

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	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	0.300	Preferred Cover Depth (m)	0.750
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Add Inflow (l/s)	Cover Level (m)	Diameter (mm)	Depth (m)
RE1	0.005	5.00	0.0	54.250	100	0.600
SWAC01	0.005	5.00	0.0	54.250	300	0.800
SWAC02	0.005	5.00	0.0	54.250	300	0.950
SWCP03	0.000	5.00	0.0	54.600	450	1.420

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	SWAC01	16.000	0.600	53.650	53.450	0.200	80.0	100	5.31	50.0
1.001	SWAC01	SWAC02	12.000	0.600	53.450	53.300	0.150	80.0	100	5.54	50.0
1.002	SWAC02	SWCP03	9.000	0.600	53.300	53.180	0.120	75.0	100	5.71	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	0.500	0.700	0.005	0.0	25	0.595
1.001	0.861	6.8	1.8	0.700	0.850	0.010	0.0	36	0.731
1.002	0.889	7.0	2.7	0.850	1.320	0.015	0.0	43	0.834

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	16.000	80.0	100	Circular	54.250	53.650	0.500	54.250	53.450	0.700
1.001	12.000	80.0	100	Circular	54.250	53.450	0.700	54.250	53.300	0.850
1.002	9.000	75.0	100	Circular	54.250	53.300	0.850	54.600	53.180	1.320

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	RE1	100	Manhole	Adoptable	SWAC01	300	Manhole	Adoptable
1.001	SWAC01	300	Manhole	Adoptable	SWAC02	300	Manhole	Adoptable
1.002	SWAC02	300	Manhole	Adoptable	SWCP03	450	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
RE1	54.250	0.600	100	○	0	1.000	53.650
					1	1.000	53.450
SWAC01	54.250	0.800	300	○	0	1.001	53.450
					1	1.001	53.300
SWAC02	54.250	0.950	300	○	0	1.002	53.300
					1	1.002	53.180
SWCP03	54.600	1.420	450	○			

Simulation Settings

Rainfall Methodology	FSR	Summer CV	1.000	Drain Down Time (mins)	240
FSR Region	England and Wales	Winter CV	0.840	Additional Storage (m ³ /ha)	20.0
M5-60 (mm)	20.000	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.300	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	45	5	0

Node SWCP03 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.03600	Porosity	0.30	Pit Width (m)	3.000	Inf Depth (m)	
Side Inf Coefficient (m/hr)	0.11520	Invert Level (m)	52.750	Pit Length (m)	5.000	Number Required	1
Safety Factor	1.5	Time to half empty (mins)	158	Depth (m)	1.500		

Results for 100 year +45% CC +5% A Critical Storm Duration. Lowest mass balance: 99.13%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
480 minute summer	RE1	304	54.250	0.600	0.8	0.1098	0.0000	FLOOD RISK
480 minute summer	SWAC01	304	54.250	0.800	1.4	0.1615	0.0000	FLOOD RISK
480 minute summer	SWAC02	304	54.249	0.949	1.9	0.1718	0.0000	FLOOD RISK
480 minute summer	SWCP03	304	54.248	1.068	1.6	6.9104	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)
480 minute summer	RE1	1.000	SWAC01	0.7	0.387	0.103	0.1252
480 minute summer	SWAC01	1.001	SWAC02	1.1	0.502	0.162	0.0939
480 minute summer	SWAC02	1.002	SWCP03	1.6	0.540	0.236	0.0704
480 minute summer	SWCP03	Infiltration		0.6			

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	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	0.300	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Add Inflow (l/s)	Cover Level (m)	Diameter (mm)	Depth (m)
SWIC04	0.004	5.00	0.0	54.250	300	0.450
SWIC05	0.004	5.00	0.0	54.250	300	0.580
SWIC06	0.004	5.00	0.0	54.250	300	0.450
SWIC07	0.003	5.00	0.0	54.250	300	0.580
SWCP08	0.000	5.00	0.0	55.200	450	1.670
SOAKAWAY	0.000	5.00	0.0	55.200	100	1.680

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	SWIC04	SWIC05	10.000	0.600	53.800	53.670	0.130	76.9	100	5.19	50.0
1.001	SWIC05	SWCP08	11.000	0.600	53.670	53.530	0.140	78.6	100	5.40	50.0
2.000	SWIC06	SWIC07	10.000	0.600	53.800	53.670	0.130	76.9	100	5.19	50.0
2.001	SWIC07	SWCP08	8.000	0.600	53.670	53.530	0.140	57.1	100	5.32	50.0
1.002	SWCP08	SOAKAWAY	1.000	0.600	53.530	53.520	0.010	100.0	100	5.42	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	0.878	6.9	0.7	0.350	0.480	0.004	0.0	22	0.572
1.001	0.869	6.8	1.4	0.480	1.570	0.008	0.0	32	0.693
2.000	0.878	6.9	0.7	0.350	0.480	0.004	0.0	22	0.572
2.001	1.021	8.0	1.3	0.480	1.570	0.007	0.0	27	0.745
1.002	0.769	6.0	2.7	1.570	1.580	0.015	0.0	47	0.750

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	10.000	76.9	100	Circular	54.250	53.800	0.350	54.250	53.670	0.480
1.001	11.000	78.6	100	Circular	54.250	53.670	0.480	55.200	53.530	1.570
2.000	10.000	76.9	100	Circular	54.250	53.800	0.350	54.250	53.670	0.480
2.001	8.000	57.1	100	Circular	54.250	53.670	0.480	55.200	53.530	1.570
1.002	1.000	100.0	100	Circular	55.200	53.530	1.570	55.200	53.520	1.580

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SWIC04	300	Manhole	Adoptable	SWIC05	300	Manhole	Adoptable
1.001	SWIC05	300	Manhole	Adoptable	SWCP08	450	Manhole	Adoptable
2.000	SWIC06	300	Manhole	Adoptable	SWIC07	300	Manhole	Adoptable
2.001	SWIC07	300	Manhole	Adoptable	SWCP08	450	Manhole	Adoptable
1.002	SWCP08	450	Manhole	Adoptable	SOAKAWAY	100	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWIC04	54.250	0.450	300				
				0	1.000	53.800	100
SWIC05	54.250	0.580	300				
				1	1.000	53.670	100
				0	1.001	53.670	100
SWIC06	54.250	0.450	300				
				0	2.000	53.800	100
SWIC07	54.250	0.580	300				
				1	2.000	53.670	100
				0	2.001	53.670	100
SWCP08	55.200	1.670	450				
				1	2.001	53.530	100
				2	1.001	53.530	100
				0	1.002	53.530	100
SOAKAWAY	55.200	1.680	100				
				1	1.002	53.520	100

Simulation Settings

Rainfall Methodology	FSR	Summer CV	1.000	Drain Down Time (mins)	240
FSR Region	England and Wales	Winter CV	0.840	Additional Storage (m³/ha)	20.0
M5-60 (mm)	20.000	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.300	Skip Steady State	x	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	5	0

Node SOAKAWAY Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.03600	Porosity	0.30	Pit Width (m)	3.000	Inf Depth (m)	
Side Inf Coefficient (m/hr)	0.11520	Invert Level (m)	52.750	Pit Length (m)	5.000	Number Required	1
Safety Factor	1.5	Time to half empty (mins)	158	Depth (m)	1.500		

Results for 100 year +45% CC +5% A 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
360 minute summer	SWIC04	248	54.228	0.428	0.8	0.1099	0.0000	FLOOD RISK
360 minute summer	SWIC05	248	54.227	0.557	1.4	0.1204	0.0000	FLOOD RISK
360 minute summer	SWIC06	248	54.227	0.427	0.8	0.1098	0.0000	FLOOD RISK
360 minute summer	SWIC07	248	54.227	0.557	1.2	0.0997	0.0000	FLOOD RISK
360 minute summer	SWCP08	248	54.227	0.697	1.9	0.1108	0.0000	SURCHARGED
360 minute summer	SOAKAWAY	248	54.227	0.707	1.5	6.6503	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)
360 minute summer	SWIC04	1.000	SWIC05	0.7	0.391	0.100	0.0782
360 minute summer	SWIC05	1.001	SWCP08	1.0	0.390	0.144	0.0861
360 minute summer	SWIC06	2.000	SWIC07	0.7	0.435	0.100	0.0782
360 minute summer	SWIC07	2.001	SWCP08	0.9	0.367	0.110	0.0626
360 minute summer	SWCP08	1.002	SOAKAWAY	1.5	0.585	0.250	0.0078
360 minute summer	SOAKAWAY	Infiltration		0.6			

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	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	0.300	Preferred Cover Depth (m)	1.200
CV	1.000	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)	Depth (m)
RE2	0.004	5.00	54.250	100	0.450
SWAC09	0.005	5.00	54.250	450	0.550
SWAC10	0.005	5.00	54.250	450	0.720
SWCP11	0.000	5.00	55.000	450	1.620

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	RE2	SWAC09	8.000	0.600	53.800	53.700	0.100	80.0	100	5.15	50.0
1.001	SWAC09	SWAC10	13.000	0.600	53.700	53.530	0.170	76.5	100	5.40	50.0
1.002	SWAC10	SWCP11	12.000	0.600	53.530	53.380	0.150	80.0	100	5.63	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	0.7	0.350	0.450	0.004	0.0	22	0.561
1.001	0.881	6.9	1.6	0.450	0.620	0.009	0.0	33	0.721
1.002	0.861	6.8	2.5	0.620	1.520	0.014	0.0	43	0.801

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	8.000	80.0	100	Circular	54.250	53.800	0.350	54.250	53.700	0.450
1.001	13.000	76.5	100	Circular	54.250	53.700	0.450	54.250	53.530	0.620
1.002	12.000	80.0	100	Circular	54.250	53.530	0.620	55.000	53.380	1.520

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	RE2	100	Manhole	Adoptable	SWAC09	450	Manhole	Adoptable
1.001	SWAC09	450	Manhole	Adoptable	SWAC10	450	Manhole	Adoptable
1.002	SWAC10	450	Manhole	Adoptable	SWCP11	450	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
RE2	54.250	0.450	100	○	0	1.000	53.800
					1	1.000	53.700
SWAC09	54.250	0.550	450	○	0	1.001	53.700
					1	1.001	53.530
SWAC10	54.250	0.720	450	○	0	1.002	53.530
					1	1.002	53.380
SWCP11	55.000	1.620	450	○			

Simulation Settings

Rainfall Methodology	FSR	Summer CV	1.000	Drain Down Time (mins)	240
FSR Region	England and Wales	Winter CV	0.840	Additional Storage (m ³ /ha)	20.0
M5-60 (mm)	20.000	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.300	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	45	5	0

Node SWCP11 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.03600	Porosity	0.30	Pit Width (m)	3.000	Inf Depth (m)	
Side Inf Coefficient (m/hr)	0.11520	Invert Level (m)	52.750	Pit Length (m)	5.000	Number Required	1
Safety Factor	1.5	Time to half empty (mins)	158	Depth (m)	1.500		

Results for 100 year +45% CC +5% A Critical Storm Duration. Lowest mass balance: 99.28%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
480 minute summer	RE2	304	54.226	0.426	0.6	0.0831	0.0000	FLOOD RISK
480 minute summer	SWAC09	304	54.226	0.526	1.4	0.1842	0.0000	FLOOD RISK
480 minute summer	SWAC10	304	54.226	0.696	1.9	0.2121	0.0000	FLOOD RISK
480 minute summer	SWCP11	304	54.224	0.844	1.7	6.7677	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)
480 minute summer	RE2	1.000	SWAC09	0.6	0.375	0.088	0.0626
480 minute summer	SWAC09	1.001	SWAC10	1.2	0.542	0.173	0.1017
480 minute summer	SWAC10	1.002	SWCP11	1.7	0.628	0.246	0.0939
480 minute summer	SWCP11	Infiltration		0.6			