

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	0.450	Preferred Cover Depth (m)	1.200
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)	Depth (m)
2.01	0.006	5.00	15.146	450		0.696
2.02	0.003	5.00	15.064	450		0.834
2.07	0.010	5.00	15.113	450		0.713
2.03	0.004	5.00	15.064	600	450	1.584
2.08	0.006	5.00	15.132	450		0.732
2.04	0.004	5.00	15.065	450	600	1.755
RE2	0.004	5.00	15.103	300		0.903
RE1	0.003	5.00	15.180	300		0.980
2.06	0.002	5.00	15.040	1200		1.960
CS2	0.000		14.850	300		1.820
DMH			14.850	300		1.830

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)
1.000	2.01	2.02	3.916	0.600	14.450	14.300	0.150	26.1	150	5.03
1.001	2.02	2.03	7.719	0.600	14.230	14.130	0.100	77.2	150	5.15
2.000	2.07	2.03	2.567	0.600	14.400	14.300	0.100	25.7	150	5.02
1.002	2.03	2.04	15.142	0.600	13.480	13.310	0.170	89.1	150	5.38
3.000	2.08	2.04	1.579	0.600	14.400	14.300	0.100	15.8	150	5.01
1.003	2.04	2.06	14.398	0.600	13.310	13.155	0.155	92.9	150	5.61
4.000	RE2	2.06	11.250	0.600	14.200	14.000	0.200	56.3	150	5.14
5.000	RE1	2.06	11.590	0.600	14.200	14.000	0.200	58.0	150	5.15
1.004	2.06	CS2	4.379	0.600	13.080	13.030	0.050	87.6	225	5.66
1.005	CS2	DMH	2.000	0.600	13.030	13.020	0.010	200.0	100	5.73

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)
1.000	2.01	2.02	1.978	35.0	0.8	0.546	0.614	0.006
1.001	2.02	2.03	1.145	20.2	1.2	0.684	0.784	0.009
2.000	2.07	2.03	1.995	35.3	1.4	0.563	0.614	0.010
1.002	2.03	2.04	1.065	18.8	3.1	1.434	1.605	0.023
3.000	2.08	2.04	2.547	45.0	0.8	0.582	0.615	0.006
1.003	2.04	2.06	1.043	18.4	4.5	1.605	1.735	0.033
4.000	RE2	2.06	1.344	23.7	0.5	0.753	0.890	0.004
5.000	RE1	2.06	1.324	23.4	0.4	0.830	0.890	0.003
1.004	2.06	CS2	1.398	55.6	5.7	1.735	1.595	0.042
1.005	CS2	DMH	0.540	4.2	5.7	1.720	1.730	0.042

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)
2.01	15.146	0.696	450		Manhole				
						0	1.000	14.450	150
2.02	15.064	0.834	450		Manhole				
						1	1.000	14.300	150
						0	1.001	14.230	150
2.07	15.113	0.713	450		Manhole				
						0	2.000	14.400	150

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Width (mm)	Node Type	Connections	Link	IL (m)	Dia (mm)
2.03	15.064	1.584	600	450	Manhole		1 2.000 2 1.001	14.300 14.130	150 150
							0 1.002	13.480	150
2.08	15.132	0.732	450		Manhole		0 3.000	14.400	150
2.04	15.065	1.755	450	600	Manhole		1 3.000 2 1.002	14.300 13.310	150 150
							0 1.003	13.310	150
RE2	15.103	0.903	300		Manhole		0 4.000	14.200	150
RE1	15.180	0.980	300		Manhole		0 5.000	14.200	150
2.06	15.040	1.960	1200		Manhole		1 5.000 2 4.000 3 1.003	14.000 14.000 13.155	150 150 150
							0 1.004	13.080	225
CS2	14.850	1.820	300		Manhole		1 1.004	13.030	225
							0 1.005	13.030	100
DMH	14.850	1.830	300		Manhole		1 1.005	13.020	100

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.750	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	0.450	Skip Steady State	✓	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 %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0	30	0	0	0
10	0	0	0	100	40	0	0

Node DMH Offline Weir Control

Flap Valve	x	Invert Level (m)	13.020	Design Flow (l/s)		Discharge Coefficient	0.590
Loop to Node	CS2	Design Depth (m)	1.600	Width (m)	0.300		

Node CS2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	12.000
Side Inf Coefficient (m/hr)	1.29600	Porosity	0.95	Time to half empty (mins)	69

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	4.5	4.5	1.600	4.5	22.1	1.601	0.0	22.1

Results for 1 year Critical Storm Duration. Lowest mass balance: 83.06%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m³)	Status
15 minute winter	2.01	10	14.467	0.017	0.9	0.0000	OK
15 minute winter	2.02	10	14.256	0.026	1.3	0.0000	OK
15 minute winter	2.07	10	14.423	0.022	1.5	0.0000	OK
15 minute winter	2.03	11	13.522	0.042	3.3	0.0000	OK
15 minute winter	2.08	10	14.416	0.016	0.9	0.0000	OK
15 minute winter	2.04	11	13.364	0.054	4.8	0.0000	OK
15 minute winter	RE2	11	14.217	0.017	0.6	0.0000	OK
15 minute winter	RE1	11	14.214	0.014	0.4	0.0000	OK
15 minute winter	2.06	11	13.135	0.055	6.1	0.0000	OK
60 minute winter	CS2	46	12.625	-0.405	2.9	0.0000	OK
15 minute summer	DMH	1	13.020	0.000	0.0	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 winter	2.01	1.000	2.02	0.9	0.820	0.025	0.0042	
15 minute winter	2.02	1.001	2.03	1.2	0.627	0.062	0.0154	
15 minute winter	2.07	2.000	2.03	1.5	0.943	0.042	0.0040	
15 minute winter	2.03	1.002	2.04	3.3	0.683	0.175	0.0739	
15 minute winter	2.08	3.000	2.04	0.9	0.953	0.020	0.0015	
15 minute winter	2.04	1.003	2.06	4.8	0.861	0.259	0.0799	
15 minute winter	RE2	4.000	2.06	0.6	0.568	0.025	0.0119	
15 minute winter	RE1	5.000	2.06	0.4	0.498	0.017	0.0093	
15 minute winter	2.06	1.004	CS2	6.1	0.868	0.109	0.0307	
15 minute summer	CS2	1.005	DMH	0.0	0.000	0.000	0.0000	
60 minute winter	CS2	Infiltration		1.2				
15 minute summer	DMH	Weir	CS2	0.0				0.0

Results for 10 year Critical Storm Duration. Lowest mass balance: 83.06%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m³)	Status
15 minute winter	2.01	10	14.474	0.024	1.7	0.0000	OK
15 minute winter	2.02	10	14.267	0.037	2.6	0.0000	OK
15 minute winter	2.07	10	14.431	0.031	2.8	0.0000	OK
15 minute winter	2.03	10	13.541	0.061	6.4	0.0000	OK
15 minute winter	2.08	10	14.422	0.022	1.7	0.0000	OK
15 minute winter	2.04	11	13.388	0.078	9.1	0.0000	OK
15 minute winter	RE2	11	14.222	0.022	1.1	0.0000	OK
15 minute winter	RE1	10	14.220	0.020	0.9	0.0000	OK
15 minute winter	2.06	11	13.158	0.078	11.6	0.0000	OK
60 minute winter	CS2	44	13.120	0.090	5.6	0.0000	OK
60 minute winter	DMH	46	13.125	0.105	0.5	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 winter	2.01	1.000	2.02	1.7	0.987	0.048	0.0067	
15 minute winter	2.02	1.001	2.03	2.5	0.762	0.125	0.0256	
15 minute winter	2.07	2.000	2.03	2.8	1.115	0.079	0.0064	
15 minute winter	2.03	1.002	2.04	6.4	0.797	0.338	0.1213	
15 minute winter	2.08	3.000	2.04	1.7	1.134	0.037	0.0023	
15 minute winter	2.04	1.003	2.06	9.2	1.014	0.497	0.1299	
15 minute winter	RE2	4.000	2.06	1.1	0.680	0.046	0.0182	
15 minute winter	RE1	5.000	2.06	0.9	0.625	0.037	0.0159	
15 minute winter	2.06	1.004	CS2	11.6	1.027	0.209	0.0496	
30 minute winter	CS2	1.005	DMH	0.4	0.111	0.086	0.0146	
60 minute winter	CS2	Infiltration		2.2				
30 minute winter	DMH	Weir	CS2	0.7				0.1

Results for 30 year Critical Storm Duration. Lowest mass balance: 83.06%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m³)	Status
15 minute winter	2.01	10	14.477	0.027	2.2	0.0000	OK
15 minute winter	2.02	10	14.272	0.042	3.3	0.0000	OK
15 minute winter	2.07	10	14.436	0.036	3.6	0.0000	OK
15 minute winter	2.03	10	13.551	0.071	8.2	0.0000	OK
15 minute winter	2.08	10	14.425	0.025	2.2	0.0000	OK
15 minute winter	2.04	11	13.402	0.092	11.6	0.0000	OK
15 minute winter	RE2	11	14.225	0.025	1.4	0.0000	OK
15 minute winter	RE1	10	14.222	0.022	1.1	0.0000	OK
60 minute winter	2.06	47	13.314	0.234	7.5	0.0000	SURCHARGED
60 minute winter	CS2	46	13.312	0.282	7.5	0.0000	SURCHARGED
60 minute winter	DMH	45	13.323	0.303	29.9	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 winter	2.01	1.000	2.02	2.2	1.057	0.062	0.0080	
15 minute winter	2.02	1.001	2.03	3.2	0.812	0.158	0.0304	
15 minute winter	2.07	2.000	2.03	3.6	1.188	0.101	0.0077	
15 minute winter	2.03	1.002	2.04	8.1	0.835	0.429	0.1464	
15 minute winter	2.08	3.000	2.04	2.2	1.210	0.048	0.0028	
15 minute winter	2.04	1.003	2.06	11.6	1.071	0.631	0.1564	
15 minute winter	RE2	4.000	2.06	1.4	0.729	0.059	0.0216	
15 minute winter	RE1	5.000	2.06	1.1	0.664	0.045	0.0185	
15 minute winter	2.06	1.004	CS2	14.8	1.091	0.267	0.1222	
60 minute winter	CS2	1.005	DMH	3.1	0.390	0.719	0.0156	
60 minute winter	CS2	Infiltration		2.6				
30 minute winter	DMH	Weir	CS2	26.6				14.9

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 83.06%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m³)	Status
15 minute winter	2.01	10	14.487	0.037	3.9	0.0000	OK
15 minute winter	2.02	10	14.289	0.059	5.9	0.0000	OK
15 minute winter	2.07	10	14.450	0.050	6.5	0.0000	OK
60 minute winter	2.03	46	14.251	0.771	7.4	0.0000	SURCHARGED
15 minute winter	2.08	10	14.435	0.035	3.9	0.0000	OK
60 minute winter	2.04	45	14.243	0.933	10.6	0.0000	SURCHARGED
60 minute winter	RE2	49	14.241	0.041	1.3	0.0000	OK
60 minute winter	RE1	49	14.240	0.040	1.0	0.0000	OK
60 minute winter	2.06	44	14.246	1.166	14.2	0.0000	SURCHARGED
60 minute winter	CS2	43	14.369	1.339	308.9	0.0000	SURCHARGED
60 minute winter	DMH	48	14.484	1.464	61.3	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 winter	2.01	1.000	2.02	3.9	1.235	0.111	0.0123	
15 minute winter	2.02	1.001	2.03	5.8	0.949	0.286	0.0471	
15 minute winter	2.07	2.000	2.03	6.5	1.373	0.184	0.0121	
15 minute winter	2.03	1.002	2.04	14.3	0.920	0.758	0.2666	
15 minute winter	2.08	3.000	2.04	3.9	1.395	0.086	0.0044	
15 minute summer	2.04	1.003	2.06	19.8	1.133	1.077	0.2535	
15 minute winter	RE2	4.000	2.06	2.6	0.866	0.108	0.0334	
15 minute winter	RE1	5.000	2.06	1.9	0.791	0.083	0.0284	
60 minute winter	2.06	1.004	CS2	80.1	2.014	1.441	0.1742	
60 minute winter	CS2	1.005	DMH	-85.4	-10.922	-20.145	0.0156	
15 minute winter	CS2	Infiltration		3.2				
60 minute winter	DMH	Weir	CS2	239.4				38.1