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)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	13.471	0.225	60.0	0.015	5.00	0.0	0.600	o	100	Pipe/Conduit	
S2.000	6.448	0.107	60.0	0.009	5.00	0.0	0.600	o	100	Pipe/Conduit	
S1.001	5.789	0.058	99.8	0.009	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	1.673	0.837	2.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	3.333	0.033	100.0	0.031	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.004	7.195	0.072	100.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.005	13.086	0.131	100.0	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.006	13.403	0.134	100.0	0.048	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.000	14.622	0.146	100.2	0.015	5.00	0.0	0.600	o	150	Pipe/Conduit	
S3.001	19.143	0.191	100.0	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
S3.002	8.429	0.084	100.0	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
S3.003	7.660	0.034	225.3	0.010	0.00	0.0	0.600	o	225	Pipe/Conduit	
S4.000	6.926	0.115	60.0	0.020	5.00	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)
S1.000	50.00	5.23	33.710	0.015	0.0	0.0	0.0	1.00	7.8	2.0
S2.000	50.00	5.11	33.710	0.009	0.0	0.0	0.0	1.00	7.8	1.2
S1.001	50.00	5.32	33.435	0.033	0.0	0.0	0.0	1.01	17.8	4.5
S1.002	50.00	5.33	33.377	0.033	0.0	0.0	0.0	7.18	127.0	4.5
S1.003	50.00	5.36	32.150	0.064	0.0	0.0	0.0	1.57	111.1	8.7
S1.004	50.00	5.44	32.117	0.064	0.0	0.0	0.0	1.57	111.1	8.7
S1.005	50.00	5.58	32.045	0.096	0.0	0.0	0.0	1.57	111.1	13.0
S1.006	50.00	5.72	31.914	0.144	0.0	0.0	0.0	1.57	111.1	19.5
S3.000	50.00	5.24	32.300	0.015	0.0	0.0	0.0	1.00	17.7	2.0
S3.001	50.00	5.56	32.154	0.025	0.0	0.0	0.0	1.00	17.8	3.4
S3.002	50.00	5.70	31.963	0.035	0.0	0.0	0.0	1.00	17.8	4.7
S3.003	50.00	5.85	31.000	0.045	0.0	0.0	0.0	0.87	34.5	6.1
S4.000	50.00	5.09	32.230	0.020	0.0	0.0	0.0	1.30	23.0	2.7

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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)	HYD SECT	DIA (mm)	Section Type	Auto Design
S5.000	8.251	0.083	99.4	0.019	5.00	0.0	0.600	o	100	Pipe/Conduit	
S4.001	17.808	0.178	100.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S6.000	10.483	0.261	40.2	0.019	5.00	0.0	0.600	o	100	Pipe/Conduit	
S4.002	9.637	0.096	100.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S7.000	7.311	0.073	100.2	0.053	5.00	0.0	0.600	o	225	Pipe/Conduit	
S4.003	12.400	0.083	149.4	0.026	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.007	2.400	0.016	150.0	0.041	0.00	0.0	0.600	o	300	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)
S5.000	50.00	5.18	32.240	0.019	0.0	0.0	0.0	0.77	6.1	2.6
S4.001	50.00	5.41	32.032	0.039	0.0	0.0	0.0	1.31	52.0	5.3
S6.000	50.00	5.14	32.240	0.019	0.0	0.0	0.0	1.22	9.6	2.6
S4.002	50.00	5.53	31.854	0.058	0.0	0.0	0.0	1.30	51.9	7.9
S7.000	50.00	5.09	32.070	0.053	0.0	0.0	0.0	1.31	51.9	7.2
S4.003	50.00	5.72	31.000	0.137	0.0	0.0	0.0	1.07	42.4	18.6
S1.007	50.00	5.88	30.842	0.367	0.0	0.0	0.0	1.28	90.6	49.7

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S1	34.270	0.560	Open Manhole	450	S1.000	33.710	100				
S2a	34.270	0.560	Open Manhole	450	S2.000	33.710	100				
S2	34.270	0.835	Open Manhole	450	S1.001	33.435	150	S1.000	33.485	100	
								S2.000	33.603	100	117
S vertical	34.270	0.893	Open Manhole	150	S1.002	33.377	150	S1.001	33.377	150	
S3	32.800	0.650	Open Manhole	600	S1.003	32.150	300	S1.002	32.540	150	240
S4	32.800	0.683	Open Manhole	600	S1.004	32.117	300	S1.003	32.117	300	
Sjunction	32.800	0.755	Junction		S1.005	32.045	300	S1.004	32.045	300	
S5	32.800	0.886	Open Manhole	600	S1.006	31.914	300	S1.005	31.914	300	
S6	32.800	0.500	Open Manhole	450	S3.000	32.300	150				
S7	32.800	0.646	Open Manhole	450	S3.001	32.154	150	S3.000	32.154	150	
S8	32.800	0.837	Open Manhole	450	S3.002	31.963	150	S3.001	31.963	150	
S9	32.800	1.800	Open Manhole	600	S3.003	31.000	225	S3.002	31.878	150	803
S10	32.800	0.570	Open Manhole	450	S4.000	32.230	150				
S11a	32.800	0.560	Open Manhole	450	S5.000	32.240	100				
S11	32.800	0.768	Open Manhole	600	S4.001	32.032	225	S4.000	32.115	150	8
								S5.000	32.157	100	
S12a	32.800	0.560	Open Manhole	450	S6.000	32.240	100				
S12	32.800	0.946	Open Manhole	600	S4.002	31.854	225	S4.001	31.854	225	
								S6.000	31.979	100	
S13a	32.800	0.730	Open Manhole	600	S7.000	32.070	225				
S13	32.800	1.800	Open Manhole	1200	S4.003	31.000	225	S4.002	31.758	225	758
								S7.000	31.997	225	997
S tank	32.800	1.958	Open Manhole	1200	S1.007	30.842	300	S1.006	31.780	300	938
								S3.003	30.966	225	49
								S4.003	30.917	225	
S	33.000	2.174	Open Manhole	0		OUTFALL		S1.007	30.826	300	

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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)
S1.000	o	100	S1	34.270	33.710	0.460	Open Manhole	450
S2.000	o	100	S2a	34.270	33.710	0.460	Open Manhole	450
S1.001	o	150	S2	34.270	33.435	0.685	Open Manhole	450
S1.002	o	150	S vertical	34.270	33.377	0.743	Open Manhole	150
S1.003	o	300	S3	32.800	32.150	0.350	Open Manhole	600
S1.004	o	300	S4	32.800	32.117	0.383	Open Manhole	600
S1.005	o	300	Sjunction	32.800	32.045	0.455	Junction	
S1.006	o	300	S5	32.800	31.914	0.586	Open Manhole	600
S3.000	o	150	S6	32.800	32.300	0.350	Open Manhole	450
S3.001	o	150	S7	32.800	32.154	0.496	Open Manhole	450
S3.002	o	150	S8	32.800	31.963	0.687	Open Manhole	450
S3.003	o	225	S9	32.800	31.000	1.575	Open Manhole	600
S4.000	o	150	S10	32.800	32.230	0.420	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)
S1.000	13.471	60.0	S2	34.270	33.485	0.685	Open Manhole	450
S2.000	6.448	60.0	S2	34.270	33.603	0.567	Open Manhole	450
S1.001	5.789	99.8	S vertical	34.270	33.377	0.743	Open Manhole	150
S1.002	1.673	2.0	S3	32.800	32.540	0.110	Open Manhole	600
S1.003	3.333	100.0	S4	32.800	32.117	0.383	Open Manhole	600
S1.004	7.195	100.0	Sjunction	32.800	32.045	0.455	Junction	
S1.005	13.086	100.0	S5	32.800	31.914	0.586	Open Manhole	600
S1.006	13.403	100.0	S tank	32.800	31.780	0.720	Open Manhole	1200
S3.000	14.622	100.2	S7	32.800	32.154	0.496	Open Manhole	450
S3.001	19.143	100.0	S8	32.800	31.963	0.687	Open Manhole	450
S3.002	8.429	100.0	S9	32.800	31.878	0.772	Open Manhole	600
S3.003	7.660	225.3	S tank	32.800	30.966	1.609	Open Manhole	1200
S4.000	6.926	60.0	S11	32.800	32.115	0.535	Open Manhole	600

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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)
S5.000	o	100	S11a	32.800	32.240	0.460	Open Manhole	450
S4.001	o	225	S11	32.800	32.032	0.543	Open Manhole	600
S6.000	o	100	S12a	32.800	32.240	0.460	Open Manhole	450
S4.002	o	225	S12	32.800	31.854	0.721	Open Manhole	600
S7.000	o	225	S13a	32.800	32.070	0.505	Open Manhole	600
S4.003	o	225	S13	32.800	31.000	1.575	Open Manhole	1200
S1.007	o	300	S tank	32.800	30.842	1.658	Open Manhole	1200

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)
S5.000	8.251	99.4	S11	32.800	32.157	0.543	Open Manhole	600
S4.001	17.808	100.0	S12	32.800	31.854	0.721	Open Manhole	600
S6.000	10.483	40.2	S12	32.800	31.979	0.721	Open Manhole	600
S4.002	9.637	100.4	S13	32.800	31.758	0.817	Open Manhole	1200
S7.000	7.311	100.2	S13	32.800	31.997	0.578	Open Manhole	1200
S4.003	12.400	149.4	S tank	32.800	30.917	1.658	Open Manhole	1200
S1.007	2.400	150.0	S	33.000	30.826	1.874	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.015	0.015	0.015
2.000	-	-	100	0.009	0.009	0.009
1.001	-	-	100	0.009	0.009	0.009
1.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.031	0.031	0.031
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.032	0.032	0.032
1.006	-	-	100	0.048	0.048	0.048
3.000	-	-	100	0.015	0.015	0.015
3.001	-	-	100	0.010	0.010	0.010
3.002	-	-	100	0.010	0.010	0.010
3.003	-	-	100	0.010	0.010	0.010
4.000	-	-	100	0.020	0.020	0.020
5.000	-	-	100	0.019	0.019	0.019
4.001	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.019	0.019	0.019
4.002	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.053	0.053	0.053
4.003	-	-	100	0.026	0.026	0.026
1.007	-	-	100	0.041	0.041	0.041
				Total	Total	Total
				0.367	0.367	0.367

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.007	S	33.000	30.826	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	1	Number of Real Time Controls	0

Synthetic Rainfall Details

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Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.361		

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Online Controls for Storm

Pump Manhole: S tank, DS/PN: S1.007, Volume (m³): 3.8

Invert Level (m) 30.842

Depth (m)	Flow (l/s)
1.390	23.4000

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Storage Structures for Storm

Cellular Storage Manhole: S tank, DS/PN: S1.007

Invert Level (m) 30.840 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	86.0	0.0	1.601	0.0	0.0
1.600	86.0	0.0			

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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 Coeffiecient 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 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 1.000
M5-60 (mm) 18.000 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1	15 Summer	1	+0%	100/15 Summer			
S2.000	S2a	15 Summer	1	+0%				
S1.001	S2	15 Summer	1	+0%	100/15 Summer			
S1.002	S vertical	15 Summer	1	+0%				
S1.003	S3	15 Summer	1	+0%	100/120 Summer			
S1.004	S4	15 Summer	1	+0%	100/120 Summer			
S1.005	Sjunction	15 Summer	1	+0%				
S1.006	S5	15 Summer	1	+0%	100/15 Summer			
S3.000	S6	15 Summer	1	+0%	100/120 Summer			
S3.001	S7	15 Summer	1	+0%	100/15 Summer			
S3.002	S8	15 Summer	1	+0%	100/15 Summer			
S3.003	S9	180 Summer	1	+0%	1/120 Summer			
S4.000	S10	15 Summer	1	+0%	100/60 Summer			
S5.000	S11a	15 Summer	1	+0%	30/15 Summer			
S4.001	S11	15 Summer	1	+0%	100/30 Summer			
S6.000	S12a	15 Summer	1	+0%	100/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	33.748	-0.062	0.000	0.31		2.3	OK	
S2.000	S2a	33.740	-0.070	0.000	0.20		1.4	OK	
S1.001	S2	33.495	-0.091	0.000	0.33		4.8	OK	
S1.002	S vertical	33.407	-0.121	0.000	0.08		4.8	OK	
S1.003	S3	32.226	-0.224	0.000	0.14		8.7	OK	
S1.004	S4	32.189	-0.228	0.000	0.13		8.8	OK	
S1.005	Sjunction	32.120	-0.225	0.000	0.14		12.8	OK*	
S1.006	S5	32.007	-0.207	0.000	0.21		18.9	OK	
S3.000	S6	32.337	-0.113	0.000	0.14		2.3	OK	
S3.001	S7	32.201	-0.103	0.000	0.21		3.5	OK	
S3.002	S8	32.020	-0.092	0.000	0.31		4.8	OK	
S3.003	S9	31.231	0.006	0.000	0.09		2.4	SURCHARGED	
S4.000	S10	32.270	-0.110	0.000	0.16		3.1	OK	
S5.000	S11a	32.292	-0.048	0.000	0.52		2.9	OK	
S4.001	S11	32.086	-0.171	0.000	0.13		5.9	OK	
S6.000	S12a	32.279	-0.061	0.000	0.32		2.9	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S4.002	S12	15 Summer	1	+0%	100/15 Summer				31.923
S7.000	S13a	15 Summer	1	+0%	100/60 Summer				32.140
S4.003	S13	180 Summer	1	+0%	1/120 Summer				31.234
S1.007	S tank	180 Summer	1	+0%	1/30 Summer				31.230

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S4.002	S12	-0.155	0.000	0.21		8.8	OK	
S7.000	S13a	-0.155	0.000	0.21		8.1	OK	
S4.003	S13	0.009	0.000	0.20		7.4	SURCHARGED	
S1.007	S tank	0.088	0.000	0.12		6.5	SURCHARGED	

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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 Coeffiecient 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 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 1.000
M5-60 (mm) 18.000 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1	15 Summer	30	+0%	100/15 Summer			
S2.000	S2a	15 Summer	30	+0%				
S1.001	S2	15 Summer	30	+0%	100/15 Summer			
S1.002	S vertical	15 Summer	30	+0%				
S1.003	S3	15 Summer	30	+0%	100/120 Summer			
S1.004	S4	15 Summer	30	+0%	100/120 Summer			
S1.005	Sjunction	15 Summer	30	+0%				
S1.006	S5	15 Summer	30	+0%	100/15 Summer			
S3.000	S6	15 Summer	30	+0%	100/120 Summer			
S3.001	S7	15 Summer	30	+0%	100/15 Summer			
S3.002	S8	15 Summer	30	+0%	100/15 Summer			
S3.003	S9	120 Summer	30	+0%	1/120 Summer			
S4.000	S10	15 Summer	30	+0%	100/60 Summer			
S5.000	S11a	15 Summer	30	+0%	30/15 Summer			
S4.001	S11	15 Summer	30	+0%	100/30 Summer			
S6.000	S12a	15 Summer	30	+0%	100/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	33.776	-0.034	0.000	0.76		5.6	OK	
S2.000	S2a	33.759	-0.051	0.000	0.48		3.4	OK	
S1.001	S2	33.544	-0.041	0.000	0.86		12.7	OK	
S1.002	S vertical	33.426	-0.102	0.000	0.22		12.6	OK	
S1.003	S3	32.286	-0.164	0.000	0.42		25.6	OK	
S1.004	S4	32.245	-0.171	0.000	0.38		25.4	OK	
S1.005	Sjunction	32.182	-0.163	0.000	0.42		38.5	OK*	
S1.006	S5	32.090	-0.124	0.000	0.63		58.0	OK	
S3.000	S6	32.361	-0.089	0.000	0.34		5.6	OK	
S3.001	S7	32.237	-0.067	0.000	0.58		9.7	OK	
S3.002	S8	32.074	-0.039	0.000	0.89		13.8	OK	
S3.003	S9	31.762	0.537	0.000	0.26		7.3	SURCHARGED	
S4.000	S10	32.295	-0.085	0.000	0.38		7.5	OK	
S5.000	S11a	32.388	0.048	0.000	1.26		7.0	SURCHARGED	
S4.001	S11	32.118	-0.139	0.000	0.31		14.4	OK	
S6.000	S12a	32.308	-0.032	0.000	0.79		7.1	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S4.002	S12	15 Summer	30	+0%	100/15 Summer				31.968
S7.000	S13a	15 Summer	30	+0%	100/60 Summer				32.186
S4.003	S13	120 Summer	30	+0%	1/120 Summer				31.770
S1.007	S tank	120 Summer	30	+0%	1/30 Summer				31.760

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S4.002	S12	-0.111	0.000	0.50		21.6	OK	
S7.000	S13a	-0.109	0.000	0.52		19.8	OK	
S4.003	S13	0.545	0.000	0.60		21.9	SURCHARGED	
S1.007	S tank	0.618	0.000	0.29		15.4	SURCHARGED	

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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 Coeffiecient 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 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.360
Region England and Wales Cv (Summer) 1.000
M5-60 (mm) 18.000 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1	15 Summer	100	+40%	100/15 Summer			
S2.000	S2a	15 Summer	100	+40%				
S1.001	S2	15 Summer	100	+40%	100/15 Summer			
S1.002	S vertical	15 Summer	100	+40%				
S1.003	S3	120 Summer	100	+40%	100/120 Summer			
S1.004	S4	120 Summer	100	+40%	100/120 Summer			
S1.005	Sjunction	180 Summer	100	+40%				
S1.006	S5	120 Summer	100	+40%	100/15 Summer			
S3.000	S6	120 Summer	100	+40%	100/120 Summer			
S3.001	S7	120 Summer	100	+40%	100/15 Summer			
S3.002	S8	120 Summer	100	+40%	100/15 Summer			
S3.003	S9	120 Summer	100	+40%	1/120 Summer			
S4.000	S10	120 Summer	100	+40%	100/60 Summer			
S5.000	S11a	120 Summer	100	+40%	30/15 Summer			
S4.001	S11	120 Summer	100	+40%	100/30 Summer			
S6.000	S12a	120 Summer	100	+40%	100/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	34.037	0.227	0.000	1.31		9.7	FLOOD RISK	
S2.000	S2a	33.783	-0.027	0.000	0.87		6.1	OK	
S1.001	S2	33.654	0.069	0.000	1.47		21.7	SURCHARGED	
S1.002	S vertical	33.442	-0.085	0.000	0.38		21.9	OK	
S1.003	S3	32.682	0.232	0.000	0.32		19.7	FLOOD RISK	
S1.004	S4	32.681	0.264	0.000	0.29		19.7	FLOOD RISK	
S1.005	Sjunction	32.345	0.000	0.000	0.26		23.3	SURCHARGED*	
S1.006	S5	32.675	0.461	0.000	0.46		42.4	FLOOD RISK	
S3.000	S6	32.686	0.236	0.000	0.28		4.6	FLOOD RISK	
S3.001	S7	32.685	0.381	0.000	0.46		7.7	FLOOD RISK	
S3.002	S8	32.679	0.566	0.000	0.65		10.2	FLOOD RISK	
S3.003	S9	32.672	1.447	0.000	0.46		12.6	FLOOD RISK	
S4.000	S10	32.693	0.313	0.000	0.31		6.2	FLOOD RISK	
S5.000	S11a	32.697	0.357	0.000	1.04		5.8	FLOOD RISK	
S4.001	S11	32.690	0.433	0.000	0.25		11.5	FLOOD RISK	
S6.000	S12a	32.693	0.353	0.000	0.65		5.8	FLOOD RISK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S4.002	S12	120 Summer	100	+40%	100/15 Summer				32.687
S7.000	S13a	120 Summer	100	+40%	100/60 Summer				32.684
S4.003	S13	120 Summer	100	+40%	1/120 Summer				32.681
S1.007	S tank	120 Summer	100	+40%	1/30 Summer				32.669

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S4.002	S12	0.608	0.000	0.37		16.0	FLOOD RISK	
S7.000	S13a	0.389	0.000	0.42		16.0	FLOOD RISK	
S4.003	S13	1.456	0.000	0.99		36.2	FLOOD RISK	
S1.007	S tank	1.527	0.000	0.44		23.4	FLOOD RISK	

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