Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	75.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	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)	Depth (m)
C1			76.200	600	2.553
S1			76.200	1500	2.529
S2	0.077	5.00	76.250	2100	2.544
S3		5.00	76.300	2100	2.400

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	S3	S2	9.000	0.600	73.900	73.706	0.194	46.4	1200	5.03	63.1
1.001	S2	S1	3.000	0.600	73.706	73.671	0.035	85.7	450	5.05	63.0
1.002	S1	C1	2.350	0.600	73.671	73.647	0.024	97.9	225	5.08	62.8

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	5.499	6218.7	0.0	1.200	1.344	0.000	0.0	0	0.000
1.001	2.197	349.4	13.1	2.094	2.079	0.077	0.0	58	1.068
1.002	1.321	52.5	13.1	2.304	2.328	0.077	0.0	76	1.099

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	9.000	46.4	1200	Circular_Default Sewer Type	76.300	73.900	1.200	76.250	73.706	1.344
1.001	3.000	85.7	450	Circular_Default Sewer Type	76.250	73.706	2.094	76.200	73.671	2.079
1.002	2.350	97.9	225	Circular_Default Sewer Type	76.200	73.671	2.304	76.200	73.647	2.328

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1	S3	2100	Manhole	Adoptable	S2	2100	Manhole	Adoptable
1.001	S2	2100	Manhole	Adoptable	S1	1500	Manhole	Adoptable
1.002	S1	1500	Manhole	Adoptable	C1	600	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
C1	76.200	2.553	600	1	1.002	73.647	225
S1	76.200	2.529	1500	1	1.001	73.671	450
				0	1.002	73.671	225
S2	76.250	2.544	2100	1	1	73.706	1200
				0	1.001	73.706	450
S3	76.300	2.400	2100				
				0	1	73.900	1200

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	18.000	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 %)
2	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0

Node S1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	73.671	Product Number	CTL-SHE-0082-3500-1500-3500
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.5	Min Node Diameter (mm)	1200

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	C1	24	73.684	0.037	3.1	0.0000	0.0000	OK
30 minute winter	S1	25	74.031	0.360	8.8	0.6354	0.0000	SURCHARGED
30 minute winter	S2	24	74.028	0.322	9.6	1.1142	0.0000	OK
30 minute winter	S3	25	74.027	0.127	2.5	0.4407	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)
30 minute winter	S1	1.002	C1	3.1	0.680	0.059	0.0108	7.5
30 minute winter	S2	1.001	S1	8.8	0.497	0.025	0.3847	
30 minute winter	S3	1	S2	-2.5	-0.032	0.000	1.3754	

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	C1	51	73.684	0.037	3.1	0.0000	0.0000	OK
30 minute winter	S1	30	74.344	0.673	8.2	1.1899	0.0000	SURCHARGED
30 minute winter	S2	31	74.341	0.635	19.0	2.2005	0.0000	SURCHARGED
30 minute winter	S3	30	74.342	0.442	6.4	1.5311	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)
30 minute winter	S1	1.002	C1	3.1	0.681	0.060	0.0108	14.3
30 minute winter	S2	1.001	S1	8.2	0.533	0.024	0.4753	
30 minute winter	S3	1	S2	-6.4	-0.054	-0.001	4.4193	

Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	C1	92	73.684	0.037	3.1	0.0000	0.0000	OK
60 minute winter	S1	57	74.599	0.928	6.9	1.6390	0.0000	SURCHARGED
60 minute winter	S2	57	74.599	0.893	16.0	3.0920	0.0000	SURCHARGED
60 minute winter	S3	57	74.599	0.699	7.0	2.4203	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)
60 minute winter	S1	1.002	C1	3.1	0.681	0.060	0.0108	23.5
60 minute winter	S2	1.001	S1	6.9	0.497	0.020	0.4753	
60 minute winter	S3	1	S2	-7.0	0.036	-0.001	7.1110	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	C1	58	73.686	0.039	3.5	0.0000	0.0000	OK
60 minute winter	S1	58	75.186	1.515	9.2	2.6770	0.0000	SURCHARGED
60 minute winter	S2	58	75.186	1.480	22.4	5.1267	0.0000	SURCHARGED
60 minute winter	S3	58	75.186	1.286	10.5	4.4547	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	S1	1.002	C1	3.5	0.699	0.066	0.0117	32.9
60 minute winter	S2	1.001	S1	9.2	0.551	0.026	0.4753	
60 minute winter	S3	1	S2	-10.5	0.031	-0.002	10.1404	