Design Settings

Rainfall Methodology	FSR
Return Period (years)	2
Additional Flow (%)	0
FSR Region	England and Wales
M5-60 (mm)	18.000
Ratio-R	0.357
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	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
SRH01	0.245	5.00	64.350	1350	388130.402	396818.283	1.420	62.930
SRH02	0.245	5.00	64.220	1350	388144.069	396868.176	1.418	62.802
SRH03	0.203	5.00	64.260	1800	388149.464	396888.114	1.680	62.580
SRH05	0.347	5.00	64.210	1350	388162.107	396933.867	1.790	62.420
SRH04			64.170	2100	388157.166	396915.908	1.807	62.363
SRH06a			64.490	2100	388184.918	396908.318	2.170	62.320
tank			64.420	1350	388194.754	396905.651	2.950	61.470
SRH06			64.551	1800	388198.714	396920.771	3.631	60.920
SRH08			64.527	2400	388197.902	396928.673	5.763	58.764

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)
1.003	SRH01	SRH02	51.315	0.600	62.930	62.802	0.128	400.0	450	5.85	50.0
1.004	SRH02	SRH03	29.243	0.600	62.802	62.729	0.073	400.0	450	6.33	50.0
1.005	SRH03	SRH04	28.603	0.600	62.580	62.508	0.072	400.0	450	6.80	50.0
4.003	SRH05	SRH04	22.798	0.600	62.420	62.363	0.057	400.0	450	5.38	50.0
1.006	SRH04	SRH06a	24.862	0.600	62.370	62.329	0.041	600.0	750	7.17	50.0
1.007	SRH06a	tank	10.931	0.600	62.320	62.190	0.130	84.1	300	7.27	50.0
1.008	tank	SRH06	28.335	0.600	61.470	61.389	0.081	349.8	300	7.84	48.8
1.009	SRH06	SRH08	10.782	0.600	60.920	58.764	2.156	5.0	300	7.86	48.7

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.003	1.010	160.7	44.3	0.970	0.968	0.245	0.0
1.004	1.010	160.7	88.5	0.968	1.081	0.490	0.0
1.005	1.010	160.7	125.2	1.230	1.212	0.693	0.0
4.003	1.010	160.7	62.7	1.340	1.357	0.347	0.0
1.006	1.135	501.4	187.9	1.050	1.411	1.040	0.0
1.007	1.715	363.8	187.9	1.870	1.930	1.040	0.0
1.008	0.835	59.0	183.4	2.650	2.862	1.040	0.0
1.009	7.075	500.1	183.2	3.331	5.463	1.040	0.0

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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)
1.003	51.315	400.0	450	1 STANDARD	64.350	62.930	0.970	64.220	62.802	0.968
1.004	29.243	400.0	450	1 STANDARD	64.220	62.802	0.968	64.260	62.729	1.081
1.005	28.603	400.0	450	1 STANDARD	64.260	62.580	1.230	64.170	62.508	1.212
4.003	22.798	400.0	450	1 STANDARD	64.210	62.420	1.340	64.170	62.363	1.357
1.006	24.862	600.0	750	1 STANDARD	64.170	62.370	1.050	64.490	62.329	1.411
1.007	10.931	84.1	300	1 -1 ooo	64.490	62.320	1.870	64.420	62.190	1.930
1.008	28.335	349.8	300	1 STANDARD	64.420	61.470	2.650	64.551	61.389	2.862
1.009	10.782	5.0	300	1 STANDARD	64.551	60.920	3.331	64.527	58.764	5.463

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.003	SRH01	1350	Manhole	4 STANDARD	SRH02	1350	Manhole	4 STANDARD
1.004	SRH02	1350	Manhole	4 STANDARD	SRH03	1800	Manhole	4 STANDARD
1.005	SRH03	1800	Manhole	4 STANDARD	SRH04	2100	Manhole	4 STANDARD
4.003	SRH05	1350	Manhole	4 STANDARD	SRH04	2100	Manhole	4 STANDARD
1.006	SRH04	2100	Manhole	4 STANDARD	SRH06a	2100	Manhole	4 STANDARD
1.007	SRH06a	2100	Manhole	4 STANDARD	tank	1350	Junction	
1.008	tank	1350	Junction		SRH06	1800	Manhole	4 STANDARD
1.009	SRH06	1800	Manhole	4 STANDARD	SRH08	2400	Manhole	4 STANDARD

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SRH01	388130.402	396818.283	64.350	1.420	1350	0	1.003	62.930	450
SRH02	388144.069	396868.176	64.220	1.418	1350	1	1.003	62.802	450
						0	1.004	62.802	450
SRH03	388149.464	396888.114	64.260	1.680	1800	1	1.004	62.729	450
						0	1.005	62.580	450
SRH05	388162.107	396933.867	64.210	1.790	1350	0	4.003	62.420	450
SRH04	388157.166	396915.908	64.170	1.807	2100	1	4.003	62.363	450
						2	1.005	62.508	450
						0	1.006	62.370	750
SRH06a	388184.918	396908.318	64.490	2.170	2100	1	1.006	62.329	750
						0	1.007	62.320	300
tank	388194.754	396905.651	64.420	2.950	1350	1	1.007	62.190	300
						0	1.008	61.470	300
SRH06	388198.714	396920.771	64.551	3.631	1800	1	1.008	61.389	300
						0	1.009	60.920	300

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SRH08	388197.902	396928.673	64.527	5.763	2400	1	1.009	58.764	300



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)	18.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.357	Starting Level (m)	
Summer CV	1.000	Check Discharge Rate(s)	x
Winter CV	0.840	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	40	0	0

Node SRH06 Online Hydro-Brake® Control

Flap Valve	x
Replaces Downstream Link	x
Invert Level (m)	60.920
Design Depth (m)	1.600
Design Flow (l/s)	18.0
Objective	(HE) Minimise upstream storage
Sump Available	✓
Product Number	CTL-SHE-0181-1800-1600-1800
Min Outlet Diameter (m)	0.225
Min Node Diameter (mm)	1800

Node tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	61.470
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	228

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	450.0	0.0	1.600	450.0	0.0	1.601	0.0	0.0

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Results for 1 year Critical Storm Duration. Lowest mass balance: 99.89%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SRH01	11	63.074	0.144	37.7	0.7007	0.0000	OK
15 minute summer	SRH02	11	63.020	0.218	74.0	1.0649	0.0000	OK
15 minute summer	SRH03	11	62.845	0.265	102.4	1.3141	0.0000	OK
15 minute summer	SRH05	11	62.660	0.240	53.5	1.2752	0.0000	OK
15 minute summer	SRH04	11	62.648	0.285	150.9	0.9869	0.0000	OK
15 minute summer	SRH06a	12	62.461	0.141	149.4	0.4892	0.0000	OK
120 minute summer	tank	86	61.674	0.204	73.5	87.3704	0.0000	OK
120 minute summer	SRH06	84	61.670	0.750	26.4	1.9088	0.0000	SURCHARGED
180 minute winter	SRH08	164	58.803	0.039	18.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SRH01	1.003	SRH02	36.7	0.630	0.229	3.0665	
15 minute summer	SRH02	1.004	SRH03	72.4	1.052	0.451	2.0141	
15 minute summer	SRH03	1.005	SRH04	101.0	1.162	0.629	2.4961	
15 minute summer	SRH05	4.003	SRH04	49.9	0.609	0.310	2.1869	
15 minute summer	SRH04	1.006	SRH06a	149.4	1.136	0.298	3.2765	
15 minute summer	SRH06a	1.007	tank	150.4	1.599	0.413	1.0287	
60 minute summer	tank	1.008	SRH06	30.3	0.878	0.514	1.5911	
180 minute winter	SRH06	1.009	SRH08	18.0	3.302	0.036	0.0588	135.3

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.96%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SRH01	11	63.244	0.314	92.3	1.5312	0.0000	OK
15 minute summer	SRH02	11	63.210	0.408	173.8	1.9926	0.0000	OK
15 minute summer	SRH03	11	63.092	0.512	242.8	2.5424	0.0000	SURCHARGED
15 minute summer	SRH05	11	62.869	0.449	130.9	2.3839	0.0000	OK
15 minute summer	SRH04	11	62.822	0.459	366.4	1.5913	0.0000	OK
15 minute summer	SRH06a	11	62.605	0.285	366.1	0.9860	0.0000	OK
180 minute summer	tank	160	62.094	0.624	133.7	266.8781	0.0000	SURCHARGED
180 minute summer	SRH06	160	62.088	1.168	22.8	2.9728	0.0000	SURCHARGED
240 minute winter	SRH08	388	58.803	0.039	18.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SRH01	1.003	SRH02	83.9	0.710	0.522	6.9009	
15 minute summer	SRH02	1.004	SRH03	169.6	1.259	1.056	4.2136	
15 minute summer	SRH03	1.005	SRH04	240.7	1.563	1.499	4.1344	
15 minute summer	SRH05	4.003	SRH04	125.7	0.795	0.782	3.6106	
15 minute summer	SRH04	1.006	SRH06a	366.1	1.480	0.730	6.1457	
15 minute summer	SRH06a	1.007	tank	359.9	1.886	0.989	2.2103	
15 minute winter	tank	1.008	SRH06	43.7	0.894	0.741	1.9812	
240 minute winter	SRH06	1.009	SRH08	18.0	3.302	0.036	0.0588	345.7

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.67%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SRH01	11	64.340	1.410	166.9	6.8851	0.0000	FLOOD RISK
15 minute summer	SRH02	11	64.200	1.398	310.7	6.8312	0.0000	FLOOD RISK
15 minute summer	SRH03	11	63.843	1.263	435.0	6.2646	0.0000	SURCHARGED
15 minute summer	SRH05	11	63.301	0.881	236.5	4.6781	0.0000	SURCHARGED
15 minute summer	SRH04	11	63.140	0.777	652.6	2.6919	0.0000	SURCHARGED
15 minute summer	SRH06a	11	63.020	0.700	649.6	2.4236	0.0000	SURCHARGED
240 minute summer	tank	232	62.748	1.278	202.4	546.5469	0.0000	SURCHARGED
240 minute summer	SRH06	232	62.739	1.819	21.0	4.6293	0.0000	SURCHARGED
240 minute summer	SRH08	232	58.804	0.040	18.9	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SRH01	1.003	SRH02	151.5	0.956	0.943	8.1305	
15 minute summer	SRH02	1.004	SRH03	302.5	1.910	1.883	4.6334	
15 minute summer	SRH03	1.005	SRH04	428.6	2.706	2.668	4.5320	
15 minute summer	SRH05	4.003	SRH04	224.3	1.416	1.396	3.6122	
15 minute summer	SRH04	1.006	SRH06a	649.6	1.597	1.296	10.7427	
15 minute summer	SRH06a	1.007	tank	647.7	3.066	1.781	2.2859	
15 minute winter	tank	1.008	SRH06	46.8	0.902	0.793	1.9953	
240 minute summer	SRH06	1.009	SRH08	18.1	3.347	0.038	0.0610	463.5

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