Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	30	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)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.450	Preferred Cover Depth (m)	0.500
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)	Width (mm)	Easting (m)	Northing (m)	Depth (m)
SW01	0.004	5.00	65.350	450	450	341604.772	339600.591	0.650
SW02	0.002	5.00	65.350	450	450	341608.484	339610.728	0.722
SW03	0.003	5.00	65.350	450	450	341593.134	339603.610	0.600
SW04	0.001	5.00	65.350	450	450	341597.441	339615.321	0.802
Private SW Soakaway			65.350			341593.059	339617.144	0.834

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	SW01	SW02	10.795	0.600	64.700	64.628	0.072	150.0	150	5.22	50.0
1.001	SW02	SW04	11.960	0.600	64.628	64.548	0.080	150.0	150	5.46	50.0
1.002	SW04	Private SW Soakaway	4.746	0.600	64.548	64.516	0.032	150.0	150	5.56	50.0
2.000	SW03	SW04	12.478	0.600	64.750	64.598	0.152	82.1	150	5.19	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	0.818	14.5	0.5	0.500	0.572	0.004	0.0	20	0.393
1.001	0.818	14.5	0.8	0.572	0.652	0.006	0.0	24	0.442
1.002	0.818	14.5	1.4	0.652	0.684	0.010	0.0	31	0.511
2.000	1.110	19.6	0.4	0.450	0.602	0.003	0.0	15	0.439

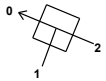
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Pipeline Schedule

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	10.795	150.0	150	Circular	65.350	64.700	0.500	65.350	64.628	0.572
1.001	11.960	150.0	150	Circular	65.350	64.628	0.572	65.350	64.548	0.652
1.002	4.746	150.0	150	Circular	65.350	64.548	0.652	65.350	64.516	0.684
2.000	12.478	82.1	150	Circular	65.350	64.750	0.450	65.350	64.598	0.602

Link	US Node	Dia (mm)	Width (mm)	Node Type	MH Type	DS Node	Dia (mm)	Width (mm)	Node Type	MH Type
1.000	SW01	450	450	Manhole	450mm Plastic Inspection Chamber	SW02	450	450	Manhole	450mm Plastic Inspection Chamber
1.001	SW02	450	450	Manhole	450mm Plastic Inspection Chamber	SW04	450	450	Manhole	450mm Plastic Inspection Chamber
1.002	SW04	450	450	Manhole	450mm Plastic Inspection Chamber	Private SW Soakaway			Junction	
2.000	SW03	450	450	Manhole	450mm Plastic Inspection Chamber	SW04	450	450	Manhole	450mm Plastic Inspection Chamber

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Connections	Link	IL (m)	Dia (mm)
SW01	341604.772	339600.591	65.350	0.650	450	450	 0	1.000	64.700	150
SW02	341608.484	339610.728	65.350	0.722	450	450	1	1.000	64.628	150
							 0	1.001	64.628	150
SW03	341593.134	339603.610	65.350	0.600	450	450	 0	2.000	64.750	150
SW04	341597.441	339615.321	65.350	0.802	450	450	1	2.000	64.598	150
							2	1.001	64.548	150
							 0	1.002	64.548	150
Private SW Soakaway	341593.059	339617.144	65.350	0.834			1	1.002	64.516	150
										

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Simulation Settings

Rainfall Methodology	FSR	Winter CV	0.840	Check Discharge Rate(s)	✓
FSR Region	England and Wales	Analysis Speed	Normal	1 year (l/s)	0.0
M5-60 (mm)	20.000	Skip Steady State	x	30 year (l/s)	0.0
Ratio-R	0.400	Drain Down Time (mins)	240	100 year (l/s)	0.0
Summer CV	0.750	Additional Storage (m³/ha)	20.0	Check Discharge Volume	x

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0	100	40	0	0
30	0	0	0				

Pre-development Discharge Rate

Site Makeup	Greenfield	SPR	0.10	Betterment (%)	0
Greenfield Method	IH124	Region	9	QBar	0.0
Positively Drained Area (ha)	0.050	Growth Factor 1 year	0.85	Q 1 year (l/s)	
SAAR (mm)	680	Growth Factor 30 year	1.95	Q 30 year (l/s)	
Soil Index	1	Growth Factor 100 year	2.48	Q 100 year (l/s)	

Node Private SW Soakaway Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.23660	Safety Factor	2.0	Invert Level (m)	64.516
Side Inf Coefficient (m/hr)	0.23660	Porosity	1.00	Time to half empty (mins)	75

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	6.0	6.0	0.400	6.0	13.8	0.401	0.0	13.8

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	109.521	30.991
1 year 15 minute winter	76.857	30.991
1 year 30 minute summer	71.439	20.215
1 year 30 minute winter	50.133	20.215
1 year 60 minute summer	48.435	12.800
1 year 60 minute winter	32.179	12.800
1 year 120 minute summer	30.053	7.942
1 year 120 minute winter	19.966	7.942
1 year 180 minute summer	23.233	5.979
1 year 180 minute winter	15.102	5.979
1 year 240 minute summer	18.475	4.882
1 year 240 minute winter	12.274	4.882
1 year 360 minute summer	14.169	3.646
1 year 360 minute winter	9.210	3.646
1 year 480 minute summer	11.185	2.956
1 year 480 minute winter	7.431	2.956
1 year 600 minute summer	9.182	2.511
1 year 600 minute winter	6.274	2.511
1 year 720 minute summer	8.203	2.199
1 year 720 minute winter	5.513	2.199
1 year 960 minute summer	6.768	1.782
1 year 960 minute winter	4.483	1.782
1 year 1440 minute summer	4.949	1.326
1 year 1440 minute winter	3.326	1.326
1 year 2160 minute summer	3.574	0.988
1 year 2160 minute winter	2.462	0.988
1 year 2880 minute summer	2.986	0.800
1 year 2880 minute winter	2.007	0.800
1 year 4320 minute summer	2.276	0.595
1 year 4320 minute winter	1.499	0.595
1 year 5760 minute summer	1.885	0.483
1 year 5760 minute winter	1.220	0.483
1 year 7200 minute summer	1.609	0.410
1 year 7200 minute winter	1.038	0.410
1 year 8640 minute summer	1.409	0.359
1 year 8640 minute winter	0.910	0.359
1 year 10080 minute summer	1.260	0.322
1 year 10080 minute winter	0.813	0.322
30 year 15 minute summer	268.706	76.035
30 year 15 minute winter	188.566	76.035
30 year 30 minute summer	174.929	49.499
30 year 30 minute winter	122.757	49.499
30 year 60 minute summer	116.589	30.811
30 year 60 minute winter	77.459	30.811
30 year 120 minute summer	70.438	18.615
30 year 120 minute winter	46.797	18.615
30 year 180 minute summer	53.298	13.715
30 year 180 minute winter	34.645	13.715
30 year 240 minute summer	41.604	10.995
30 year 240 minute winter	27.641	10.995
30 year 360 minute summer	31.221	8.034
30 year 360 minute winter	20.295	8.034
30 year 480 minute summer	24.324	6.428
30 year 480 minute winter	16.160	6.428
30 year 600 minute summer	19.756	5.404
30 year 600 minute winter	13.498	5.404
30 year 720 minute summer	17.490	4.687
30 year 720 minute winter	11.754	4.687
30 year 960 minute summer	14.215	3.743
30 year 960 minute winter	9.416	3.743
30 year 1440 minute summer	10.161	2.723
30 year 1440 minute winter	6.829	2.723
30 year 2160 minute summer	7.160	1.979
30 year 2160 minute winter	4.933	1.979
30 year 2880 minute summer	5.883	1.577
30 year 2880 minute winter	3.953	1.577
30 year 4320 minute summer	4.374	1.143
30 year 4320 minute winter	2.880	1.143
30 year 5760 minute summer	3.554	0.910
30 year 5760 minute winter	2.301	0.910
30 year 7200 minute summer	2.987	0.762
30 year 7200 minute winter	1.928	0.762

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Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year 8640 minute summer	2.583	0.659
30 year 8640 minute winter	1.667	0.659
30 year 10080 minute summer	2.284	0.583
30 year 10080 minute winter	1.474	0.583
100 year +40% CC 15 minute summer	488.233	138.153
100 year +40% CC 15 minute winter	342.620	138.153
100 year +40% CC 30 minute summer	320.551	90.705
100 year +40% CC 30 minute winter	224.948	90.705
100 year +40% CC 60 minute summer	214.603	56.713
100 year +40% CC 60 minute winter	142.577	56.713
100 year +40% CC 120 minute summer	129.587	34.246
100 year +40% CC 120 minute winter	86.094	34.246
100 year +40% CC 180 minute summer	97.729	25.149
100 year +40% CC 180 minute winter	63.526	25.149
100 year +40% CC 240 minute summer	75.977	20.078
100 year +40% CC 240 minute winter	50.477	20.078
100 year +40% CC 360 minute summer	56.677	14.585
100 year +40% CC 360 minute winter	36.841	14.585
100 year +40% CC 480 minute summer	43.979	11.622
100 year +40% CC 480 minute winter	29.219	11.622
100 year +40% CC 600 minute summer	35.604	9.738
100 year +40% CC 600 minute winter	24.327	9.738
100 year +40% CC 720 minute summer	31.433	8.424
100 year +40% CC 720 minute winter	21.125	8.424
100 year +40% CC 960 minute summer	25.432	6.697
100 year +40% CC 960 minute winter	16.847	6.697
100 year +40% CC 1440 minute summer	18.055	4.839
100 year +40% CC 1440 minute winter	12.134	4.839
100 year +40% CC 2160 minute summer	12.630	3.490
100 year +40% CC 2160 minute winter	8.702	3.490
100 year +40% CC 2880 minute summer	10.319	2.766
100 year +40% CC 2880 minute winter	6.935	2.766
100 year +40% CC 4320 minute summer	7.609	1.989
100 year +40% CC 4320 minute winter	5.011	1.989
100 year +40% CC 5760 minute summer	6.145	1.573
100 year +40% CC 5760 minute winter	3.978	1.573
100 year +40% CC 7200 minute summer	5.137	1.311
100 year +40% CC 7200 minute winter	3.316	1.311
100 year +40% CC 8640 minute summer	4.424	1.129
100 year +40% CC 8640 minute winter	2.855	1.129
100 year +40% CC 10080 minute summer	3.897	0.994
100 year +40% CC 10080 minute winter	2.515	0.994

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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 winter	SW01	10	64.720	0.020	0.6	0.0066	0.0000	OK
15 minute winter	SW02	11	64.653	0.025	0.9	0.0063	0.0000	OK
15 minute winter	SW03	11	64.765	0.015	0.4	0.0045	0.0000	OK
60 minute winter	SW04	47	64.598	0.050	0.7	0.0114	0.0000	OK
60 minute winter	Private SW Soakaway	48	64.599	0.083	0.7	0.4968	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	SW01	1.000	SW02	0.6	0.348	0.038	0.0175
15 minute winter	SW02	1.001	SW04	0.8	0.374	0.059	0.0272
15 minute winter	SW03	2.000	SW04	0.4	0.440	0.020	0.0113
60 minute winter	SW04	1.002	Private SW Soakaway	0.7	0.423	0.048	0.0360
60 minute winter	Private SW Soakaway	Infiltration		0.2			

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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 winter	SW01	10	64.731	0.031	1.4	0.0101	0.0000	OK
60 minute winter	SW02	53	64.713	0.085	1.1	0.0219	0.0000	OK
15 minute winter	SW03	11	64.773	0.023	1.0	0.0071	0.0000	OK
60 minute winter	SW04	50	64.713	0.165	1.8	0.0374	0.0000	SURCHARGED
60 minute winter	Private SW Soakaway	50	64.713	0.197	1.3	1.1823	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	SW01	1.000	SW02	1.4	0.450	0.095	0.0329
60 minute winter	SW02	1.001	SW04	1.1	0.344	0.076	0.1669
15 minute winter	SW03	2.000	SW04	1.0	0.579	0.051	0.0592
60 minute winter	SW04	1.002	Private SW Soakaway	1.3	0.567	0.093	0.0836
60 minute winter	Private SW Soakaway	Infiltration		0.3			

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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
120 minute winter	SW01	94	64.886	0.186	0.8	0.0606	0.0000	SURCHARGED
120 minute winter	SW02	94	64.886	0.258	1.2	0.0665	0.0000	SURCHARGED
120 minute winter	SW03	94	64.886	0.136	0.6	0.0412	0.0000	OK
120 minute winter	SW04	94	64.886	0.338	1.6	0.0767	0.0000	SURCHARGED
120 minute winter	Private SW Soakaway	94	64.886	0.370	1.3	2.2191	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
120 minute winter	SW01	1.000	SW02	0.8	0.349	0.054	0.1900
120 minute winter	SW02	1.001	SW04	0.9	0.298	0.059	0.2106
120 minute winter	SW03	2.000	SW04	0.6	0.405	0.031	0.2145
120 minute winter	SW04	1.002	Private SW Soakaway	1.3	0.562	0.091	0.0836
120 minute winter	Private SW Soakaway	Infiltration		0.4			

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