

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	0.75
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	1.500
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)	110.0		

1 2107940-SWS-NT1 Manhole Type

Max Width (mm)	Diameter (mm)	Max Width (mm)	Diameter (mm)
374	1200	749	1500
499	1350	900	1800

>900 Link+900 mm

Max Depth (m)	Diameter (mm)	Max Depth (m)	Diameter (mm)
1.500	1050	99.999	1350

1 2107940-SWS-NT1 Link Type

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

Available Diameters (mm)

100 | 150

Nodes

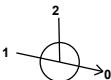
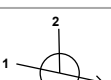
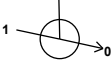
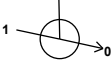
Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
60	0.028	5.00	12.734	1200	500688.281	106271.512	1.240
61	0.048	5.00	11.825	1200	500693.661	106253.121	1.375
62			11.405	1200	500690.380	106238.123	1.455
63	0.038	5.00	11.689	1200	500679.601	106224.999	1.813
64	0.048	5.00	11.646	1200	500677.783	106215.648	1.824
65	0.030	5.00	19.044	1200	500600.320	106293.236	1.444
66	0.060	5.00	17.038	1200	500629.328	106285.475	1.428
67			16.081	1200	500638.545	106273.003	1.481
68	0.060	5.00	15.910	1200	500642.753	106266.056	1.590
69	0.030	5.00	15.392	1200	500648.036	106234.886	1.752
73	0.060	5.00	10.336	1200	500737.014	106268.933	1.416
71	0.048	5.00	13.236	1350	500643.760	106184.203	1.786
72	0.070	5.00	10.835	1350	500678.598	106176.809	1.555
74	0.030	5.00	9.286	1200	500751.600	106212.780	1.300
75	0.103	5.00	7.770	1200	500743.335	106166.957	1.534
76	0.051	5.00	8.050	1500	500738.052	106163.807	2.220
Headwall 77			7.000	1500	500733.995	106157.003	1.325
Headwall 78			6.950	1500	500717.478	106124.705	1.300
10			7.000	1200	500720.069	106080.512	1.850
New SHMH			15.770		500647.072	106249.363	1.782

Pipeline Schedule

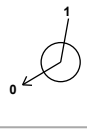
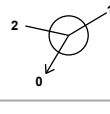
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	19.162	18.4	225	1 2107940-SWS-NT1	12.734	11.494	1.015	11.825	10.450	1.150
1.001	15.352	30.8	225	1 2107940-SWS-NT1	11.825	10.450	1.150	11.405	9.951	1.229
1.002	16.983	229.5	300	1 2107940-SWS-NT1	11.405	9.950	1.155	11.689	9.876	1.513
1.003	9.625	178.2	300	1 2107940-SWS-NT1	11.689	9.876	1.513	11.646	9.822	1.524
1.004	38.747	71.5	300	1 2107940-SWS-NT1	11.646	9.822	1.524	10.835	9.280	1.255
2.000	37.919	19.1	225	1 2107940-SWS-NT1	19.044	17.600	1.219	17.038	15.610	1.203
2.001	15.415	15.3	225	1 2107940-SWS-NT1	17.038	15.610	1.203	16.081	14.600	1.256
2.002	11.160	39.9	225	1 2107940-SWS-NT1	16.081	14.600	1.256	15.910	14.320	1.365
2.003	17.243	51.9	225	1 2107940-SWS-NT1	15.910	14.320	1.365	15.770	13.988	1.557
2.005	50.863	23.2	225	1 2107940-SWS-NT1	15.392	13.640	1.527	13.236	11.450	1.561
3.000	58.016	62.1	150	1 2107940-SWS-NT1	10.336	8.920	1.266	9.286	7.986	1.150
2.007	35.614	17.0	225	1 2107940-SWS-NT1	13.236	11.450	1.561	10.835	9.355	1.255
1.005	60.859	18.9	300	1 2107940-SWS-NT1	10.835	9.280	1.255	8.050	6.055	1.695
3.001	46.562	27.8	150	1 2107940-SWS-NT1	9.286	7.986	1.150	7.770	6.311	1.309
3.002	6.151	58.0	225	1 2107940-SWS-NT1	7.770	6.236	1.309	8.050	6.130	1.695
1.006	7.922	51.1	525	1 2107940-SWS-NT1	8.050	5.830	1.695	7.000	5.675	0.800
1.007	36.276	1451.0	525	1 2107940-SWS-NT1	7.000	5.675	0.800	6.950	5.650	0.775
1.008	44.270	88.5	600	1 2107940-SWS-NT1	6.950	5.650	0.700	7.000	5.150	1.250
2.004	14.509	41.7	225	1 2107940-SWS-NT1	15.770	13.988	1.557	15.392	13.640	1.527

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	60	1200	Manhole	1 2107940-SWS-NT1	61	1200	Manhole	1 2107940-SWS-NT1
1.001	61	1200	Manhole	1 2107940-SWS-NT1	62	1200	Manhole	1 2107940-SWS-NT1
1.002	62	1200	Manhole	1 2107940-SWS-NT1	63	1200	Manhole	1 2107940-SWS-NT1
1.003	63	1200	Manhole	1 2107940-SWS-NT1	64	1200	Manhole	1 2107940-SWS-NT1
1.004	64	1200	Manhole	1 2107940-SWS-NT1	72	1350	Manhole	1 2107940-SWS-NT1
2.000	65	1200	Manhole	1 2107940-SWS-NT1	66	1200	Manhole	1 2107940-SWS-NT1
2.001	66	1200	Manhole	1 2107940-SWS-NT1	67	1200	Manhole	1 2107940-SWS-NT1
2.002	67	1200	Manhole	1 2107940-SWS-NT1	68	1200	Manhole	1 2107940-SWS-NT1
2.003	68	1200	Manhole	1 2107940-SWS-NT1	New SHMH		Manhole	1 2107940-SWS-NT1
2.005	69	1200	Manhole	1 2107940-SWS-NT1	71	1350	Manhole	1 2107940-SWS-NT1
3.000	73	1200	Manhole	1 2107940-SWS-NT1	74	1200	Manhole	1 2107940-SWS-NT1
2.007	71	1350	Manhole	1 2107940-SWS-NT1	72	1350	Manhole	1 2107940-SWS-NT1
1.005	72	1350	Manhole	1 2107940-SWS-NT1	76	1500	Manhole	1 2107940-SWS-NT1
3.001	74	1200	Manhole	1 2107940-SWS-NT1	75	1200	Manhole	1 2107940-SWS-NT1
3.002	75	1200	Manhole	1 2107940-SWS-NT1	76	1500	Manhole	1 2107940-SWS-NT1
1.006	76	1500	Manhole	1 2107940-SWS-NT1	Headwall 77	1500	Manhole	1 2107940-SWS-NT1
1.007	Headwall 77	1500	Manhole	1 2107940-SWS-NT1	Headwall 78	1500	Manhole	1 2107940-SWS-NT1
1.008	Headwall 78	1500	Manhole	1 2107940-SWS-NT1	10	1200	Manhole	1 2107940-SWS-NT1
2.004	New SHMH		Manhole	1 2107940-SWS-NT1	69	1200	Manhole	1 2107940-SWS-NT1

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
60	500688.281	106271.512	12.734	1.240	1200		0	1.000	11.494	225
61	500693.661	106253.121	11.825	1.375	1200		1	1.000	10.450	225
62	500690.380	106238.123	11.405	1.455	1200		0	1.001	10.450	225
63	500679.601	106224.999	11.689	1.813	1200		1	1.002	9.876	300
64	500677.783	106215.648	11.646	1.824	1200		0	1.003	9.876	300
65	500600.320	106293.236	19.044	1.444	1200		0	2.000	17.600	225
66	500629.328	106285.475	17.038	1.428	1200		1	2.000	15.610	225
67	500638.545	106273.003	16.081	1.481	1200		0	2.001	15.610	225
68	500642.753	106266.056	15.910	1.590	1200		1	2.001	14.600	225
69	500648.036	106234.886	15.392	1.752	1200		0	2.002	14.600	225
70	500648.036	106234.886	15.392	1.752	1200		1	2.002	14.320	225
71	500643.760	106184.203	13.236	1.786	1350		0	2.003	14.320	225
72	500678.598	106176.809	10.835	1.555	1350		1	2.004	13.640	225
73	500737.014	106268.933	10.336	1.416	1200		0	2.005	13.640	225
74	500643.760	106184.203	13.236	1.786	1350		0	2.007	11.450	225
75	500678.598	106176.809	10.835	1.555	1350		1	2.007	9.355	225
76	500678.598	106176.809	10.835	1.555	1350		2	1.004	9.280	300
77	500678.598	106176.809	10.835	1.555	1350		0	1.005	9.280	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
74	500751.600	106212.780	9.286	1.300	1200		1	3.000	7.986	150
							0	3.001	7.986	150
75	500743.335	106166.957	7.770	1.534	1200		1	3.001	6.311	150
							0	3.002	6.236	225
76	500738.052	106163.807	8.050	2.220	1500		1	3.002	6.130	225
							2	1.005	6.055	300
							0	1.006	5.830	525
Headwall 77	500733.995	106157.003	7.000	1.325	1500		1	1.006	5.675	525
							0	1.007	5.675	525
Headwall 78	500717.478	106124.705	6.950	1.300	1500		1	1.007	5.650	525
							0	1.008	5.650	600
10	500720.069	106080.512	7.000	1.850	1200		1	1.008	5.150	600
New SHMH	500647.072	106249.363	15.770	1.782			1	2.003	13.988	225
							0	2.004	13.988	225

Node Headwall 78 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	5.650	Product Number	CTL-SHE-0044-1000-1300-1000
Design Depth (m)	1.300	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node Headwall 78 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	5.650
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	534.0	0.0	1.300	928.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	60	10	11.526	0.032	5.3	0.0503	0.0000	OK
15 minute summer	61	10	10.509	0.059	14.2	0.1074	0.0000	OK
15 minute summer	62	10	10.043	0.093	14.1	0.1048	0.0000	OK
15 minute summer	63	10	9.985	0.109	21.1	0.1694	0.0000	OK
15 minute summer	64	11	9.918	0.096	29.7	0.1594	0.0000	OK
15 minute summer	65	10	17.633	0.033	5.6	0.0509	0.0000	OK
15 minute summer	66	10	15.664	0.054	16.8	0.1056	0.0000	OK
15 minute summer	67	10	14.669	0.069	16.7	0.0785	0.0000	OK
15 minute summer	68	10	14.423	0.103	27.9	0.1935	0.0000	OK
15 minute summer	69	11	13.726	0.086	33.1	0.1261	0.0000	OK
15 minute summer	73	10	8.996	0.076	11.3	0.1497	0.0000	OK
15 minute summer	71	11	11.542	0.092	41.9	0.1807	0.0000	OK
15 minute summer	72	11	9.398	0.118	84.5	0.2740	0.0000	OK
15 minute summer	74	11	8.060	0.074	16.7	0.1179	0.0000	OK
15 minute summer	75	10	6.473	0.237	35.6	0.5874	0.0000	SURCHARGED
15 minute summer	76	10	6.436	0.606	144.2	1.3503	0.0000	SURCHARGED
15 minute summer	Headwall 77	10	6.422	0.747	178.0	1.3192	0.0000	SURCHARGED
1440 minute summer	Headwall 78	1440	6.023	0.373	11.5	221.2202	0.0000	OK
120 minute summer	10	106	5.161	0.011	0.7	0.0000	0.0000	OK
15 minute summer	New SHMH	11	14.086	0.098	27.7	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	60	1.000	61	5.3	0.925	0.043	0.1115	
15 minute summer	61	1.001	62	14.1	1.216	0.150	0.1797	
15 minute summer	62	1.002	63	14.0	0.673	0.191	0.3538	
15 minute summer	63	1.003	64	21.0	0.985	0.253	0.2053	
15 minute summer	64	1.004	72	29.8	1.327	0.227	0.8727	
15 minute summer	65	2.000	66	5.6	1.043	0.046	0.2050	
15 minute summer	66	2.001	67	16.7	1.904	0.125	0.1357	
15 minute summer	67	2.002	68	16.6	1.196	0.201	0.1563	
15 minute summer	68	2.003	New SHMH	27.7	1.620	0.382	0.2944	
15 minute summer	69	2.005	71	33.3	2.293	0.307	0.7392	
15 minute summer	73	3.000	74	11.1	1.273	0.491	0.5058	
15 minute summer	71	2.007	72	42.1	2.827	0.332	0.5299	
15 minute summer	72	1.005	76	84.6	3.187	0.329	2.9010	
15 minute summer	74	3.001	75	16.6	1.853	0.489	0.6086	
15 minute summer	75	3.002	76	50.3	1.536	0.736	0.2446	
15 minute summer	76	1.006	Headwall 77	178.0	1.180	0.262	1.7114	
15 minute summer	Headwall 77	1.007	Headwall 78	210.4	2.297	1.679	4.0168	
1440 minute summer	Headwall 78	1.008	10	0.7	0.503	0.001	0.0643	51.8
15 minute summer	New SHMH	2.004	69	27.7	1.822	0.343	0.2206	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	60	10	11.544	0.050	13.5	0.0796	0.0000	OK
15 minute summer	61	10	10.547	0.097	36.5	0.1773	0.0000	OK
15 minute summer	62	10	10.118	0.168	36.3	0.1899	0.0000	OK
15 minute summer	63	10	10.069	0.193	54.1	0.2984	0.0000	OK
15 minute summer	64	10	9.990	0.168	76.6	0.2791	0.0000	OK
15 minute summer	65	10	17.652	0.052	14.4	0.0810	0.0000	OK
15 minute summer	66	10	15.697	0.087	43.2	0.1720	0.0000	OK
15 minute summer	67	10	14.731	0.131	42.9	0.1478	0.0000	OK
15 minute summer	68	11	14.577	0.257	71.4	0.4848	0.0000	SURCHARGED
15 minute summer	69	10	13.790	0.150	83.8	0.2209	0.0000	OK
15 minute summer	73	12	9.618	0.698	28.9	1.3805	0.0000	SURCHARGED
15 minute summer	71	11	11.617	0.167	106.3	0.3291	0.0000	OK
30 minute summer	72	18	9.488	0.208	201.0	0.4841	0.0000	OK
15 minute summer	74	12	8.574	0.588	35.5	0.9373	0.0000	SURCHARGED
15 minute summer	75	9	6.973	0.737	80.5	1.8236	0.0000	SURCHARGED
15 minute winter	76	8	6.773	0.943	304.1	2.1005	0.0000	SURCHARGED
15 minute winter	Headwall 77	8	6.738	1.063	323.5	1.8782	0.0000	FLOOD RISK
1440 minute winter	Headwall 78	1440	6.332	0.682	15.8	436.1654	0.0000	SURCHARGED
1440 minute winter	10	1440	5.161	0.011	0.7	0.0000	0.0000	OK
15 minute summer	New SHMH	11	14.176	0.188	70.1	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	60	1.000	61	13.4	1.192	0.110	0.2199	
15 minute summer	61	1.001	62	36.3	1.500	0.385	0.3680	
15 minute summer	62	1.002	63	35.8	0.815	0.490	0.7500	
15 minute summer	63	1.003	64	53.8	1.222	0.648	0.4258	
15 minute summer	64	1.004	72	76.5	1.651	0.581	1.7921	
15 minute summer	65	2.000	66	14.3	1.366	0.119	0.4021	
15 minute summer	66	2.001	67	42.9	2.345	0.321	0.2937	
15 minute summer	67	2.002	68	42.5	1.333	0.514	0.3514	
15 minute summer	68	2.003	New SHMH	70.1	1.892	0.969	0.6481	
15 minute summer	69	2.005	71	83.2	2.798	0.768	1.5114	
15 minute summer	73	3.000	74	22.5	1.424	0.995	1.0214	
15 minute summer	71	2.007	72	105.7	3.466	0.833	1.0852	
30 minute summer	72	1.005	76	198.6	3.954	0.773	3.0635	
15 minute summer	74	3.001	75	34.6	2.142	1.023	0.8197	
15 minute summer	75	3.002	76	87.9	2.210	1.285	0.2446	
15 minute winter	76	1.006	Headwall 77	323.5	1.607	0.476	1.7114	
15 minute winter	Headwall 77	1.007	Headwall 78	347.6	2.442	2.773	4.5544	
1440 minute winter	Headwall 78	1.008	10	0.7	0.504	0.001	0.0671	59.8
15 minute summer	New SHMH	2.004	69	69.6	2.212	0.862	0.4596	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	60	10	11.561	0.067	23.7	0.1058	0.0000	OK
15 minute summer	61	12	11.350	0.900	64.2	1.6458	0.0000	SURCHARGED
15 minute summer	62	12	11.177	1.227	58.6	1.3877	0.0000	FLOOD RISK
15 minute summer	63	12	11.132	1.256	85.1	1.9474	0.0000	SURCHARGED
15 minute summer	64	12	11.065	1.243	115.4	2.0600	0.0000	SURCHARGED
15 minute summer	65	10	17.670	0.070	25.4	0.1081	0.0000	OK
15 minute summer	66	12	16.315	0.705	75.9	1.3888	0.0000	SURCHARGED
15 minute summer	67	12	16.081	1.481	65.3	1.6750	0.0704	FLOOD
15 minute summer	68	12	15.910	1.590	105.1	2.9987	0.8372	FLOOD
15 minute summer	69	12	14.968	1.328	107.2	1.9561	0.0000	SURCHARGED
30 minute summer	73	18	10.336	1.416	46.7	2.8008	4.7005	FLOOD
15 minute summer	71	12	13.041	1.591	141.1	3.1336	0.0000	FLOOD RISK
15 minute summer	72	12	10.674	1.394	273.1	3.2513	0.0000	FLOOD RISK
15 minute summer	74	10	9.286	1.300	48.0	2.0709	1.8234	FLOOD
15 minute winter	75	8	7.350	1.114	117.2	2.7548	0.0000	SURCHARGED
15 minute winter	76	8	7.030	1.200	414.2	2.6714	0.0000	SURCHARGED
15 minute winter	Headwall 77	7	6.969	1.294	415.8	2.2870	0.0000	FLOOD RISK
1440 minute winter	Headwall 78	1440	6.779	1.129	25.9	798.3139	0.0000	FLOOD RISK
1440 minute winter	10	1440	5.164	0.014	0.9	0.0000	0.0000	OK
15 minute summer	New SHMH	12	15.401	1.413	90.3	0.0000	0.0000	SURCHARGED
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	60	1.000	61	23.6	1.265	0.194	0.4756	
15 minute summer	61	1.001	62	58.6	1.612	0.623	0.6106	
15 minute summer	62	1.002	63	54.6	0.814	0.747	1.1959	
15 minute summer	63	1.003	64	76.8	1.185	0.925	0.6778	
15 minute summer	64	1.004	72	103.6	1.621	0.788	2.7285	
15 minute summer	65	2.000	66	25.2	1.458	0.211	0.9473	
15 minute summer	66	2.001	67	65.3	2.346	0.488	0.6131	
15 minute summer	67	2.002	68	55.1	1.385	0.667	0.4438	
15 minute summer	68	2.003	New SHMH	90.3	2.270	1.248	0.6858	
15 minute summer	69	2.005	71	103.1	2.797	0.951	2.0229	
30 minute summer	73	3.000	74	24.8	1.443	1.099	1.0214	
15 minute summer	71	2.007	72	125.4	3.418	0.989	1.4164	
15 minute summer	72	1.005	76	270.3	3.840	1.052	4.2856	
15 minute summer	74	3.001	75	38.7	2.198	1.142	0.8197	
15 minute winter	75	3.002	76	119.9	3.015	1.753	0.2446	
15 minute winter	76	1.006	Headwall 77	415.8	1.925	0.612	1.7114	
15 minute winter	Headwall 77	1.007	Headwall 78	422.5	2.903	3.371	6.7410	
1440 minute winter	Headwall 78	1.008	10	0.9	0.503	0.001	0.0828	73.3
15 minute summer	New SHMH	2.004	69	84.9	2.136	1.051	0.5770	