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Sir Henry Doulton House Forge Lane ST1 5BD		
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XP Solutions Network 2017.1.1		

Existing Network Details 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
1.000	4.465	0.000	0.0	0.215	5.00	0.0	0.600	o	150	Pipe/Conduit
1.001	4.344	0.000	0.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
2.000	6.229	0.040	155.7	0.158	5.00	0.0	0.600	o	300	Pipe/Conduit
3.000	13.120	0.131	100.2	0.792	6.00	0.0	0.600	o	300	Pipe/Conduit
3.001	4.253	0.043	100.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
2.001	38.904	0.049	790.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
1.002	1.675	0.010	167.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
1.003	11.741	0.049	238.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.004	29.766	0.122	244.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.005	52.263	0.219	238.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
4.000	8.410	0.082	102.6	0.184	10.00	0.0	0.600	Q15	-1	Pipe/Conduit
5.000	16.491	0.082	200.0	0.142	10.00	0.0	0.600	Q15	-1	Pipe/Conduit
4.001	2.358	0.014	168.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
6.000	14.937	0.101	147.9	0.039	5.00	0.0	0.600	M11	-30	Pipe/Conduit
6.001	2.527	0.090	28.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
6.002	28.702	-1.000	-28.7	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit
1.006	35.766	0.150	238.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	155.033	0.215	0.0	0.00	0.0
1.001	154.983	0.215	0.0	0.00	0.0
2.000	155.700	0.158	0.0	1.26	88.9
3.000	155.400	0.792	0.0	1.57	111.1
3.001	155.269	0.792	0.0	1.57	111.1
2.001	155.107	0.950	0.0	0.35	6.2
1.002	154.983	1.165	0.0	1.01	40.1
1.003	154.898	1.165	0.0	1.01	71.7
1.004	154.849	1.165	0.0	1.00	70.8
1.005	154.727	1.165	0.0	1.01	71.6
4.000	155.500	0.184	0.0	0.99	17.5
5.000	155.500	0.142	0.0	0.71	12.5
4.001	155.418	0.325	0.0	1.21	85.4
6.000	154.940	0.039	0.0	0.85	12.7
6.001	154.849	0.039	0.0	1.91	33.7
6.002	154.100	0.039	0.0	0.00	0.0
1.006	154.508	1.530	0.0	1.01	71.7

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Existing Network Details 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
7.000	20.130	0.101	199.3	0.216	10.00	0.0	0.600	Q15	-1	Pipe/Conduit
7.001	14.426	0.041	351.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.007	4.856	0.108	45.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.008	3.927	0.000	0.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit
1.009	4.867	0.000	0.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
1.010	22.901	0.050	458.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
1.011	20.007	0.050	400.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
8.000	5.948	0.050	119.0	0.040	5.00	0.0	0.600	o	150	Pipe/Conduit
8.001	45.727	0.457	100.0	0.006	0.00	0.0	0.600	o	150	Pipe/Conduit
8.002	26.687	0.267	100.0	0.014	0.00	0.0	0.600	o	150	Pipe/Conduit
8.003	17.610	0.176	100.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
9.000	6.997	0.118	59.3	0.028	5.00	0.0	0.600	o	150	Pipe/Conduit
8.004	9.131	0.130	70.0	0.050	0.00	0.0	0.600	o	150	Pipe/Conduit
1.012	20.073	0.055	365.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit
1.013	12.460	0.075	167.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
1.014	3.938	0.017	231.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
7.000	155.500	0.216	0.0	0.71	12.5
7.001	155.399	0.216	0.0	0.83	58.8
1.007	154.358	1.746	0.0	2.35	166.2
1.008	154.200	1.746	0.0	0.00	0.0
1.009	154.200	1.746	0.0	0.00	0.0
1.010	154.200	1.746	0.0	0.46	8.2
1.011	154.150	1.746	0.0	0.50	8.8
8.000	155.495	0.040	0.0	0.92	16.3
8.001	155.455	0.046	0.0	1.00	17.8
8.002	154.995	0.060	0.0	1.00	17.8
8.003	154.774	0.060	0.0	1.00	17.8
9.000	154.715	0.028	0.0	1.31	23.1
8.004	154.585	0.138	0.0	1.20	21.3
1.012	154.100	1.885	0.0	0.52	9.2
1.013	153.970	1.885	0.0	1.01	40.1
1.014	153.895	1.885	0.0	0.85	34.0

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)
1.014		154.500	153.878	0.000	0	0

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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	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 Online Controls	4	Number of Storage Structures	3
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.200	Storm Duration (mins)	15
Ratio R	0.360		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: 4, DS/PN: 2.001, Volume (m³): 1.9

Unit Reference	MD-SHE-0109-5000-0800-5000
Design Head (m)	0.800
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	109
Invert Level (m)	155.107
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)	0.800	5.0	Kick-Flo®	0.537	4.2
Flush-Flo™	0.241	5.0	Mean Flow over Head Range	-	4.3

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	3.7	0.800	5.0	2.000	7.7	4.000	10.6	7.000	13.9
0.200	5.0	1.000	5.5	2.200	8.0	4.500	11.3	7.500	14.4
0.300	5.0	1.200	6.0	2.400	8.4	5.000	11.8	8.000	14.8
0.400	4.8	1.400	6.5	2.600	8.7	5.500	12.4	8.500	15.2
0.500	4.5	1.600	6.9	3.000	9.3	6.000	12.9	9.000	15.7
0.600	4.4	1.800	7.3	3.500	10.0	6.500	13.4	9.500	16.1

Pump Manhole: 4, DS/PN: 6.002, Volume (m³): 1.6

Invert Level (m) 154.100

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)
0.200	12.0000	1.400	0.0000	2.600	0.0000	3.800	0.0000	5.000	0.0000
0.400	12.0000	1.600	0.0000	2.800	0.0000	4.000	0.0000	5.200	0.0000
0.600	15.0000	1.800	0.0000	3.000	0.0000	4.200	0.0000	5.400	0.0000
0.800	15.0000	2.000	0.0000	3.200	0.0000	4.400	0.0000	5.600	0.0000
1.000	15.0000	2.200	0.0000	3.400	0.0000	4.600	0.0000	5.800	0.0000
1.200	15.0000	2.400	0.0000	3.600	0.0000	4.800	0.0000	6.000	0.0000

Hydro-Brake® Optimum Manhole: 10, DS/PN: 1.009, Volume (m³): 2.1

Unit Reference	MD-SHE-0108-6500-1750-6500
Design Head (m)	1.750
Design Flow (l/s)	6.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	108
Invert Level (m)	154.200
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

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Hydro-Brake® Optimum Manhole: 10, DS/PN: 1.009, Volume (m³): 2.1

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.750	6.5	Kick-Flo®	0.965	4.9
Flush-Flo™	0.474	6.2	Mean Flow over Head Range	-	5.5

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	3.7	0.800	5.7	2.000	6.9	4.000	9.6	7.000	12.5
0.200	5.5	1.000	5.0	2.200	7.2	4.500	10.1	7.500	12.9
0.300	6.0	1.200	5.5	2.400	7.5	5.000	10.7	8.000	13.3
0.400	6.1	1.400	5.9	2.600	7.8	5.500	11.2	8.500	13.7
0.500	6.2	1.600	6.2	3.000	8.4	6.000	11.6	9.000	14.1
0.600	6.1	1.800	6.6	3.500	9.0	6.500	12.1	9.500	14.5

Hydro-Brake® Optimum Manhole: 15, DS/PN: 1.012, Volume (m³): 1.6

Unit Reference	MD-SHE-0109-5500-1100-5500
Design Head (m)	1.100
Design Flow (l/s)	5.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	109
Invert Level (m)	154.100
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)	1.100	5.5	Kick-Flo®	0.695	4.4
Flush-Flo™	0.324	5.5	Mean Flow over Head Range	-	4.8

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	3.7	0.800	4.7	2.000	7.3	4.000	10.1	7.000	13.2
0.200	5.3	1.000	5.3	2.200	7.6	4.500	10.7	7.500	13.6
0.300	5.5	1.200	5.7	2.400	7.9	5.000	11.2	8.000	14.0
0.400	5.4	1.400	6.2	2.600	8.2	5.500	11.7	8.500	14.4
0.500	5.3	1.600	6.5	3.000	8.8	6.000	12.2	9.000	14.8
0.600	5.0	1.800	6.9	3.500	9.5	6.500	12.7	9.500	15.2

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Storage Structures for Storm

Cellular Storage Manhole: 4, DS/PN: 2.001

Invert Level (m) 155.107 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	1060.0	0.0	0.800	1060.0	0.0	0.801	0.0	0.0

Cellular Storage Manhole: 10, DS/PN: 1.009

Invert Level (m) 154.200 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	650.0	0.0	0.400	650.0	0.0	0.401	0.0	0.0

Tank or Pond Manhole: 15, DS/PN: 1.012

Invert Level (m) 154.100

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	563.0	0.900	845.0

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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 Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (1/per/day) 0.000
 Foul Sewage per hectare (1/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 4 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.200 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.360 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 50.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status ON
 Inertia Status OFF

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) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
1.000	2	15 Winter	1	+0%	1/15 Summer	100/15 Summer			155.362	0.179	0.000
1.001	3	15 Winter	1	+0%	1/15 Summer				155.234	0.101	0.000
2.000	4	15 Winter	1	+0%	100/15 Summer				155.815	-0.185	0.000
3.000	1	15 Winter	1	+0%	1/15 Winter	30/15 Summer			155.723	0.023	0.000
3.001	2	15 Winter	1	+0%	1/15 Summer				155.607	0.038	0.000
2.001	4	600 Winter	1	+0%	30/30 Summer				155.232	-0.025	0.000
1.002	3	15 Winter	1	+0%	30/15 Summer				155.123	-0.085	0.000
1.003	4	15 Winter	1	+0%	30/15 Winter				155.023	-0.175	0.000
1.004	5	15 Winter	1	+0%	30/15 Winter				154.966	-0.183	0.000
1.005	6	15 Winter	1	+0%	30/15 Summer				154.840	-0.187	0.000
4.000	9	15 Winter	1	+0%	30/15 Summer	30/15 Summer			155.612	-0.038	0.000
5.000	10	15 Winter	1	+0%	30/15 Summer	30/15 Summer			155.621	-0.029	0.000
4.001	10	15 Winter	1	+0%	100/60 Winter	100/120 Summer			155.554	-0.164	0.000
6.000	15	15 Winter	1	+0%	100/15 Summer				155.013	-0.087	0.000
6.001	15	15 Winter	1	+0%					154.899	-0.100	0.000
6.002	4	15 Winter	1	+0%	30/15 Summer				154.174	-0.026	0.000
1.006	7	15 Winter	1	+0%	30/15 Summer	100/60 Winter			154.701	-0.107	0.000
7.000	13	15 Winter	1	+0%	1/15 Summer	30/15 Summer			155.684	0.034	0.000
7.001	14	15 Winter	1	+0%	100/60 Winter				155.517	-0.182	0.000
1.007	8	15 Winter	1	+0%	30/15 Summer				154.591	-0.067	0.000
1.008	9	15 Winter	1	+0%	1/15 Summer				154.537	0.037	0.000
1.009	10	1440 Winter	1	+0%	1/120 Winter	100/60 Winter			154.476	0.126	0.000
1.010	11	1440 Winter	1	+0%	30/600 Winter				154.290	-0.060	0.000
1.011	12	1440 Winter	1	+0%	30/480 Summer				154.262	-0.038	0.000
8.000	23	15 Winter	1	+0%	100/15 Summer				155.558	-0.087	0.000
8.001	24	15 Winter	1	+0%	100/15 Summer				155.513	-0.092	0.000
8.002	25	15 Winter	1	+0%	30/15 Summer				155.061	-0.084	0.000
8.003	36	15 Winter	1	+0%	30/15 Summer				154.839	-0.084	0.000
9.000	38	15 Winter	1	+0%	30/15 Summer	100/15 Summer			154.757	-0.108	0.000
8.004	26	15 Winter	1	+0%	30/15 Summer				154.685	-0.050	0.000
1.012	15	1440 Winter	1	+0%	30/360 Summer				154.238	-0.012	0.000
1.013	32	1440 Winter	1	+0%					154.026	-0.169	0.000
1.014	32	1440 Winter	1	+0%					153.962	-0.158	0.000

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

PN	US/MH Name	Flow / Cap.	Overflow (1/s)	Pipe Flow (1/s)	Status	Level Exceeded
1.000	2	2.51		23.5	SURCHARGED	6
1.001	3	2.16		20.4	SURCHARGED*	
2.000	4	0.31		19.0	OK	
3.000	1	0.84		76.4	SURCHARGED	11
3.001	2	1.24		76.2	SURCHARGED	
2.001	4	0.72		4.3	OK	
1.002	3	0.70		20.7	OK	
1.003	4	0.36		20.8	OK	
1.004	5	0.32		20.5	OK	
1.005	6	0.30		20.2	OK	
4.000	9	0.84		14.7	OK	28
5.000	10	0.90		11.2	OK	28
4.001	10	0.42		26.0	OK*	18
6.000	15	0.35		4.5	OK	
6.001	15	0.24		4.4	OK*	
6.002	4	2.45		4.4	OK	
1.006	7	0.74		48.6	OK	19
7.000	13	1.18		14.8	SURCHARGED*	31
7.001	14	0.33		14.8	OK	
1.007	8	0.75		61.4	OK	
1.008	9	1.61		61.4	SURCHARGED*	
1.009	10	0.57		5.2	SURCHARGED	19
1.010	11	0.67		5.2	OK	
1.011	12	0.63		5.2	OK	
8.000	23	0.36		4.9	OK	
8.001	24	0.31		5.3	OK	
8.002	25	0.39		6.7	OK	
8.003	36	0.40		6.6	OK	
9.000	38	0.17		3.3	OK	4
8.004	26	0.77		14.4	OK	
1.012	15	0.56		4.9	OK	
1.013	32	0.14		4.9	OK	
1.014	32	0.19		4.9	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 (1/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 4 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.200 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.360 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 50.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status ON
 Inertia Status OFF

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) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
1.000	2	15 Winter	30	+0%	1/15 Summer	100/15 Summer			156.165	0.982	0.000
1.001	3	15 Winter	30	+0%	1/15 Summer				155.622	0.489	0.000
2.000	4	15 Winter	30	+0%	100/15 Summer				155.900	-0.100	0.000
3.000	1	15 Winter	30	+0%	1/15 Winter	30/15 Summer			156.258	0.558	7.769
3.001	2	15 Winter	30	+0%	1/15 Summer				155.885	0.316	0.000
2.001	4	960 Winter	30	+0%	30/30 Summer				155.487	0.230	0.000
1.002	3	960 Winter	30	+0%	30/15 Summer				155.532	0.324	0.000
1.003	4	960 Winter	30	+0%	30/15 Winter				155.534	0.336	0.000
1.004	5	960 Winter	30	+0%	30/15 Winter				155.536	0.387	0.000
1.005	6	960 Winter	30	+0%	30/15 Summer				155.539	0.512	0.000
4.000	9	15 Winter	30	+0%	30/15 Summer	30/15 Summer			155.851	0.201	1.308
5.000	10	15 Winter	30	+0%	30/15 Summer	30/15 Summer			155.852	0.202	1.610
4.001	10	30 Winter	30	+0%	100/60 Winter	100/120 Summer			155.624	-0.094	0.000
6.000	15	15 Winter	30	+0%	100/15 Summer				155.083	-0.017	0.000
6.001	15	15 Winter	30	+0%					154.932	-0.067	0.000
6.002	4	15 Winter	30	+0%	30/15 Summer				154.284	0.084	0.000
1.006	7	960 Winter	30	+0%	30/15 Summer	100/60 Winter			155.542	0.734	0.000
7.000	13	30 Winter	30	+0%	1/15 Summer	30/15 Summer			155.810	0.160	9.885
7.001	14	960 Winter	30	+0%	100/60 Winter				155.540	-0.159	0.000
1.007	8	960 Winter	30	+0%	30/15 Summer				155.538	0.880	0.000
1.008	9	960 Winter	30	+0%	1/15 Summer				155.536	1.036	0.000
1.009	10	960 Winter	30	+0%	1/120 Winter	100/60 Winter			155.534	1.184	0.000
1.010	11	1440 Winter	30	+0%	30/600 Winter				154.381	0.031	0.000
1.011	12	1440 Winter	30	+0%	30/480 Summer				154.353	0.053	0.000
8.000	23	15 Winter	30	+0%	100/15 Summer				155.606	-0.039	0.000
8.001	24	15 Winter	30	+0%	100/15 Summer				155.557	-0.048	0.000
8.002	25	15 Winter	30	+0%	30/15 Summer				155.264	0.119	0.000
8.003	36	15 Winter	30	+0%	30/15 Summer				155.070	0.146	0.000
9.000	38	15 Winter	30	+0%	30/15 Summer	100/15 Summer			154.970	0.105	0.000
8.004	26	15 Winter	30	+0%	30/15 Summer				154.953	0.218	0.000
1.012	15	1440 Winter	30	+0%	30/360 Summer				154.327	0.077	0.000
1.013	32	1440 Winter	30	+0%					154.029	-0.166	0.000
1.014	32	1440 Winter	30	+0%					153.965	-0.155	0.000

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

PN	US/MH Name	Flow / Cap.	Overflow (1/s)	Pipe Flow (1/s)	Status	Level Exceeded
1.000	2	5.37		50.4	SURCHARGED	6
1.001	3	3.95		37.4	SURCHARGED*	
2.000	4	0.76		46.4	OK	
3.000	1	1.69		153.0	FLOOD	11
3.001	2	2.49		153.0	SURCHARGED	
2.001	4	0.83		5.0	SURCHARGED	
1.002	3	0.32		9.4	SURCHARGED	
1.003	4	0.16		9.4	SURCHARGED	
1.004	5	0.15		9.4	SURCHARGED	
1.005	6	0.14		9.4	SURCHARGED	
4.000	9	1.66		29.2	FLOOD	28
5.000	10	1.66		20.8	FLOOD	28
4.001	10	0.81		49.9	OK*	18
6.000	15	0.87		11.1	OK	
6.001	15	0.58		11.0	OK*	
6.002	4	6.05		10.9	SURCHARGED	
1.006	7	0.26		17.3	SURCHARGED	19
7.000	13	1.62		20.3	FLOOD	31
7.001	14	0.10		4.7	OK	
1.007	8	0.27		21.8	SURCHARGED	
1.008	9	0.57		21.8	SURCHARGED*	
1.009	10	0.68		6.2	SURCHARGED	19
1.010	11	0.79		6.2	SURCHARGED	
1.011	12	0.75		6.2	SURCHARGED	
8.000	23	0.88		11.9	OK	
8.001	24	0.77		13.3	OK	
8.002	25	0.85		14.4	SURCHARGED	
8.003	36	0.92		15.3	SURCHARGED	
9.000	38	0.36		7.1	SURCHARGED	4
8.004	26	1.63		30.6	SURCHARGED	
1.012	15	0.62		5.4	SURCHARGED	
1.013	32	0.16		5.4	OK	
1.014	32	0.21		5.4	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 4 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 18.200 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.360 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 50.0
 Analysis Timestep 2.5 Second Increment (Extended)
 DTS Status OFF
 DVD Status ON
 Inertia Status OFF

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) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
1.000	2	15 Winter	100	+40%	1/15 Summer	100/15 Summer			156.314	1.131	14.077
1.001	3	240 Winter	100	+40%	1/15 Summer				155.977	0.844	0.000
2.000	4	1440 Winter	100	+40%	100/15 Summer				156.102	0.102	0.000
3.000	1	15 Winter	100	+40%	1/15 Winter	30/15 Summer			156.320	0.620	70.180
3.001	2	1440 Winter	100	+40%	1/15 Summer				156.103	0.534	0.000
2.001	4	1440 Winter	100	+40%	30/30 Summer				156.102	0.845	0.000
1.002	3	240 Winter	100	+40%	30/15 Summer				155.900	0.692	0.000
1.003	4	240 Winter	100	+40%	30/15 Winter				155.896	0.698	0.000
1.004	5	1440 Winter	100	+40%	30/15 Winter				155.889	0.740	0.000
1.005	6	1440 Winter	100	+40%	30/15 Summer				155.882	0.855	0.000
4.000	9	480 Winter	100	+40%	30/15 Summer	30/15 Summer			155.876	0.226	26.256
5.000	10	600 Winter	100	+40%	30/15 Summer	30/15 Summer			155.876	0.226	25.633
4.001	10	1440 Winter	100	+40%	100/60 Winter	100/120 Summer			155.874	0.156	23.914
6.000	15	15 Winter	100	+40%	100/15 Summer				155.152	0.052	0.000
6.001	15	15 Winter	100	+40%					154.956	-0.043	0.000
6.002	4	15 Winter	100	+40%	30/15 Summer				154.827	0.627	0.000
1.006	7	1440 Winter	100	+40%	30/15 Summer	100/60 Winter			155.874	1.066	23.840
7.000	13	960 Winter	100	+40%	1/15 Summer	30/15 Summer			155.873	0.223	72.750
7.001	14	120 Winter	100	+40%	100/60 Winter				155.899	0.200	0.000
1.007	8	180 Summer	100	+40%	30/15 Summer				155.912	1.254	0.000
1.008	9	120 Winter	100	+40%	1/15 Summer				155.888	1.388	0.000
1.009	10	1440 Winter	100	+40%	1/120 Winter	100/60 Winter			155.862	1.512	11.589
1.010	11	1440 Winter	100	+40%	30/600 Winter				154.528	0.178	0.000
1.011	12	1440 Winter	100	+40%	30/480 Summer				154.496	0.196	0.000
8.000	23	15 Winter	100	+40%	100/15 Summer				156.154	0.509	0.000
8.001	24	15 Winter	100	+40%	100/15 Summer				156.092	0.487	0.000
8.002	25	15 Winter	100	+40%	30/15 Summer				155.709	0.564	0.000
8.003	36	15 Winter	100	+40%	30/15 Summer				155.343	0.420	0.000
9.000	38	15 Winter	100	+40%	30/15 Summer	100/15 Summer			155.102	0.237	2.406
8.004	26	15 Winter	100	+40%	30/15 Summer				155.132	0.397	0.000
1.012	15	1440 Winter	100	+40%	30/360 Summer				154.468	0.218	0.000
1.013	32	1440 Winter	100	+40%					154.030	-0.165	0.000
1.014	32	1440 Winter	100	+40%					153.966	-0.154	0.000

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

PN	US/MH Name	Flow / Cap.	Overflow (1/s)	Pipe Flow (1/s)	Status	Level Exceeded
1.000	2	6.13		57.6	FLOOD	6
1.001	3	2.51		23.7	SURCHARGED*	
2.000	4	0.07		4.5	SURCHARGED	
3.000	1	1.76		159.3	FLOOD	11
3.001	2	0.36		22.0	SURCHARGED	
2.001	4	0.83		5.0	SURCHARGED	
1.002	3	0.96		28.6	SURCHARGED	
1.003	4	0.49		28.2	SURCHARGED	
1.004	5	0.16		10.1	SURCHARGED	
1.005	6	0.15		10.0	SURCHARGED	
4.000	9	0.68		12.0	FLOOD	28
5.000	10	0.61		7.6	FLOOD	28
4.001	10	0.13		8.2	FLOOD	18
6.000	15	1.26		16.1	FLOOD RISK*	
6.001	15	0.86		16.1	OK*	
6.002	4	8.31		15.0	SURCHARGED	
1.006	7	0.27		18.1	FLOOD	19
7.000	13	0.62		7.8	FLOOD	31
7.001	14	0.46		20.8	FLOOD RISK	
1.007	8	1.27		104.5	SURCHARGED	
1.008	9	2.80		106.9	SURCHARGED*	
1.009	10	0.68		6.2	FLOOD	19
1.010	11	0.79		6.2	SURCHARGED	
1.011	12	0.75		6.2	SURCHARGED	
8.000	23	1.13		15.3	SURCHARGED	
8.001	24	0.91		15.7	SURCHARGED	
8.002	25	1.16		19.7	SURCHARGED	
8.003	36	1.19		19.8	SURCHARGED	
9.000	38	0.85		16.8	FLOOD	4
8.004	26	2.00		37.6	SURCHARGED	
1.012	15	0.63		5.5	SURCHARGED	
1.013	32	0.16		5.5	OK	
1.014	32	0.22		5.5	OK	