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21 Cross Street Court Peterborough PE1 1XA 01733 807313	170193 65 Peterborough Rd. Crowland Private Storm Drainage	
Date 11.09.17 File 170193 Storm.mdx	Designed by GPD Checked by	
Micro Drainage	Network 2015.1	

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)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.000	Minimum Backdrop Height (m)	0.000
Ratio R	0.427	Maximum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	250	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.117	4-8	0.046

Total Area Contributing (ha) = 0.163

Total Pipe Volume (m³) = 7.952

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)	Auto Design
1.000	13.073	0.225	58.1	0.002	5.00	0.0	0.600	o	150	
1.001	8.755	0.090	97.3	0.003	0.00	0.0	0.600	o	150	
2.000	15.995	0.315	50.8	0.004	5.00	0.0	0.600	o	150	
1.002	4.917	0.205	24.0	0.001	0.00	0.0	0.600	o	150	
3.000	17.487	0.520	33.6	0.003	5.00	0.0	0.600	o	150	
1.003	9.655	0.170	56.8	0.000	0.00	0.0	0.600	o	150	

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	68.06	5.16	1.150	0.002	0.0	0.0	0.0	1.32	23.4	0.4
1.001	67.25	5.31	0.925	0.005	0.0	0.0	0.0	1.02	18.0	0.9
2.000	67.93	5.19	1.150	0.004	0.0	0.0	0.0	1.42	25.0	0.7
1.002	67.02	5.35	0.835	0.010	0.0	0.0	0.0	2.06	36.5	1.8
3.000	68.05	5.17	1.150	0.003	0.0	0.0	0.0	1.74	30.8	0.6
1.003	66.36	5.47	0.630	0.013	0.0	0.0	0.0	1.34	23.6	2.3

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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)	Auto Design
4.000	14.725	0.615	23.9	0.090	5.00	0.0	0.600	o	225	
5.000	13.089	0.130	100.7	0.005	5.00	0.0	0.600	o	150	
5.001	7.783	0.080	97.3	0.000	0.00	0.0	0.600	o	150	
5.002	3.491	0.480	7.3	0.004	0.00	0.0	0.600	o	150	
1.004	5.176	0.035	147.9	0.000	0.00	0.0	0.600	o	225	
6.000	10.603	0.325	32.6	0.002	5.00	0.0	0.600	o	150	
1.005	9.947	0.060	165.8	0.029	0.00	0.0	0.600	o	375	
1.006	31.309	0.190	164.8	0.020	0.00	0.0	0.600	o	375	
1.007	6.800	0.040	170.0	0.000	0.00	0.0	0.600	o	375	

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)
4.000	68.49	5.09	1.000	0.090	0.0	0.0	0.0	2.69	106.8	16.7
5.000	67.76	5.22	1.150	0.005	0.0	0.0	0.0	1.00	17.7	0.9
5.001	67.04	5.35	1.020	0.005	0.0	0.0	0.0	1.02	18.0	0.9
5.002	66.95	5.36	0.940	0.009	0.0	0.0	0.0	3.76	66.5	1.6
1.004	65.92	5.55	0.385	0.112	0.0	0.0	0.0	1.07	42.7	20.0
6.000	68.44	5.10	0.750	0.002	0.0	0.0	0.0	1.77	31.3	0.4
1.005	65.30	5.67	0.200	0.143	0.0	0.0	0.0	1.40	155.1	25.3
1.006	63.42	6.04	0.140	0.163	0.0	0.0	0.0	1.41	155.6	28.0
1.007	63.02	6.12	-0.050	0.163	0.0	0.0	0.0	1.39	153.2	28.0

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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)	Backdrop (mm)
RE1	1.750	0.600	Open Manhole	150	1.000	1.150	150				
S1	1.750	0.825	Open Manhole	600	1.001	0.925	150	1.000	0.925	150	
RE2	1.750	0.600	Open Manhole	150	2.000	1.150	150				
S2	1.680	0.845	Open Manhole	600	1.002	0.835	150	1.001	0.835	150	
								2.000	0.835	150	
RE3	1.750	0.600	Open Manhole	150	3.000	1.150	150				
S3	1.680	1.050	Open Manhole	1800	1.003	0.630	150	1.002	0.630	150	
								3.000	0.630	150	
S4	1.750	0.750	Open Manhole	600	4.000	1.000	225				
RE4	1.750	0.600	Open Manhole	150	5.000	1.150	150				
S5	1.750	0.730	Open Manhole	600	5.001	1.020	150	5.000	1.020	150	
S6	1.640	0.700	Open Manhole	600	5.002	0.940	150	5.001	0.940	150	
S7	1.640	1.255	Open Manhole	1500	1.004	0.385	225	1.003	0.460	150	
								4.000	0.385	225	
								5.002	0.460	150	
S8	1.750	1.000	Open Manhole	600	6.000	0.750	150				
S9	1.560	1.360	Open Manhole	2700	1.005	0.200	375	1.004	0.350	225	
								6.000	0.425	150	
S10	1.600	1.460	Open Manhole	2700	1.006	0.140	375	1.005	0.140	375	
S11	1.880	1.930	Open Manhole	2700	1.007	-0.050	375	1.006	-0.050	375	
S12	2.000	2.090	Open Manhole	1200		OUTFALL		1.007	-0.090	375	

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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., (mm)	L*W
1.000	o	150	RE1	1.750	1.150	0.450	Open Manhole	150	
1.001	o	150	S1	1.750	0.925	0.675	Open Manhole	600	
2.000	o	150	RE2	1.750	1.150	0.450	Open Manhole	150	
1.002	o	150	S2	1.680	0.835	0.695	Open Manhole	600	
3.000	o	150	RE3	1.750	1.150	0.450	Open Manhole	150	
1.003	o	150	S3	1.680	0.630	0.900	Open Manhole	1800	
4.000	o	225	S4	1.750	1.000	0.525	Open Manhole	600	
5.000	o	150	RE4	1.750	1.150	0.450	Open Manhole	150	
5.001	o	150	S5	1.750	1.020	0.580	Open Manhole	600	
5.002	o	150	S6	1.640	0.940	0.550	Open Manhole	600	
1.004	o	225	S7	1.640	0.385	1.030	Open Manhole	1500	
6.000	o	150	S8	1.750	0.750	0.850	Open Manhole	600	
1.005	o	375	S9	1.560	0.200	0.985	Open Manhole	2700	
1.006	o	375	S10	1.600	0.140	1.085	Open Manhole	2700	
1.007	o	375	S11	1.880	-0.050	1.555	Open Manhole	2700	

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W
1.000	13.073	58.1	S1	1.750	0.925	0.675	Open Manhole	600	
1.001	8.755	97.3	S2	1.680	0.835	0.695	Open Manhole	600	
2.000	15.995	50.8	S2	1.680	0.835	0.695	Open Manhole	600	
1.002	4.917	24.0	S3	1.680	0.630	0.900	Open Manhole	1800	
3.000	17.487	33.6	S3	1.680	0.630	0.900	Open Manhole	1800	
1.003	9.655	56.8	S7	1.640	0.460	1.030	Open Manhole	1500	
4.000	14.725	23.9	S7	1.640	0.385	1.030	Open Manhole	1500	
5.000	13.089	100.7	S5	1.750	1.020	0.580	Open Manhole	600	
5.001	7.783	97.3	S6	1.640	0.940	0.550	Open Manhole	600	
5.002	3.491	7.3	S7	1.640	0.460	1.030	Open Manhole	1500	
1.004	5.176	147.9	S9	1.560	0.350	0.985	Open Manhole	2700	
6.000	10.603	32.6	S9	1.560	0.425	0.985	Open Manhole	2700	
1.005	9.947	165.8	S10	1.600	0.140	1.085	Open Manhole	2700	
1.006	31.309	164.8	S11	1.880	-0.050	1.555	Open Manhole	2700	
1.007	6.800	170.0	S12	2.000	-0.090	1.715	Open Manhole	1200	

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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	0.002	0.002	0.002
1.001	-	-	100	0.003	0.003	0.003
2.000	-	-	100	0.004	0.004	0.004
1.002	-	-	100	0.001	0.001	0.001
3.000	-	-	100	0.003	0.003	0.003
1.003	-	-	100	0.000	0.000	0.000
4.000	-	-	100	0.090	0.090	0.090
5.000	-	-	100	0.005	0.005	0.005
5.001	-	-	100	0.000	0.000	0.000
5.002	-	-	100	0.004	0.004	0.004
1.004	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.002	0.002	0.002
1.005	-	-	100	0.029	0.029	0.029
1.006	-	-	100	0.020	0.020	0.020
1.007	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.163	0.163	0.163

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)
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1.007	S12	2.000	-0.090	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 * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	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 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.427		

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Online Controls for Storm

Hydro-Brake Optimum® Manhole: S11, DS/PN: 1.007, Volume (m³): 14.2

Unit Reference MD-SHE-0093-5000-1855-5000
Design Head (m) 1.855
Design Flow (l/s) 5.0
Flush-Flo™ Calculated
Objective Minimise upstream storage
Diameter (mm) 93
Invert Level (m) -0.050
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.855	5.0	Kick-Flo®	0.833	3.5
Flush-Flo™	0.410	4.3	Mean Flow over Head Range	-	4.0

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)	Depth (m)	Flow (l/s)
0.100	3.0	0.800	3.6	2.000	5.2	4.000	7.2	7.000	9.3
0.200	4.0	1.000	3.8	2.200	5.4	4.500	7.6	7.500	9.6
0.300	4.2	1.200	4.1	2.400	5.6	5.000	8.0	8.000	9.9
0.400	4.3	1.400	4.4	2.600	5.8	5.500	8.3	8.500	10.2
0.500	4.3	1.600	4.7	3.000	6.3	6.000	8.7	9.000	10.5
0.600	4.2	1.800	4.9	3.500	6.7	6.500	9.0	9.500	10.8

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Storage Structures for Storm

Cellular Storage Manhole: S3, DS/PN: 1.003

Invert Level (m) 0.630 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	14.0	14.0	0.400	14.0	21.2	0.401	0.0	21.2

Cellular Storage Manhole: S8, DS/PN: 6.000

Invert Level (m) 0.750 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	10.0	10.0	0.400	10.0	15.6	0.401	0.0	15.6

Cellular Storage Manhole: S9, DS/PN: 1.005

Invert Level (m) 0.425 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	16.0	16.0	0.400	16.0	24.0	0.401	0.0	24.0

Cellular Storage Manhole: S10, DS/PN: 1.006

Invert Level (m) 0.330 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	54.0	54.0	0.400	54.0	77.2	0.401	0.0	77.2

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2 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 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.427 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, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 65

US/MH		Return Climate		First (X)		First (Y)		First (Z)		Water	Surcharged
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Overflow	Act.	Level (m)	Depth (m)
1.000	RE1	15 Winter	2	+0%	100/60 Winter					1.162	-0.138
1.001	S1	15 Winter	2	+0%	100/30 Winter					0.947	-0.128
2.000	RE2	15 Winter	2	+0%	100/60 Winter					1.167	-0.133
1.002	S2	15 Winter	2	+0%	100/30 Winter					0.858	-0.127
3.000	RE3	15 Winter	2	+0%	100/60 Winter					1.163	-0.137
1.003	S3	15 Winter	2	+0%	100/15 Summer					0.657	-0.123
4.000	S4	15 Winter	2	+0%	100/60 Winter					1.062	-0.163
5.000	RE4	15 Winter	2	+0%	100/60 Winter					1.172	-0.128
5.001	S5	15 Winter	2	+0%	100/60 Winter					1.043	-0.127
5.002	S6	15 Winter	2	+0%	100/30 Winter					0.958	-0.132
1.004	S7	15 Winter	2	+0%	30/15 Summer					0.513	-0.097
6.000	S8	15 Winter	2	+0%	100/30 Summer					0.756	-0.144
1.005	S9	30 Winter	2	+0%	100/15 Summer 100/120 Winter					0.386	-0.189
1.006	S10	30 Winter	2	+0%	30/30 Winter					0.384	-0.131
1.007	S11	30 Winter	2	+0%	2/15 Summer					0.381	0.056

Flooded		Pipe		Level	
US/MH	Volume	Flow / Overflow	Pipe	Level	
PN	Name	(m ³)	Cap. (l/s)	(l/s)	Status Exceeded
1.000	RE1	0.000	0.02	0.3	OK
1.001	S1	0.000	0.05	0.8	OK
2.000	RE2	0.000	0.03	0.7	OK
1.002	S2	0.000	0.06	1.6	OK
3.000	RE3	0.000	0.02	0.5	OK
1.003	S3	0.000	0.08	1.6	OK
4.000	S4	0.000	0.17	15.7	OK
5.000	RE4	0.000	0.05	0.9	OK
5.001	S5	0.000	0.06	0.9	OK
5.002	S6	0.000	0.03	1.5	OK

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

PN	US/MH Name	Flooded		Pipe	Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)		
1.004	S7	0.000	0.61		18.2	OK
6.000	S8	0.000	0.01		0.2	OK
1.005	S9	0.000	0.16		16.8	OK
1.006	S10	0.000	0.11		15.6	OK
1.007	S11	0.000	0.04		4.3	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 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 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.427 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, 240, 360, 480, 960, 1440
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 65

US/MH		Return		Climate	First (X)	First (Y)	First (Z)	Overflow	Water	Surcharged
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level (m)	Depth (m)
1.000	RE1	15 Winter	30	+0%	100/60 Winter				1.167	-0.133
1.001	S1	15 Winter	30	+0%	100/30 Winter				0.958	-0.117
2.000	RE2	15 Winter	30	+0%	100/60 Winter				1.173	-0.127
1.002	S2	15 Winter	30	+0%	100/30 Winter				0.870	-0.115
3.000	RE3	15 Winter	30	+0%	100/60 Winter				1.168	-0.132
1.003	S3	15 Winter	30	+0%	100/15 Summer				0.672	-0.108
4.000	S4	15 Winter	30	+0%	100/60 Winter				1.087	-0.138
5.000	RE4	15 Winter	30	+0%	100/60 Winter				1.182	-0.118
5.001	S5	15 Winter	30	+0%	100/60 Winter				1.053	-0.117
5.002	S6	15 Winter	30	+0%	100/30 Winter				0.966	-0.124
1.004	S7	15 Winter	30	+0%	30/15 Summer				0.631	0.021
6.000	S8	15 Winter	30	+0%	100/30 Summer				0.762	-0.138
1.005	S9	60 Winter	30	+0%	100/15 Summer	100/120 Winter			0.567	-0.008
1.006	S10	60 Winter	30	+0%	30/30 Winter				0.565	0.050
1.007	S11	60 Winter	30	+0%	2/15 Summer				0.561	0.236

Flooded		Pipe		Level	
US/MH	Volume	Flow / Overflow	Pipe	Flow	Level
PN	Name	(m ³)	Cap.	(l/s)	Exceeded
1.000	RE1	0.000	0.03	0.7	OK
1.001	S1	0.000	0.11	1.7	OK
2.000	RE2	0.000	0.06	1.3	OK
1.002	S2	0.000	0.12	3.4	OK
3.000	RE3	0.000	0.03	1.0	OK
1.003	S3	0.000	0.18	3.7	OK
4.000	S4	0.000	0.32	29.7	OK
5.000	RE4	0.000	0.10	1.7	OK
5.001	S5	0.000	0.10	1.6	OK
5.002	S6	0.000	0.07	3.0	OK

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

PN	US/MH Name	Flooded		Pipe	Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)		
1.004	S7	0.000	1.20		35.8	SURCHARGED
6.000	S8	0.000	0.02		0.5	OK
1.005	S9	0.000	0.20		21.3	OK
1.006	S10	0.000	0.09		11.8	SURCHARGED
1.007	S11	0.000	0.04		4.3	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 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 1 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.427 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
 Analysis Timestep 2.5 Second Increment (Extended)
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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, 65

US/MH		Return Climate		First (X)		First (Y)		First (Z)		Water	Surcharged
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level	Depth	
1.000	RE1	120 Winter	100	+65%	100/60 Winter				1.566	0.266	
1.001	S1	120 Winter	100	+65%	100/30 Winter				1.566	0.491	
2.000	RE2	120 Winter	100	+65%	100/60 Winter				1.566	0.266	
1.002	S2	120 Winter	100	+65%	100/30 Winter				1.565	0.580	
3.000	RE3	120 Winter	100	+65%	100/60 Winter				1.565	0.265	
1.003	S3	120 Winter	100	+65%	100/15 Summer				1.565	0.785	
4.000	S4	120 Winter	100	+65%	100/60 Winter				1.569	0.344	
5.000	RE4	120 Winter	100	+65%	100/60 Winter				1.565	0.265	
5.001	S5	120 Winter	100	+65%	100/60 Winter				1.564	0.394	
5.002	S6	120 Winter	100	+65%	100/30 Winter				1.564	0.474	
1.004	S7	120 Winter	100	+65%	30/15 Summer				1.563	0.953	
6.000	S8	120 Winter	100	+65%	100/30 Summer				1.561	0.661	
1.005	S9	120 Winter	100	+65%	100/15 Summer	100/120 Winter			1.560	0.985	
1.006	S10	120 Winter	100	+65%	30/30 Winter				1.566	1.051	
1.007	S11	120 Winter	100	+65%	2/15 Summer				1.569	1.244	

Flooded				Pipe			
	US/MH	Volume	Flow / Overflow	Flow			Level
PN	Name	(m³)	Cap.	(l/s)	(l/s)	Status	Exceeded
1.000	RE1	0.000	0.02		0.4	FLOOD	RISK
1.001	S1	0.000	0.07		1.1	FLOOD	RISK
2.000	RE2	0.000	0.04		0.9	FLOOD	RISK
1.002	S2	0.000	0.08		2.2	FLOOD	RISK
3.000	RE3	0.000	0.02		0.7	FLOOD	RISK
1.003	S3	0.000	0.12		2.6	FLOOD	RISK
4.000	S4	0.000	0.21		20.0	FLOOD	RISK
5.000	RE4	0.000	0.07		1.1	FLOOD	RISK
5.001	S5	0.000	0.07		1.1	FLOOD	RISK
5.002	S6	0.000	0.05		2.0	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	Flooded		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)	Flow (l/s)			
1.004	S7	0.000	0.75	22.4	FLOOD RISK		
6.000	S8	0.000	0.03	1.0	FLOOD RISK		
1.005	S9	0.506	0.20	21.6	FLOOD		1
1.006	S10	0.000	0.06	8.6	FLOOD RISK		
1.007	S11	0.000	0.05	4.7	SURCHARGED		