHARGED
720 minute winter	Attenuation tank	705	22.757	0.557	11.7	159.4621	0.0000	SURCHARGED
720 minute winter	SW08 HB	705	22.757	0.667	4.8	0.7547	0.0000	SURCHARGED
15 minute summer	EX SW	245	21.962	0.022	1.1	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 summer	SW01	1.000	SW02	12.4	1.055	0.697	0.2141	
15 minute summer	SW02	1.001	SW11	24.7	1.349	0.335	0.6836	
15 minute summer	SW11	1.002	SW03	36.6	1.772	0.496	0.3194	
15 minute winter	SW03	1.003	SW10	63.9	1.151	0.261	0.8167	
15 minute summer	SW04	2.001	SW05	58.7	1.212	0.528	1.0854	
15 minute summer	SW05	2.002	SW06	88.3	1.750	0.744	0.7512	
15 minute summer	SW06	2.003	SW07	87.1	2.494	0.553	0.5032	
15 minute summer	SW07	2.004	SW10	90.3	1.585	0.215	0.3340	
15 minute winter	SW10	Petrol interceptor	Attenuation tank	166.7	3.059	2.106	0.5332	
720 minute winter	Attenuation tank	3.000	SW08 HB	4.8	0.182	0.033	0.4678	
720 minute winter	SW08 HB	3.001	EX SW	1.1	0.494	0.011	0.0378	56.2

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
15 minute summer	SW01	10	24.498	0.248	23.6	0.2807	0.0000	SURCHARGED
15 minute summer	SW02	10	24.239	0.246	44.6	0.2783	0.0000	SURCHARGED
15 minute summer	SW11	10	24.044	0.796	65.2	0.8999	0.0000	SURCHARGED
1440 minute winter	SW03	1380	23.952	1.086	5.0	1.2282	0.0000	FLOOD RISK
15 minute summer	SW04	10	24.836	0.961	108.7	1.0865	0.0000	FLOOD RISK
15 minute summer	SW05	10	24.619	0.969	154.9	1.0962	0.0000	SURCHARGED
15 minute summer	SW06	10	24.240	0.760	146.7	0.8590	0.0000	SURCHARGED
1440 minute winter	SW07	1380	23.952	0.744	6.8	0.8412	0.0000	SURCHARGED
1440 minute winter	SW10	1380	23.952	1.702	12.7	1.9251	0.0000	SURCHARGED
1440 minute winter	Attenuation tank	1380	23.952	1.752	12.6	322.7488	0.0000	SURCHARGED
1440 minute winter	SW08 HB	1380	23.952	1.862	4.8	2.1060	0.0000	FLOOD RISK
1440 minute winter	EX SW	1380	21.966	0.026	1.7	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 summer	SW01	1.000	SW02	21.0	1.193	1.181	0.3207	
15 minute summer	SW02	1.001	SW11	43.4	1.435	0.588	1.4813	
15 minute summer	SW11	1.002	SW03	64.6	1.700	0.877	0.6114	
1440 minute winter	SW03	1.003	SW10	5.0	0.365	0.020	0.9019	
15 minute summer	SW04	2.001	SW05	96.7	1.374	0.870	1.5842	
15 minute summer	SW05	2.002	SW06	146.7	2.084	1.236	1.0507	
15 minute summer	SW06	2.003	SW07	147.2	2.429	0.934	0.9594	
1440 minute winter	SW07	2.004	SW10	6.8	0.518	0.016	0.4762	
1440 minute winter	SW10	Petrol interceptor	Attenuation tank	12.6	0.706	0.159	0.6890	
1440 minute winter	Attenuation tank	3.000	SW08 HB	4.8	0.155	0.033	0.4678	
1440 minute winter	SW08 HB	3.001	EX SW	1.7	0.560	0.016	0.0500	123.0