

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)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
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)
S1	0.035	5.00	64.250	600	401863.101	182285.773	0.650
S2	0.024	5.00	63.700	600	401736.674	182227.290	0.800
S3	0.007	5.00	63.600	600	401818.489	182271.887	0.800
S4	0.039	5.00	63.800	600	401829.777	182275.296	1.090
S5	0.035	5.00	63.600	600	401821.157	182303.790	1.070
S6	0.029	5.00	63.600	600	401852.520	182312.354	1.279
POND			63.600	1200	401850.107	182321.429	1.280
S7-HB			63.600	1200	401852.961	182331.342	1.285
S8			63.600	600	401853.416	182332.939	1.300
9_OUT			63.250		401853.387	182335.655	0.975

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	S1	S4	34.932	0.600	63.600	62.710	0.890	39.2	150	5.36	50.0
2.000	S2	S3	93.180	0.600	62.900	62.800	0.100	931.8	300	8.06	50.0
2.001	S3	S4	11.792	0.600	62.800	62.710	0.090	131.0	300	8.21	50.0
1.001	S4	S5	29.769	0.600	62.710	62.530	0.180	165.4	225	8.70	50.0
1.002	S5	S6	32.511	0.600	62.530	62.321	0.209	155.6	225	9.21	50.0
1.003	S6	POND	9.390	0.600	62.321	62.320	0.001	9390.0	225	10.46	50.0
1.004	POND	S7-HB	10.316	0.600	62.320	62.315	0.005	2063.2	225	11.07	50.0
1.005	S7-HB	S8	1.658	0.600	62.315	62.300	0.015	110.5	150	11.10	50.0
1.006	S8	9_OUT	2.716	0.600	62.300	62.275	0.025	108.6	150	11.15	50.0

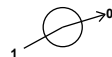
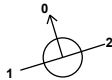
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	1.611	28.5	4.7	0.500	0.940	0.035	0.0
2.000	0.507	35.8	3.3	0.500	0.500	0.024	0.0
2.001	1.372	97.0	4.2	0.500	0.790	0.031	0.0
1.001	1.014	40.3	14.2	0.865	0.845	0.105	0.0
1.002	1.046	41.6	19.0	0.845	1.054	0.140	0.0
1.003	0.126	5.0	22.9	1.054	1.055	0.169	0.0
1.004	0.279	11.1	22.9	1.055	1.060	0.169	0.0
1.005	0.955	16.9	22.9	1.135	1.150	0.169	0.0
1.006	0.963	17.0	22.9	1.150	0.825	0.169	0.0

Pipeline Schedule

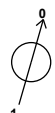
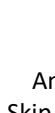
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	34.932	39.2	150	Circular	64.250	63.600	0.500	63.800	62.710	0.940
2.000	93.180	931.8	300	FilterCarrier	63.700	62.900	0.500	63.600	62.800	0.500
2.001	11.792	131.0	300	Circular	63.600	62.800	0.500	63.800	62.710	0.790
1.001	29.769	165.4	225	Circular	63.800	62.710	0.865	63.600	62.530	0.845
1.002	32.511	155.6	225	Circular	63.600	62.530	0.845	63.600	62.321	1.054
1.003	9.390	9390.0	225	Circular	63.600	62.321	1.054	63.600	62.320	1.055
1.004	10.316	2063.2	225	Circular	63.600	62.320	1.055	63.600	62.315	1.060
1.005	1.658	110.5	150	Circular	63.600	62.315	1.135	63.600	62.300	1.150
1.006	2.716	108.6	150	Circular	63.600	62.300	1.150	63.250	62.275	0.825

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	600	Manhole	1 STANDARD	S4	600	Manhole	1 STANDARD
2.000	S2	600	Manhole	1 STANDARD	S3	600	Manhole	1 STANDARD
2.001	S3	600	Manhole	1 STANDARD	S4	600	Manhole	1 STANDARD
1.001	S4	600	Manhole	1 STANDARD	S5	600	Manhole	1 STANDARD
1.002	S5	600	Manhole	1 STANDARD	S6	600	Manhole	1 STANDARD
1.003	S6	600	Manhole	1 STANDARD	POND	1200	Manhole	1 STANDARD
1.004	POND	1200	Manhole	1 STANDARD	S7-HB	1200	Manhole	1 STANDARD
1.005	S7-HB	1200	Manhole	1 STANDARD	S8	600	Manhole	1 STANDARD
1.006	S8	600	Manhole	1 STANDARD	9_OUT		Manhole	1 STANDARD

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	401863.101	182285.773	64.250	0.650	600				
						0	1.000	63.600	150
S2	401736.674	182227.290	63.700	0.800	600				
						0	2.000	62.900	300
S3	401818.489	182271.887	63.600	0.800	600				
						1	2.000	62.800	300
						0	2.001	62.800	300
S4	401829.777	182275.296	63.800	1.090	600				
						1	2.001	62.710	300
						2	1.000	62.710	150
						0	1.001	62.710	225
S5	401821.157	182303.790	63.600	1.070	600				
						1	1.001	62.530	225
						0	1.002	62.530	225
S6	401852.520	182312.354	63.600	1.279	600				
						1	1.002	62.321	225
						0	1.003	62.321	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
POND	401850.107	182321.429	63.600	1.280	1200		1	1.003	62.320	225
S7-HB	401852.961	182331.342	63.600	1.285	1200		1	1.004	62.320	225
							0	1.005	62.315	150
							1	1.006	62.300	150
S8	401853.416	182332.939	63.600	1.300	600		0	1.006	62.300	150
9_OUT	401853.387	182335.655	63.250	0.975			1	1.006	62.275	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	0.0
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
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	35	0	0
100	45	0	0

Node S7-HB Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	62.315	Product Number	CTL-SHE-0031-5000-1200-5000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.5	Min Node Diameter (mm)	1200

Node POND Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	62.315
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	71.0	0.0	1.280	266.0	0.0

Results for 2 year Critical Storm Duration. Lowest mass balance: 96.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	63.648	0.048	6.4	0.0136	0.0000	OK
15 minute winter	S2	12	62.976	0.076	4.4	0.0215	0.0000	OK
15 minute winter	S3	12	62.844	0.044	4.8	0.0124	0.0000	OK
15 minute winter	S4	11	62.813	0.103	16.8	0.0292	0.0000	OK
1440 minute winter	S5	1560	62.770	0.240	1.3	0.0680	0.0000	SURCHARGED
1440 minute winter	S6	1560	62.770	0.449	1.5	0.1271	0.0000	SURCHARGED
1440 minute winter	POND	1500	62.770	0.450	1.5	48.1866	0.0000	SURCHARGED
1440 minute winter	S7-HB	1620	62.770	0.455	0.0	0.5147	0.0000	SURCHARGED
1440 minute winter	S8	1650	62.770	0.470	0.0	0.1331	0.0000	SURCHARGED
15 minute summer	9_OUT	1	125.449	63.174	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S4	6.3	0.744	0.222	0.3081	
15 minute winter	S2	2.000	S3	3.8	0.378	0.106	0.9503	
15 minute winter	S3	2.001	S4	4.5	0.400	0.047	0.1610	
15 minute winter	S4	1.001	S5	16.7	0.867	0.414	0.5728	
1440 minute winter	S5	1.002	S6	1.2	0.173	0.029	1.2930	
1440 minute winter	S6	1.003	POND	1.5	0.171	0.295	0.3735	
1440 minute winter	POND	1.004	S7-HB	0.0	0.051	0.004	0.4103	
1440 minute winter	S7-HB	1.005	S8	0.0	0.083	0.002	0.0292	
1440 minute winter	S8	1.006	9_OUT	0.0	0.000	0.000	0.0478	0.0

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 96.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	63.681	0.081	16.3	0.0229	0.0000	OK
1440 minute winter	S2	1560	63.115	0.215	0.5	0.0610	0.0000	OK
1440 minute winter	S3	1680	63.115	0.315	0.7	0.0892	0.0000	SURCHARGED
1440 minute winter	S4	1680	63.115	0.405	2.3	0.1147	0.0000	SURCHARGED
1440 minute winter	S5	1560	63.115	0.585	2.9	0.1656	0.0000	SURCHARGED
1440 minute winter	S6	1650	63.115	0.794	3.5	0.2248	0.0000	SURCHARGED
1440 minute winter	POND	1500	63.115	0.795	3.4	106.1009	0.0000	SURCHARGED
1440 minute winter	S7-HB	1560	63.115	0.800	0.1	0.9052	0.0000	SURCHARGED
1440 minute winter	S8	1590	63.115	0.815	0.0	0.2307	0.0000	SURCHARGED
15 minute summer	9_OUT	1	125.449	63.174	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S4	16.2	1.045	0.567	0.4766	
1440 minute winter	S2	2.000	S3	0.5	0.191	0.014	5.8037	
1440 minute winter	S3	2.001	S4	0.7	0.202	0.007	0.8304	
1440 minute winter	S4	1.001	S5	2.1	0.413	0.052	1.1839	
1440 minute winter	S5	1.002	S6	2.9	0.176	0.069	1.2930	
1440 minute winter	S6	1.003	POND	3.4	0.204	0.684	0.3735	
1440 minute winter	POND	1.004	S7-HB	0.1	0.050	0.007	0.4103	
1440 minute winter	S7-HB	1.005	S8	0.0	0.107	0.002	0.0292	
1440 minute winter	S8	1.006	9_OUT	0.0	0.000	0.000	0.0478	0.0

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 96.79%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	12	63.871	0.271	22.8	0.0766	0.0000	SURCHARGED
15 minute winter	S2	12	63.624	0.724	25.3	0.2048	0.0000	FLOOD RISK
15 minute winter	S3	13	63.577	0.777	33.7	0.2199	0.0000	FLOOD RISK
15 minute winter	S4	13	63.577	0.867	47.2	0.2455	0.0000	FLOOD RISK
15 minute winter	S5	12	63.353	0.823	57.9	0.2329	0.0000	FLOOD RISK
1440 minute winter	S6	1590	63.332	1.011	4.3	0.2860	0.0000	FLOOD RISK
1440 minute winter	POND	1620	63.331	1.011	4.3	151.6208	0.0000	FLOOD RISK
1440 minute winter	S7-HB	1650	63.332	1.017	0.1	1.1497	0.0000	FLOOD RISK
1440 minute winter	S8	1620	63.332	1.032	0.0	0.2920	0.0000	FLOOD RISK
15 minute summer	9_OUT	1	125.449	63.174	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S4	21.8	1.287	0.767	0.6150	
15 minute winter	S2	2.000	S3	16.6	0.443	0.463	6.5617	
15 minute winter	S3	2.001	S4	23.9	0.527	0.247	0.8304	
15 minute winter	S4	1.001	S5	44.3	1.115	1.100	1.1839	
15 minute winter	S5	1.002	S6	60.6	1.523	1.457	1.2930	
1440 minute winter	S6	1.003	POND	4.3	0.214	0.862	0.3735	
1440 minute winter	POND	1.004	S7-HB	0.1	0.050	0.008	0.4103	
1440 minute winter	S7-HB	1.005	S8	0.0	0.106	0.002	0.0292	
1440 minute winter	S8	1.006	9_OUT	0.0	0.000	0.000	0.0478	0.0