



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)	19.000	Minimum Backdrop Height (m)	0.000
Ratio-R	0.350	Preferred Cover Depth (m)	0.550
CV	1.000	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)	Depth (m)
IC S1	0.013	5.00	67.200	315	1.000
IC S2	0.004	5.00	67.150	600	1.110
MH S3	0.012	5.00	67.100	1200	1.169
MH C1	0.000		67.100	1200	1.198

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	IC S1	IC S2	12.800	0.600	66.200	66.040	0.160	80.0	100	5.25	47.7
1.001	IC S2	MH S3	4.700	0.600	66.040	65.981	0.059	80.0	100	5.34	47.3
1.002	MH S3	MH C1	2.300	0.600	65.931	65.902	0.029	80.0	150	5.37	47.2

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	0.861	6.8	2.2	0.900	1.010	0.013	0.0	39	0.771
1.001	0.861	6.8	2.9	1.010	1.019	0.017	0.0	46	0.827
1.002	1.125	19.9	4.9	1.019	1.048	0.029	0.0	51	0.933

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
IC S1	67.200	1.000	315				
				0	1.000	66.200	100
IC S2	67.150	1.110	600		1	1.000	66.040
				0	1.001	66.040	100
MH S3	67.100	1.169	1200		1	1.001	65.981
				0	1.002	65.931	150
MH C1	67.100	1.198	1200		1	1.002	65.902
							150

**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	0.350	Additional Storage (m ³ /ha)	20.0
Summer CV	1.000	Check Discharge Rate(s)	x
Winter CV	1.000	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	45	0	0

Node MH S3 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	65.931	Product Number	CTL-SHE-0103-5000-1200-5000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node MH S3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	65.931
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	25

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	4.0	0.0	0.750	4.0	0.0	0.751	0.0	0.0

**Results for 1 year Critical Storm Duration. Lowest mass balance: 99.52%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	IC S1	10	66.238	0.038	2.1	0.0129	0.0000	OK
15 minute summer	IC S2	11	66.087	0.047	2.7	0.0167	0.0000	OK
15 minute summer	MH S3	12	66.042	0.111	4.5	0.5916	0.0000	OK
15 minute summer	MH C1	1	65.902	0.000	3.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	IC S1	1.000	IC S2	2.1	0.659	0.307	0.0403	
15 minute summer	IC S2	1.001	MH S3	2.6	0.772	0.388	0.0196	
15 minute summer	MH S3	Hydro-Brake®	MH C1	3.8				2.0

**Results for 30 year Critical Storm Duration. Lowest mass balance: 99.52%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	IC S1	12	66.340	0.140	5.2	0.0474	0.0000	SURCHARGED
30 minute summer	IC S2	21	66.301	0.261	6.1	0.0926	0.0000	SURCHARGED
30 minute summer	MH S3	22	66.281	0.350	9.3	1.8702	0.0000	SURCHARGED
15 minute summer	MH C1	1	65.902	0.000	5.0	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 summer	IC S1	1.000	IC S2	4.8	0.755	0.709	0.1002	
30 minute summer	IC S2	1.001	MH S3	4.9	0.762	0.719	0.0368	
30 minute summer	MH S3	Hydro-Brake®	MH C1	5.0				6.7

**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.52%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	IC S1	24	67.095	0.895	8.9	0.3025	0.0000	FLOOD RISK
30 minute summer	IC S2	24	67.075	1.035	9.3	0.3674	0.0000	FLOOD RISK
30 minute summer	MH S3	24	67.060	1.129	15.4	4.5104	0.0000	FLOOD RISK
15 minute summer	MH C1	1	65.902	0.000	5.0	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)
30 minute summer	IC S1	1.000	IC S2	6.6	0.845	0.978	0.1002	
30 minute summer	IC S2	1.001	MH S3	7.2	0.926	1.072	0.0368	
30 minute summer	MH S3	Hydro-Brake®	MH C1	5.0				12.6