STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Network 1

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.363	Minimum Backdrop Height (m)	0.700
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	1.000	Min Slope for Optimisation (1:X)	400

Designed with Level Soffits

Time Area Diagram for Surface Network 1

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.090	4-8	0.023

Total Area Contributing (ha) = 0.113

Total Pipe Volume (m³) = 4.254

Network Design Table for Surface Network 1

« - Indicates pipe capacity < flow

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
1.000	18.634	0.311	60.0	0.008	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	6.831	0.085	80.0	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	7.529	0.396	19.0	0.013	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	30.337	0.303	100.0	0.022	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.003	11.505	0.115	100.0	0.023	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.004	6.169	0.062	99.5	0.006	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)
1.000	50.00	5.24	44.300	0.008	0.0	0.0	0.0	1.30	23.0	1.4
1.001	50.00	5.34	43.989	0.013	0.0	0.0	0.0	1.12	19.9	2.3
2.000	50.00	5.05	44.300	0.013	0.0	0.0	0.0	2.32	41.0	2.3
1.002	50.00	5.73	43.829	0.048	0.0	0.0	0.0	1.31	52.0	8.7
1.003	50.00	5.87	43.526	0.071	0.0	0.0	0.0	1.31	52.0	12.8
1.004	50.00	5.95	43.411	0.077	0.0	0.0	0.0	1.31	52.1	13.9

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Network Design Table for Surface Network 1

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
3.000	12.385	0.206	60.1	0.011	5.00	0.0	0.600	o	150	Pipe/Conduit	
3.001	33.131	0.414	80.0	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.002	13.684	0.137	100.0	0.010	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.003	2.542	0.025	100.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.004	3.668	0.095	38.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.005	3.043	0.030	101.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.006	2.587	0.026	99.5	0.000	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)
3.000	50.00	5.16	44.300	0.011	0.0	0.0	0.0	1.30	23.0	1.9
3.001	50.00	5.65	44.094	0.026	0.0	0.0	0.0	1.12	19.9	4.6
3.002	50.00	5.82	43.605	0.036	0.0	0.0	0.0	1.31	52.0	6.5
3.003	50.00	5.86	43.468	0.036	0.0	0.0	0.0	1.31	52.0	6.5
3.004	50.00	5.89	43.443	0.036	0.0	0.0	0.0	2.11	83.8	6.5
1.005	50.00	5.99	43.348	0.113	0.0	0.0	0.0	1.30	51.6	20.4
1.006	50.00	6.03	43.318	0.113	0.0	0.0	0.0	1.01	17.8«	20.4

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Area Summary for Surface Network 1

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.008	0.008	0.008
1.001	User	-	100	0.005	0.005	0.005
2.000	User	-	100	0.013	0.013	0.013
1.002	User	-	100	0.022	0.022	0.022
1.003	User	-	100	0.023	0.023	0.023
1.004	User	-	100	0.006	0.006	0.006
3.000	User	-	100	0.011	0.011	0.011
3.001	-	-	100	0.015	0.015	0.015
3.002	User	-	100	0.010	0.010	0.010
3.003	-	-	100	0.000	0.000	0.000
3.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.113	0.113	0.113

Free Flowing Outfall Details for Surface Network 1

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.006	S14	44.767	43.292	0.000	1350	0

Simulation Criteria for Surface Network 1

Volumetric Runoff Coeff	1.000	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

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.000	Storm Duration (mins)	30
Ratio R	0.363		

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Online Controls for Surface Network 1

ACO Q-Brake Manhole: S13, DS/PN: 1.006, Volume (m³): 2.7

Design Head (m) 1.600 Design Flow (l/s) 5.0 Diameter (mm) 93 Invert Level (m) 43.318

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.0	0.800	3.6	2.000	5.6	4.000	7.9	7.000	10.5
0.200	4.2	1.000	4.0	2.200	5.9	4.500	8.4	7.500	10.9
0.300	4.9	1.200	4.4	2.400	6.2	5.000	8.9	8.000	11.2
0.400	5.0	1.400	4.7	2.600	6.4	5.500	9.3	8.500	11.6
0.500	4.5	1.600	5.0	3.000	6.9	6.000	9.7	9.000	11.9
0.600	3.8	1.800	5.3	3.500	7.4	6.500	10.1	9.500	12.2

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Storage Structures for Surface Network 1

Porous Car Park Manhole: S12, DS/PN: 1.005

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	25.9
Max Percolation (l/s)	71.9	Slope (1:X)	80.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	44.200	Membrane Depth (mm)	0

Volume Summary (Static)

Length Calculations based on Centre-Centre

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	S1	0.184	0.329	0.000	0.513
1.001	S2	0.272	0.121	0.000	0.392
2.000	S3	0.184	0.133	0.000	0.317
1.002	S4	0.317	1.206	0.000	1.523
1.003	S5	1.611	0.457	0.000	2.068
1.004	S6	1.741	0.245	0.000	1.986
3.000	S7	0.184	0.219	0.000	0.403
3.001	S8	0.242	0.585	0.000	0.828
3.002	S9	0.380	0.544	0.000	0.924
3.003	S10	0.419	0.101	0.000	0.520
3.004	S11	0.426	0.146	0.000	0.572
1.005	S12	0.000	0.121	37.927	38.048
1.006	S13	2.637	0.046	0.000	2.682
Total		8.596	4.254	37.927	50.777

Volume Summary (Static)

Length Calculations based on True Length

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	S1	0.184	0.319	0.000	0.502
1.001	S2	0.272	0.110	0.000	0.382
2.000	S3	0.184	0.122	0.000	0.306
1.002	S4	0.317	1.170	0.000	1.487
1.003	S5	1.611	0.410	0.000	2.021
1.004	S6	1.741	0.221	0.000	1.962
3.000	S7	0.184	0.208	0.000	0.392
3.001	S8	0.242	0.575	0.000	0.817
3.002	S9	0.380	0.520	0.000	0.901
3.003	S10	0.419	0.077	0.000	0.496
3.004	S11	0.426	0.134	0.000	0.560
1.005	S12	0.000	0.091	37.927	38.018
1.006	S13	2.637	0.021	0.000	2.657
Total		8.596	3.979	37.927	50.502

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

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 M5-60 (mm) 18.000 Cv (Summer) 1.000
Region England and Wales Ratio R 0.363 Cv (Winter) 1.000

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
1.000	S1	15 Summer	2	+0%	100/15 Summer				44.326	-0.124	0.000	0.07
1.001	S2	30 Summer	2	+0%	30/15 Summer				44.036	-0.104	0.000	0.13
2.000	S3	15 Summer	2	+0%	100/15 Summer				44.327	-0.123	0.000	0.07
1.002	S4	30 Summer	2	+0%	30/15 Summer				44.035	-0.019	0.000	0.17
1.003	S5	30 Summer	2	+0%	2/15 Summer				44.031	0.281	0.000	0.19
1.004	S6	30 Summer	2	+0%	2/15 Summer				44.028	0.393	0.000	0.18
3.000	S7	15 Summer	2	+0%	100/15 Summer				44.332	-0.118	0.000	0.10
3.001	S8	15 Summer	2	+0%	30/15 Summer				44.144	-0.100	0.000	0.24
3.002	S9	30 Summer	2	+0%	2/15 Summer				44.029	0.199	0.000	0.12
3.003	S10	30 Summer	2	+0%	2/15 Summer				44.028	0.334	0.000	0.11
3.004	S11	30 Summer	2	+0%	2/15 Summer				44.027	0.359	0.000	0.07
1.005	S12	30 Summer	2	+0%	2/15 Summer				44.026	0.453	0.000	0.23
1.006	S13	30 Summer	2	+0%	2/15 Summer				44.025	0.557	0.000	0.46

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1			1.5	OK	
1.001	S2			2.2	OK	
2.000	S3			2.6	OK	
1.002	S4			8.1	OK	
1.003	S5			8.6	SURCHARGED	
1.004	S6			6.4	SURCHARGED	
3.000	S7			2.1	OK	
3.001	S8			4.6	OK	
3.002	S9			5.4	SURCHARGED	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
3.003	S10			3.2	SURCHARGED	
3.004	S11			2.9	SURCHARGED	
1.005	S12		27	6.8	SURCHARGED*	
1.006	S13			4.9	SURCHARGED	

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

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 M5-60 (mm) 18.000 Cv (Summer) 1.000
Region England and Wales Ratio R 0.363 Cv (Winter) 1.000

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
1.000	S1	60 Winter	30	+0%	100/15 Summer				44.449	-0.001	0.000	0.07
1.001	S2	60 Winter	30	+0%	30/15 Summer				44.447	0.307	0.000	0.13
2.000	S3	60 Winter	30	+0%	100/15 Summer				44.447	-0.003	0.000	0.07
1.002	S4	60 Winter	30	+0%	30/15 Summer				44.445	0.391	0.000	0.15
1.003	S5	60 Winter	30	+0%	2/15 Summer				44.440	0.689	0.000	0.24
1.004	S6	60 Winter	30	+0%	2/15 Summer				44.436	0.800	0.000	0.31
3.000	S7	60 Winter	30	+0%	100/15 Summer				44.446	-0.004	0.000	0.10
3.001	S8	60 Winter	30	+0%	30/15 Summer				44.444	0.200	0.000	0.24
3.002	S9	60 Winter	30	+0%	2/15 Summer				44.437	0.607	0.000	0.12
3.003	S10	60 Winter	30	+0%	2/15 Summer				44.435	0.742	0.000	0.18
3.004	S11	60 Winter	30	+0%	2/15 Summer				44.434	0.766	0.000	0.12
1.005	S12	60 Winter	30	+0%	2/15 Summer				44.433	0.860	0.000	0.22
1.006	S13	60 Winter	30	+0%	2/15 Summer				44.437	0.969	0.000	0.46

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1			1.4	OK	
1.001	S2			2.1	SURCHARGED	
2.000	S3			2.4	OK	
1.002	S4			7.4	SURCHARGED	
1.003	S5			10.5	SURCHARGED	
1.004	S6			11.0	SURCHARGED	
3.000	S7			2.0	OK	
3.001	S8			4.7	SURCHARGED	
3.002	S9			5.4	SURCHARGED	

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

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
3.003	S10			5.2	SURCHARGED	
3.004	S11			5.1	SURCHARGED	
1.005	S12		30	6.6	SURCHARGED*	
1.006	S13			4.9	SURCHARGED	

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

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 M5-60 (mm) 18.000 Cv (Summer) 1.000
Region England and Wales Ratio R 0.363 Cv (Winter) 1.000

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
1.000	S1	30 Summer	100	+0%	100/15 Summer				44.625	0.175	0.000	0.14
1.001	S2	30 Summer	100	+0%	30/15 Summer				44.613	0.473	0.000	0.27
2.000	S3	30 Summer	100	+0%	100/15 Summer				44.615	0.165	0.000	0.14
1.002	S4	30 Summer	100	+0%	30/15 Summer				44.601	0.547	0.000	0.36
1.003	S5	30 Summer	100	+0%	2/15 Summer				44.558	0.807	0.000	0.58
1.004	S6	60 Winter	100	+0%	2/15 Summer				44.546	0.910	0.000	0.46
3.000	S7	60 Winter	100	+0%	100/15 Summer				44.555	0.105	0.000	0.12
3.001	S8	60 Winter	100	+0%	30/15 Summer				44.554	0.310	0.000	0.29
3.002	S9	60 Winter	100	+0%	2/15 Summer				44.547	0.717	0.000	0.17
3.003	S10	60 Winter	100	+0%	2/15 Summer				44.544	0.851	0.000	0.26
3.004	S11	60 Winter	100	+0%	2/15 Summer				44.544	0.876	0.000	0.18
1.005	S12	60 Winter	100	+0%	2/15 Summer				44.543	0.970	0.000	0.23
1.006	S13	60 Winter	100	+0%	2/15 Summer				44.547	1.079	0.000	0.46

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1			3.0	SURCHARGED	
1.001	S2			4.6	SURCHARGED	
2.000	S3			5.1	SURCHARGED	
1.002	S4			17.6	SURCHARGED	
1.003	S5			25.5	SURCHARGED	
1.004	S6			16.3	SURCHARGED	
3.000	S7			2.4	SURCHARGED	
3.001	S8			5.6	SURCHARGED	
3.002	S9			7.9	SURCHARGED	

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

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
3.003	S10			7.7	SURCHARGED	
3.004	S11			7.6	SURCHARGED	
1.005	S12		39	6.9	SURCHARGED*	
1.006	S13			4.9	FLOOD RISK	

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Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

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 M5-60 (mm) 18.000 Cv (Summer) 1.000
Region England and Wales Ratio R 0.363 Cv (Winter) 1.000

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 100
Climate Change (%) 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.
1.000	S1	30 Summer	100	+45%	100/15 Summer				44.838	0.388	0.000	0.22
1.001	S2	30 Summer	100	+45%	100/15 Summer				44.817	0.678	0.000	0.45
2.000	S3	30 Summer	100	+45%	100/15 Summer				44.820	0.370	0.000	0.22
1.002	S4	30 Summer	100	+45%	100/15 Summer				44.798	0.744	0.000	0.60
1.003	S5	120 Winter	100	+45%	100/15 Summer				44.748	0.997	0.000	0.34
1.004	S6	120 Winter	100	+45%	100/15 Summer				44.743	1.108	0.000	0.46
3.000	S7	15 Summer	100	+45%	100/15 Summer				44.896	0.446	0.000	0.34
3.001	S8	30 Summer	100	+45%	100/15 Summer				44.872	0.628	0.000	0.75
3.002	S9	120 Winter	100	+45%	100/15 Summer				44.745	0.915	0.000	0.17
3.003	S10	120 Winter	100	+45%	100/15 Summer				44.742	1.049	0.000	0.25
3.004	S11	120 Winter	100	+45%	100/15 Summer				44.741	1.074	0.000	0.17
1.005	S12	120 Winter	100	+45%	100/15 Summer				44.741	1.167	0.000	0.20
1.006	S13	120 Winter	100	+45%	100/15 Summer				44.744	1.276	0.000	0.46

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1			4.7	FLOOD RISK	
1.001	S2			7.6	FLOOD RISK	
2.000	S3			7.9	FLOOD RISK	
1.002	S4			29.3	FLOOD RISK	
1.003	S5			15.0	FLOOD RISK	
1.004	S6			16.0	FLOOD RISK	
3.000	S7			7.1	FLOOD RISK	
3.001	S8			14.3	FLOOD RISK	
3.002	S9			7.7	FLOOD RISK	

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Summary of Critical Results by Maximum Level (Rank 1) for Surface Network 1

PN	US/MH Name	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
3.003	S10			7.6	FLOOD RISK	
3.004	S11			7.5	FLOOD RISK	
1.005	S12		81	6.0	FLOOD RISK*	
1.006	S13			4.9	FLOOD RISK	

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