

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	✓

Adoptable 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	1200

Circular 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)
S1	0.010	5.00	59.000	600	506601.405	186183.619	0.550
S2			59.000	600	506604.725	186179.887	0.700
S3			59.000	600	506603.093	186178.436	0.740
S4	0.010	5.00	59.000	600	506613.587	186166.641	1.050
S5	0.010	5.00	59.000	600	506619.163	186199.732	0.550
S6	0.010	5.00	59.000	600	506631.641	186185.706	0.900
S7	0.062	5.00	59.000	600	506631.262	186174.858	1.400
S8			59.000	600	506639.491	186165.609	1.540
EX			59.000	600	506641.167	186163.725	1.600

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	S1	S2	4.995	0.600	58.450	58.300	0.150	33.3	150	5.05	50.0
1.001	S2	S3	2.184	0.600	58.300	58.260	0.040	54.6	150	5.07	50.0
1.002	S3	S4	15.788	0.600	58.260	57.950	0.310	50.9	150	5.26	50.0
1.003	S4	S7	19.492	0.600	57.950	57.600	0.350	55.7	150	5.50	50.0
2.000	S5	S6	18.773	0.600	58.450	58.100	0.350	53.6	150	5.23	50.0
2.001	S6	S7	10.855	0.600	58.100	57.600	0.500	21.7	150	5.31	50.0
1.004	S7	S8	12.380	0.600	57.600	57.460	0.140	88.4	150	5.69	50.0
1.005	S8	EX	2.522	0.600	57.460	57.400	0.060	42.0	150	5.72	50.0

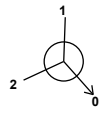
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.750	30.9	1.4	0.400	0.550	0.010	0.0	21	0.877
1.001	1.364	24.1	1.4	0.550	0.590	0.010	0.0	24	0.740
1.002	1.413	25.0	1.4	0.590	0.900	0.010	0.0	24	0.755
1.003	1.350	23.9	2.7	0.900	1.250	0.020	0.0	34	0.902
2.000	1.376	24.3	1.4	0.400	0.750	0.010	0.0	24	0.747
2.001	2.171	38.4	2.7	0.750	1.250	0.020	0.0	27	1.249
1.004	1.069	18.9	13.8	1.250	1.390	0.102	0.0	95	1.165
1.005	1.556	27.5	13.8	1.390	1.450	0.102	0.0	75	1.559

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	4.995	33.3	150	Circular	59.000	58.450	0.400	59.000	58.300	0.550
1.001	2.184	54.6	150	Circular	59.000	58.300	0.550	59.000	58.260	0.590
1.002	15.788	50.9	150	Circular	59.000	58.260	0.590	59.000	57.950	0.900
1.003	19.492	55.7	150	Circular	59.000	57.950	0.900	59.000	57.600	1.250
2.000	18.773	53.6	150	Circular	59.000	58.450	0.400	59.000	58.100	0.750
2.001	10.855	21.7	150	Circular	59.000	58.100	0.750	59.000	57.600	1.250
1.004	12.380	88.4	150	Circular	59.000	57.600	1.250	59.000	57.460	1.390
1.005	2.522	42.0	150	Circular	59.000	57.460	1.390	59.000	57.400	1.450

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	600	Manhole	Adoptable	S2	600	Manhole	Adoptable
1.001	S2	600	Manhole	Adoptable	S3	600	Manhole	Adoptable
1.002	S3	600	Manhole	Adoptable	S4	600	Manhole	Adoptable
1.003	S4	600	Manhole	Adoptable	S7	600	Manhole	Adoptable
2.000	S5	600	Manhole	Adoptable	S6	600	Manhole	Adoptable
2.001	S6	600	Manhole	Adoptable	S7	600	Manhole	Adoptable
1.004	S7	600	Manhole	Adoptable	S8	600	Manhole	Adoptable
1.005	S8	600	Manhole	Adoptable	EX	600	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S1	506601.405	186183.619	59.000	0.550	600		0	1.000	58.450	150
S2	506604.725	186179.887	59.000	0.700	600		1	1.000	58.300	150
S3	506603.093	186178.436	59.000	0.740	600		1	1.001	58.260	150
S4	506613.587	186166.641	59.000	1.050	600		1	1.002	57.950	150
S5	506619.163	186199.732	59.000	0.550	600		0	2.000	58.450	150
S6	506631.641	186185.706	59.000	0.900	600		1	2.000	58.100	150
S7	506631.262	186174.858	59.000	1.400	600		1	2.001	57.600	150
S8	506639.491	186165.609	59.000	1.540	600		1	1.004	57.460	150
EX	506641.167	186163.725	59.000	1.600	600		1	1.005	57.400	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
30	0	0	0
100	0	0	0
100	40	0	0

Node S8 Online Orifice Control

Flap Valve	x	Design Depth (m)	1.100	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.4		
Invert Level (m)	57.460	Diameter (m)	0.025		

Node S7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	57.600
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.33	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	310.0	0.0	0.500	310.0	0.0	0.501	0.0	0.0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Results for 1 year Critical Storm Duration. Lowest mass balance: 98.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	58.472	0.022	1.4	0.0141	0.0000	OK
15 minute winter	S2	10	58.326	0.026	1.4	0.0075	0.0000	OK
15 minute winter	S3	11	58.284	0.024	1.4	0.0067	0.0000	OK
15 minute summer	S4	10	57.986	0.036	2.6	0.0170	0.0000	OK
15 minute winter	S5	10	58.474	0.024	1.4	0.0156	0.0000	OK
15 minute summer	S6	9	58.128	0.028	2.6	0.0144	0.0000	OK
240 minute winter	S7	220	57.704	0.104	3.0	10.7384	0.0000	OK
240 minute winter	S8	220	57.704	0.244	0.7	0.0690	0.0000	SURCHARGED
15 minute summer	EX	1	57.400	0.000	0.6	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 winter	S1	1.000	S2	1.4	0.761	0.045	0.0091	
15 minute winter	S2	1.001	S3	1.4	0.710	0.056	0.0042	
15 minute winter	S3	1.002	S4	1.4	0.559	0.054	0.0395	
15 minute summer	S4	1.003	S7	2.7	1.086	0.112	0.0605	
15 minute winter	S5	2.000	S6	1.4	0.677	0.056	0.0385	
15 minute summer	S6	2.001	S7	2.7	1.457	0.069	0.0299	
240 minute winter	S7	1.004	S8	0.7	0.194	0.038	0.1895	
240 minute winter	S8	Orifice	EX	0.6				14.4

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	58.485	0.035	3.5	0.0226	0.0000	OK
15 minute winter	S2	10	58.343	0.043	3.5	0.0123	0.0000	OK
15 minute winter	S3	10	58.297	0.037	3.4	0.0106	0.0000	OK
15 minute winter	S4	10	58.005	0.055	6.9	0.0261	0.0000	OK
15 minute winter	S5	10	58.488	0.038	3.5	0.0247	0.0000	OK
15 minute winter	S6	10	58.143	0.043	7.0	0.0218	0.0000	OK
360 minute winter	S7	344	57.870	0.270	4.9	27.9466	0.0000	SURCHARGED
360 minute winter	S8	344	57.870	0.410	0.8	0.1160	0.0000	SURCHARGED
15 minute summer	EX	1	57.400	0.000	0.7	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 winter	S1	1.000	S2	3.5	0.949	0.112	0.0183	
15 minute winter	S2	1.001	S3	3.4	0.901	0.143	0.0084	
15 minute winter	S3	1.002	S4	3.4	0.743	0.136	0.0733	
15 minute winter	S4	1.003	S7	6.9	1.166	0.289	0.1908	
15 minute winter	S5	2.000	S6	3.5	0.898	0.142	0.0724	
15 minute winter	S6	2.001	S7	6.9	1.558	0.180	0.1004	
360 minute winter	S7	1.004	S8	0.8	0.197	0.044	0.2179	
360 minute winter	S8	Orifice	EX	0.8				23.8

Results for 100 year Critical Storm Duration. Lowest mass balance: 98.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	58.490	0.040	4.5	0.0259	0.0000	OK
15 minute winter	S2	10	58.350	0.050	4.5	0.0142	0.0000	OK
15 minute winter	S3	10	58.302	0.042	4.4	0.0120	0.0000	OK
15 minute winter	S4	10	58.013	0.063	8.9	0.0297	0.0000	OK
15 minute winter	S5	10	58.494	0.044	4.5	0.0281	0.0000	OK
15 minute winter	S6	10	58.149	0.049	8.9	0.0248	0.0000	OK
360 minute winter	S7	344	57.971	0.371	6.2	38.3770	0.0000	SURCHARGED
360 minute winter	S8	344	57.970	0.510	0.9	0.1445	0.0000	SURCHARGED
15 minute summer	EX	1	57.400	0.000	0.7	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 winter	S1	1.000	S2	4.5	1.004	0.144	0.0223	
15 minute winter	S2	1.001	S3	4.4	0.960	0.183	0.0101	
15 minute winter	S3	1.002	S4	4.4	0.793	0.175	0.0873	
15 minute winter	S4	1.003	S7	8.7	1.199	0.366	0.2250	
15 minute winter	S5	2.000	S6	4.4	0.961	0.183	0.0868	
15 minute winter	S6	2.001	S7	8.9	1.599	0.231	0.1153	
360 minute winter	S7	1.004	S8	0.9	0.230	0.049	0.2179	
360 minute winter	S8	Orifice	EX	0.9				26.6

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 98.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	S1	328	58.595	0.145	0.9	0.0934	0.0000	OK
360 minute winter	S2	328	58.595	0.295	0.9	0.0834	0.0000	SURCHARGED
360 minute winter	S3	328	58.595	0.335	0.9	0.0947	0.0000	SURCHARGED
360 minute winter	S4	328	58.595	0.645	1.8	0.3049	0.0000	SURCHARGED
360 minute winter	S5	328	58.594	0.144	0.9	0.0933	0.0000	OK
360 minute winter	S6	328	58.595	0.495	1.8	0.2497	0.0000	SURCHARGED
360 minute winter	S7	328	58.595	0.995	8.9	52.3627	0.0000	SURCHARGED
360 minute winter	S8	328	58.594	1.134	1.6	0.3208	0.0000	SURCHARGED
15 minute summer	EX	1	57.400	0.000	0.8	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)
360 minute winter	S1	1.000	S2	0.9	0.676	0.029	0.0874	
360 minute winter	S2	1.001	S3	0.9	0.630	0.037	0.0384	
360 minute winter	S3	1.002	S4	0.9	0.504	0.036	0.2779	
360 minute winter	S4	1.003	S7	1.8	0.532	0.075	0.3432	
360 minute winter	S5	2.000	S6	0.9	0.603	0.037	0.3286	
360 minute winter	S6	2.001	S7	1.8	0.867	0.047	0.1911	
360 minute winter	S7	1.004	S8	1.6	0.237	0.084	0.2179	
360 minute winter	S8	Orifice	EX	1.4				32.8