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)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.200	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)	Add Inflow (l/s)	Cover Level (m)	Diameter (mm)	Width (mm)	Depth (m)
S1	0.005	5.00		152.350	450		0.800
S2	0.009	5.00		152.350	450		0.938
S3				152.350	450		1.213
S4				152.790	750	600	2.395
C7			1.1	151.870	1200		2.522
C8				152.290	1200		3.692
C9				150.530	1200		2.315
Outfall				147.730			0.190
S5	0.006	5.00		152.350	450		0.800

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)
S1 - S2	S1	S2	11.000	0.600	151.550	151.412	0.138	80.0	150	5.16	50.0
S2 - S3	S2	S3	22.000	0.600	151.412	151.137	0.275	80.0	150	5.49	50.0
S3 - S4	S3	S4	89.000	0.600	151.137	150.395	0.742	120.0	150	7.11	50.0
S4 - C7	S4	C7	25.000	0.600	150.395	149.348	1.047	23.9	150	7.31	50.0
C7 - C8	C7	C8	90.000	0.600	149.348	148.598	0.750	120.0	150	8.95	50.0
C8 - C9	C8	C9	46.000	0.600	148.598	148.215	0.383	120.0	150	9.78	50.0
C9 - Outfall	C9	Outfall	8.000	0.600	148.215	147.540	0.675	11.9	150	9.83	50.0
S5 - S3	S5	S3	11.000	0.600	151.550	151.138	0.412	26.7	150	5.09	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)
S1 - S2	1.125	19.9	0.7	0.650	0.788	0.005	0.0	19	0.522
S2 - S3	1.125	19.9	1.9	0.788	1.063	0.014	0.0	31	0.712
S3 - S4	0.916	16.2	2.7	1.063	2.245	0.020	0.0	41	0.680
S4 - C7	2.069	36.6	2.7	2.245	2.372	0.020	0.0	28	1.222
C7 - C8	0.916	16.2	3.8	2.372	3.542	0.020	1.1	50	0.750
C8 - C9	0.916	16.2	3.8	3.542	2.165	0.020	1.1	50	0.750
C9 - Outfall	2.942	52.0	3.8	2.165	0.040	0.020	1.1	27	1.718
S5 - S3	1.956	34.6	0.8	0.650	1.062	0.006	0.0	16	0.818

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)
S1 - S2	11.000	80.0	150	Circular	152.350	151.550	0.650	152.350	151.412	0.788
S2 - S3	22.000	80.0	150	Circular	152.350	151.412	0.788	152.350	151.137	1.063
S3 - S4	89.000	120.0	150	Circular	152.350	151.137	1.063	152.790	150.395	2.245
S4 - C7	25.000	23.9	150	Circular	152.790	150.395	2.245	151.870	149.348	2.372
C7 - C8	90.000	120.0	150	Circular	151.870	149.348	2.372	152.290	148.598	3.542
C8 - C9	46.000	120.0	150	Circular	152.290	148.598	3.542	150.530	148.215	2.165
C9 - Outfall	8.000	11.9	150	Circular	150.530	148.215	2.165	147.730	147.540	0.040
S5 - S3	11.000	26.7	150	Circular	152.350	151.550	0.650	152.350	151.138	1.062

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
S1 - S2	S1	450		Manhole	Private	S2	450		Manhole	Private
S2 - S3	S2	450		Manhole	Private	S3	450		Manhole	Private
S3 - S4	S3	450		Manhole	Private	S4	750	600	Manhole	Private
S4 - C7	S4	750	600	Manhole	Private	C7	1200		Manhole	Private
C7 - C8	C7	1200		Manhole	Private	C8	1200		Manhole	Private
C8 - C9	C8	1200		Manhole	Private	C9	1200		Manhole	Private
C9 - Outfall	C9	1200		Manhole	Private	Outfall			Junction	
S5 - S3	S5	450		Manhole	Adoptable	S3	450		Manhole	Private

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
S1	152.350	0.800	450		0	S1 - S2	151.550	150
S2	152.350	0.938	450		1	S1 - S2	151.412	150
					0	S2 - S3	151.412	150

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
S3	152.350	1.213	450		1	S5 - S3	151.138	150
					2	S2 - S3	151.137	150
					0	S3 - S4	151.137	150
S4	152.790	2.395	750	600	1	S3 - S4	150.395	150
					0	S4 - C7	150.395	150
C7	151.870	2.522	1200		1	S4 - C7	149.348	150
					0	C7 - C8	149.348	150
C8	152.290	3.692	1200		1	C7 - C8	148.598	150
					0	C8 - C9	148.598	150
C9	150.530	2.315	1200		1	C8 - C9	148.215	150
					0	C9 - Outfall	148.215	150
Outfall	147.730	0.190			1	C9 - Outfall	147.540	150
S5	152.350	0.800	450		0	S5 - S3	151.550	150

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	Drain Down Time (mins)	240
FSR Region	England and Wales	Winter CV	0.840	Additional Storage (m³/ha)	0.0
M5-60 (mm)	17.000	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.200	Skip Steady State	x	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	35	0	0

Node S4 Online Orifice Control

Flap Valve	x	Invert Level (m)	150.395	Design Flow (l/s)	5.0	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Depth (m)	2.000	Diameter (m)	0.070		

Results for 100 year +35% CC Critical Storm Duration. Lowest mass balance: 99.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	151.582	0.032	2.0	0.0051	0.0000	OK
15 minute winter	S2	10	151.466	0.054	5.6	0.0085	0.0000	OK
15 minute winter	S3	11	151.208	0.071	7.8	0.0114	0.0000	OK
30 minute winter	S4	22	150.678	0.283	6.8	0.1274	0.0000	SURCHARGED
30 minute winter	C7	23	149.412	0.064	6.2	0.0723	0.0000	OK
30 minute winter	C8	24	148.668	0.070	6.2	0.0794	0.0000	OK
30 minute winter	C9	24	148.251	0.035	6.1	0.0401	0.0000	OK
30 minute winter	Outfall	24	147.575	0.035	6.1	0.0000	0.0000	OK
15 minute winter	S5	10	151.577	0.027	2.4	0.0042	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	S1 - S2	S2	2.0	0.478	0.100	0.0462	
15 minute winter	S2	S2 - S3	S3	5.5	0.812	0.275	0.1519	
15 minute winter	S3	S3 - S4	S4	7.5	0.747	0.463	1.1486	
30 minute winter	S4	Orifice	C7	5.1				
30 minute winter	C7	C7 - C8	C8	6.2	0.823	0.381	0.6836	
30 minute winter	C8	C8 - C9	C9	6.1	1.099	0.376	0.2591	
30 minute winter	C9	C9 - Outfall	Outfall	6.1	1.943	0.117	0.0250	22.9
15 minute winter	S5	S5 - S3	S3	2.4	0.566	0.069	0.0558	