STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	30	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.300	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	10	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.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

« - 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
S1.000	17.635	1.137	15.5	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	
S1.001	23.673	1.863	12.7	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.000	12.670	0.084	150.8	0.088	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.001	16.953	0.100	169.5	0.140	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.002	29.616	0.453	65.4	0.162	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.000	7.572	0.365	20.7	0.072	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	23.768	1.586	15.0	0.037	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.002	28.843	1.922	15.0	0.072	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)
S1.000	10.00	5.07	125.300	0.000	0.0	0.0	0.0	4.01	283.6	0.0
S1.001	10.00	5.16	124.163	0.000	0.0	0.0	0.0	4.43	313.4	0.0
S2.000	10.00	5.20	122.559	0.088	0.0	0.0	0.0	1.06	42.2	2.4
S2.001	10.00	5.43	122.400	0.228	0.0	0.0	0.0	1.20	85.2	6.2
S1.002	10.00	5.63	122.150	0.390	0.0	0.0	0.0	2.52	400.4	10.6
S3.000	10.00	5.04	126.995	0.072	0.0	0.0	0.0	2.89	114.7	1.9
S3.001	10.00	5.14	126.555	0.109	0.0	0.0	0.0	4.08	288.5	3.0
S3.002	10.00	5.26	124.969	0.181	0.0	0.0	0.0	4.08	288.3	4.9

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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
S1.003	29.089	0.579	50.2	0.023	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.004	11.657	0.490	23.8	0.035	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.005	13.705	0.578	23.7	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.006	10.472	0.800	13.1	0.052	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.007	2.102	0.100	21.0	0.038	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.008	27.465	0.055	499.4	0.000	0.00	0.0	0.600	[]	-1	Pipe/Conduit	
S4.000	9.140	0.070	130.6	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.009	1.554	0.004	388.5	0.061	0.00	0.0	0.600	[]	-1	Pipe/Conduit	
S1.010	1.983	0.015	132.2	0.135	0.00	0.0	0.600	o	1050	Pipe/Conduit	
S1.011	18.090	0.121	149.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.012	18.067	0.500	36.1	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)
S1.003	10.00	5.77	121.547	0.594	0.0	0.0	0.0	3.44	973.0	16.1
S1.004	10.00	5.81	120.968	0.629	0.0	0.0	0.0	5.01	1415.6	17.0
S1.005	10.00	5.85	120.478	0.629	0.0	0.0	0.0	5.02	1418.0	17.0
S1.006	10.00	5.88	119.900	0.681	0.0	0.0	0.0	6.75	1909.7	18.4
S1.007	10.00	5.89	119.100	0.719	0.0	0.0	0.0	5.33	1506.2	19.5
S1.008	10.00	6.02	117.100	0.719	0.0	0.0	0.0	3.42	77031.7	19.5
S4.000	10.00	5.17	118.840	0.000	0.0	0.0	0.0	0.88	15.5	0.0
S1.009	10.00	6.03	117.045	0.780	0.0	0.0	0.0	3.88	87372.9	21.1
S1.010	10.00	6.04	117.041	0.915	0.0	0.0	0.0	3.00	2594.1	24.8
S1.011	10.00	6.41	116.976	0.915	0.0	0.0	0.0	0.82	14.5«	24.8
S1.012	10.00	6.59	116.855	0.915	0.0	0.0	0.0	1.68	29.7	24.8

Conduit Sections for Storm

NOTE: Diameters less than 66 refer to section numbers of hydraulic conduits. These conduits are marked by the symbols:- [] box culvert, \/ open channel, oo dual pipe, ooo triple pipe, O egg.

Section numbers < 0 are taken from user conduit table

Section Number	Conduit Type	Major Dimn. (mm)	Minor Dimn. (mm)	Side Slope (Deg)	Corner Splay (mm)	4*Hyd Radius (m)	XSect Area (m^2)
-1	[]	9000	2500	90.0		3.913	22.500

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Ba
S21	126.650	1.350	Open Manhole	1200	S1.000	125.300	300				
S22	126.240	2.077	Open Manhole	1200	S1.001	124.163	300	S1.000	124.163	300	
S31	124.200	1.641	Open Manhole	1200	S2.000	122.559	225				
S32	124.800	2.400	Open Manhole	1200	S2.001	122.400	300	S2.000	122.475	225	
S23	125.600	3.450	Open Manhole	1500	S1.002	122.150	450	S1.001	122.300	300	
								S2.001	122.300	300	
S35A	128.420	1.425	Open Manhole	1200	S3.000	126.995	225				
S35	128.070	1.515	Open Manhole	1200	S3.001	126.555	300	S3.000	126.630	225	
S36	126.490	1.521	Open Manhole	1200	S3.002	124.969	300	S3.001	124.969	300	
S24	124.860	3.313	Open Manhole	1500	S1.003	121.547	600	S1.002	121.697	450	
								S3.002	123.047	300	
S25	123.530	2.562	Open Manhole	1500	S1.004	120.968	600	S1.003	120.968	600	
S25A	123.000	2.522	Open Manhole	1500	S1.005	120.478	600	S1.004	120.478	600	
S26	122.320	2.420	Open Manhole	1500	S1.006	119.900	600	S1.005	119.900	600	
S27	122.280	3.180	Open Manhole		S1.007	119.100	600	S1.006	119.100	600	
STANK END	122.650	5.550	Junction		S1.008	117.100	-1	S1.007	119.000	600	
S29	120.200	1.360	Open Manhole		S4.000	118.840	150				
STANK INLET	120.500	3.455	Junction		S1.009	117.045	-1	S1.008	117.045	-1	
								S4.000	118.770	150	
STANK END	120.500	3.459	Junction	0	S1.010	117.041	1050	S1.009	117.041	-1	
S28	120.500	3.524	Open Manhole	2700	S1.011	116.976	150	S1.010	117.026	1050	
SC01	119.450	2.595	Open Manhole	1200	S1.012	116.855	150	S1.011	116.855	150	
SC02	118.400	2.045	Open Manhole	1200		OUTFALL		S1.012	116.355	150	

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)
S1.012	SC02	118.400	116.355	0.000	1200	0

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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	0.000
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 Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.300		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: S28, DS/PN: S1.011, Volume (m³): 20.7

Unit Reference	MD-SHE-0086-5000-2600-5000
Design Head (m)	2.600
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	86
Invert Level (m)	116.976
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.600	5.0
Flush-Flo™	0.374	3.5
Kick-Flo®	0.766	2.8
Mean Flow over Head Range	-	3.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.6	1.200	3.5	3.000	5.3	7.000	8.0
0.200	3.3	1.400	3.7	3.500	5.7	7.500	8.2
0.300	3.5	1.600	4.0	4.000	6.1	8.000	8.5
0.400	3.5	1.800	4.2	4.500	6.5	8.500	8.7
0.500	3.5	2.000	4.4	5.000	6.8	9.000	9.0
0.600	3.4	2.200	4.6	5.500	7.1	9.500	9.2
0.800	2.9	2.400	4.8	6.000	7.4		
1.000	3.2	2.600	5.0	6.500	7.7		

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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	0.000
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 Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.300
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	OFF
DVD Status	ON
Inertia Status	ON

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 (%)	30, 30, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S21	360 Winter	1	+30%				
S1.001	S22	360 Winter	1	+30%				
S2.000	S31	15 Winter	1	+30%	30/15 Summer			
S2.001	S32	15 Winter	1	+30%	30/15 Summer			
S1.002	S23	15 Winter	1	+30%				
S3.000	S35A	15 Winter	1	+30%				
S3.001	S35	15 Winter	1	+30%				
S3.002	S36	15 Winter	1	+30%				
S1.003	S24	15 Winter	1	+30%				
S1.004	S25	15 Winter	1	+30%				
S1.005	S25A	15 Winter	1	+30%				
S1.006	S26	15 Winter	1	+30%				
S1.007	S27	15 Winter	1	+30%	100/15 Summer			
S1.008	STANK END	1440 Winter	1	+30%				
S4.000	S29	360 Winter	1	+30%	30/480 Winter			
S1.009	STANK INLET	1440 Winter	1	+30%				
S1.010	STANK END	1440 Winter	1	+30%	30/60 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	S21	125.300	-0.300	0.000	0.00		0.0	OK	
S1.001	S22	124.163	-0.300	0.000	0.00		0.0	OK	
S2.000	S31	122.655	-0.129	0.000	0.38		13.7	OK	
S2.001	S32	122.541	-0.159	0.000	0.44		32.0	OK	
S1.002	S23	122.269	-0.331	0.000	0.16		53.3	OK	
S3.000	S35A	127.049	-0.171	0.000	0.13		11.2	OK	
S3.001	S35	126.604	-0.251	0.000	0.06		16.0	OK	
S3.002	S36	125.032	-0.237	0.000	0.10		25.4	OK	
S1.003	S24	121.679	-0.468	0.000	0.11		82.1	OK	
S1.004	S25	121.109	-0.459	0.000	0.12		87.1	OK	
S1.005	S25A	120.613	-0.465	0.000	0.11		87.3	OK	
S1.006	S26	120.029	-0.471	0.000	0.10		93.9	OK	
S1.007	S27	119.317	-0.383	0.000	0.28		98.3	OK	
S1.008	STANK END	117.994	-1.606	0.000	0.00		9.1	OK*	
S4.000	S29	118.840	-0.150	0.000	0.00		0.0	OK	
S1.009	STANK INLET	117.994	-1.551	0.000	0.00		51.2	OK*	
S1.010	STANK END	118.000	-0.091	0.000	0.02		32.1	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)
S1.011	S28	960 Winter	1	+30%	1/15 Summer				118.011
S1.012	SC01	5760 Winter	1	+30%					116.890

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.011	S28	0.885	0.000	0.26		3.5	SURCHARGED	
S1.012	SC01	-0.115	0.000	0.13		3.5	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	0.000
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 Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.300
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	OFF
DVD Status	ON
Inertia Status	ON

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 (%)	30, 30, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S21	360 Winter	30	+30%				
S1.001	S22	360 Winter	30	+30%				
S2.000	S31	15 Winter	30	+30%	30/15 Summer			
S2.001	S32	15 Winter	30	+30%	30/15 Summer			
S1.002	S23	15 Winter	30	+30%				
S3.000	S35A	15 Winter	30	+30%				
S3.001	S35	15 Winter	30	+30%				
S3.002	S36	15 Winter	30	+30%				
S1.003	S24	15 Winter	30	+30%				
S1.004	S25	15 Winter	30	+30%				
S1.005	S25A	15 Winter	30	+30%				
S1.006	S26	15 Winter	30	+30%				
S1.007	S27	15 Winter	30	+30%	100/15 Summer			
S1.008	STANK END	720 Winter	30	+30%				
S4.000	S29	720 Winter	30	+30%	30/480 Winter			
S1.009	STANK INLET	720 Winter	30	+30%				
S1.010	STANK END	720 Winter	30	+30%	30/60 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	S21	125.300	-0.300	0.000	0.00		0.0	OK	
S1.001	S22	124.163	-0.300	0.000	0.00		0.0	OK	
S2.000	S31	122.848	0.064	0.000	0.94		34.1	SURCHARGED	
S2.001	S32	122.746	0.046	0.000	1.25		90.9	SURCHARGED	
S1.002	S23	122.364	-0.236	0.000	0.45		156.0	OK	
S3.000	S35A	127.083	-0.137	0.000	0.32		27.5	OK	
S3.001	S35	126.637	-0.218	0.000	0.17		42.4	OK	
S3.002	S36	125.076	-0.193	0.000	0.27		71.5	OK	
S1.003	S24	121.777	-0.370	0.000	0.31		235.3	OK	
S1.004	S25	121.217	-0.351	0.000	0.35		247.1	OK	
S1.005	S25A	120.716	-0.362	0.000	0.33		247.8	OK	
S1.006	S26	120.126	-0.374	0.000	0.30		268.7	OK	
S1.007	S27	119.517	-0.183	0.000	0.82		283.7	OK	
S1.008	STANK END	119.100	-0.500	0.000	0.00		29.0	OK*	
S4.000	S29	119.097	0.107	0.000	0.00		0.1	SURCHARGED	
S1.009	STANK INLET	119.100	-0.445	0.000	0.00		117.1	OK*	
S1.010	STANK END	119.119	1.028	0.000	0.02		30.4	SURCHARGED*	

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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)
S1.011	S28	720 Winter	30	+30%	1/15 Summer				119.125
S1.012	SC01	720 Winter	30	+30%					116.895

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.011	S28	1.999	0.000	0.33		4.5	SURCHARGED	
S1.012	SC01	-0.110	0.000	0.16		4.5	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	0.000
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 Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.300
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	OFF
DVD Status	ON
Inertia Status	ON

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 (%)	30, 30, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S21	360 Winter	100	+30%				
S1.001	S22	360 Winter	100	+30%				
S2.000	S31	15 Winter	100	+30%	30/15 Summer			
S2.001	S32	15 Winter	100	+30%	30/15 Summer			
S1.002	S23	15 Winter	100	+30%				
S3.000	S35A	15 Winter	100	+30%				
S3.001	S35	15 Winter	100	+30%				
S3.002	S36	15 Winter	100	+30%				
S1.003	S24	15 Winter	100	+30%				
S1.004	S25	15 Winter	100	+30%				
S1.005	S25A	15 Winter	100	+30%				
S1.006	S26	15 Winter	100	+30%				
S1.007	S27	960 Winter	100	+30%	100/15 Summer			
S1.008	STANK END	960 Winter	100	+30%				
S4.000	S29	960 Winter	100	+30%	30/480 Winter			
S1.009	STANK INLET	960 Winter	100	+30%				
S1.010	STANK END	960 Winter	100	+30%	30/60 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	S21	125.300	-0.300	0.000	0.00		0.0	OK	
S1.001	S22	124.163	-0.300	0.000	0.00		0.0	OK	
S2.000	S31	122.973	0.189	0.000	1.20		43.7	SURCHARGED	
S2.001	S32	122.850	0.150	0.000	1.61		116.9	SURCHARGED	
S1.002	S23	122.399	-0.201	0.000	0.59		201.8	OK	
S3.000	S35A	127.097	-0.123	0.000	0.42		35.5	OK	
S3.001	S35	126.649	-0.206	0.000	0.21		54.7	OK	
S3.002	S36	125.093	-0.176	0.000	0.35		92.4	OK	
S1.003	S24	121.812	-0.335	0.000	0.40		305.2	OK	
S1.004	S25	121.255	-0.313	0.000	0.46		321.6	OK	
S1.005	S25A	120.751	-0.327	0.000	0.42		319.0	OK	
S1.006	S26	120.160	-0.340	0.000	0.39		346.3	OK	
S1.007	S27	119.727	0.027	0.000	0.09		29.9	SURCHARGED	
S1.008	STANK END	119.600	0.000	0.000	0.00		29.8	SURCHARGED*	
S4.000	S29	119.723	0.733	0.000	0.01		0.1	SURCHARGED	
S1.009	STANK INLET	119.545	0.000	0.000	0.00		85.9	SURCHARGED*	
S1.010	STANK END	119.541	1.450	0.000	0.03		46.5	SURCHARGED*	

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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)
S1.011	S28	960 Winter	100	+30%	1/15 Summer				119.746
S1.012	SC01	960 Winter	100	+30%					116.898

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.011	S28	2.620	0.000	0.38		5.1	SURCHARGED	
S1.012	SC01	-0.107	0.000	0.18		5.1	OK	

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