Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	19.000	Minimum Backdrop Height (m)	1.000
Ratio-R	0.350	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
101	0.089	5.00	144.598	1200	418393.472	418011.278	1.448
102	0.089	5.00	140.468	1200	418358.419	418047.752	1.425
103	0.089	5.00	139.728	1200	418345.815	418036.497	1.425
104	0.089	5.00	138.846	1200	418339.849	418024.849	1.425
105	0.099	5.00	136.097	1350	418347.293	417964.653	1.500
106	0.089	5.00	137.350	1350	418337.344	418006.989	3.006
107	0.089	5.00	136.741	1350	418319.888	418005.049	2.485
108	0.089	5.00	135.885	1350	418304.290	418010.626	1.712
109			134.586	1350	418292.976	418023.314	1.575
110	0.089	5.00	132.142	1350	418277.863	418050.145	1.595
111	0.099	5.00	130.036	1350	418259.276	418068.247	1.615
112	0.089	5.00	127.981	1350	418230.182	418039.800	1.650
113	0.089	5.00	127.083	1350	418226.788	418026.385	2.083
114	0.089	5.00	126.143	1500	418229.455	418012.323	2.176
115	0.089	5.00	126.188	1500	418249.416	417979.835	2.412
116	0.089	5.00	127.141	1500	418274.146	417961.409	3.519
117	0.020	5.00	127.197	1500	418282.874	417947.185	3.658
118	0.089	5.00	126.547	1500	418282.631	417929.648	3.096
119	0.089	5.00	125.340	1500	418272.961	417910.038	1.998
120	0.089	5.00	123.767	1500	418269.749	417882.944	1.800
121	0.089	5.00	123.187	1500	418254.697	417877.770	3.687
122	0.089	5.00	122.114	1500	418240.209	417867.046	3.788
123	0.000		119.636	1500	418263.232	417835.771	2.561
124	0.000	5.00	118.667	1200	418283.514	417801.607	1.767
125	0.000	5.00	118.128	1200	418277.719	417796.470	1.328
126	0.000	5.00	117.624	1200	418239.130	417817.148	1.999
127	0.000	5.00	116.193	1200	418196.589	417840.196	1.442
128			114.874	1200	418176.358	417828.547	1.425
129	0.000		113.250	1200	418154.332	417839.983	2.050
130			108.250	1200	418116.857	417816.262	1.550
131			106.500	1200	418094.583	417823.608	2.145
132			100.500	1350	418064.602	417779.153	1.385
25	0.037	5.00	100.600	1800	418057.906	417782.304	1.904
24			101.200	2100	418039.357	417791.032	2.604
1	0.026	5.00	110.379	1200	418014.945	417907.623	1.414
2	0.063	5.00	109.628	1200	417991.515	417890.247	1.725
3	0.082	5.00	108.760	1200	417998.554	417878.601	1.725
4	0.045	5.00	105.538	1200	418013.496	417839.036	1.875
5	0.114	5.00	104.279	1350	418022.580	417827.379	1.880
6	0.045	5.00	103.779	1350	418025.245	417821.450	1.875
7	0.044	5.00	103.235	1350	418027.054	417815.154	1.735

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
8			103.250	1350	418035.579	417817.179	2.250
9	0.040	5.00	107.928	1200	418061.509	417867.468	1.560
10	0.039	5.00	107.174	1200	418075.863	417848.113	1.889
12			106.200	1200	418055.437	417832.605	4.400
13	0.037	5.00	104.905	1200	418050.140	417827.760	4.805
14			103.078	1200	418037.931	417813.943	3.078
15			102.601	1500	418033.844	417810.999	2.651
21			102.159	2100	418029.628	417802.626	3.160
22			101.481	2100	418034.679	417794.507	3.440
23			99.626	2100	418014.247	417778.802	2.250

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	29.170	0.600	108.965	107.903	1.062	27.5	225	5.19	50.0
1.001	2	3	13.608	0.600	107.903	107.035	0.868	15.7	225	5.26	50.0
1.002	3	4	42.292	0.600	107.035	103.813	3.222	13.1	225	5.46	50.0
1.003	4	5	14.779	0.600	103.663	102.399	1.264	11.7	375	5.50	50.0
1.004	5	6	6.500	0.600	102.399	101.904	0.495	13.1	375	5.52	50.0
1.005	6	7	6.551	0.600	101.904	101.500	0.404	16.2	375	5.55	50.0
1.006	7	8	7.680	0.600	101.500	101.000	0.500	15.4	375	5.58	50.0
1.007	8	14	4.000	0.600	101.000	100.900	0.100	40.0	375	5.64	50.0
3.000	9	10	24.097	0.600	106.368	105.360	1.008	23.9	225	5.15	50.0
2.001	10	12	25.646	0.600	105.285	104.700	0.585	43.8	300	5.33	50.0
3.003	12	13	6.172	0.600	101.800	101.400	0.400	15.4	300	5.35	50.0
3.004	13	14	20.000	0.600	100.100	100.000	0.100	200.0	1800	5.43	50.0
1.008	14	15	4.037	0.600	100.000	99.950	0.050	80.7	375	5.68	50.0
1.009	15	21	9.375	0.600	99.950	99.524	0.426	22.0	225	5.73	50.0
1.010	21	22	9.562	0.600	98.999	98.041	0.958	10.0	750	5.75	50.0
4.000	101	102	50.587	0.600	143.150	139.043	4.107	12.3	225	5.22	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)
1.000	2.506	99.6	3.5	1.189	1.500	0.026	0.0	29	1.183
1.001	3.321	132.0	12.1	1.500	1.500	0.089	0.0	45	2.076
1.002	3.631	144.4	23.2	1.500	1.500	0.171	0.0	61	2.692
1.003	5.323	587.9	29.3	1.500	1.505	0.216	0.0	56	2.817
1.004	5.022	554.7	44.7	1.505	1.500	0.330	0.0	71	3.067
1.005	4.518	499.0	50.8	1.500	1.360	0.375	0.0	80	2.949
1.006	4.642	512.7	56.8	1.360	1.875	0.419	0.0	83	3.092
1.007	2.872	317.2	56.8	1.875	1.803	0.419	0.0	107	2.192
3.000	2.687	106.8	5.4	1.335	1.589	0.040	0.0	34	1.410
2.001	2.381	168.3	10.7	1.589	1.200	0.079	0.0	51	1.347
3.003	4.022	284.3	10.7	4.100	3.205	0.079	0.0	40	1.962
3.004	4.366	44794.4	15.7	3.005	1.278	0.116	0.0	10	0.289
1.008	2.018	222.8	72.5	2.703	2.276	0.535	0.0	147	1.811
1.009	2.801	111.4	72.5	2.426	2.410	0.535	0.0	132	2.975
1.010	8.885	3925.4	72.5	2.410	2.690	0.535	0.0	69	3.564
4.000	3.748	149.0	12.1	1.223	1.200	0.089	0.0	43	2.263

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)
4.001	102	103	16.898	0.600	139.043	138.303	0.740	22.8	225	5.33	50.0
4.002	103	104	13.087	0.600	138.303	137.421	0.882	14.8	225	5.39	50.0
4.003	104	106	18.035	0.600	137.421	135.925	1.496	12.1	225	5.47	50.0
5.000	105	106	43.489	0.600	134.597	134.419	0.178	244.3	300	5.72	50.0
4.004	106	107	17.563	0.600	134.344	134.256	0.088	199.6	375	5.95	50.0
4.005	107	108	16.565	0.600	134.256	134.173	0.083	199.6	375	6.17	50.0
4.006	108	109	17.000	0.600	134.173	133.011	1.162	14.6	375	6.23	50.0
4.007	109	110	30.795	0.600	133.011	130.547	2.464	12.5	375	6.33	50.0
4.008	110	111	25.945	0.600	130.547	128.421	2.126	12.2	375	6.41	50.0
4.009	111	112	40.690	0.600	128.421	126.406	2.015	20.2	375	6.58	50.0
4.010	112	113	13.838	0.600	126.331	125.000	1.331	10.4	450	6.62	50.0
4.011	113	114	14.313	0.600	125.000	124.117	0.883	16.2	450	6.66	50.0
4.012	114	115	38.130	0.600	123.967	123.776	0.191	199.6	600	7.03	50.0
4.013	115	116	30.840	0.600	123.776	123.622	0.154	200.3	600	7.33	50.0
4.014	116	117	16.688	0.600	123.622	123.539	0.083	201.1	600	7.49	50.0
4.015	117	118	17.539	0.600	123.539	123.451	0.088	199.3	600	7.66	50.0
4.016	118	119	21.865	0.600	123.451	123.342	0.109	200.6	600	7.88	50.0
4.017	119	120	27.284	0.600	123.342	121.967	1.375	19.8	600	7.96	50.0
4.018	120	121	15.916	0.600	121.967	121.387	0.580	27.4	600	8.02	50.0
4.019	121	122	18.025	0.600	119.500	118.326	1.174	15.4	600	8.06	50.0
4.020	122	123	38.835	0.600	118.326	117.836	0.490	79.3	600	8.30	50.0
4.021	124	125	7.744	0.600	116.900	116.800	0.100	77.4	300	5.07	50.0
4.022	125	126	43.780	0.600	116.800	115.625	1.175	37.3	150	5.51	50.0
4.023	126	127	48.383	0.600	115.625	114.751	0.874	55.4	150	6.11	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)
4.001	2.749	109.3	24.1	1.200	1.200	0.178	0.0	72	2.220
4.002	3.414	135.7	36.2	1.200	1.200	0.267	0.0	79	2.893
4.003	3.789	150.7	48.2	1.200	1.200	0.356	0.0	87	3.384
5.000	1.001	70.8	13.4	1.200	2.631	0.099	0.0	88	0.775
4.004	1.279	141.2	73.7	2.631	2.110	0.544	0.0	192	1.292
4.005	1.279	141.2	85.8	2.110	1.337	0.633	0.0	211	1.338
4.006	4.757	525.4	97.8	1.337	1.200	0.722	0.0	109	3.672
4.007	5.148	568.6	97.8	1.200	1.220	0.722	0.0	104	3.887
4.008	5.210	575.4	109.9	1.220	1.240	0.811	0.0	110	4.050
4.009	4.047	447.0	123.3	1.240	1.200	0.910	0.0	134	3.481
4.010	6.332	1007.0	135.4	1.200	1.633	0.999	0.0	110	4.470
4.011	5.068	806.1	147.5	1.633	1.576	1.088	0.0	130	3.903
4.012	1.720	486.2	159.5	1.576	1.812	1.177	0.0	236	1.548
4.013	1.717	485.4	171.6	1.812	2.919	1.266	0.0	246	1.576
4.014	1.713	484.5	183.6	2.919	3.058	1.355	0.0	256	1.601
4.015	1.721	486.6	186.3	3.058	2.496	1.375	0.0	257	1.611
4.016	1.715	485.0	198.4	2.496	1.398	1.464	0.0	267	1.633
4.017	5.482	1550.1	210.5	1.398	1.200	1.553	0.0	148	3.893
4.018	4.660	1317.6	222.5	1.200	1.200	1.642	0.0	166	3.514
4.019	6.234	1762.7	234.6	3.087	3.188	1.731	0.0	146	4.399
4.020	2.737	773.8	246.7	3.188	1.200	1.820	0.0	232	2.444
4.021	1.788	126.4	0.0	1.467	1.028	0.000	0.0	0	0.000
4.022	1.654	29.2	0.0	1.178	1.849	0.000	0.0	0	0.000
4.023	1.355	23.9	0.0	1.849	1.292	0.000	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)
4.024	127	128	23.345	0.600	114.751	113.524	1.227	19.0	150	6.28	50.0
4.025	128	129	24.818	0.600	113.449	111.200	2.249	11.0	225	6.38	50.0
4.026	129	130	44.352	0.600	111.200	106.700	4.500	9.9	225	6.56	50.0
4.027	130	131	23.454	0.600	106.700	104.355	2.345	10.0	225	6.65	50.0
4.028	131	132	53.620	0.600	104.355	99.190	5.165	10.4	225	6.87	50.0
4.029	132	25	7.400	0.600	99.115	99.071	0.044	168.2	300	6.97	50.0
4.030	25	24	20.500	0.600	98.696	98.655	0.041	500.0	675	7.27	50.0
4.031	24	22	5.827	0.600	98.596	98.561	0.035	166.0	225	7.36	50.0
1.011	22	23	25.770	0.600	98.041	97.376	0.665	38.8	750	5.85	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)
4.024	2.320	41.0	0.0	1.292	1.200	0.000	0.0	0	0.000
4.025	3.961	157.5	0.0	1.200	1.825	0.000	0.0	0	0.000
4.026	4.192	166.7	0.0	1.825	1.325	0.000	0.0	0	0.000
4.027	4.161	165.5	0.0	1.325	1.920	0.000	0.0	0	0.000
4.028	4.084	162.4	0.0	1.920	1.085	0.000	0.0	0	0.000
4.029	1.209	85.5	0.0	1.085	1.229	0.000	0.0	0	0.000
4.030	1.165	416.9	5.0	1.229	1.870	0.037	0.0	51	0.405
4.031	1.012	40.2	5.0	2.379	2.695	0.037	0.0	53	0.692
1.011	4.503	1989.3	77.5	2.690	1.500	0.572	0.0	99	2.244

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	29.170	27.5	225	Circular_Default Sewer Type	110.379	108.965	1.189	109.628	107.903	1.500
1.001	13.608	15.7	225	Circular_Default Sewer Type	109.628	107.903	1.500	108.760	107.035	1.500
1.002	42.292	13.1	225	Circular_Default Sewer Type	108.760	107.035	1.500	105.538	103.813	1.500
1.003	14.779	11.7	375	Circular_Default Sewer Type	105.538	103.663	1.500	104.279	102.399	1.505
1.004	6.500	13.1	375	Circular_Default Sewer Type	104.279	102.399	1.505	103.779	101.904	1.500
1.005	6.551	16.2	375	Circular_Default Sewer Type	103.779	101.904	1.500	103.235	101.500	1.360
1.006	7.680	15.4	375	Circular_Default Sewer Type	103.235	101.500	1.360	103.250	101.000	1.875
1.007	4.000	40.0	375	Circular_Default Sewer Type	103.250	101.000	1.875	103.078	100.900	1.803
3.000	24.097	23.9	225	Circular_Default Sewer Type	107.928	106.368	1.335	107.174	105.360	1.589
2.001	25.646	43.8	300	Circular_Default Sewer Type	107.174	105.285	1.589	106.200	104.700	1.200
3.003	6.172	15.4	300	Circular_Default Sewer Type	106.200	101.800	4.100	104.905	101.400	3.205

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1200	Manhole	Adoptable	2	1200	Manhole	Adoptable
1.001	2	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable
1.002	3	1200	Manhole	Adoptable	4	1200	Manhole	Adoptable
1.003	4	1200	Manhole	Adoptable	5	1350	Manhole	Adoptable
1.004	5	1350	Manhole	Adoptable	6	1350	Manhole	Adoptable
1.005	6	1350	Manhole	Adoptable	7	1350	Manhole	Adoptable
1.006	7	1350	Manhole	Adoptable	8	1350	Manhole	Adoptable
1.007	8	1350	Manhole	Adoptable	14	1200	Manhole	Adoptable
3.000	9	1200	Manhole	Adoptable	10	1200	Manhole	Adoptable
2.001	10	1200	Manhole	Adoptable	12	1200	Manhole	Adoptable
3.003	12	1200	Manhole	Adoptable	13	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)
3.004	20.000	200.0	1800	TANK	104.905	100.100	3.005	103.078	100.000	1.278
1.008	4.037	80.7	375	Circular_Default Sewer Type	103.078	100.000	2.703	102.601	99.950	2.276
1.009	9.375	22.0	225	Circular_Default Sewer Type	102.601	99.950	2.426	102.159	99.524	2.410
1.010	9.562	10.0	750	Circular_Default Sewer Type	102.159	98.999	2.410	101.481	98.041	2.690
4.000	50.587	12.3	225	Circular_Default Sewer Type	144.598	143.150	1.223	140.468	139.043	1.200
4.001	16.898	22.8	225	Circular_Default Sewer Type	140.468	139.043	1.200	139.728	138.303	1.200
4.002	13.087	14.8	225	Circular_Default Sewer Type	139.728	138.303	1.200	138.846	137.421	1.200
4.003	18.035	12.1	225	Circular_Default Sewer Type	138.846	137.421	1.200	137.350	135.925	1.200
5.000	43.489	244.3	300	Circular_Default Sewer Type	136.097	134.597	1.200	137.350	134.419	2.631
4.004	17.563	199.6	375	Circular_Default Sewer Type	137.350	134.344	2.631	136.741	134.256	2.110
4.005	16.565	199.6	375	Circular_Default Sewer Type	136.741	134.256	2.110	135.885	134.173	1.337
4.006	17.000	14.6	375	Circular_Default Sewer Type	135.885	134.173	1.337	134.586	133.011	1.200
4.007	30.795	12.5	375	Circular_Default Sewer Type	134.586	133.011	1.200	132.142	130.547	1.220
4.008	25.945	12.2	375	Circular_Default Sewer Type	132.142	130.547	1.220	130.036	128.421	1.240
4.009	40.690	20.2	375	Circular_Default Sewer Type	130.036	128.421	1.240	127.981	126.406	1.200
4.010	13.838	10.4	450	Circular_Default Sewer Type	127.981	126.331	1.200	127.083	125.000	1.633
4.011	14.313	16.2	450	Circular_Default Sewer Type	127.083	125.000	1.633	126.143	124.117	1.576
4.012	38.130	199.6	600	Circular_Default Sewer Type	126.143	123.967	1.576	126.188	123.776	1.812
4.013	30.840	200.3	600	Circular_Default Sewer Type	126.188	123.776	1.812	127.141	123.622	2.919
4.014	16.688	201.1	600	Circular_Default Sewer Type	127.141	123.622	2.919	127.197	123.539	3.058
4.015	17.539	199.3	600	Circular_Default Sewer Type	127.197	123.539	3.058	126.547	123.451	2.496
4.016	21.865	200.6	600	Circular_Default Sewer Type	126.547	123.451	2.496	125.340	123.342	1.398
4.017	27.284	19.8	600	Circular_Default Sewer Type	125.340	123.342	1.398	123.767	121.967	1.200
4.018	15.916	27.4	600	Circular_Default Sewer Type	123.767	121.967	1.200	123.187	121.387	1.200
4.019	18.025	15.4	600	Circular_Default Sewer Type	123.187	119.500	3.087	122.114	118.326	3.188

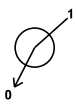
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
3.004	13	1200	Manhole	Adoptable	14	1200	Manhole	Adoptable
1.008	14	1200	Manhole	Adoptable	15	1500	Manhole	Adoptable
1.009	15	1500	Manhole	Adoptable	21	2100	Manhole	Adoptable
1.010	21	2100	Manhole	Adoptable	22	2100	Manhole	Adoptable
4.000	101	1200	Manhole	Adoptable	102	1200	Manhole	Adoptable
4.001	102	1200	Manhole	Adoptable	103	1200	Manhole	Adoptable
4.002	103	1200	Manhole	Adoptable	104	1200	Manhole	Adoptable
4.003	104	1200	Manhole	Adoptable	106	1350	Manhole	Adoptable
5.000	105	1350	Manhole	Adoptable	106	1350	Manhole	Adoptable
4.004	106	1350	Manhole	Adoptable	107	1350	Manhole	Adoptable
4.005	107	1350	Manhole	Adoptable	108	1350	Manhole	Adoptable
4.006	108	1350	Manhole	Adoptable	109	1350	Manhole	Adoptable
4.007	109	1350	Manhole	Adoptable	110	1350	Manhole	Adoptable
4.008	110	1350	Manhole	Adoptable	111	1350	Manhole	Adoptable
4.009	111	1350	Manhole	Adoptable	112	1350	Manhole	Adoptable
4.010	112	1350	Manhole	Adoptable	113	1350	Manhole	Adoptable
4.011	113	1350	Manhole	Adoptable	114	1500	Manhole	Adoptable
4.012	114	1500	Manhole	Adoptable	115	1500	Manhole	Adoptable
4.013	115	1500	Manhole	Adoptable	116	1500	Manhole	Adoptable
4.014	116	1500	Manhole	Adoptable	117	1500	Manhole	Adoptable
4.015	117	1500	Manhole	Adoptable	118	1500	Manhole	Adoptable
4.016	118	1500	Manhole	Adoptable	119	1500	Manhole	Adoptable
4.017	119	1500	Manhole	Adoptable	120	1500	Manhole	Adoptable
4.018	120	1500	Manhole	Adoptable	121	1500	Manhole	Adoptable
4.019	121	1500	Manhole	Adoptable	122	1500	Manhole	Adoptable

Pipeline Schedule

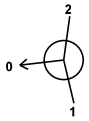
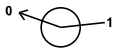
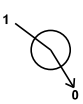
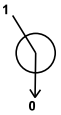
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.020	38.835	79.3	600	Circular_Default Sewer Type	122.114	118.326	3.188	119.636	117.836	1.200
4.021	7.744	77.4	300	Circular_Default Sewer Type	118.667	116.900	1.467	118.128	116.800	1.028
4.022	43.780	37.3	150	Circular_Default Sewer Type	118.128	116.800	1.178	117.624	115.625	1.849
4.023	48.383	55.4	150	Circular_Default Sewer Type	117.624	115.625	1.849	116.193	114.751	1.292
4.024	23.345	19.0	150	Circular_Default Sewer Type	116.193	114.751	1.292	114.874	113.524	1.200
4.025	24.818	11.0	225	Circular_Default Sewer Type	114.874	113.449	1.200	113.250	111.200	1.825
4.026	44.352	9.9	225	Circular_Default Sewer Type	113.250	111.200	1.825	108.250	106.700	1.325
4.027	23.454	10.0	225	Circular_Default Sewer Type	108.250	106.700	1.325	106.500	104.355	1.920
4.028	53.620	10.4	225	Circular_Default Sewer Type	106.500	104.355	1.920	100.500	99.190	1.085
4.029	7.400	168.2	300	Circular_Default Sewer Type	100.500	99.115	1.085	100.600	99.071	1.229
4.030	20.500	500.0	675	Circular_Default Sewer Type	100.600	98.696	1.229	101.200	98.655	1.870
4.031	5.827	166.0	225	Circular_Default Sewer Type	101.200	98.596	2.379	101.481	98.561	2.695
1.011	25.770	38.8	750	Circular_Default Sewer Type	101.481	98.041	2.690	99.626	97.376	1.500

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.020	122	1500	Manhole	Adoptable	123	1500	Manhole	Adoptable
4.021	124	1200	Manhole	Adoptable	125	1200	Manhole	Adoptable
4.022	125	1200	Manhole	Adoptable	126	1200	Manhole	Adoptable
4.023	126	1200	Manhole	Adoptable	127	1200	Manhole	Adoptable
4.024	127	1200	Manhole	Adoptable	128	1200	Manhole	Adoptable
4.025	128	1200	Manhole	Adoptable	129	1200	Manhole	Adoptable
4.026	129	1200	Manhole	Adoptable	130	1200	Manhole	Adoptable
4.027	130	1200	Manhole	Adoptable	131	1200	Manhole	Adoptable
4.028	131	1200	Manhole	Adoptable	132	1350	Manhole	Adoptable
4.029	132	1350	Manhole	Adoptable	25	1800	Manhole	Adoptable
4.030	25	1800	Manhole	Adoptable	24	2100	Manhole	Adoptable
4.031	24	2100	Manhole	Adoptable	22	2100	Manhole	Adoptable
1.011	22	2100	Manhole	Adoptable	23	2100	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
101	418393.472	418011.278	144.598	1.448	1200				
						0	4.000	143.150	225
102	418358.419	418047.752	140.468	1.425	1200	1	4.000	139.043	225
									
						0	4.001	139.043	225
103	418345.815	418036.497	139.728	1.425	1200	1	4.001	138.303	225
									
						0	4.002	138.303	225
104	418339.849	418024.849	138.846	1.425	1200	1	4.002	137.421	225
									
						0	4.003	137.421	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
105	418347.293	417964.653	136.097	1.500	1350				
						0	5.000	134.597	300
106	418337.344	418006.989	137.350	3.006	1350		1	5.000	134.419	300
							2	4.003	135.925	225
						0	4.004	134.344	375
107	418319.888	418005.049	136.741	2.485	1350		1	4.004	134.256	375
						0	4.005	134.256	375
108	418304.290	418010.626	135.885	1.712	1350		1	4.005	134.173	375
						0	4.006	134.173	375
109	418292.976	418023.314	134.586	1.575	1350		1	4.006	133.011	375
						0	4.007	133.011	375
110	418277.863	418050.145	132.142	1.595	1350		1	4.007	130.547	375
						0	4.008	130.547	375
111	418259.276	418068.247	130.036	1.615	1350		1	4.008	128.421	375
						0	4.009	128.421	375
112	418230.182	418039.800	127.981	1.650	1350		1	4.009	126.406	375
						0	4.010	126.331	450
113	418226.788	418026.385	127.083	2.083	1350		1	4.010	125.000	450
						0	4.011	125.000	450
114	418229.455	418012.323	126.143	2.176	1500		1	4.011	124.117	450
						0	4.012	123.967	600
115	418249.416	417979.835	126.188	2.412	1500		1	4.012	123.776	600
						0	4.013	123.776	600
116	418274.146	417961.409	127.141	3.519	1500		1	4.013	123.622	600
						0	4.014	123.622	600
117	418282.874	417947.185	127.197	3.658	1500		1	4.014	123.539	600
						0	4.015	123.539	600

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
118	418282.631	417929.648	126.547	3.096	1500	1	4.015	123.451	600
						0	4.016	123.451	600
119	418272.961	417910.038	125.340	1.998	1500	1	4.016	123.342	600
						0	4.017	123.342	600
120	418269.749	417882.944	123.767	1.800	1500	1	4.017	121.967	600
						0	4.018	121.967	600
121	418254.697	417877.770	123.187	3.687	1500	1	4.018	121.387	600
						0	4.019	119.500	600
122	418240.209	417867.046	122.114	3.788	1500	1	4.019	118.326	600
						0	4.020	118.326	600
123	418263.232	417835.771	119.636	2.561	1500	1	4.020	117.836	600
124	418283.514	417801.607	118.667	1.767	1200	0	4.021	116.900	300
125	418277.719	417796.470	118.128	1.328	1200	1	4.021	116.800	300
						0	4.022	116.800	150
126	418239.130	417817.148	117.624	1.999	1200	1	4.022	115.625	150
						0	4.023	115.625	150
127	418196.589	417840.196	116.193	1.442	1200	1	4.023	114.751	150
						0	4.024	114.751	150
128	418176.358	417828.547	114.874	1.425	1200	1	4.024	113.524	150
						0	4.025	113.449	225
129	418154.332	417839.983	113.250	2.050	1200	1	4.025	111.200	225
						0	4.026	111.200	225
130	418116.857	417816.262	108.250	1.550	1200	1	4.026	106.700	225
						0	4.027	106.700	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
131	418094.583	417823.608	106.500	2.145	1200	1	4.027	104.355	225
						0	4.028	104.355	225
132	418064.602	417779.153	100.500	1.385	1350	1	4.028	99.190	225
						0	4.029	99.115	300
25	418057.906	417782.304	100.600	1.904	1800	1	4.029	99.071	300
						0	4.030	98.696	675
24	418039.357	417791.032	101.200	2.604	2100	1	4.030	98.655	675
						0	4.031	98.596	225
1	418014.945	417907.623	110.379	1.414	1200	0	1.000	108.965	225
2	417991.515	417890.247	109.628	1.725	1200	1	1.000	107.903	225
						0	1.001	107.903	225
3	417998.554	417878.601	108.760	1.725	1200	1	1.001	107.035	225
						0	1.002	107.035	225
4	418013.496	417839.036	105.538	1.875	1200	1	1.002	103.813	225
						0	1.003	103.663	375
5	418022.580	417827.379	104.279	1.880	1350	1	1.003	102.399	375
						0	1.004	102.399	375
6	418025.245	417821.450	103.779	1.875	1350	1	1.004	101.904	375
						0	1.005	101.904	375
7	418027.054	417815.154	103.235	1.735	1350	1	1.005	101.500	375
						0	1.006	101.500	375
8	418035.579	417817.179	103.250	2.250	1350	1	1.006	101.000	375
						0	1.007	101.000	375
9	418061.509	417867.468	107.928	1.560	1200	0	3.000	106.368	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
10	418075.863	417848.113	107.174	1.889	1200	1	3.000	105.360	225
						0	2.001	105.285	300
12	418055.437	417832.605	106.200	4.400	1200	1	2.001	104.700	300
						0	3.003	101.800	300
13	418050.140	417827.760	104.905	4.805	1200	1	3.003	101.400	300
						0	3.004	100.100	1800
14	418037.931	417813.943	103.078	3.078	1200	1	3.004	100.000	1800
						2	1.007	100.900	375
						0	1.008	100.000	375
15	418033.844	417810.999	102.601	2.651	1500	1	1.008	99.950	375
						0	1.009	99.950	225
21	418029.628	417802.626	102.159	3.160	2100	1	1.009	99.524	225
						0	1.010	98.999	750
22	418034.679	417794.507	101.481	3.440	2100	1	4.031	98.561	225
						2	1.010	98.041	750
						0	1.011	98.041	750
23	418014.247	417778.802	99.626	2.250	2100	1	1.011	97.376	750

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
FSR Region	England and Wales	Skip Steady State	✓
M5-60 (mm)	19.000	Drain Down Time (mins)	240
Ratio-R	0.350	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	✓
Winter CV	0.840	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	30	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Node 125 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	116.800	Product Number	CTL-SHE-0132-9100-1500-9100
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	9.1	Min Node Diameter (mm)	1200

Node 15 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	99.950	Product Number	CTL-SHE-0136-1080-2000-1080
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	10.8	Min Node Diameter (mm)	1500

Node 24 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	98.596	Product Number	CTL-SHE-0128-9300-1900-9300
Design Depth (m)	1.900	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	9.3	Min Node Diameter (mm)	1500

Node 124 Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Main Channel Length (m)	35.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	116.900	Main Channel Slope (1:X)	200.0
Safety Factor	2.0	Time to half empty (mins)	0	Main Channel n	1.500

Inlets

123

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	1268.0	0.0	1.500	2023.0	0.0

Results for 100 year +30% CC Critical Storm Duration. Lowest mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	101	10	143.236	0.086	46.9	0.2028	0.0000	OK
15 minute winter	102	12	139.579	0.536	93.4	1.2752	0.0000	SURCHARGED
15 minute winter	103	12	139.084	0.781	127.5	1.8579	0.0000	SURCHARGED
15 minute winter	104	11	138.173	0.752	158.9	1.7902	0.0000	SURCHARGED
15 minute winter	105	11	135.521	0.924	52.1	2.5417	0.0000	SURCHARGED
15 minute winter	106	11	135.423	1.079	247.9	2.1841	0.0000	SURCHARGED
15 minute winter	107	11	135.020	0.764	291.2	1.6409	0.0000	SURCHARGED
15 minute winter	108	11	134.432	0.259	334.6	0.6399	0.0000	OK
15 minute winter	109	11	133.232	0.221	334.5	0.3167	0.0000	OK
15 minute winter	110	11	130.778	0.231	378.3	0.5884	0.0000	OK
15 minute winter	111	11	128.763	0.342	427.4	0.9090	0.0000	OK
15 minute winter	112	11	126.630	0.299	469.4	0.7500	0.0000	OK
15 minute winter	113	11	125.915	0.915	510.7	2.0914	0.0000	SURCHARGED
15 minute winter	114	11	125.306	1.339	545.8	3.4610	0.0000	SURCHARGED
15 minute winter	115	11	124.973	1.197	584.8	2.9984	0.0000	SURCHARGED
15 minute winter	116	11	124.642	1.020	624.5	2.3188	0.0000	SURCHARGED
15 minute winter	117	11	124.380	0.841	633.6	1.5783	0.0000	SURCHARGED
15 minute winter	118	11	124.105	0.654	673.8	1.5316	0.0000	SURCHARGED
15 minute winter	119	11	123.656	0.314	714.8	0.8338	0.0000	OK
15 minute winter	120	11	122.387	0.420	757.5	1.1576	0.0000	OK
15 minute winter	121	11	119.878	0.378	796.3	0.8504	0.0000	OK
15 minute winter	122	11	119.186	0.860	835.5	1.9246	0.0000	SURCHARGED
720 minute winter	123	705	117.783	0.708	85.9	1.2502	0.0000	OK
720 minute winter	124	705	117.783	0.883	48.3	0.9981	0.0000	SURCHARGED
720 minute winter	125	705	117.782	0.982	15.5	1.1105	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 winter	101	4.000	102	46.5	1.979	0.312	1.3581	
15 minute winter	102	4.001	103	83.4	2.404	0.763	0.6721	
15 minute winter	103	4.002	104	116.7	3.013	0.860	0.5205	
15 minute winter	104	4.003	106	155.9	3.930	1.035	0.7172	
15 minute winter	105	5.000	106	48.2	0.755	0.680	3.0625	
15 minute winter	106	4.004	107	247.2	2.241	1.750	1.9371	
15 minute winter	107	4.005	108	290.6	2.790	2.057	1.5859	
15 minute winter	108	4.006	109	334.5	4.490	0.637	1.2650	
15 minute winter	109	4.007	110	334.2	4.820	0.588	2.1384	
15 minute winter	110	4.008	111	378.3	4.244	0.657	2.2928	
15 minute winter	111	4.009	112	425.3	4.372	0.952	3.9781	
15 minute winter	112	4.010	113	466.7	4.347	0.463	1.8695	
15 minute winter	113	4.011	114	502.8	3.791	0.624	2.2678	
15 minute winter	114	4.012	115	545.1	1.935	1.121	10.7404	
15 minute winter	115	4.013	116	585.9	2.080	1.207	8.6869	
15 minute winter	116	4.014	117	625.4	2.220	1.291	4.7006	
15 minute winter	117	4.015	118	635.3	2.256	1.306	4.9403	
15 minute winter	118	4.016	119	674.7	2.924	1.391	4.7091	
15 minute winter	119	4.017	120	713.5	3.972	0.460	4.9085	
15 minute winter	120	4.018	121	754.0	4.166	0.572	2.8770	
15 minute winter	121	4.019	122	793.5	3.328	0.450	4.2237	
15 minute winter	122	4.020	123	834.6	3.014	1.079	10.7839	
720 minute winter	123	Flow through pond	124	48.3	0.008	0.006	1169.9824	
720 minute winter	124	4.021	125	15.5	0.386	0.122	0.5453	
720 minute winter	125	Hydro-Brake®	126	9.1				

Results for 100 year +30% CC Critical Storm Duration. Lowest mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	126	66	115.693	0.068	9.1	0.0772	0.0000	OK
15 minute summer	127	87	114.800	0.049	9.1	0.0557	0.0000	OK
15 minute summer	128	87	113.486	0.037	9.1	0.0423	0.0000	OK
15 minute summer	129	88	111.236	0.036	9.1	0.0405	0.0000	OK
360 minute summer	130	176	106.736	0.036	9.1	0.0410	0.0000	OK
15 minute summer	131	89	104.391	0.036	9.1	0.0412	0.0000	OK
1440 minute winter	132	900	100.286	1.171	9.1	1.6759	0.0000	FLOOD RISK
1440 minute winter	25	900	100.285	1.589	10.0	4.6617	0.0000	SURCHARGED
1440 minute winter	24	900	100.285	1.689	9.6	5.8520	0.0000	SURCHARGED
15 minute winter	1	10	109.021	0.056	13.7	0.0838	0.0000	OK
15 minute winter	2	10	107.996	0.093	46.8	0.1734	0.0000	OK
15 minute winter	3	10	107.168	0.133	89.6	0.2760	0.0000	OK
15 minute winter	4	10	103.774	0.111	112.2	0.1780	0.0000	OK
15 minute winter	5	10	102.575	0.176	171.9	0.4656	0.0000	OK
15 minute winter	6	10	102.113	0.209	194.8	0.3998	0.0000	OK
180 minute winter	7	172	101.828	0.328	56.1	0.6354	0.0000	OK
180 minute winter	8	172	101.828	0.827	56.1	1.1841	0.0000	SURCHARGED
15 minute winter	9	10	106.438	0.070	21.1	0.1143	0.0000	OK
15 minute winter	10	10	105.390	0.105	41.3	0.1625	0.0000	OK
15 minute winter	12	10	101.888	0.088	40.8	0.0994	0.0000	OK
180 minute winter	13	172	101.827	1.727	35.0	2.2195	0.0000	OK
180 minute winter	14	172	101.827	1.827	55.9	2.0666	0.0000	SURCHARGED
180 minute winter	15	172	101.827	1.877	23.8	3.3165	0.0000	SURCHARGED
15 minute winter	21	120	99.028	0.029	10.8	0.1002	0.0000	OK
480 minute summer	22	232	98.095	0.054	20.1	0.1861	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)
120 minute winter	126	4.023	127	9.1	1.424	0.380	0.3102	
15 minute summer	127	4.024	128	9.1	1.841	0.222	0.1154	
15 minute summer	128	4.025	129	9.1	2.173	0.058	0.1039	
15 minute summer	129	4.026	130	9.1	2.225	0.055	0.1814	
360 minute summer	130	4.027	131	9.1	2.204	0.055	0.0970	
15 minute summer	131	4.028	132	9.1	2.208	0.056	0.2210	
1440 minute winter	132	4.029	25	9.1	0.763	0.106	0.5211	
1440 minute winter	25	4.030	24	9.6	0.405	0.023	7.3181	
1440 minute winter	24	Hydro-Brake®	22	9.3				
15 minute winter	1	1.000	2	13.6	1.184	0.136	0.3383	
15 minute winter	2	1.001	3	46.4	2.330	0.352	0.2711	
15 minute winter	3	1.002	4	88.5	3.740	0.613	1.0002	
15 minute winter	4	1.003	5	111.9	2.899	0.190	0.5755	
15 minute winter	5	1.004	6	171.1	3.004	0.308	0.3704	
15 minute winter	6	1.005	7	194.1	3.017	0.389	0.4225	
180 minute winter	7	1.006	8	56.1	2.084	0.109	0.8159	
180 minute winter	8	1.007	14	55.9	1.868	0.176	0.4412	
15 minute winter	9	3.000	10	20.8	2.051	0.195	0.2449	
15 minute winter	10	2.001	12	40.8	1.921	0.243	0.5451	
15 minute winter	12	3.003	13	40.7	2.609	0.143	0.0963	
180 minute winter	13	3.004	14	-19.4	0.021	0.000	201.1367	
180 minute winter	14	1.008	15	23.8	0.531	0.107	0.4453	
180 minute winter	15	Hydro-Brake®	21	10.8				
15 minute winter	21	1.010	22	10.8	1.596	0.003	0.0913	
480 minute summer	22	1.011	23	20.1	1.473	0.010	0.3509	662.1

Results for 100 year +30% CC Critical Storm Duration. Lowest mass balance: 99.70%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute summer	23	232	97.429	0.053	20.1	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)