

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	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)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
Ex.A(S)	0.017	5.00	122.240	900	675	539340.814	138102.260	0.810
Ex.B(S)	0.023	5.00	119.970	900	675	539323.633	138103.371	0.570
Ex.C(S)			118.910	900	675	539315.274	138104.968	0.980
Ex.D(S)	0.016	5.00	120.030	900	675	539304.347	138088.377	1.240
Ex.E(S)			119.160	900	675	539302.302	138096.456	3.060
SIC01			118.500	675		539311.635	138106.324	2.470
SRE01	0.003	5.00	123.600	150		539339.887	138094.498	0.650
SRE02	0.018	5.00	123.300	150		539331.368	138084.767	0.650
SIC03	0.003	5.00	123.300	675		539323.729	138077.477	0.888
SIC04	0.007	5.00	123.300	675		539311.450	138072.197	1.150
SIC05			118.500	675		539301.737	138102.531	2.470
SIC06	0.041	5.00	118.500	675		539303.893	138106.998	1.650
Inlet1			118.500	1		539309.954	138105.680	2.475
Inlet2			118.500	1		539303.418	138103.175	2.475
Inlet3			118.500	1		539304.537	138105.318	2.475
Skwy			118.500	2100		539306.686	138104.428	2.490
Temp			118.500	675		539305.110	138103.824	2.478

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	SRE01	Ex.A(S)	7.817	0.600	122.950	121.430	1.520	5.1	100	5.04	50.0
1.001	Ex.A(S)	Ex.B(S)	17.217	0.600	121.430	119.400	2.030	8.5	100	5.15	50.0
1.002	Ex.B(S)	Ex.C(S)	8.510	0.600	119.400	117.980	1.420	6.0	100	5.19	50.0
1.003	Ex.C(S)	SIC01	3.883	0.600	117.930	116.030	1.900	2.0	150	5.20	50.0
1.004	SIC01	Inlet1	1.800	0.600	116.030	116.025	0.005	360.0	150	5.26	50.0
1.005	Inlet1	Temp	5.187	0.600	116.025	116.022	0.003	1729.1	225	5.54	50.0
1.006	Temp	Skwy	1.688	0.600	116.022	116.010	0.012	140.6	300	5.56	50.0
2.000	SRE02	SIC03	10.559	0.600	122.650	122.412	0.238	44.4	150	5.12	50.0
2.001	SIC03	SIC04	13.366	0.600	122.412	122.150	0.262	51.0	150	5.27	50.0
2.002	SIC04	Ex.D(S)	17.670	0.600	122.150	118.865	3.285	5.4	150	5.34	50.0
2.003	Ex.D(S)	Ex.E(S)	8.334	0.600	118.790	116.100	2.690	3.1	225	5.36	50.0
2.004	Ex.E(S)	SIC05	6.101	0.600	116.100	116.030	0.070	87.2	225	5.43	50.0
2.005	SIC05	Inlet2	1.800	0.600	116.030	116.025	0.005	360.0	225	5.48	50.0
2.007	Inlet2	Temp	1.812	0.600	116.025	116.022	0.003	604.1	225	5.53	50.0
3.000	SIC06	Inlet3	1.799	0.600	116.850	116.025	0.825	2.2	150	5.00	50.0
3.001	Inlet3	Temp	1.600	0.600	116.025	116.022	0.003	533.4	150	5.07	50.0

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	7.817	5.1	100	Circular	123.600	122.950	0.550	122.240	121.430	0.710
1.001	17.217	8.5	100	Circular	122.240	121.430	0.710	119.970	119.400	0.470
1.002	8.510	6.0	100	Circular	119.970	119.400	0.470	118.910	117.980	0.830
1.003	3.883	2.0	150	Circular	118.910	117.930	0.830	118.500	116.030	2.320
1.004	1.800	360.0	150	Circular	118.500	116.030	2.320	118.500	116.025	2.325
1.005	5.187	1729.1	225	Circular	118.500	116.025	2.250	118.500	116.022	2.253
1.006	1.688	140.6	300	Circular	118.500	116.022	2.178	118.500	116.010	2.190
2.000	10.559	44.4	150	Circular	123.300	122.650	0.500	123.300	122.412	0.738
2.001	13.366	51.0	150	Circular	123.300	122.412	0.738	123.300	122.150	1.000
2.002	17.670	5.4	150	Circular	123.300	122.150	1.000	120.030	118.865	1.015
2.003	8.334	3.1	225	Circular	120.030	118.790	1.015	119.160	116.100	2.835
2.004	6.101	87.2	225	Circular	119.160	116.100	2.835	118.500	116.030	2.245
2.005	1.800	360.0	225	Circular	118.500	116.030	2.245	118.500	116.025	2.250
2.007	1.812	604.1	225	Circular	118.500	116.025	2.250	118.500	116.022	2.253
3.000	1.799	2.2	150	Circular	118.500	116.850	1.500	118.500	116.025	2.325
3.001	1.600	533.4	150	Circular	118.500	116.025	2.325	118.500	116.022	2.328

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
1.000	SRE01	150		Manhole	Adoptable	Ex.A(S)	900	675	Manhole	Adoptable
1.001	Ex.A(S)	900	675	Manhole	Adoptable	Ex.B(S)	900	675	Manhole	Adoptable
1.002	Ex.B(S)	900	675	Manhole	Adoptable	Ex.C(S)	900	675	Manhole	Adoptable
1.003	Ex.C(S)	900	675	Manhole	Adoptable	SIC01	675		Manhole	Adoptable
1.004	SIC01	675		Manhole	Adoptable	Inlet1	1		Manhole	Adoptable
1.005	Inlet1	1		Manhole	Adoptable	Temp	675		Manhole	Adoptable
1.006	Temp	675		Manhole	Adoptable	Skwy	2100		Manhole	Adoptable
2.000	SRE02	150		Manhole	Adoptable	SIC03	675		Manhole	Adoptable
2.001	SIC03	675		Manhole	Adoptable	SIC04	675		Manhole	Adoptable
2.002	SIC04	675		Manhole	Adoptable	Ex.D(S)	900	675	Manhole	Adoptable
2.003	Ex.D(S)	900	675	Manhole	Adoptable	Ex.E(S)	900	675	Manhole	Adoptable
2.004	Ex.E(S)	900	675	Manhole	Adoptable	SIC05	675		Manhole	Adoptable
2.005	SIC05	675		Manhole	Adoptable	Inlet2	1		Manhole	Adoptable
2.007	Inlet2	1		Manhole	Adoptable	Temp	675		Manhole	Adoptable
3.000	SIC06	675		Manhole	Adoptable	Inlet3	1		Manhole	Adoptable
3.001	Inlet3	1		Manhole	Adoptable	Temp	675		Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
Ex.A(S)	539340.814	138102.260	122.240	0.810	900	675		1	1.000	121.430	100
								0	1.001	121.430	100
Ex.B(S)	539323.633	138103.371	119.970	0.570	900	675		1	1.001	119.400	100
								0	1.002	119.400	100
Ex.C(S)	539315.274	138104.968	118.910	0.980	900	675		1	1.002	117.980	100
								0	1.003	117.930	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
Ex.D(S)	539304.347	138088.377	120.030	1.240	900	675		1	2.002	118.865	150
Ex.E(S)	539302.302	138096.456	119.160	3.060	900	675		1	2.003	118.790	225
								0	2.004	116.100	225
SIC01	539311.635	138106.324	118.500	2.470	675			1	1.003	116.030	150
SRE01	539339.887	138094.498	123.600	0.650	150						
								0	1.004	116.030	150
SRE02	539331.368	138084.767	123.300	0.650	150						
SIC03	539323.729	138077.477	123.300	0.888	675			1	2.000	122.650	150
								0	2.001	122.412	150
SIC04	539311.450	138072.197	123.300	1.150	675			1	2.001	122.150	150
SIC05	539301.737	138102.531	118.500	2.470	675			0	2.002	122.150	150
								1	2.004	116.030	225
SIC06	539303.893	138106.998	118.500	1.650	675			0	2.005	116.030	225
Inlet1	539309.954	138105.680	118.500	2.475	1						
								1	1.004	116.025	150
Inlet2	539303.418	138103.175	118.500	2.475	1			0	1.005	116.025	225
								1	2.005	116.025	225
Inlet3	539304.537	138105.318	118.500	2.475	1			0	2.007	116.025	225
								1	3.000	116.025	150
Skwy	539306.686	138104.428	118.500	2.490	2100			1	1.006	116.010	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)	
Temp	539305.110	138103.824	118.500	2.478	675			1	3.001	116.022	150
								2	2.007	116.022	225
								3	1.005	116.022	225
								0	1.006	116.022	300

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)	0.0
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 | 2160

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node Skwy Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.85680	Invert Level (m)	116.010	Depth (m)	1.200
Side Inf Coefficient (m/hr)	0.85680	Time to half empty (mins)	51	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	3.200	Number Required	1
Porosity	0.95	Pit Length (m)	6.800		

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	Ex.A(S)	10	121.455	0.025	2.8	0.0150	0.0000	OK
15 minute winter	Ex.B(S)	10	119.435	0.035	6.0	0.0211	0.0000	OK
15 minute winter	Ex.C(S)	10	117.952	0.022	6.0	0.0131	0.0000	OK
15 minute winter	Ex.D(S)	10	118.812	0.022	6.1	0.0134	0.0000	OK
30 minute winter	Ex.E(S)	28	116.219	0.119	4.8	0.0721	0.0000	OK
30 minute winter	SIC01	28	116.219	0.189	4.6	0.0676	0.0000	SURCHARGED
15 minute winter	SRE01	11	122.959	0.009	0.4	0.0002	0.0000	OK
15 minute winter	SRE02	10	122.681	0.031	2.5	0.0006	0.0000	OK
15 minute winter	SIC03	10	122.450	0.037	2.9	0.0134	0.0000	OK
15 minute winter	SIC04	10	122.173	0.023	3.9	0.0083	0.0000	OK
30 minute winter	SIC05	28	116.219	0.189	4.8	0.0675	0.0000	OK
15 minute winter	SIC06	10	116.872	0.022	5.8	0.0078	0.0000	OK
30 minute winter	Inlet1	28	116.219	0.194	4.3	0.0000	0.0000	OK
30 minute winter	Inlet2	28	116.219	0.194	4.2	0.0000	0.0000	OK
30 minute winter	Inlet3	28	116.219	0.194	4.5	0.0000	0.0000	SURCHARGED
30 minute winter	Skwy	28	116.219	0.209	11.4	5.0329	0.0000	OK
30 minute winter	Temp	28	116.219	0.197	11.9	0.0704	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	Ex.A(S)	1.001	Ex.B(S)	2.8	1.430	0.133	0.0337
15 minute winter	Ex.B(S)	1.002	Ex.C(S)	6.0	2.537	0.239	0.0200
15 minute winter	Ex.C(S)	1.003	SIC01	5.9	1.052	0.047	0.0364
15 minute winter	Ex.D(S)	2.003	Ex.E(S)	6.1	1.500	0.020	0.0714
30 minute winter	Ex.E(S)	2.004	SIC05	4.8	0.469	0.086	0.1731
30 minute winter	SIC01	1.004	Inlet1	4.3	0.375	0.460	0.0317
15 minute winter	SRE01	1.000	Ex.A(S)	0.4	0.475	0.015	0.0071
15 minute winter	SRE02	2.000	SIC03	2.5	0.824	0.093	0.0319
15 minute winter	SIC03	2.001	SIC04	2.9	1.129	0.114	0.0343
15 minute winter	SIC04	2.002	Ex.D(S)	3.8	2.258	0.049	0.0298
30 minute winter	SIC05	2.005	Inlet2	4.2	0.295	0.156	0.0647
15 minute winter	SIC06	3.000	Inlet3	5.8	1.361	0.048	0.0168
30 minute winter	Inlet1	1.005	Temp	3.9	0.274	0.319	0.1898
30 minute winter	Inlet2	2.007	Temp	3.8	0.268	0.183	0.0663
30 minute winter	Inlet3	3.001	Temp	4.2	0.399	0.556	0.0282
30 minute winter	Skwy	Infiltration		3.1			
30 minute winter	Temp	1.006	Skwy	11.4	1.004	0.122	0.0854

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	Ex.A(S)	10	121.470	0.039	6.9	0.0240	0.0000	OK
15 minute winter	Ex.B(S)	10	119.460	0.060	14.9	0.0364	0.0000	OK
15 minute winter	Ex.C(S)	10	117.964	0.034	14.7	0.0205	0.0000	OK
15 minute winter	Ex.D(S)	10	118.824	0.034	14.9	0.0205	0.0000	OK
60 minute winter	Ex.E(S)	53	116.688	0.588	7.7	0.3575	0.0000	SURCHARGED
60 minute winter	SIC01	52	116.688	0.658	7.6	0.2356	0.0000	SURCHARGED
15 minute winter	SRE01	11	122.963	0.013	1.0	0.0002	0.0000	OK
15 minute winter	SRE02	10	122.700	0.050	6.2	0.0009	0.0000	OK
15 minute winter	SIC03	10	122.473	0.061	7.2	0.0217	0.0000	OK
15 minute winter	SIC04	10	122.186	0.036	9.5	0.0130	0.0000	OK
60 minute winter	SIC05	53	116.688	0.658	6.8	0.2355	0.0000	SURCHARGED
15 minute winter	SIC06	10	116.884	0.034	14.2	0.0121	0.0000	OK
60 minute winter	Inlet1	53	116.688	0.663	6.9	0.0000	0.0000	SURCHARGED
60 minute winter	Inlet2	53	116.688	0.663	6.2	0.0000	0.0000	SURCHARGED
60 minute winter	Inlet3	53	116.688	0.663	7.2	0.0000	0.0000	SURCHARGED
60 minute winter	Skwy	53	116.688	0.678	17.9	16.3574	0.0000	OK
60 minute winter	Temp	53	116.688	0.666	18.5	0.2384	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	Ex.A(S)	1.001	Ex.B(S)	6.9	1.767	0.327	0.0668
15 minute winter	Ex.B(S)	1.002	Ex.C(S)	14.7	3.158	0.590	0.0397
15 minute winter	Ex.C(S)	1.003	SIC01	14.7	2.018	0.117	0.0399
15 minute winter	Ex.D(S)	2.003	Ex.E(S)	14.9	1.669	0.050	0.1810
60 minute winter	Ex.E(S)	2.004	SIC05	6.8	0.413	0.123	0.2426
60 minute winter	SIC01	1.004	Inlet1	6.9	0.393	0.748	0.0317
15 minute winter	SRE01	1.000	Ex.A(S)	1.0	0.625	0.037	0.0136
15 minute winter	SRE02	2.000	SIC03	6.2	1.047	0.230	0.0622
15 minute winter	SIC03	2.001	SIC04	7.1	1.441	0.284	0.0666
15 minute winter	SIC04	2.002	Ex.D(S)	9.4	2.930	0.122	0.0569
60 minute winter	SIC05	2.005	Inlet2	6.2	0.257	0.229	0.0716
15 minute winter	SIC06	3.000	Inlet3	14.2	1.145	0.117	0.0185
60 minute winter	Inlet1	1.005	Temp	6.3	0.233	0.520	0.2063
60 minute winter	Inlet2	2.007	Temp	5.6	0.249	0.270	0.0721
60 minute winter	Inlet3	3.001	Temp	6.6	0.437	0.867	0.0282
60 minute winter	Skwy	Infiltration		4.2			
60 minute winter	Temp	1.006	Skwy	17.9	1.061	0.192	0.1189

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	Ex.A(S)	10	121.486	0.056	12.6	0.0340	0.0000	OK
15 minute winter	Ex.B(S)	11	119.775	0.375	27.0	0.2277	0.0000	FLOOD RISK
15 minute winter	Ex.C(S)	12	117.974	0.044	23.8	0.0267	0.0000	OK
15 minute winter	Ex.D(S)	10	118.835	0.045	27.4	0.0276	0.0000	OK
60 minute winter	Ex.E(S)	60	117.842	1.742	14.3	1.0594	0.0000	SURCHARGED
60 minute winter	SIC01	60	117.843	1.813	14.0	0.6489	0.0000	SURCHARGED
15 minute winter	SRE01	10	122.968	0.018	1.9	0.0003	0.0000	OK
15 minute winter	SRE02	10	122.721	0.071	11.3	0.0013	0.0000	OK
15 minute winter	SIC03	10	122.499	0.087	13.1	0.0310	0.0000	OK
15 minute winter	SIC04	10	122.200	0.050	17.4	0.0179	0.0000	OK
60 minute winter	SIC05	60	117.842	1.812	12.6	0.6488	0.0000	SURCHARGED
60 minute winter	SIC06	60	117.843	0.993	13.3	0.3554	0.0000	SURCHARGED
60 minute winter	Inlet1	60	117.842	1.817	12.7	0.0000	0.0000	SURCHARGED
60 minute winter	Inlet2	60	117.842	1.817	11.4	0.0000	0.0000	SURCHARGED
60 minute winter	Inlet3	60	117.842	1.817	13.2	0.0000	0.0000	SURCHARGED
60 minute winter	Skwy	60	117.842	1.832	32.5	31.1627	0.0000	OK
60 minute winter	Temp	60	117.842	1.820	33.7	0.6516	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	Ex.A(S)	1.001	Ex.B(S)	12.5	1.873	0.597	0.1060
15 minute winter	Ex.B(S)	1.002	Ex.C(S)	23.8	3.321	0.952	0.0612
15 minute winter	Ex.C(S)	1.003	SIC01	23.7	1.824	0.189	0.0425
15 minute winter	Ex.D(S)	2.003	Ex.E(S)	27.3	1.661	0.092	0.1895
60 minute winter	Ex.E(S)	2.004	SIC05	12.6	0.482	0.226	0.2426
60 minute winter	SIC01	1.004	Inlet1	12.7	0.720	1.369	0.0317
15 minute winter	SRE01	1.000	Ex.A(S)	1.9	0.721	0.070	0.0213
15 minute winter	SRE02	2.000	SIC03	11.2	1.199	0.420	0.0988
15 minute winter	SIC03	2.001	SIC04	13.0	1.665	0.521	0.1047
15 minute winter	SIC04	2.002	Ex.D(S)	17.3	3.459	0.224	0.0883
60 minute winter	SIC05	2.005	Inlet2	11.4	0.292	0.421	0.0716
60 minute winter	SIC06	3.000	Inlet3	13.2	1.378	0.109	0.0317
60 minute winter	Inlet1	1.005	Temp	11.5	0.290	0.947	0.2063
60 minute winter	Inlet2	2.007	Temp	10.3	0.284	0.493	0.0721
60 minute winter	Inlet3	3.001	Temp	12.0	0.679	1.579	0.0282
60 minute winter	Skwy	Infiltration		5.4			
60 minute winter	Temp	1.006	Skwy	32.5	1.224	0.348	0.1189