

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	17.000	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	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S2	0.015	5.00	155.594	1350	400912.625	340409.264	1.294
S43	0.030	5.00	158.072	1200	400942.377	340389.527	2.447
S1	0.000	5.00	156.559	1200	400925.489	340404.111	2.359
S161			157.572	1200	400928.029	340414.146	3.772
S162			156.448	1200	400907.779	340424.137	2.848
S4	0.015	5.00	154.647	1350	400899.275	340412.335	1.447
S5	0.015	5.00	153.954	1350	400890.488	340405.728	1.186
S6			153.278	1350	400884.708	340393.871	1.172
INFILTRATION BASIN 2			154.055	1200	400893.752	340389.398	2.007

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)
10.000	S2	S1	13.857	0.600	154.300	154.200	0.100	138.6	225	5.21	50.0
11.000	S43	S1	22.314	0.600	155.625	154.200	1.425	15.7	225	5.11	50.0
10.001	S1	S161	10.352	0.600	154.200	153.800	0.400	25.9	225	5.28	50.0
10.002	S161	S162	22.580	0.300	153.800	153.600	0.200	112.9	1000	7.15	50.0
10.003	S162	S4	14.547	0.300	153.600	153.200	0.400	36.4	225	10.14	50.0
10.004	S4	S5	10.994	0.300	153.200	152.768	0.432	25.4	225	12.02	50.0
10.005	S5	S6	13.190	0.300	152.768	152.106	0.662	19.9	225	14.03	50.0
10.006	S6	INFILTRATION BASIN 2	10.089	0.300	152.106	152.048	0.058	173.9	225	18.56	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)
10.000	1.109	44.1	2.8	1.069	2.134	0.015	0.0	38	0.623
11.000	3.323	132.1	5.7	2.222	2.134	0.030	0.0	31	1.660
10.001	2.582	102.7	8.5	2.134	3.547	0.045	0.0	44	1.576
10.002	0.201	703.5	8.5	2.772	1.848	0.045	0.0	142	0.065
10.003	0.081	3.2	8.5	2.623	1.222	0.045	0.0	225	0.083
10.004	0.097	3.9	11.4	1.222	0.961	0.060	0.0	225	0.099
10.005	0.110	4.4	14.2	0.961	0.947	0.075	0.0	225	0.112
10.006	0.037	1.5	14.2	0.947	1.782	0.075	0.0	225	0.038

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)
10.000	13.857	138.6	225	Circular	155.594	154.300	1.069	156.559	154.200	2.134
11.000	22.314	15.7	225	Circular	158.072	155.625	2.222	156.559	154.200	2.134
10.001	10.352	25.9	225	Circular	156.559	154.200	2.134	157.572	153.800	3.547
10.002	22.580	112.9	1000	SWALE	157.572	153.800	2.772	156.448	153.600	1.848
10.003	14.547	36.4	225	Circular	156.448	153.600	2.623	154.647	153.200	1.222
10.004	10.994	25.4	225	Circular	154.647	153.200	1.222	153.954	152.768	0.961
10.005	13.190	19.9	225	Circular	153.954	152.768	0.961	153.278	152.106	0.947
10.006	10.089	173.9	225	Circular	153.278	152.106	0.947	154.055	152.048	1.782

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
10.000	S2	1350	Manhole	Adoptable	S1	1200	Manhole	Adoptable
11.000	S43	1200	Manhole	Adoptable	S1	1200	Manhole	Adoptable
10.001	S1	1200	Manhole	Adoptable	S161	1200	Manhole	Adoptable
10.002	S161	1200	Manhole	Adoptable	S162	1200	Manhole	Adoptable
10.003	S162	1200	Manhole	Adoptable	S4	1350	Manhole	Adoptable
10.004	S4	1350	Manhole	Adoptable	S5	1350	Manhole	Adoptable
10.005	S5	1350	Manhole	Adoptable	S6	1350	Manhole	Adoptable
10.006	S6	1350	Manhole	Adoptable	INFILTRATION BASIN 2	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S2	400912.625	340409.264	155.594	1.294	1350				
						0	10.000	154.300	225
S43	400942.377	340389.527	158.072	2.447	1200				
						0	11.000	155.625	225
S1	400925.489	340404.111	156.559	2.359	1200				
						1	11.000	154.200	225
						2	10.000	154.200	225
S161	400928.029	340414.146	157.572	3.772	1200				
						0	10.001	154.200	225
						1	10.001	153.800	225
S162	400907.779	340424.137	156.448	2.848	1200				
						0	10.002	153.800	1000
						1	10.002	153.600	1000
S4	400899.275	340412.335	154.647	1.447	1350				
						0	10.003	153.600	225
						1	10.003	153.200	225
S5	400890.488	340405.728	153.954	1.186	1350				
						0	10.004	153.200	225
						1	10.004	152.768	225
						0	10.005	152.768	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S6	400884.708	340393.871	153.278	1.172	1350		1	10.005	152.106	225
							0	10.006	152.106	225
INFILTRATION BASIN 2	400893.752	340389.398	154.055	2.007	1200		1	10.006	152.048	225

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	17.000	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

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
1000	0	0	0

Node INFILTRATION BASIN 2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.07164	Safety Factor	10.0	Invert Level (m)	151.048
Side Inf Coefficient (m/hr)	0.07164	Porosity	1.00	Time to half empty (mins)	11571

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	10.0	10.0	3.172	401.2	401.2

Results for 1 year Critical Storm Duration. Lowest mass balance: 98.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S2	10	154.331	0.031	1.8	0.0442	0.0000	OK
15 minute winter	S43	10	155.651	0.026	3.6	0.0289	0.0000	OK
15 minute winter	S1	10	154.235	0.035	5.3	0.0391	0.0000	OK
15 minute winter	S161	13	153.918	0.118	5.2	0.1330	0.0000	OK
30 minute winter	S162	28	153.726	0.126	4.2	0.1424	0.0000	OK
60 minute winter	S4	42	153.324	0.124	2.3	0.1773	0.0000	OK
15 minute winter	S5	12	152.925	0.157	3.0	0.2246	0.0000	OK
60 minute winter	S6	48	152.393	0.287	2.8	0.4109	0.0000	SURCHARGED
1440 minute winter	INFILTRATION BASIN 2	1110	151.386	-0.662	0.5	10.4020	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	S2	10.000	S1	1.8	0.496	0.040	0.0492
15 minute winter	S43	11.000	S1	3.6	1.139	0.027	0.0704
15 minute winter	S1	10.001	S161	5.2	1.127	0.051	0.1239
15 minute winter	S161	10.002	S162	4.1	0.057	0.006	1.6910
30 minute winter	S162	10.003	S4	1.9	0.085	0.578	0.3214
60 minute winter	S4	10.004	S5	2.3	0.098	0.585	0.2542
15 minute winter	S5	10.005	S6	3.1	0.121	0.719	0.3656
60 minute winter	S6	10.006	INFILTRATION BASIN 2	2.5	0.093	1.687	0.2247
1440 minute winter	INFILTRATION BASIN 2	Infiltration		0.1			

Results for 2 year Critical Storm Duration. Lowest mass balance: 98.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S2	10	154.335	0.035	2.3	0.0500	0.0000	OK
15 minute winter	S43	10	155.654	0.029	4.6	0.0324	0.0000	OK
15 minute winter	S1	10	154.239	0.039	6.8	0.0442	0.0000	OK
15 minute winter	S161	13	153.936	0.136	6.8	0.1535	0.0000	OK
30 minute winter	S162	28	153.750	0.150	5.5	0.1701	0.0000	OK
60 minute winter	S4	42	153.348	0.148	3.0	0.2117	0.0000	OK
15 minute winter	S5	12	152.954	0.186	4.0	0.2664	0.0000	OK
60 minute winter	S6	49	152.539	0.433	3.7	0.6191	0.0000	SURCHARGED
1440 minute winter	INFILTRATION BASIN 2	1140	151.434	-0.614	0.5	13.0552	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	S2	10.000	S1	2.3	0.533	0.051	0.0589
15 minute winter	S43	11.000	S1	4.6	1.224	0.035	0.0840
15 minute winter	S1	10.001	S161	6.8	1.150	0.066	0.1487
15 minute winter	S161	10.002	S162	5.6	0.063	0.008	2.1578
30 minute winter	S162	10.003	S4	2.5	0.090	0.769	0.4012
60 minute winter	S4	10.004	S5	3.0	0.104	0.767	0.3162
15 minute winter	S5	10.005	S6	4.0	0.128	0.915	0.4469
60 minute winter	S6	10.006	INFILTRATION BASIN 2	3.1	0.113	2.085	0.2285
1440 minute winter	INFILTRATION BASIN 2	Infiltration		0.1			

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S2	10	154.349	0.049	4.4	0.0697	0.0000	OK
15 minute winter	S43	10	155.664	0.039	8.7	0.0441	0.0000	OK
15 minute winter	S1	10	154.254	0.054	13.0	0.0606	0.0000	OK
15 minute winter	S161	12	153.988	0.188	12.8	0.2126	0.0000	OK
30 minute winter	S162	29	153.887	0.287	10.3	0.3248	0.0000	SURCHARGED
60 minute winter	S4	42	153.701	0.501	5.1	0.7172	0.0000	SURCHARGED
60 minute winter	S5	42	153.390	0.622	5.9	0.8894	0.0000	SURCHARGED
60 minute winter	S6	51	152.757	0.651	4.3	0.9318	0.0000	SURCHARGED
960 minute winter	INFILTRATION BASIN 2	915	151.649	-0.399	1.5	28.3170	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	S2	10.000	S1	4.3	0.639	0.098	0.0938
15 minute winter	S43	11.000	S1	8.6	1.474	0.065	0.1317
15 minute winter	S1	10.001	S161	12.8	1.272	0.125	0.2168
15 minute winter	S161	10.002	S162	12.3	0.078	0.018	4.2594
30 minute winter	S162	10.003	S4	3.3	0.084	1.015	0.5785
60 minute winter	S4	10.004	S5	3.7	0.100	0.962	0.4372
60 minute winter	S5	10.005	S6	4.3	0.109	0.996	0.5246
60 minute winter	S6	10.006	INFILTRATION BASIN 2	3.8	0.138	2.603	0.2336
960 minute winter	INFILTRATION BASIN 2	Infiltration		0.2			

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 98.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S2	10	154.367	0.067	7.9	0.0956	0.0000	OK
15 minute winter	S43	10	155.677	0.052	15.8	0.0591	0.0000	OK
15 minute winter	S1	10	154.273	0.073	23.5	0.0821	0.0000	OK
60 minute winter	S161	56	154.068	0.268	12.3	0.3027	0.0000	OK
60 minute winter	S162	56	154.067	0.467	12.0	0.5287	0.0000	SURCHARGED
30 minute winter	S4	22	154.082	0.882	8.2	1.2627	0.0000	SURCHARGED
30 minute winter	S5	22	153.936	1.168	9.0	1.6718	0.0000	FLOOD RISK
60 minute winter	S6	48	152.968	0.862	5.3	1.2328	0.0000	SURCHARGED
1440 minute winter	INFILTRATION BASIN 2	1440	151.903	-0.145	1.9	53.6669	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	S2	10.000	S1	7.8	0.745	0.177	0.1449
15 minute winter	S43	11.000	S1	15.7	1.753	0.119	0.2013
15 minute winter	S1	10.001	S161	23.3	1.419	0.227	0.2631
60 minute winter	S161	10.002	S162	11.4	0.051	0.016	13.9783
60 minute winter	S162	10.003	S4	3.4	0.088	1.068	0.5785
30 minute winter	S4	10.004	S5	3.5	0.090	0.905	0.4372
30 minute winter	S5	10.005	S6	5.7	0.143	1.304	0.5246
60 minute winter	S6	10.006	INFILTRATION BASIN 2	4.5	0.158	3.038	0.2374
1440 minute winter	INFILTRATION BASIN 2	Infiltration		0.2			

Results for 1000 year Critical Storm Duration. Lowest mass balance: 98.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S2	10	154.373	0.073	9.2	0.1040	0.0000	OK
15 minute winter	S43	10	155.681	0.056	18.3	0.0637	0.0000	OK
15 minute winter	S1	10	154.279	0.079	27.3	0.0888	0.0000	OK
60 minute winter	S161	59	154.132	0.332	14.7	0.3757	0.0000	OK
60 minute winter	S162	59	154.132	0.532	14.0	0.6018	0.0000	SURCHARGED
30 minute winter	S4	21	154.225	1.025	8.5	1.4673	0.0000	SURCHARGED
30 minute winter	S5	19	153.954	1.186	9.9	1.6972	0.6807	FLOOD
60 minute winter	S6	48	153.019	0.913	5.5	1.3063	0.0000	FLOOD RISK
1440 minute winter	INFILTRATION BASIN 2	1410	151.982	-0.066	2.1	63.1428	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	S2	10.000	S1	9.1	0.776	0.206	0.1621
15 minute winter	S43	11.000	S1	18.2	1.826	0.138	0.2239
15 minute winter	S1	10.001	S161	27.0	1.477	0.263	0.2696
60 minute winter	S161	10.002	S162	12.8	0.052	0.018	18.2052
60 minute winter	S162	10.003	S4	3.4	0.088	1.068	0.5785
30 minute winter	S4	10.004	S5	3.5	0.089	0.908	0.4372
30 minute winter	S5	10.005	S6	5.9	0.148	1.351	0.5246
60 minute winter	S6	10.006	INFILTRATION BASIN 2	4.6	0.163	3.139	0.2383
1440 minute winter	INFILTRATION BASIN 2	Infiltration		0.2			