

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	x
Maximum Rainfall (mm/hr)	0.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
1.0	0.200	5.00	108.100	600		522693.097	228626.706	0.600
1.3	0.014	5.00	96.700	600		522240.560	228768.812	0.600
2.0	0.128	5.00	97.500	600		522295.338	228966.799	0.600
1.4	0.099	5.00	96.500	600		522203.444	228752.392	0.600
3.0	0.086	5.00	93.850	600		522188.550	228568.978	0.600
1.7			93.400	600		522183.656	228583.972	0.600
1.8			93.350	1200	675	522177.467	228582.210	1.200
1.9			92.600	1500		522087.467	228582.077	1.650
1.10			91.750	1500		521997.468	228581.943	1.650
1.11			91.000	1500		521962.136	228578.842	1.650
HW1			90.000	1		521952.212	228568.102	1.000
HW2		5.00	90.000	1		521930.884	228554.575	1.000
1.12/FC			90.000	1200	675	521921.601	228554.297	1.100
Outfall			87.000	1		521848.189	228555.041	0.100

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	1.0	1.3	474.300	0.600	107.500	96.100	11.400	41.6	300	8.23	0.0
1.003	1.3	1.4	40.600	0.600	96.100	95.900	0.200	203.0	300	8.85	0.0
2.000	2.0	1.4	236.100	0.600	96.900	95.900	1.000	236.1	300	8.86	0.0
1.004	1.4	1.7	169.900	0.600	95.900	92.800	3.100	54.8	300	10.19	0.0
3.000	3.0	1.7	47.100	0.600	93.250	92.800	0.450	104.7	300	5.51	0.0
1.007	1.7	1.8	12.000	0.600	92.800	92.300	0.500	24.0	300	10.26	0.0
1.008	1.8	1.9	90.000	0.600	92.150	90.950	1.200	75.0	450	10.89	0.0
1.009	1.9	1.10	90.000	0.600	90.950	90.100	0.850	105.9	450	11.65	0.0

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	2.444	172.8	0.0	0.300	0.300	0.200	0.0	0	0.000
1.003	1.100	77.7	0.0	0.300	0.300	0.214	0.0	0	0.000
2.000	1.019	72.0	0.0	0.300	0.300	0.128	0.0	0	0.000
1.004	2.128	150.4	0.0	0.300	0.300	0.441	0.0	0	0.000
3.000	1.536	108.6	0.0	0.300	0.300	0.086	0.0	0	0.000
1.007	3.222	227.8	0.0	0.300	0.750	0.527	0.0	0	0.000
1.008	2.349	373.6	0.0	0.750	1.200	0.527	0.0	0	0.000
1.009	1.975	314.1	0.0	1.200	1.200	0.527	0.0	0	0.000

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)
1.010	1.10	1.11	35.300	0.600	90.100	89.350	0.750	47.1	450	11.85	0.0
1.011	1.11	HW1	13.700	0.600	89.350	89.000	0.350	39.1	450	11.92	0.0
1.012	HW2	1.12/FC	8.400	0.600	89.000	88.900	0.100	84.0	450	5.06	0.0
1.013	1.12/FC	Outfall	71.500	0.600	88.900	86.900	2.000	35.8	100	5.98	0.0

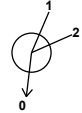
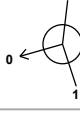
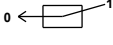
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.010	2.969	472.2	0.0	1.200	1.200	0.527	0.0	0	0.000
1.011	3.257	518.0	0.0	1.200	0.550	0.527	0.0	0	0.000
1.012	2.219	352.9	0.0	0.550	0.650	0.000	0.0	0	0.000
1.013	1.294	10.2	0.0	1.000	0.000	0.000	0.0	0	0.000

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	474.300	41.6	300	Circular	108.100	107.500	0.300	96.700	96.100	0.300
1.003	40.600	203.0	300	Circular	96.700	96.100	0.300	96.500	95.900	0.300
2.000	236.100	236.1	300	Circular	97.500	96.900	0.300	96.500	95.900	0.300
1.004	169.900	54.8	300	Circular	96.500	95.900	0.300	93.400	92.800	0.300
3.000	47.100	104.7	300	Circular	93.850	93.250	0.300	93.400	92.800	0.300
1.007	12.000	24.0	300	Circular	93.400	92.800	0.300	93.350	92.300	0.750
1.008	90.000	75.0	450	Circular	93.350	92.150	0.750	92.600	90.950	1.200
1.009	90.000	105.9	450	Circular	92.600	90.950	1.200	91.750	90.100	1.200
1.010	35.300	47.1	450	Circular	91.750	90.100	1.200	91.000	89.350	1.200
1.011	13.700	39.1	450	Circular	91.000	89.350	1.200	90.000	89.000	0.550
1.012	8.400	84.0	450	Circular	90.000	89.000	0.550	90.000	88.900	0.650
1.013	71.500	35.8	100	Circular	90.000	88.900	1.000	87.000	86.900	0.000

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
1.000	1.0	600		Manhole	Adoptable	1.3	600		Manhole	Adoptable
1.003	1.3	600		Manhole	Adoptable	1.4	600		Manhole	Adoptable
2.000	2.0	600		Manhole	Adoptable	1.4	600		Manhole	Adoptable
1.004	1.4	600		Manhole	Adoptable	1.7	600		Manhole	Adoptable
3.000	3.0	600		Manhole	Adoptable	1.7	600		Manhole	Adoptable
1.007	1.7	600		Manhole	Adoptable	1.8	1200	675	Manhole	Adoptable
1.008	1.8	1200	675	Manhole	Adoptable	1.9	1500		Manhole	Adoptable
1.009	1.9	1500		Manhole	Adoptable	1.10	1500		Manhole	Adoptable
1.010	1.10	1500		Manhole	Adoptable	1.11	1500		Manhole	Adoptable
1.011	1.11	1500		Manhole	Adoptable	HW1	1		Manhole	Adoptable
1.012	HW2	1		Manhole	Adoptable	1.12/FC	1200	675	Manhole	Adoptable
1.013	1.12/FC	1200	675	Manhole	Adoptable	Outfall	1		Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
1.0	522693.097	228626.706	108.100	0.600	600			0	1.000	107.500	300
1.3	522240.560	228768.812	96.700	0.600	600			1	1.000	96.100	300
							0	1.003	96.100	300	
2.0	522295.338	228966.799	97.500	0.600	600			0	2.000	96.900	300
1.4	522203.444	228752.392	96.500	0.600	600			1	2.000	95.900	300
							2	1.003	95.900	300	
							0	1.004	95.900	300	
3.0	522188.550	228568.978	93.850	0.600	600			0	3.000	93.250	300
1.7	522183.656	228583.972	93.400	0.600	600			1	3.000	92.800	300
							2	1.004	92.800	300	
							0	1.007	92.800	300	
1.8	522177.467	228582.210	93.350	1.200	1200	675		1	1.007	92.300	300
							0	1.008	92.150	450	
1.9	522087.467	228582.077	92.600	1.650	1500			1	1.008	90.950	450
							0	1.009	90.950	450	
1.10	521997.468	228581.943	91.750	1.650	1500			1	1.009	90.100	450
							0	1.010	90.100	450	
1.11	521962.136	228578.842	91.000	1.650	1500			1	1.010	89.350	450
							0	1.011	89.350	450	
HW1	521952.212	228568.102	90.000	1.000	1			1	1.011	89.000	450
HW2	521930.884	228554.575	90.000	1.000	1			0	1.012	89.000	450
1.12/FC	521921.601	228554.297	90.000	1.100	1200	675		1	1.012	88.900	450
							0	1.013	88.900	100	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
Outfall	521848.189	228555.041	87.000	0.100	1		1	1.013	86.900	100
										

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	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	20.0		

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	25	0	0
100	25	0	0

Node 1.12/FC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	88.900	Product Number	CTL-SHE-0067-2100-1100-2100
Design Depth (m)	1.100	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.1	Min Node Diameter (mm)	1200

Node HW2 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	30.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	89.000	Main Channel Slope (1:X)	9999.0
Safety Factor	2.0	Time to half empty (mins)		Main Channel n	0.050

Inlets

HW1

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	280.7	0.0	1.000	507.9	0.0	1.001	0.0	0.0

Node 1.7 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.004
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	92.800	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	0	Diameter (mm)	1000

Node 1.4 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.003
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	95.900	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	7	Diameter (mm)	1000

Node 1.3 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	96.100	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	0	Diameter (mm)	1000

Node 1.4 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	2.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	95.900	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	4	Diameter (mm)	1000

Results for 2 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
15 minute summer	1.0	11	107.585	0.085	33.6	0.5891	0.0000	OK
30 minute summer	1.3	22	96.209	0.109	28.3	0.1404	0.0000	OK
15 minute summer	2.0	12	97.004	0.104	21.5	0.4751	0.0000	OK
30 minute summer	1.4	21	96.011	0.111	47.1	1.0282	0.0000	OK
15 minute summer	3.0	10	93.324	0.074	14.4	0.2341	0.0000	OK
30 minute summer	1.7	21	92.906	0.106	51.5	0.1025	0.0000	OK
30 minute summer	1.8	21	92.260	0.110	51.0	0.0894	0.0000	OK
30 minute summer	1.9	22	91.076	0.126	50.7	0.2230	0.0000	OK
30 minute summer	1.10	23	90.200	0.100	50.4	0.1761	0.0000	OK
15 minute summer	1.11	14	89.459	0.109	48.4	0.1932	0.0000	OK
360 minute winter	HW1	360	89.296	0.296	15.0	0.0000	0.0000	OK
360 minute winter	HW2	360	89.296	0.296	16.9	0.0000	0.0000	OK
360 minute winter	1.12/FC	368	89.306	0.406	11.1	0.3289	0.0000	SURCHARGED
15 minute summer	Outfall	1	86.900	0.000	2.0	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	1.0	1.000	1.3	29.9	1.921	0.173	8.7393	
30 minute summer	1.3	1.003	1.4	21.3	0.919	0.274	0.9463	
15 minute summer	2.0	2.000	1.4	18.9	0.896	0.263	5.0889	
30 minute summer	1.4	1.004	1.7	43.0	1.883	0.286	3.8837	
15 minute summer	3.0	3.000	1.7	14.4	1.099	0.133	0.7548	
30 minute summer	1.7	1.007	1.8	51.0	2.457	0.224	0.2491	
30 minute summer	1.8	1.008	1.9	50.7	1.545	0.136	2.9826	
30 minute summer	1.9	1.009	1.10	50.4	1.625	0.160	2.8001	
30 minute summer	1.10	1.010	1.11	50.1	1.828	0.106	0.9678	
15 minute summer	1.11	1.011	HW1	48.9	2.613	0.094	0.2845	
360 minute winter	HW1	Flow through Pond	HW2	9.7	0.018	0.005	92.7609	
360 minute winter	HW2	1.012	1.12/FC	11.1	0.289	0.031	1.0969	
360 minute winter	1.12/FC	Hydro-Brake®	Outfall	2.0				130.1

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1.0	11	107.668	0.168	114.4	1.1704	0.0000	OK
15 minute summer	1.3	13	96.381	0.281	114.0	0.5841	0.0000	OK
15 minute summer	2.0	11	97.130	0.230	73.2	1.0444	0.0000	OK
15 minute summer	1.4	13	96.172	0.272	186.0	4.5436	0.0000	OK
15 minute summer	3.0	10	93.392	0.142	49.2	0.4463	0.0000	OK
15 minute summer	1.7	13	93.071	0.271	194.6	0.5291	0.0000	OK
15 minute summer	1.8	13	92.377	0.227	189.8	0.1840	0.0000	OK
15 minute summer	1.9	14	91.213	0.263	190.2	0.4654	0.0000	OK
15 minute summer	1.10	14	90.308	0.208	189.4	0.3671	0.0000	OK
600 minute winter	1.11	615	89.800	0.450	41.3	0.7956	0.0000	SURCHARGED
600 minute winter	HW1	615	89.800	0.800	51.9	0.0000	0.0000	OK
600 minute winter	HW2	615	89.800	0.800	34.3	0.0000	0.0000	FLOOD RISK
600 minute winter	1.12/FC	615	89.800	0.900	11.0	0.7292	0.0000	FLOOD RISK
15 minute summer	Outfall	1	86.900	0.000	2.0	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	1.0	1.000	1.3	106.4	2.454	0.616	24.6934	
15 minute summer	1.3	1.003	1.4	79.2	1.213	1.019	2.7550	
15 minute summer	2.0	2.000	1.4	66.6	1.162	0.925	14.1982	
15 minute summer	1.4	1.004	1.7	159.6	2.450	1.061	11.3817	
15 minute summer	3.0	3.000	1.7	48.9	1.341	0.451	2.1922	
15 minute summer	1.7	1.007	1.8	189.8	3.169	0.834	0.7119	
15 minute summer	1.8	1.008	1.9	190.2	2.161	0.509	7.9183	
15 minute summer	1.9	1.009	1.10	189.4	2.256	0.603	7.5540	
15 minute summer	1.10	1.010	1.11	189.2	2.514	0.401	2.6891	
600 minute winter	1.11	1.011	HW1	51.9	1.164	0.100	2.1699	
600 minute winter	HW1	Flow through Pond	HW2	34.3	0.022	0.018	296.7737	
600 minute winter	HW2	1.012	1.12/FC	11.0	0.235	0.031	1.3309	
600 minute winter	1.12/FC	Hydro-Brake®	Outfall	2.0				210.9

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 97.15%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1.0	11	107.697	0.197	144.5	1.3665	0.0000	OK
15 minute summer	1.3	14	96.630	0.530	144.3	1.9181	0.0000	FLOOD RISK
15 minute summer	2.0	12	97.282	0.382	92.4	1.7378	0.0000	FLOOD RISK
15 minute summer	1.4	14	96.380	0.480	226.8	12.4370	0.0000	FLOOD RISK
15 minute summer	3.0	10	93.414	0.164	62.2	0.5166	0.0000	OK
15 minute summer	1.7	12	93.157	0.357	221.0	0.9393	0.0000	FLOOD RISK
15 minute summer	1.8	11	92.383	0.233	196.9	0.1889	0.0000	OK
15 minute summer	1.9	13	91.220	0.270	196.5	0.4770	0.0000	OK
15 minute summer	1.10	13	90.313	0.213	196.7	0.3755	0.0000	OK
600 minute winter	1.11	615	89.967	0.617	41.3	1.0895	0.0000	SURCHARGED
600 minute winter	HW1	615	89.967	0.967	37.5	0.0000	0.0000	OK
600 minute winter	HW2	615	89.967	0.967	20.3	0.0000	0.0000	FLOOD RISK
600 minute winter	1.12/FC	615	89.967	1.067	11.2	0.8639	0.0000	FLOOD RISK
15 minute summer	Outfall	1	86.900	0.000	2.0	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	1.0	1.000	1.3	134.6	2.556	0.779	27.9823	
15 minute summer	1.3	1.003	1.4	79.9	1.142	1.028	2.8590	
15 minute summer	2.0	2.000	1.4	79.6	1.182	1.106	16.6260	
15 minute summer	1.4	1.004	1.7	160.9	2.540	1.070	11.9642	
15 minute summer	3.0	3.000	1.7	62.4	1.390	0.575	2.5384	
15 minute summer	1.7	1.007	1.8	196.9	3.171	0.864	0.7427	
15 minute summer	1.8	1.008	1.9	196.5	2.200	0.526	8.1582	
15 minute summer	1.9	1.009	1.10	196.7	2.274	0.626	7.7801	
15 minute summer	1.10	1.010	1.11	196.6	2.547	0.416	2.7789	
600 minute winter	1.11	1.011	HW1	37.5	1.217	0.072	2.1707	
600 minute winter	HW1	Flow through Pond	HW2	20.3	0.024	0.010	376.7395	
600 minute winter	HW2	1.012	1.12/FC	11.2	0.245	0.032	1.3309	
600 minute winter	1.12/FC	Hydro-Brake®	Outfall	2.1				227.2