Design Settings

Rainfall Methodology	FSR
Return Period (years)	1
Additional Flow (%)	0
FSR Region	England and Wales
M5-60 (mm)	20.000
Ratio-R	0.400
CV	1.000
Time of Entry (mins)	5.00
Maximum Time of Concentration (mins)	30.00
Maximum Rainfall (mm/hr)	50.0
Minimum Velocity (m/s)	1.00
Connection Type	Level Soffits
Minimum Backdrop Height (m)	0.200
Preferred Cover Depth (m)	1.200
Include Intermediate Ground	✓
Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
SW1	0.005	5.00	128.600	450	0.700
SW2	0.005	5.00	128.600	450	0.920
SW3	0.007	5.00	128.600	450	1.150
SW4			128.600	450	1.280
SW5	0.005	5.00	128.600	450	1.180
SW6	0.006	5.00	128.600	450	1.000
SOAKAWAY			129.000	450	1.750
SW7			128.600	450	1.300
DUMMY			128.600	450	1.367

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	SW1	SW2	17.600	0.600	127.900	127.680	0.220	80.0	100	5.34	50.0
1.001	SW2	SW3	18.500	0.600	127.680	127.450	0.230	80.4	100	5.70	50.0
1.003	SW6	SW5	14.500	0.600	127.600	127.420	0.180	80.6	100	5.28	50.0
1.004	SW5	SW4	7.300	0.600	127.420	127.320	0.100	73.0	100	5.42	50.0
1.005	SW4	SOAKAWAY	2.000	0.600	127.320	127.250	0.070	28.6	100	5.44	50.0
1.002	SW3	SW7	3.200	0.600	127.450	127.300	0.150	21.3	100	5.73	50.0
1.006	SW7	SOAKAWAY	2.000	0.600	127.300	127.250	0.050	40.0	100	5.76	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	0.861	6.8	0.9	0.600	0.820	0.005	0.0	25	0.595
1.001	0.858	6.7	1.8	0.820	1.050	0.010	0.0	36	0.729
1.003	0.858	6.7	1.1	0.900	1.080	0.006	0.0	27	0.625
1.004	0.902	7.1	2.0	1.080	1.180	0.011	0.0	36	0.775
1.005	1.449	11.4	2.0	1.180	1.650	0.011	0.0	29	1.093
1.002	1.679	13.2	3.1	1.050	1.200	0.017	0.0	33	1.377
1.006	1.223	9.6	3.1	1.200	1.650	0.017	0.0	39	1.085

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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)
1.007	SOAKAWAY	DUMMY	1.000	0.600	127.250	127.233	0.017	58.8	100	5.78	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)
1.007	1.006	7.9	5.1	1.650	1.267	0.028	0.0	58	1.067

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)
1.000	17.600	80.0	100	Circular	128.600	127.900	0.600	128.600	127.680	0.820
1.001	18.500	80.4	100	Circular	128.600	127.680	0.820	128.600	127.450	1.050
1.003	14.500	80.6	100	Circular	128.600	127.600	0.900	128.600	127.420	1.080
1.004	7.300	73.0	100	Circular	128.600	127.420	1.080	128.600	127.320	1.180
1.005	2.000	28.6	100	Circular	128.600	127.320	1.180	129.000	127.250	1.650
1.002	3.200	21.3	100	Circular	128.600	127.450	1.050	128.600	127.300	1.200
1.006	2.000	40.0	100	Circular	128.600	127.300	1.200	129.000	127.250	1.650
1.007	1.000	58.8	100	Circular	129.000	127.250	1.650	128.600	127.233	1.267

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SW1	450	Manhole	Adoptable	SW2	450	Manhole	Adoptable
1.001	SW2	450	Manhole	Adoptable	SW3	450	Manhole	Adoptable
1.003	SW6	450	Manhole	Adoptable	SW5	450	Manhole	Adoptable
1.004	SW5	450	Manhole	Adoptable	SW4	450	Manhole	Adoptable
1.005	SW4	450	Manhole	Adoptable	SOAKAWAY	450	Manhole	Adoptable
1.002	SW3	450	Manhole	Adoptable	SW7	450	Manhole	Adoptable
1.006	SW7	450	Manhole	Adoptable	SOAKAWAY	450	Manhole	Adoptable
1.007	SOAKAWAY	450	Manhole	Adoptable	DUMMY	450	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW1	128.600	0.700	450	 0	1.000	127.900	100
SW2	128.600	0.920	450	1  0	1.000 1.001	127.680 127.680	100 100
SW3	128.600	1.150	450	1  0	1.001 1.002	127.450 127.450	100 100
SW4	128.600	1.280	450	1  0	1.004 1.005	127.320 127.320	100 100

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Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW5	128.600	1.180	450	1	1.003	127.420	100
				0	1.004	127.420	100
SW6	128.600	1.000	450	0	1.003	127.600	100
SOAKAWAY	129.000	1.750	450	1	1.006	127.250	100
				2	1.005	127.250	100
				0	1.007	127.250	100
SW7	128.600	1.300	450	1	1.002	127.300	100
				0	1.006	127.300	100
DUMMY	128.600	1.367	450	1	1.007	127.233	100

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m³/ha)	0.0
Ratio-R	0.400	Starting Level (m)	
Summer CV	1.000	Check Discharge Rate(s)	x
Winter CV	1.000	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960
30	120	240	480	720	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 SOAKAWAY Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.04890	Pit Width (m)	3.500
Side Inf Coefficient (m/hr)	0.04890	Pit Length (m)	7.000
Safety Factor	2.0	Depth (m)	0.800
Porosity	0.95	Inf Depth (m)	0.800
Invert Level (m)	127.250	Number Required	1
Time to half empty (mins)	0		

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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 summer	SW1	11	127.925	0.025	0.9	0.0039	0.0000	OK
15 minute summer	SW2	11	127.716	0.036	1.8	0.0057	0.0000	OK
15 minute summer	SW3	10	127.485	0.035	3.1	0.0055	0.0000	OK
15 minute summer	SW4	10	127.351	0.031	2.0	0.0050	0.0000	OK
15 minute summer	SW5	10	127.458	0.038	2.0	0.0061	0.0000	OK
15 minute summer	SW6	10	127.627	0.027	1.1	0.0043	0.0000	OK
30 minute summer	SOAKAWAY	21	127.300	0.049	4.5	1.1590	0.0000	OK
15 minute summer	SW7	10	127.345	0.045	3.1	0.0072	0.0000	OK
30 minute summer	DUMMY	21	127.274	0.041	2.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW1	1.000	SW2	0.9	0.450	0.133	0.0355	
15 minute summer	SW2	1.001	SW3	1.8	0.734	0.266	0.0456	
15 minute summer	SW3	1.002	SW7	3.1	1.057	0.233	0.0093	
15 minute summer	SW4	1.005	SOAKAWAY	2.0	1.116	0.172	0.0052	
15 minute summer	SW5	1.004	SW4	2.0	0.817	0.276	0.0176	
15 minute summer	SW6	1.003	SW5	1.1	0.488	0.160	0.0322	
30 minute summer	SOAKAWAY	1.007	DUMMY	2.8	0.814	0.355	0.0034	2.5
30 minute summer	SOAKAWAY	Infiltration		0.2				
15 minute summer	SW7	1.006	SOAKAWAY	3.1	1.229	0.319	0.0066	

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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 summer	SW1	10	127.939	0.039	2.2	0.0062	0.0000	OK
15 minute summer	SW2	10	127.740	0.060	4.4	0.0095	0.0000	OK
15 minute summer	SW3	10	127.511	0.061	7.4	0.0098	0.0000	OK
15 minute summer	SW4	11	127.378	0.057	4.7	0.0091	0.0000	OK
15 minute summer	SW5	10	127.485	0.065	4.8	0.0103	0.0000	OK
15 minute summer	SW6	10	127.643	0.043	2.6	0.0068	0.0000	OK
30 minute summer	SOAKAWAY	21	127.352	0.102	11.0	2.3995	0.0000	SURCHARGED
15 minute summer	SW7	11	127.387	0.087	7.4	0.0138	0.0000	OK
30 minute summer	DUMMY	21	127.309	0.076	7.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW1	1.000	SW2	2.2	0.566	0.323	0.0679	
15 minute summer	SW2	1.001	SW3	4.3	0.874	0.641	0.0918	
15 minute summer	SW3	1.002	SW7	7.4	1.234	0.558	0.0195	
15 minute summer	SW4	1.005	SOAKAWAY	4.7	1.181	0.413	0.0118	
15 minute summer	SW5	1.004	SW4	4.7	0.972	0.670	0.0361	
15 minute summer	SW6	1.003	SW5	2.6	0.602	0.383	0.0621	
30 minute summer	SOAKAWAY	1.007	DUMMY	7.3	1.009	0.926	0.0071	6.5
30 minute summer	SOAKAWAY	Infiltration		0.2				
15 minute summer	SW7	1.006	SOAKAWAY	7.2	1.311	0.753	0.0147	

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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 (m³)	Flood (m³)	Status
15 minute summer	SW1	12	128.022	0.122	4.1	0.0193	0.0000	SURCHARGED
15 minute summer	SW2	12	127.961	0.281	7.9	0.0447	0.0000	SURCHARGED
15 minute summer	SW3	12	127.706	0.256	12.3	0.0408	0.0000	SURCHARGED
30 minute summer	SW4	20	127.475	0.155	7.5	0.0247	0.0000	SURCHARGED
15 minute summer	SW5	11	127.615	0.195	8.8	0.0310	0.0000	SURCHARGED
15 minute summer	SW6	12	127.694	0.094	5.0	0.0150	0.0000	OK
30 minute summer	SOAKAWAY	22	127.443	0.193	17.8	4.5234	0.0000	SURCHARGED
15 minute summer	SW7	13	127.537	0.237	11.5	0.0377	0.0000	SURCHARGED
15 minute summer	DUMMY	12	127.328	0.095	12.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW1	1.000	SW2	3.8	0.620	0.561	0.1377	
15 minute summer	SW2	1.001	SW3	6.6	0.876	0.974	0.1448	
15 minute summer	SW3	1.002	SW7	11.5	1.474	0.875	0.0250	
30 minute summer	SW4	1.005	SOAKAWAY	7.2	1.161	0.634	0.0156	
15 minute summer	SW5	1.004	SW4	8.1	1.040	1.148	0.0571	
15 minute summer	SW6	1.003	SW5	4.7	0.655	0.699	0.1122	
30 minute summer	SOAKAWAY	1.007	DUMMY	12.6	1.605	1.589	0.0077	12.7
30 minute summer	SOAKAWAY	Infiltration		0.2				
15 minute summer	SW7	1.006	SOAKAWAY	11.0	1.411	1.149	0.0156	

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