

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)	19.000	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)	Easting (m)	Northing (m)	Depth (m)
S1	0.011	5.00	100.000	450	414828.276	415704.781	0.450
S2			100.000	450	414814.423	415702.516	0.700
S3			100.000	450	414815.241	415693.226	0.900
S4			100.000	450	414811.179	415692.892	1.000
S5			100.000	450	414810.759	415697.176	1.400
S6			100.000	1200	414810.369	415701.157	1.420
S7			100.000	450	414810.264	415702.220	1.460
S8			100.000	450	414808.212	415702.192	1.500
S9	0.011	5.00	100.000	450	414830.056	415694.531	0.450

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)
1.001	S1	S2	14.037	0.600	99.550	99.300	0.250	56.1	100	5.23	65.5
1.002	S2	S3	9.326	0.600	99.300	99.100	0.200	46.6	100	5.36	64.8
2.001	S9	S3	14.872	0.600	99.550	99.100	0.450	33.0	100	5.18	65.7
1.003	S3	S4	4.076	0.600	99.100	99.000	0.100	40.8	100	5.42	64.5
1.004	S4	S5	4.305	0.600	99.000	98.900	0.100	43.0	100	5.48	64.2
1.005	S5	S6	4.000	0.600	98.600	98.580	0.020	200.0	400	5.51	64.0
1.006	S6	S7	1.068	0.600	98.580	98.540	0.040	26.7	150	5.52	64.0
1.007	S7	S8	2.052	0.600	98.540	98.500	0.040	51.3	150	5.54	63.9

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)
1.001	1.030	8.1	2.0	0.350	0.600	0.011	0.0	33	0.844
1.002	1.131	8.9	1.9	0.600	0.800	0.011	0.0	32	0.904
2.001	1.346	10.6	2.0	0.350	0.800	0.011	0.0	29	1.031
1.003	1.211	9.5	3.8	0.800	0.900	0.022	0.0	44	1.146
1.004	1.178	9.3	3.8	0.900	1.000	0.022	0.0	45	1.124
1.005	2.658	2657.8	3.8	1.000	1.020	0.022	0.0	7	0.213
1.006	1.956	34.6	3.8	1.270	1.310	0.022	0.0	34	1.294
1.007	1.407	24.9	3.8	1.310	1.350	0.022	0.0	40	1.020

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)
1.001	14.037	56.1	100	Circular_Default Sewer Type	100.000	99.550	0.350	100.000	99.300	0.600
1.002	9.326	46.6	100	Circular_Default Sewer Type	100.000	99.300	0.600	100.000	99.100	0.800
2.001	14.872	33.0	100	Circular_Default Sewer Type	100.000	99.550	0.350	100.000	99.100	0.800
1.003	4.076	40.8	100	Circular_Default Sewer Type	100.000	99.100	0.800	100.000	99.000	0.900
1.004	4.305	43.0	100	Circular_Default Sewer Type	100.000	99.000	0.900	100.000	98.900	1.000
1.005	4.000	200.0	400	aTENUATION tANK	100.000	98.600	1.000	100.000	98.580	1.020
1.006	1.068	26.7	150	Circular_Default Sewer Type	100.000	98.580	1.270	100.000	98.540	1.310
1.007	2.052	51.3	150	Circular_Default Sewer Type	100.000	98.540	1.310	100.000	98.500	1.350

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.001	S1	450	Manhole	Adoptable	S2	450	Manhole	Adoptable
1.002	S2	450	Manhole	Adoptable	S3	450	Manhole	Adoptable
2.001	S9	450	Manhole	Adoptable	S3	450	Manhole	Adoptable
1.003	S3	450	Manhole	Adoptable	S4	450	Manhole	Adoptable
1.004	S4	450	Manhole	Adoptable	S5	450	Manhole	Adoptable
1.005	S5	450	Manhole	Adoptable	S6	1200	Manhole	Adoptable
1.006	S6	1200	Manhole	Adoptable	S7	450	Manhole	Adoptable
1.007	S7	450	Manhole	Adoptable	S8	450	Manhole	Adoptable

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	19.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m ³ /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 %)
100	45	0	0

Node S6 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	98.580	Product Number	CTL-SHE-0090-3000-0500-3000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	3.0	Min Node Diameter (mm)	1200

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	S1	11	99.624	0.074	6.8	0.0478	0.0000	OK
15 minute winter	S2	12	99.499	0.199	6.9	0.0316	0.0000	SURCHARGED
15 minute winter	S3	12	99.401	0.301	11.8	0.0478	0.0000	SURCHARGED
15 minute winter	S4	12	99.198	0.198	11.2	0.0315	0.0000	SURCHARGED
30 minute winter	S5	27	98.972	0.372	9.8	0.0592	0.0000	OK
30 minute winter	S6	27	98.972	0.392	6.7	0.4438	0.0000	SURCHARGED
120 minute summer	S7	88	98.580	0.040	3.0	0.0063	0.0000	OK
120 minute summer	S8	88	98.535	0.035	3.0	0.0000	0.0000	OK
15 minute winter	S9	11	99.612	0.062	6.8	0.0404	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute winter	S1	1.001	S2	6.9	1.129	0.857	0.0983	
15 minute winter	S2	1.002	S3	5.6	0.771	0.626	0.0730	
15 minute winter	S3	1.003	S4	11.2	1.428	1.175	0.0319	
15 minute winter	S4	1.004	S5	11.1	1.418	1.199	0.0333	
30 minute winter	S5	1.005	S6	6.7	0.065	0.003	3.8239	
30 minute winter	S6	Hydro-Brake®	S7	3.0				
120 minute summer	S7	1.007	S8	3.0	0.873	0.120	0.0070	11.2
15 minute winter	S9	2.001	S3	6.6	0.928	0.625	0.0963	