



Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	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)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	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)
SP01	0.004	5.00	172.700	450	395905.356	341126.002	0.700
SP02	0.016	5.00	172.800	450	395911.103	341126.644	0.900
SP03	0.015	5.00	172.800	450	395920.617	341121.749	0.950
SP04	0.001	5.00	172.800	450	395930.132	341116.855	1.000
SP05	0.009	5.00	172.850	450	395933.858	341114.954	1.100
SP06	0.009	5.00	172.934	600	395936.507	341120.163	1.309
SP07	0.001	5.00	172.746	600	395947.178	341114.674	1.191
SP08	0.022	5.00	172.746	600	395946.115	341109.545	1.221
SP09	0.008	5.00	172.613	600	395938.497	341095.777	1.178
SP10			172.150	600	395936.235	341090.690	0.745
SP11			172.375	1200	395934.524	341087.363	1.775
TANK			172.100	100	395927.855	341090.794	1.550
SP12			172.305	1200	395921.630	341093.996	1.805
SP13			172.375	1200	395917.736	341094.245	1.945
SP14	0.006	5.00	173.060	450	395916.272	341136.693	0.710
SP15			173.100	450	395925.698	341131.844	0.850
SP16	0.005	5.00	172.850	450	395919.269	341119.070	0.650
SP17	0.004	5.00	172.830	450	395903.315	341113.570	1.130
SP18	0.023	5.00	172.525	450	395911.874	341103.218	0.925
SP19	0.028	5.00	172.425	450	395908.469	341096.549	0.725
SP20	0.005	5.00	172.225	450	395932.830	341084.021	0.815



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	SP01	SP02	5.783	0.600	172.000	171.900	0.100	57.8	150	5.07	50.0
1.001	SP02	SP03	10.699	0.600	171.900	171.850	0.050	214.0	150	5.33	50.0
1.002	SP03	SP04	10.700	0.600	171.850	171.800	0.050	214.0	150	5.60	50.0
1.003	SP04	SP05	4.183	0.600	171.800	171.750	0.050	83.7	150	5.66	50.0
1.004	SP05	SP06	5.844	0.600	171.750	171.700	0.050	116.9	150	5.76	50.0
1.005	SP06	SP07	12.000	0.600	171.625	171.555	0.070	171.4	225	5.96	50.0
1.006	SP07	SP08	5.238	0.600	171.555	171.525	0.030	174.6	225	6.05	50.0
1.007	SP08	SP09	15.735	0.600	171.525	171.435	0.090	174.8	225	6.32	49.1
1.008	SP09	SP10	5.567	0.600	171.435	171.405	0.030	185.6	225	6.42	48.8
1.009	SP10	SP11	3.741	0.600	171.405	170.600	0.805	4.6	225	6.43	48.7
1.010	SP11	TANK	7.500	0.600	170.600	170.550	0.050	150.0	225	6.54	48.3
1.011	TANK	SP12	7.000	0.600	170.550	170.500	0.050	140.0	225	6.65	47.9
1.012	SP12	SP13	3.902	0.600	170.500	170.430	0.070	55.7	225	6.69	47.8
2.000	SP14	SP15	10.600	0.600	172.350	172.250	0.100	106.0	150	5.18	50.0
2.001	SP15	SP03	11.302	0.600	172.250	171.850	0.400	28.3	150	5.28	50.0
3.000	SP16	SP03	2.999	0.600	172.200	171.850	0.350	8.6	150	5.01	50.0
4.000	SP17	SP18	13.432	0.600	171.700	171.600	0.100	134.3	150	5.26	50.0
4.001	SP18	SP10	27.394	0.600	171.600	171.480	0.120	228.3	150	5.95	50.0
5.000	SP19	SP20	27.394	0.600	171.700	171.410	0.290	94.5	150	5.44	50.0
5.001	SP20	SP11	3.747	0.600	171.410	170.675	0.735	5.1	150	5.46	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	1.325	23.4	0.5	0.550	0.750	0.004	0.0	16	0.539
1.001	0.683	12.1	2.7	0.750	0.800	0.020	0.0	48	0.552
1.002	0.683	12.1	6.2	0.800	0.850	0.046	0.0	76	0.688
1.003	1.100	19.4	6.4	0.850	0.950	0.047	0.0	59	0.985
1.004	0.928	16.4	7.6	0.950	1.084	0.056	0.0	72	0.911
1.005	0.995	39.6	8.8	1.084	0.966	0.065	0.0	72	0.802
1.006	0.986	39.2	8.9	0.966	0.996	0.066	0.0	73	0.800
1.007	0.986	39.2	11.7	0.996	0.953	0.088	0.0	84	0.862
1.008	0.956	38.0	12.7	0.953	0.520	0.096	0.0	89	0.861
1.009	6.111	243.0	16.3	0.520	1.550	0.123	0.0	39	3.508
1.010	1.065	42.3	20.4	1.550	1.325	0.156	0.0	110	1.056
1.011	1.103	43.8	20.3	1.325	1.580	0.156	0.0	108	1.083
1.012	1.755	69.8	20.2	1.580	1.720	0.156	0.0	83	1.528
2.000	0.975	17.2	0.8	0.560	0.700	0.006	0.0	22	0.495
2.001	1.901	33.6	0.8	0.700	0.800	0.006	0.0	16	0.795
3.000	3.463	61.2	0.7	0.500	0.800	0.005	0.0	11	1.158
4.000	0.865	15.3	0.5	0.980	0.775	0.004	0.0	20	0.408
4.001	0.661	11.7	3.7	0.775	0.520	0.027	0.0	58	0.585
5.000	1.034	18.3	3.8	0.575	0.665	0.028	0.0	47	0.820
5.001	4.493	79.4	4.5	0.665	1.550	0.033	0.0	24	2.450

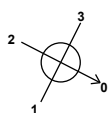
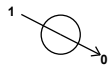
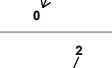
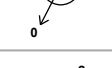
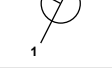


Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	5.783	57.8	150	172.700	172.000	0.550	172.800	171.900	0.750
1.001	10.699	214.0	150	172.800	171.900	0.750	172.800	171.850	0.800
1.002	10.700	214.0	150	172.800	171.850	0.800	172.800	171.800	0.850
1.003	4.183	83.7	150	172.800	171.800	0.850	172.850	171.750	0.950
1.004	5.844	116.9	150	172.850	171.750	0.950	172.934	171.700	1.084
1.005	12.000	171.4	225	172.934	171.625	1.084	172.746	171.555	0.966
1.006	5.238	174.6	225	172.746	171.555	0.966	172.746	171.525	0.996
1.007	15.735	174.8	225	172.746	171.525	0.996	172.613	171.435	0.953
1.008	5.567	185.6	225	172.613	171.435	0.953	172.150	171.405	0.520
1.009	3.741	4.6	225	172.150	171.405	0.520	172.375	170.600	1.550
1.010	7.500	150.0	225	172.375	170.600	1.550	172.100	170.550	1.325
1.011	7.000	140.0	225	172.100	170.550	1.325	172.305	170.500	1.580
1.012	3.902	55.7	225	172.305	170.500	1.580	172.375	170.430	1.720
2.000	10.600	106.0	150	173.060	172.350	0.560	173.100	172.250	0.700
2.001	11.302	28.3	150	173.100	172.250	0.700	172.800	171.850	0.800
3.000	2.999	8.6	150	172.850	172.200	0.500	172.800	171.850	0.800
4.000	13.432	134.3	150	172.830	171.700	0.980	172.525	171.600	0.775
4.001	27.394	228.3	150	172.525	171.600	0.775	172.150	171.480	0.520
5.000	27.394	94.5	150	172.425	171.700	0.575	172.225	171.410	0.665
5.001	3.747	5.1	150	172.225	171.410	0.665	172.375	170.675	1.550

Link	US Node	Dia (mm)	DS Node	Dia (mm)
1.000	SP01	450	SP02	450
1.001	SP02	450	SP03	450
1.002	SP03	450	SP04	450
1.003	SP04	450	SP05	450
1.004	SP05	450	SP06	600
1.005	SP06	600	SP07	600
1.006	SP07	600	SP08	600
1.007	SP08	600	SP09	600
1.008	SP09	600	SP10	600
1.009	SP10	600	SP11	1200
1.010	SP11	1200	TANK	100
1.011	TANK	100	SP12	1200
1.012	SP12	1200	SP13	1200
2.000	SP14	450	SP15	450
2.001	SP15	450	SP03	450
3.000	SP16	450	SP03	450
4.000	SP17	450	SP18	450
4.001	SP18	450	SP10	600
5.000	SP19	450	SP20	450
5.001	SP20	450	SP11	1200

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
SP01	395905.356	341126.002	172.700	0.700	450		0	1.000	172.000	150
SP02	395911.103	341126.644	172.800	0.900	450		1	1.000	171.900	150
						0	1.001	171.900	150	
SP03	395920.617	341121.749	172.800	0.950	450		1	3.000	171.850	150
						2	1.001	171.850	150	
						3	2.001	171.850	150	
						0	1.002	171.850	150	
SP04	395930.132	341116.855	172.800	1.000	450		1	1.002	171.800	150
						0	1.003	171.800	150	
SP05	395933.858	341114.954	172.850	1.100	450		1	1.003	171.750	150
						0	1.004	171.750	150	
SP06	395936.507	341120.163	172.934	1.309	600		1	1.004	171.700	150
						0	1.005	171.625	225	
SP07	395947.178	341114.674	172.746	1.191	600		1	1.005	171.555	225
						0	1.006	171.555	225	
SP08	395946.115	341109.545	172.746	1.221	600		1	1.006	171.525	225
						0	1.007	171.525	225	
SP09	395938.497	341095.777	172.613	1.178	600		1	1.007	171.435	225
						0	1.008	171.435	225	
SP10	395936.235	341090.690	172.150	0.745	600		1	4.001	171.480	150
						2	1.008	171.405	225	
						0	1.009	171.405	225	
SP11	395934.524	341087.363	172.375	1.775	1200		1	5.001	170.675	150
						2	1.009	170.600	225	
						0	1.010	170.600	225	
TANK	395927.855	341090.794	172.100	1.550	100		1	1.010	170.550	225
						0	1.011	170.550	225	
SP12	395921.630	341093.996	172.305	1.805	1200		1	1.011	170.500	225
						0	1.012	170.500	225	



Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SP13	395917.736	341094.245	172.375	1.945	1200	 1	1.012	170.430	225
SP14	395916.272	341136.693	173.060	0.710	450	 0	2.000	172.350	150
SP15	395925.698	341131.844	173.100	0.850	450	 1 0	1 2.000 0 2.001	172.250 172.250	150 150
SP16	395919.269	341119.070	172.850	0.650	450	 0	3.000	172.200	150
SP17	395903.315	341113.570	172.830	1.130	450	 0	4.000	171.700	150
SP18	395911.874	341103.218	172.525	0.925	450	 1 0	1 4.000 0 4.001	171.600 171.600	150 150
SP19	395908.469	341096.549	172.425	0.725	450	 0	5.000	171.700	150
SP20	395932.830	341084.021	172.225	0.815	450	 1 0	1 5.000 0 5.001	171.410 171.410	150 150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
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 %)
1	0	0	0
2	0	0	0
30	0	0	0
100	40	0	0



Node SP12 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	170.500	Product Number	CTL-SHE-0108-5000-0850-5000
Design Depth (m)	0.850	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	170.550
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	80.0	0.0	0.800	80.0	0.0	0.801	0.0	0.0