



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	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	6.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	500.0		

Circular Default Sewer Type Link Type

Shape Circular | Barrels 1 | Auto Increment (mm) 75 | Follow Ground x

Available Diameters (mm)
100 | 150

CHANNEL Link Type

Shape Open User Defined | Auto Increment (mm) 150 | Velocity Manning
Barrels 1 | Follow Ground x | ks (mm) / n 0.045

Available Diameters (mm)
1000

Width / Total	Depth / Total	Width / Total	Depth / Total	Width / Total	Depth / Total	Width / Total	Depth / Total
0.000	1.000	1.000	0.000	2.000	0.000	3.000	1.000

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
86	0.192	6.00	68.750	1350	379153.182	407490.123	1.500
88	0.176	6.00	67.704	1350	379104.340	407451.329	1.504
90	0.080	6.00	66.580	1350	379065.484	407466.323	1.480
92	0.017	6.00	66.781	1350	379073.079	407441.683	1.881
94	0.045	6.00	66.624	1350	379077.173	407428.265	1.874
96	0.270	6.00	65.471	1350	379094.886	407386.657	3.871
98	0.106	6.00	66.320	1350	379155.271	407392.894	1.470
100	0.078	6.00	65.230	1500	379104.608	407368.864	3.768
102	0.046	6.00	64.350	1500	379068.147	407343.560	2.999
HW1	0.000		64.300	1	379074.997	407333.688	2.979
104	0.080	6.00	66.216	1350	379180.378	407375.525	1.441
106	0.059	6.00	66.049	1350	379186.779	407360.472	1.449
108	0.062	6.00	65.739	1350	379199.289	407344.180	1.439
110	0.145	6.00	65.017	1200	379208.129	407318.731	1.517
112	0.038	6.00	65.100	1350	379195.097	407327.105	1.850
114	0.091	6.00	65.150	1200	379159.803	407323.208	2.200
116	0.000		65.000	1350	379126.701	407299.181	2.350
118	0.171	6.00	65.200	1350	379109.098	407323.397	2.800
HW2	0.000		64.300	1	379097.244	407314.780	2.700
CC120	0.159	6.00	65.000	2400	379106.830	407288.229	3.800
OUTFALL	0.000		64.000	1	379109.385	407271.866	4.000

Links (Input)

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	86	88	62.374	0.600	67.250	66.200	1.050	59.4	300	6.51	44.9
1.001	88	92	32.716	0.600	66.200	64.975	1.225	26.7	300	6.69	43.9
2.000	90	92	25.783	0.600	65.100	64.975	0.125	206.3	300	6.39	46.1
1.002	92	94	14.029	0.600	64.900	64.750	0.150	93.5	375	6.81	43.5
1.003	94	96	45.221	0.600	64.750	61.600	3.150	14.4	375	6.97	43.0
1.004	96	100	20.276	0.600	61.600	61.537	0.063	321.8	375	7.31	42.0
3.000	98	100	56.074	0.600	64.850	61.687	3.163	17.7	225	6.30	44.5
1.006	100	102	44.381	0.600	61.462	61.351	0.111	399.8	450	8.04	41.3
1.007	102	HW1	12.016	0.600	61.351	61.321	0.030	400.5	450	8.24	41.0
1.008	HW1	CC120	15.000	0.045	61.321	61.200	0.121	124.0	500	8.54	40.1
4.000	104	106	16.357	0.600	64.775	64.600	0.175	93.5	225	6.20	46.4
4.001	106	108	20.541	0.600	64.600	64.300	0.300	68.5	225	6.42	45.7
4.002	108	112	17.583	0.600	64.300	63.325	0.975	18.0	225	6.51	45.2
5.000	110	112	15.491	0.600	63.500	63.250	0.250	62.0	300	6.13	46.1
4.003	112	114	35.508	0.600	63.250	63.025	0.225	157.8	300	6.99	44.1
4.004	114	116	40.903	0.600	62.950	62.650	0.300	136.3	375	7.43	42.9
4.005	116	118	29.938	0.600	62.650	62.400	0.250	119.8	375	7.73	42.1
4.006	118	HW2	14.655	0.600	62.400	61.600	0.800	18.3	375	7.79	41.8
4.007	HW2	CC120	10.000	0.045	61.600	61.200	0.400	25.0	500	7.88	41.1
1.009	CC120	OUTFALL	16.562	0.600	61.200	60.000	1.200	13.8	450	8.59	39.8

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	62.374	59.4	300	Circular_Default Sewer Type	68.750	67.250	1.200	67.704	66.200	1.204
1.001	32.716	26.7	300	Circular_Default Sewer Type	67.704	66.200	1.204	66.781	64.975	1.506
2.000	25.783	206.3	300	Circular_Default Sewer Type	66.580	65.100	1.180	66.781	64.975	1.506
1.002	14.029	93.5	375	Circular_Default Sewer Type	66.781	64.900	1.506	66.624	64.750	1.499
1.003	45.221	14.4	375	Circular_Default Sewer Type	66.624	64.750	1.499	65.471	61.600	3.496
1.004	20.276	321.8	375	Circular_Default Sewer Type	65.471	61.600	3.496	65.230	61.537	3.318
3.000	56.074	17.7	225	Circular_Default Sewer Type	66.320	64.850	1.245	65.230	61.687	3.318
1.006	44.381	399.8	450	Circular_Default Sewer Type	65.230	61.462	3.318	64.350	61.351	2.549
1.007	12.016	400.5	450	Circular_Default Sewer Type	64.350	61.351	2.549	64.300	61.321	2.529
1.008	15.000	124.0	500	CHANNEL	64.300	61.321	2.479	65.000	61.200	3.300
4.000	16.357	93.5	225	Circular_Default Sewer Type	66.216	64.775	1.216	66.049	64.600	1.224
4.001	20.541	68.5	225	Circular_Default Sewer Type	66.049	64.600	1.224	65.739	64.300	1.214
4.002	17.583	18.0	225	Circular_Default Sewer Type	65.739	64.300	1.214	65.100	63.325	1.550
5.000	15.491	62.0	300	Circular_Default Sewer Type	65.017	63.500	1.217	65.100	63.250	1.550
4.003	35.508	157.8	300	Circular_Default Sewer Type	65.100	63.250	1.550	65.150	63.025	1.825

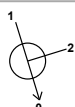
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	86	1350	Manhole	Adoptable	88	1350	Manhole	Adoptable
1.001	88	1350	Manhole	Adoptable	92	1350	Manhole	Adoptable
2.000	90	1350	Manhole	Adoptable	92	1350	Manhole	Adoptable
1.002	92	1350	Manhole	Adoptable	94	1350	Manhole	Adoptable
1.003	94	1350	Manhole	Adoptable	96	1350	Manhole	Adoptable
1.004	96	1350	Manhole	Adoptable	100	1500	Manhole	Adoptable
3.000	98	1350	Manhole	Adoptable	100	1500	Manhole	Adoptable
1.006	100	1500	Manhole	Adoptable	102	1500	Manhole	Adoptable
1.007	102	1500	Manhole	Adoptable	HW1	1	Manhole	Adoptable
1.008	HW1	1	Manhole	Adoptable	CC120	2400	Manhole	Adoptable
4.000	104	1350	Manhole	Adoptable	106	1350	Manhole	Adoptable
4.001	106	1350	Manhole	Adoptable	108	1350	Manhole	Adoptable
4.002	108	1350	Manhole	Adoptable	112	1350	Manhole	Adoptable
5.000	110	1200	Manhole	Adoptable	112	1350	Manhole	Adoptable
4.003	112	1350	Manhole	Adoptable	114	1200	Manhole	Adoptable

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)
4.004	40.903	136.3	375	Circular_Default Sewer Type	65.150	62.950	1.825	65.000	62.650	1.975
4.005	29.938	119.8	375	Circular_Default Sewer Type	65.000	62.650	1.975	65.200	62.400	2.425
4.006	14.655	18.3	375	Circular_Default Sewer Type	65.200	62.400	2.425	64.300	61.600	2.325
4.007	10.000	25.0	500	CHANNEL	64.300	61.600	2.200	65.000	61.200	3.300
1.009	16.562	13.8	450	Circular_Default Sewer Type	65.000	61.200	3.350	64.000	60.000	3.550

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.004	114	1200	Manhole	Adoptable	116	1350	Manhole	Adoptable
4.005	116	1350	Manhole	Adoptable	118	1350	Manhole	Adoptable
4.006	118	1350	Manhole	Adoptable	HW2	1	Manhole	Adoptable
4.007	HW2	1	Manhole	Adoptable	CC120	2400	Manhole	Adoptable
1.009	CC120	2400	Manhole	Adoptable	OUTFALL	1	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
86	379153.182	407490.123	68.750	1.500	1350		0	1.000	67.250	300
88	379104.340	407451.329	67.704	1.504	1350		1	1.000	66.200	300
							0	1.001	66.200	300
90	379065.484	407466.323	66.580	1.480	1350		0	2.000	65.100	300
92	379073.079	407441.683	66.781	1.881	1350		1	2.000	64.975	300
							2	1.001	64.975	300
							0	1.002	64.900	375
94	379077.173	407428.265	66.624	1.874	1350		1	1.002	64.750	375
							0	1.003	64.750	375
96	379094.886	407386.657	65.471	3.871	1350		1	1.003	61.600	375
							0	1.004	61.600	375
98	379155.271	407392.894	66.320	1.470	1350		0	3.000	64.850	225
100	379104.608	407368.864	65.230	3.768	1500		1	3.000	61.687	225
							2	1.004	61.537	375
							0	1.006	61.462	450
102	379068.147	407343.560	64.350	2.999	1500		1	1.006	61.351	450
							0	1.007	61.351	450
HW1	379074.997	407333.688	64.300	2.979	1		1	1.007	61.321	450
							0	1.008	61.321	500

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
104	379180.378	407375.525	66.216	1.441	1350				
						0	4.000	64.775	225
106	379186.779	407360.472	66.049	1.449	1350		1	4.000	64.600
						0	4.001	64.600	225
108	379199.289	407344.180	65.739	1.439	1350		1	4.001	64.300
						0	4.002	64.300	225
110	379208.129	407318.731	65.017	1.517	1200				
						0	5.000	63.500	300
112	379195.097	407327.105	65.100	1.850	1350		1	5.000	63.250
						2	4.002	63.325	225
						0	4.003	63.250	300
114	379159.803	407323.208	65.150	2.200	1200		1	4.003	63.025
						0	4.004	62.950	375
116	379126.701	407299.181	65.000	2.350	1350		1	4.004	62.650
						0	4.005	62.650	375
118	379109.098	407323.397	65.200	2.800	1350		1	4.005	62.400
						0	4.006	62.400	375
HW2	379097.244	407314.780	64.300	2.700	1		1	4.006	61.600
						0	4.007	61.600	500
CC120	379106.830	407288.229	65.000	3.800	2400		1	4.007	61.200
						2	1.008	61.200	500
						0	1.009	61.200	450
OUTFALL	379109.385	407271.866	64.000	4.000	1		1	1.009	60.000
									450

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Additional Storage (m³/ha)	20.0
Summer CV	1.000	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x

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 %)
100	45	0	0

Node CC120 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	61.200	Product Number	CTL-SHE-0178-2040-2500-2040
Design Depth (m)	2.500	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	20.4	Min Node Diameter (mm)	1800

Node CC120 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)			0.00000			Safety Factor			2.0			Invert Level (m)			61.300		
Side Inf Coefficient (m/hr)			0.00000			Porosity			0.80			Time to half empty (mins)			152		
Depth		Area	Inf Area	Depth		Area	Inf Area	Depth		Area	Inf Area	Depth		Area	Inf Area		
(m)		(m²)	(m²)	(m)		(m²)	(m²)	(m)		(m²)	(m²)	(m)		(m²)	(m²)		
0.000		170.0	0.0	3.000		1350.0	0.0	3.001		0.0	0.0	3.001		0.0	0.0		

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.39%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	86	20	68.393	1.143	129.0	4.5612	0.0000	SURCHARGED
15 minute summer	88	12	67.704	1.504	236.1	5.6731	2.7579	FLOOD
30 minute summer	90	19	66.580	1.480	53.7	3.7178	2.9812	FLOOD
15 minute summer	92	12	66.587	1.687	239.0	2.7197	0.0000	FLOOD RISK
15 minute summer	94	12	66.322	1.572	265.3	3.0063	0.0000	SURCHARGED
30 minute summer	96	19	65.471	3.871	414.3	10.9395	2.8883	FLOOD
30 minute summer	98	20	65.275	0.425	71.2	1.2218	0.0000	SURCHARGED
30 minute summer	100	20	64.422	2.960	498.2	6.4547	0.0000	SURCHARGED
360 minute winter	102	352	63.494	2.143	100.1	4.4449	0.0000	SURCHARGED
360 minute winter	HW1	352	63.494	2.173	99.5	0.0000	0.0000	SURCHARGED
30 minute summer	104	19	66.216	1.441	53.7	3.6630	0.4005	FLOOD
30 minute summer	106	19	66.049	1.449	83.7	3.2545	3.2569	FLOOD
30 minute summer	108	19	65.739	1.439	97.1	3.2996	0.1447	FLOOD
30 minute summer	110	18	65.017	1.517	97.4	4.6162	7.7900	FLOOD
30 minute summer	112	19	64.983	1.733	175.9	3.1928	0.0000	FLOOD RISK
30 minute summer	114	20	64.053	1.103	234.1	2.1587	0.0000	SURCHARGED
60 minute summer	116	37	63.541	0.891	203.8	1.2751	0.0000	SURCHARGED
360 minute winter	118	352	63.494	1.094	66.0	2.9027	0.0000	SURCHARGED
360 minute winter	HW2	352	63.494	1.894	63.6	0.0000	0.0000	SURCHARGED
360 minute winter	CC120	352	63.494	2.294	173.9	1067.9900	0.0000	SURCHARGED
15 minute summer	OUTFALL	1	60.000	0.000	20.4	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)
30 minute summer	86	1.000	88	118.6	1.923	0.821	4.3923	
15 minute summer	88	1.001	92	193.4	2.811	0.896	2.3038	
30 minute summer	90	2.000	92	41.6	0.957	0.539	1.8156	
15 minute summer	92	1.002	94	237.2	2.525	1.146	1.5474	
15 minute summer	94	1.003	96	262.0	2.415	0.494	4.9877	
30 minute summer	96	1.004	100	387.1	3.510	3.490	2.2364	
30 minute summer	98	3.000	100	66.7	1.932	0.537	2.2301	
30 minute summer	100	1.006	102	492.6	3.109	3.066	7.0319	
360 minute winter	102	1.007	HW1	99.5	0.707	0.620	1.9039	
360 minute winter	HW1	1.008	CC120	96.3	0.208	0.236	7.5008	
30 minute summer	104	4.000	106	45.8	1.152	0.852	0.6505	
30 minute summer	106	4.001	108	62.6	1.770	0.996	0.8169	
30 minute summer	108	4.002	112	94.6	2.380	0.769	0.6993	
30 minute summer	110	5.000	112	72.1	1.023	0.510	1.0909	
30 minute summer	112	4.003	114	173.1	2.458	1.960	2.5004	
30 minute summer	114	4.004	116	226.1	2.050	1.321	4.5115	
60 minute summer	116	4.005	118	202.0	1.949	1.106	3.3021	
360 minute winter	118	4.006	HW2	63.6	1.859	0.135	1.6164	
360 minute winter	HW2	4.007	CC120	61.3	0.174	0.068	5.0006	
360 minute winter	CC120	Hydro-Brake®	OUTFALL	20.4				1588.9