

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)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.200	Preferred Cover Depth (m)	0.400
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)	Easting (m)	Northing (m)	Depth (m)
SWIC-1	0.030	5.00	197.705	450	379558.238	421679.798	0.625
SWIC-2	0.020	5.00	197.800	450	379581.114	421679.994	0.925
SWIC-3	0.020	5.00	197.830	450	379581.033	421709.992	1.148
TANK			197.860		379562.994	421709.906	1.210
SWMH-4	0.020	5.00	197.860	1050	379561.144	421709.898	1.300
MH03			197.840	1200	379559.211	421712.820	1.310

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)
P1.001	SWIC-1	SWIC-2	22.877	0.600	197.080	196.875	0.205	111.6	225	5.31	37.8
P1.002	SWIC-2	SWIC-3	29.998	0.600	196.875	196.682	0.193	155.4	225	5.79	36.7
P1.003	SWIC-3	TANK	18.039	0.600	196.682	196.650	0.032	563.7	225	6.34	35.5
P1.004	TANK	SWMH-4	1.677	0.600	196.650	196.560	0.090	18.6	225	6.35	35.7
P2.000	SWMH-4	MH03	3.504	0.600	196.560	196.530	0.030	116.8	150	6.41	35.3

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)
P1.001	1.237	49.2	3.1	0.400	0.700	0.030	0.0	38	0.696
P1.002	1.046	41.6	5.0	0.700	0.923	0.050	0.0	52	0.708
P1.003	0.544	21.6	6.7	0.923	0.985	0.070	0.0	86	0.480
P1.004	3.045	121.1	6.8	0.985	1.075	0.070	0.0	36	1.649
P2.000	0.929	16.4	8.6	1.150	1.160	0.090	0.0	77	0.939

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)
P1.001	22.877	111.6	225	Circular	197.705	197.080	0.400	197.800	196.875	0.700
P1.002	29.998	155.4	225	Circular	197.800	196.875	0.700	197.830	196.682	0.923
P1.003	18.039	563.7	225	Circular	197.830	196.682	0.923	197.860	196.650	0.985
P1.004	1.677	18.6	225	Circular	197.860	196.650	0.985	197.860	196.560	1.075

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
P1.001	SWIC-1	450	Manhole	Adoptable	SWIC-2	450	Manhole	Adoptable
P1.002	SWIC-2	450	Manhole	Adoptable	SWIC-3	450	Manhole	Adoptable
P1.003	SWIC-3	450	Manhole	Adoptable	TANK		Junction	
P1.004	TANK		Junction		SWMH-4	1050	Manhole	Adoptable

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)
P2.000	3.504	116.8	150	Circular	197.860	196.560	1.150	197.840	196.530	1.160

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
P2.000	SWMH-4	1050	Manhole	Adoptable	MH03	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWIC-1	379558.238	421679.798	197.705	0.625	450				
						0	P1.001	197.080	225
SWIC-2	379581.114	421679.994	197.800	0.925	450				
						1	P1.001	196.875	225
						0	P1.002	196.875	225
SWIC-3	379581.033	421709.992	197.830	1.148	450				
						1	P1.002	196.682	225
						0	P1.003	196.682	225
TANK	379562.994	421709.906	197.860	1.210					
						1	P1.003	196.650	225
						0	P1.004	196.650	225
SWMH-4	379561.144	421709.898	197.860	1.300	1050				
						1	P1.004	196.560	225
						0	P2.000	196.560	150
MH03	379559.211	421712.820	197.840	1.310	1200				
						1	P2.000	196.530	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	17.000	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 %)
1	0	0	0
30	0	0	0
100	0	0	0
100	40	0	0

Node SWMH-4 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.800	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	4.0		
Invert Level (m)	196.560	Diameter (m)	0.046		

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	196.650
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	49

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	10.0	0.0	0.500	10.0	0.0	0.501	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute winter	SWIC-1	10	197.121	0.041	3.6	0.0456	0.0000	OK
15 minute winter	SWIC-2	11	196.931	0.056	5.9	0.0332	0.0000	OK
30 minute winter	SWIC-3	26	196.859	0.177	6.3	0.0899	0.0000	OK
30 minute winter	TANK	26	196.859	0.209	5.0	1.9892	0.0000	OK
30 minute winter	SWMH-4	26	196.859	0.299	5.2	0.3509	0.0000	SURCHARGED
15 minute summer	MH03	1	196.530	0.000	2.2	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 winter	SWIC-1	P1.001	SWIC-2	3.5	0.568	0.072	0.1434	
15 minute winter	SWIC-2	P1.002	SWIC-3	5.8	0.515	0.139	0.5067	
30 minute winter	SWIC-3	P1.003	TANK	5.0	0.557	0.233	0.6492	
30 minute winter	TANK	P1.004	SWMH-4	5.0	0.224	0.042	0.0656	
30 minute winter	SWMH-4	Orifice	MH03	2.3				6.3

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute winter	SWIC-1	46	197.525	0.445	4.5	0.4976	0.0000	FLOOD RISK
60 minute winter	SWIC-2	46	197.525	0.650	7.5	0.3842	0.0000	FLOOD RISK
60 minute winter	SWIC-3	46	197.526	0.844	9.1	0.4277	0.0000	SURCHARGED
60 minute winter	TANK	46	197.526	0.876	8.6	4.7548	0.0000	SURCHARGED
60 minute winter	SWMH-4	46	197.525	0.965	9.7	1.1329	0.0000	SURCHARGED
15 minute summer	MH03	1	196.530	0.000	3.3	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)
60 minute winter	SWIC-1	P1.001	SWIC-2	4.5	0.582	0.092	0.9098	
60 minute winter	SWIC-2	P1.002	SWIC-3	6.4	0.403	0.155	1.1931	
60 minute winter	SWIC-3	P1.003	TANK	7.9	0.569	0.365	0.7174	
60 minute winter	TANK	P1.004	SWMH-4	9.0	0.464	0.074	0.0667	
60 minute winter	SWMH-4	Orifice	MH03	4.3				19.6

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute winter	SWIC-1	36	197.705	0.625	15.4	0.6994	3.5750	FLOOD
30 minute winter	SWIC-2	21	197.738	0.863	14.5	0.5098	0.0000	FLOOD RISK
30 minute winter	SWIC-3	21	197.767	1.085	16.4	0.5503	0.0000	FLOOD RISK
30 minute winter	TANK	21	197.780	1.130	15.5	4.7548	0.0000	FLOOD RISK
30 minute winter	SWMH-4	21	197.780	1.220	11.6	1.4319	0.0000	FLOOD RISK
15 minute summer	MH03	1	196.530	0.000	4.3	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)
60 minute winter	SWIC-1	P1.001	SWIC-2	-10.5	0.593	-0.213	0.9098	
30 minute winter	SWIC-2	P1.002	SWIC-3	10.9	0.474	0.263	1.1931	
30 minute winter	SWIC-3	P1.003	TANK	13.5	0.705	0.623	0.7174	
30 minute winter	TANK	P1.004	SWMH-4	6.1	0.232	0.050	0.0667	
30 minute winter	SWMH-4	Orifice	MH03	4.8				17.8

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
60 minute winter	SWIC-1	31	197.705	0.625	26.7	0.6994	12.1759	FLOOD
30 minute summer	SWIC-2	19	197.780	0.905	24.6	0.5346	0.0000	FLOOD RISK
15 minute summer	SWIC-3	12	197.830	1.148	25.1	0.5820	0.0078	FLOOD
15 minute summer	TANK	12	197.860	1.210	24.9	4.7548	0.0000	FLOOD RISK
15 minute summer	SWMH-4	12	197.860	1.300	12.4	1.5262	0.1757	FLOOD
15 minute summer	MH03	1	196.530	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 (m ³)	Discharge Vol (m ³)
60 minute winter	SWIC-1	P1.001	SWIC-2	-18.5	0.599	-0.376	0.9098	
30 minute summer	SWIC-2	P1.002	SWIC-3	-16.4	0.451	-0.394	1.1931	
15 minute summer	SWIC-3	P1.003	TANK	21.9	0.780	1.012	0.7174	
15 minute summer	TANK	P1.004	SWMH-4	5.7	0.214	0.047	0.0667	
15 minute summer	SWMH-4	Orifice	MH03	5.0				15.5