Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	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	0.325	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)
RE1	0.020	5.00	81.650	600	415606.371	416341.804	0.450
MH1	0.004	5.00	81.000	600	415575.590	416340.119	0.600
MH2	0.013	5.00	81.000	900	415608.141	416328.312	1.050
MH3	0.003	5.00	81.000	1200	415575.878	416326.535	1.670
OUTFALL			80.900		415575.950	416324.328	1.778

Links

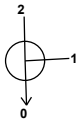
Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	RE1	MH1	30.827	0.600	81.200	80.400	0.800	38.5	150	5.32	50.0
1.001	MH1	MH3	13.587	0.600	80.400	80.250	0.150	90.6	150	5.53	50.0
2.000	MH2	MH3	32.312	0.600	79.950	79.330	0.620	52.1	450	5.19	50.0
1.002	MH3	OUTFALL	2.208	0.600	79.330	79.122	0.208	10.6	150	5.54	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	1.626	28.7	3.8	0.300	0.450	0.020	0.0	37	1.129
1.001	1.056	18.7	4.6	0.450	0.600	0.024	0.0	51	0.876
2.000	2.821	448.6	2.5	0.600	1.220	0.013	0.0	23	0.764
1.002	3.110	55.0	7.6	1.520	1.628	0.040	0.0	38	2.201

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
RE1	415606.371	416341.804	81.650	0.450	600				
						0	1.000	81.200	150
MH1	415575.590	416340.119	81.000	0.600	600	1	1.000	80.400	150
									
						0	1.001	80.400	150
MH2	415608.141	416328.312	81.000	1.050	900				
						0	2.000	79.950	450

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
MH3	415575.878	416326.535	81.000	1.670	1200		1	2.000	79.330	450
							2	1.001	80.250	150
							0	1.002	79.330	150
OUTFALL	415575.950	416324.328	80.900	1.778			1	1.002	79.122	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	19.000	Drain Down Time (mins)	720
Ratio-R	0.325	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 %)
1	0	0	0
30	0	0	0
100	40	0	0

Node MH3 Online Hydro-Brake® Control

Flap Valve	✓	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	79.330	Product Number	CTL-SHE-0077-3000-1400-3000
Design Depth (m)	1.400	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.0	Min Node Diameter (mm)	1200

Results for 1 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
15 minute winter	RE1	10	81.230	0.030	2.5	0.0084	0.0000	OK
15 minute winter	MH1	11	80.441	0.041	2.9	0.0116	0.0000	OK
15 minute winter	MH2	10	79.969	0.019	1.6	0.0124	0.0000	OK
15 minute winter	MH3	14	79.493	0.163	4.8	0.1843	0.0000	SURCHARGED
15 minute summer	OUTFALL	1	79.122	0.000	2.4	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	RE1	1.000	MH1	2.4	0.787	0.085	0.0969	
15 minute winter	MH1	1.001	MH3	2.9	0.758	0.155	0.0519	
15 minute winter	MH2	2.000	MH3	1.5	0.386	0.003	0.8595	
15 minute winter	MH3	Hydro-Brake®	OUTFALL	2.5				2.3

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
15 minute winter	RE1	10	81.247	0.047	6.1	0.0132	0.0000	OK
15 minute winter	MH1	11	80.467	0.067	7.2	0.0191	0.0000	OK
30 minute winter	MH2	27	79.981	0.031	3.2	0.0199	0.0000	OK
30 minute winter	MH3	27	79.978	0.648	9.8	0.7332	0.0000	SURCHARGED
15 minute summer	OUTFALL	1	79.122	0.000	2.7	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	RE1	1.000	MH1	6.0	0.990	0.210	0.1889	
15 minute winter	MH1	1.001	MH3	7.2	0.963	0.383	0.1010	
30 minute winter	MH2	2.000	MH3	3.2	0.335	0.007	2.6365	
30 minute winter	MH3	Hydro-Brake®	OUTFALL	2.7				7.6

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
15 minute winter	RE1	10	81.264	0.064	11.1	0.0182	0.0000	OK
60 minute winter	MH1	48	80.778	0.378	7.4	0.1069	0.0000	FLOOD RISK
60 minute winter	MH2	48	80.779	0.829	10.8	0.5274	0.0000	FLOOD RISK
60 minute winter	MH3	48	80.772	1.442	11.4	1.6314	0.0000	FLOOD RISK
15 minute summer	OUTFALL	1	79.122	0.000	2.7	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	RE1	1.000	MH1	11.0	1.137	0.382	0.2979	
60 minute winter	MH1	1.001	MH3	7.4	0.970	0.396	0.2392	
60 minute winter	MH2	2.000	MH3	-6.9	0.394	-0.015	5.1196	
60 minute winter	MH3	Hydro-Brake®	OUTFALL	3.0				18.1