


















STORM SEWER DESIGN by the Modified Rational Method


Network Design Table for Storm

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	4.893	0.050	97.9	0.003	4.00	0.0	0.600		o	150	Pipe/Conduit	
1.001	8.096	0.140	57.8	0.003	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.002	10.770	0.050	215.4	0.037	0.00	0.0		0.075 → ↓ ←			Porous Car Park	
2.000	6.652	0.450	14.8	0.005	4.00	0.0	0.600		o	150	Pipe/Conduit	
2.001	7.740	0.150	51.6	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
2.002	4.869	0.070	69.6	0.005	0.00	0.0	0.600		o	150	Pipe/Conduit	
2.003	14.022	0.070	200.3	0.045	0.00	0.0		0.075 → ↓ ←			Porous Car Park	
1.003	19.142	0.135	141.8	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.004	1.163#	0.025	46.5	0.003	0.00	0.0	0.600		o	150	Pipe/Conduit	
3.000	17.342	0.650	26.7	0.013	4.00	0.0	0.600		o	150	Pipe/Conduit	
3.001	4.553	0.075	60.7	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
3.002	15.280	0.200	76.4	0.011	0.00	0.0	0.600		o	150	Pipe/Conduit	
3.003	7.649#	0.075	102.0	0.003	0.00	0.0	0.600		o	150	Pipe/Conduit	
4.000	27.355	0.400	68.4	0.023	4.00	0.0	0.600		o	150	Pipe/Conduit	
4.001	5.865	0.050	117.3	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
4.002	7.632	0.060	127.2	0.010	0.00	0.0	0.600		o	150	Pipe/Conduit	
4.003	6.332	0.050	126.6	0.004	0.00	0.0	0.600		o	150	Pipe/Conduit	






Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	4.08	210.000	0.003	0.0	0.0	0.0	1.02	18.0	0.4
1.001	50.00	4.18	209.950	0.006	0.0	0.0	0.0	1.33	23.4	0.9
1.002	50.00	5.53	209.810	0.043	0.0	0.0	0.0	0.13	24.8	6.2
2.000	50.00	4.04	210.500	0.005	0.0	0.0	0.0	2.63	46.5	0.7
2.001	50.00	4.13	210.050	0.005	0.0	0.0	0.0	1.40	24.8	0.7
2.002	50.00	4.20	209.900	0.010	0.0	0.0	0.0	1.21	21.3	1.4
2.003	50.00	5.90	209.830	0.055	0.0	0.0	0.0	0.14	25.3	7.9
1.003	50.00	6.28	209.760	0.098	0.0	0.0	0.0	0.84	14.9	14.2
1.004	50.00	6.29	209.625	0.101	0.0	0.0	0.0	1.48	26.1	14.6
3.000	50.00	4.15	209.900	0.013	0.0	0.0	0.0	1.96	34.6	1.9
3.001	50.00	4.21	209.250	0.013	0.0	0.0	0.0	1.29	22.9	1.9
3.002	50.00	4.43	209.175	0.024	0.0	0.0	0.0	1.15	20.3	3.5
3.003	50.00	4.56	208.975	0.027	0.0	0.0	0.0	0.99	17.6	3.9
4.000	50.00	4.37	210.000	0.023	0.0	0.0	0.0	1.22	21.5	3.3
4.001	50.00	4.48	209.600	0.023	0.0	0.0	0.0	0.93	16.4	3.3
4.002	50.00	4.62	209.550	0.033	0.0	0.0	0.0	0.89	15.7	4.8
4.003	50.00	4.74	209.490	0.037	0.0	0.0	0.0	0.89	15.8	5.3

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Fosse House Roman Wharf Lincoln LN1 1SR	Torsion Care, Thomas Street Lindley, Huddersfield 10-6102	
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Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
4.004	1.832	0.240	7.6	0.000	0.00	0.0	0.600		o	150	Pipe/Conduit	
1.005	11.500#	0.001	11500.0	0.015	0.00	0.0		0.050	→[↓]		Cellular Storage	
1.006	1.169	0.029	40.3	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.007	2.968	0.060	49.5	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.008	5.636	0.035	161.0	0.000	0.00	0.0	0.600		o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
4.004	50.00	4.75	209.440	0.037	0.0	0.0	0.0	3.67	64.9	5.3
1.005	50.00	7.90	208.600	0.180	0.0	0.0	0.0	0.12	1025.7	26.0
1.006	50.00	7.91	208.599	0.180	0.0	0.0	0.0	2.07	82.2	26.0
1.007	49.94	7.94	208.570	0.180	0.0	0.0	0.0	1.86	74.1	26.0
1.008	49.68	8.03	208.510	0.180	0.0	0.0	0.0	1.03	40.9	26.0

PIPELINE SCHEDULES for Storm

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o		S1	211.060	210.000	0.910	Open Manhole	450
1.001	o	150	S2	211.440	209.950	1.340	Open Manhole	450
1.002	→ ↓ →		S3	211.395	209.810	0.425	Open Manhole	3000
2.000	o	150	RE	211.600	210.500	0.950	Open Manhole	150
2.001	o	150	S4	211.710	210.050	1.510	Open Manhole	450
2.002	o	150	S5	211.430	209.900	1.380	Open Manhole	450
2.003	→ ↓ →		S6	211.400	209.830	0.430	Open Manhole	3000
1.003	o	150	S7	211.350	209.760	1.440	Open Manhole	1200
1.004	o	150	S8	211.325	209.625	1.550	Open Manhole	900
3.000	o	150	RE	210.900	209.900	0.850	Open Manhole	150
3.001	o	150	S10	210.080	209.250	0.680	Open Manhole	450
3.002	o	150	S11	209.950	209.175	0.625	Open Manhole	450
3.003	o	150	S12	210.000	208.975	0.875	Open Manhole	600
4.000	o	150	S14	211.200	210.000	1.050	Open Manhole	450
4.001	o	150	S15	210.350	209.600	0.600	Open Manhole	450
4.002	o	150	S16	210.120	209.550	0.420	Open Manhole	450
4.003	o	150	S17	210.090	209.490	0.450	Open Manhole	450

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	4.893	97.9	S2	211.440	209.950	1.340	Open Manhole	450
1.001	8.096	57.8	S3	211.395	209.810	1.435	Open Manhole	3000
1.002	10.770	215.4	S7	211.350	209.760	0.430	Open Manhole	1200
2.000	6.652	14.8	S4	211.710	210.050	1.510	Open Manhole	450
2.001	7.740	51.6	S5	211.430	209.900	1.380	Open Manhole	450
2.002	4.869	69.6	S6	211.400	209.830	1.420	Open Manhole	3000
2.003	14.022	200.3	S7	211.350	209.760	0.450	Open Manhole	1200
1.003	19.142	141.8	S8	211.325	209.625	1.550	Open Manhole	900
1.004	1.163#	46.5	ATT	211.325	209.600	1.575	Open Manhole	3000
3.000	17.342	26.7	S10	210.080	209.250	0.680	Open Manhole	450
3.001	4.553	60.7	S11	209.950	209.175	0.625	Open Manhole	450
3.002	15.280	76.4	S12	210.000	208.975	0.875	Open Manhole	600
3.003	7.649#	102.0	ATT	211.325	208.900	2.275	Open Manhole	3000
4.000	27.355	68.4	S15	210.350	209.600	0.600	Open Manhole	450
4.001	5.865	117.3	S16	210.120	209.550	0.420	Open Manhole	450
4.002	7.632	127.2	S17	210.090	209.490	0.450	Open Manhole	450
4.003	6.332	126.6	S18	210.060	209.440	0.470	Open Manhole	600


PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
4.004	o	150	S18	210.060	209.440	0.470	Open Manhole	600
1.005	→[↓]		ATT	211.325	208.600	1.425	Open Manhole	3000
1.006	o	225	ATT	211.325	208.599	2.501	Open Manhole	3000
1.007	o	225	S19	211.325	208.570	2.530	Open Manhole	1200
1.008	o	225	S20	210.060	208.510	1.325	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
4.004	1.832	7.6	ATT	211.325	209.200	1.975	Open Manhole	3000
1.005	11.500#	11500.0	ATT	211.325	208.599	1.426	Open Manhole	3000
1.006	1.169	40.3	S19	211.325	208.570	2.530	Open Manhole	1200
1.007	2.968	49.5	S20	210.060	208.510	1.325	Open Manhole	600
1.008	5.636	161.0	Existing MH	210.020	208.475	1.320	Open Manhole	1200

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Online Controls for Storm


Orifice Manhole: S7, DS/PN: 1.003, Volume (m³): 6.5

Diameter (m) 0.075 Discharge Coefficient 0.600 Invert Level (m) 209.760

Crown Vortex Valve® Manhole: S19, DS/PN: 1.007, Volume (m³): 3.1

Design Head (m) 1.200 Vortex Valve® Type R1 SW Only Invert Level (m) 208.570
Design Flow (l/s) 5.0 Diameter (mm) 88

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.4	1.200	5.0	3.000	7.9	7.000	12.1
0.200	2.2	1.400	5.4	3.500	8.6	7.500	12.5
0.300	2.5	1.600	5.8	4.000	9.2	8.000	13.0
0.400	2.9	1.800	6.1	4.500	9.7	8.500	13.4
0.500	3.2	2.000	6.5	5.000	10.2	9.000	13.7
0.600	3.5	2.200	6.8	5.500	10.7	9.500	14.1
0.800	4.1	2.400	7.1	6.000	11.2		
1.000	4.6	2.600	7.4	6.500	11.7		

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Storage Structures for Storm

Porous Car Park Pipe: 1.002

Manning's N	0.075	Width (m)	0.5
Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	10.8
Membrane Percolation (mm/hr)	250	Slope (1:X)	215.4
Max Percolation (l/s)	0.4	Depression Storage (mm)	5
Safety Factor	2.0	Evaporation (mm/day)	3
Porosity	0.30	Membrane Depth (mm)	130
Invert Level (m)	209.810		

Under Drain Details

Depth above Invert Level (m)	0.050	Number of Pipes	1
Diameter (m)	0.150	Manning's N	0.007

Porous Car Park Pipe: 2.003

Manning's N	0.075	Width (m)	0.5
Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	14.0
Membrane Percolation (mm/hr)	250	Slope (1:X)	200.3
Max Percolation (l/s)	0.5	Depression Storage (mm)	5
Safety Factor	2.0	Evaporation (mm/day)	3
Porosity	0.30	Membrane Depth (mm)	130
Invert Level (m)	209.830		


Under Drain Details

Depth above Invert Level (m)	0.050	Number of Pipes	1
Diameter (m)	0.150	Manning's N	0.007

Cellular Storage Pipe: 1.005

Manning's N	0.050	Infiltration Coefficient Side (m/hr)	0.00000
Invert Level (m)	208.600	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	83.5	83.5	1.300	0.0	135.6
1.200	83.5	135.6			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 3 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.310
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S1	15 Winter	1	+0%	30/15 Summer				210.016
1.001	S2	30 Winter	1	+0%	30/15 Summer				209.983
1.002	S3	30 Winter	1	+0%					209.982
2.000	RE	15 Winter	1	+0%	100/15 Winter				210.512
2.001	S4	15 Winter	1	+0%	30/15 Summer				210.067
2.002	S5	30 Winter	1	+0%	30/15 Summer				210.006
2.003	S6	30 Winter	1	+0%					210.004
1.003	S7	30 Winter	1	+0%	1/15 Summer				209.975
1.004	S8	30 Winter	1	+0%	100/15 Winter				209.697
3.000	RE	15 Winter	1	+0%					209.922
3.001	S10	15 Winter	1	+0%	30/180 Winter				209.281
3.002	S11	15 Winter	1	+0%	30/120 Winter				209.214
3.003	S12	15 Winter	1	+0%	30/60 Summer				209.021
4.000	S14	15 Winter	1	+0%					210.038
4.001	S15	15 Winter	1	+0%	100/15 Summer				209.647
4.002	S16	15 Winter	1	+0%	30/15 Summer				209.606
4.003	S17	15 Winter	1	+0%	30/15 Summer				209.550
4.004	S18	15 Winter	1	+0%	100/120 Winter				209.478
1.005	ATT	180 Winter	1	+0%					208.796
1.006	ATT	180 Winter	1	+0%	30/15 Summer				208.796
1.007	S19	180 Winter	1	+0%	1/120 Winter				208.814
1.008	S20	180 Winter	1	+0%					208.550

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)						
1.000	S1	-0.134	0.000	0.03			0.4	OK	
1.001	S2	-0.117	0.000	0.03			0.6	OK	
1.002	S3	-1.283	0.000	0.08		14	2.6	OK	
2.000	RE	-0.138	0.000	0.02			0.6	OK	
2.001	S4	-0.133	0.000	0.03			0.6	OK	
2.002	S5	-0.044	0.000	0.05			0.8	OK	
2.003	S6	-1.266	0.000	0.11		16	3.6	OK	
1.003	S7	0.065	0.000	0.35			4.9	SURCHARGED	
1.004	S8	-0.078	0.000	0.47			5.1	OK	
3.000	RE	-0.128	0.000	0.05			1.7	OK	
3.001	S10	-0.119	0.000	0.10			1.7	OK	
3.002	S11	-0.111	0.000	0.15			2.8	OK	
3.003	S12	-0.104	0.000	0.21			3.1	OK	
4.000	S14	-0.112	0.000	0.14			3.0	OK	
4.001	S15	-0.103	0.000	0.22			3.0	OK	
4.002	S16	-0.094	0.000	0.29			4.0	OK	
4.003	S17	-0.090	0.000	0.33			4.4	OK	
4.004	S18	-0.112	0.000	0.14			4.4	OK	
1.005	ATT	-1.104	0.000	0.00		94	5.8	OK	
1.006	ATT	-0.028	0.000	0.09			2.6	OK	
1.007	S19	0.019	0.000	0.06			2.2	SURCHARGED	
1.008	S20	-0.185	0.000	0.07			2.2	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000


Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.310
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840
Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S1	30 Winter	30	+40%	30/15 Summer				210.560
1.001	S2	30 Winter	30	+40%	30/15 Summer				210.559
1.002	S3	30 Winter	30	+40%					210.557
2.000	RE	30 Winter	30	+40%	100/15 Winter				210.567
2.001	S4	30 Winter	30	+40%	30/15 Summer				210.565
2.002	S5	30 Winter	30	+40%	30/15 Summer				210.564
2.003	S6	30 Winter	30	+40%					210.562
1.003	S7	30 Winter	30	+40%	1/15 Summer				210.551
1.004	S8	30 Winter	30	+40%	100/15 Winter				209.742
3.000	RE	15 Winter	30	+40%					209.943
3.001	S10	240 Winter	30	+40%	30/180 Winter				209.404
3.002	S11	240 Winter	30	+40%	30/120 Winter				209.404
3.003	S12	240 Winter	30	+40%	30/60 Summer				209.402
4.000	S14	15 Winter	30	+40%					210.075
4.001	S15	15 Winter	30	+40%	100/15 Summer				209.748
4.002	S16	15 Winter	30	+40%	30/15 Summer				209.721
4.003	S17	15 Winter	30	+40%	30/15 Summer				209.654
4.004	S18	15 Winter	30	+40%	100/120 Winter				209.516
1.005	ATT	240 Winter	30	+40%					209.401
1.006	ATT	240 Winter	30	+40%	30/15 Summer				209.401
1.007	S19	180 Winter	30	+40%	1/120 Winter				209.459
1.008	S20	240 Winter	30	+40%					208.566

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Innovyze	Network 2020.1.3	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)						
1.000	S1	0.410	0.000	0.05			0.7	SURCHARGED	
1.001	S2	0.459	0.000	0.07			1.5	SURCHARGED	
1.002	S3	-0.708	0.000	0.15		22	4.6	OK	
2.000	RE	-0.083	0.000	0.04			1.7	OK	
2.001	S4	0.365	0.000	0.06			1.3	SURCHARGED	
2.002	S5	0.514	0.000	0.17			2.8	SURCHARGED	
2.003	S6	-0.708	0.000	0.28		21	9.2	OK	
1.003	S7	0.641	0.000	0.73			10.2	SURCHARGED	
1.004	S8	-0.033	0.000	0.97			10.5	OK	
3.000	RE	-0.107	0.000	0.18			5.8	OK	
3.001	S10	0.004	0.000	0.07			1.2	SURCHARGED	
3.002	S11	0.079	0.000	0.12			2.3	SURCHARGED	
3.003	S12	0.277	0.000	0.17			2.5	SURCHARGED	
4.000	S14	-0.075	0.000	0.50			10.2	OK	
4.001	S15	-0.002	0.000	0.72			9.8	OK	
4.002	S16	0.021	0.000	1.03			14.0	SURCHARGED	
4.003	S17	0.014	0.000	1.18			15.7	SURCHARGED	
4.004	S18	-0.074	0.000	0.51			15.7	OK	
1.005	ATT	-0.499	0.000	0.00		170	13.3	OK	
1.006	ATT	0.577	0.000	0.17			5.1	SURCHARGED	
1.007	S19	0.664	0.000	0.12			4.2	SURCHARGED	
1.008	S20	-0.169	0.000	0.14			4.2	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 3 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.310
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S1	60 Winter	100	+45%	30/15 Summer				210.912
1.001	S2	60 Winter	100	+45%	30/15 Summer				210.911
1.002	S3	60 Winter	100	+45%					210.909
2.000	RE	60 Winter	100	+45%	100/15 Winter				210.920
2.001	S4	60 Winter	100	+45%	30/15 Summer				210.918
2.002	S5	60 Winter	100	+45%	30/15 Summer				210.917
2.003	S6	60 Winter	100	+45%					210.914
1.003	S7	60 Winter	100	+45%	1/15 Summer				210.902
1.004	S8	60 Winter	100	+45%	100/15 Winter				209.781
3.000	RE	15 Winter	100	+45%					209.950
3.001	S10	240 Winter	100	+45%	30/180 Winter				209.737
3.002	S11	240 Winter	100	+45%	30/120 Winter				209.737
3.003	S12	240 Winter	100	+45%	30/60 Summer				209.735
4.000	S14	15 Winter	100	+45%					210.090
4.001	S15	15 Winter	100	+45%	100/15 Summer				209.872
4.002	S16	15 Winter	100	+45%	30/15 Summer				209.825
4.003	S17	240 Winter	100	+45%	30/15 Summer				209.736
4.004	S18	240 Winter	100	+45%	100/120 Winter				209.734
1.005	ATT	240 Winter	100	+45%					209.733
1.006	ATT	240 Winter	100	+45%	30/15 Summer				209.733
1.007	S19	240 Winter	100	+45%	1/120 Winter				209.758
1.008	S20	240 Winter	100	+45%					208.571

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Flooded		Flow / Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)					
1.000	S1	0.762	0.000	0.05		0.7	FLOOD RISK	
1.001	S2	0.811	0.000	0.07		1.5	SURCHARGED	
1.002	S3	-0.356	0.000	0.16	30	5.1	OK	
2.000	RE	0.270	0.000	0.04		1.6	SURCHARGED	
2.001	S4	0.718	0.000	0.06		1.2	SURCHARGED	
2.002	S5	0.867	0.000	0.15		2.6	SURCHARGED	
2.003	S6	-0.356	0.000	0.25	29	8.2	OK	
1.003	S7	0.992	0.000	0.85		11.9	SURCHARGED	
1.004	S8	0.006	0.000	1.13		12.3	SURCHARGED	
3.000	RE	-0.100	0.000	0.24		7.7	OK	
3.001	S10	0.337	0.000	0.10		1.6	SURCHARGED	
3.002	S11	0.412	0.000	0.16		3.0	FLOOD RISK	
3.003	S12	0.610	0.000	0.21		3.1	FLOOD RISK	
4.000	S14	-0.060	0.000	0.66		13.7	OK	
4.001	S15	0.122	0.000	0.97		13.2	SURCHARGED	
4.002	S16	0.125	0.000	1.37		18.6	FLOOD RISK	
4.003	S17	0.096	0.000	0.35		4.7	SURCHARGED	
4.004	S18	0.144	0.000	0.15		4.7	SURCHARGED	
1.005	ATT	-0.167	0.000	0.01	194	17.1	OK	
1.006	ATT	0.909	0.000	0.19		5.8	SURCHARGED	
1.007	S19	0.963	0.000	0.14		4.9	SURCHARGED	
1.008	S20	-0.164	0.000	0.17		4.9	OK	