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Leicester Road Ibstock Leicestershire LE67 6HP		
Date 01/10/2026 14:13	Designed by jacob.clifford	
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XP Solutions		Network 2020.1.3

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)	1	PIMP (%)	100
M5-60 (mm)	20.300	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
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.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

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	31.404	0.188	167.0	0.067	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	42.246	0.178	237.3	0.072	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.002	30.649	0.129	237.6	0.069	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	22.420	0.095	237.0	0.019	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	33.214	0.099	335.5	0.092	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.005	24.245	0.077	314.9	0.192	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.006	18.728	0.059	315.0	0.037	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.007	8.695	0.028	315.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.000	21.728	0.109	200.0	0.078	5.00	0.0	0.600	o	300	Pipe/Conduit	
2.001	5.121	0.026	197.0	0.001	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)
1.000	50.00	5.52	130.780	0.067	0.0	0.0	0.0	1.01	40.1	9.1
1.001	50.00	6.21	130.517	0.139	0.0	0.0	0.0	1.02	71.8	18.8
1.002	48.41	6.71	130.339	0.208	0.0	0.0	0.0	1.02	71.8	27.2
1.003	47.14	7.08	130.210	0.227	0.0	0.0	0.0	1.02	71.9	29.0
1.004	45.34	7.64	130.040	0.319	0.0	0.0	0.0	0.98	108.6	39.2
1.005	44.17	8.04	129.941	0.511	0.0	0.0	0.0	1.02	112.2	61.1
1.006	43.30	8.35	129.864	0.548	0.0	0.0	0.0	1.02	112.2	64.3
1.007	42.91	8.49	129.805	0.548	0.0	0.0	0.0	1.02	112.2	64.3
2.000	50.00	5.33	130.164	0.078	0.0	0.0	0.0	1.11	78.3	10.5
2.001	50.00	5.40	130.055	0.079	0.0	0.0	0.0	1.12	78.9	10.7

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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
4.002	87.215	0.368	237.0	0.084	0.00	0.0	0.600	o	375	Pipe/Conduit	
4.003	15.495	0.067	231.3	0.098	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.015	23.159	0.000	0.0	0.001	0.00	0.0	0.600	\	38	Pipe/Conduit	
1.016	44.782	0.175	255.9	0.044	0.00	0.0	0.600	o	600	Pipe/Conduit	
6.000	51.812	0.259	200.0	0.082	5.00	0.0	0.600	o	225	Pipe/Conduit	
6.001	31.790	0.159	199.9	0.147	0.00	0.0	0.600	o	300	Pipe/Conduit	
6.002	18.066	0.090	200.7	0.068	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.017	15.116	0.050	300.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.018	24.000	0.100	240.0	0.000	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)
4.002	47.95	6.85	129.835	0.380	0.0	0.0	0.0	1.17	129.5	49.3
4.003	47.20	7.06	129.467	0.478	0.0	0.0	0.0	1.19	131.1	61.1
1.015	33.80	13.25	129.400	2.065	0.0	0.0	0.0	0.44	668.4	189.0
1.016	33.11	13.74	129.400	2.109	0.0	0.0	0.0	1.52	429.1	189.1
6.000	50.00	5.94	130.173	0.082	0.0	0.0	0.0	0.92	36.6	11.1
6.001	49.49	6.42	129.839	0.229	0.0	0.0	0.0	1.11	78.3	30.7
6.002	48.63	6.65	129.680	0.297	0.0	0.0	0.0	1.28	140.8	39.1
1.017	32.86	13.92	129.225	2.406	0.0	0.0	0.0	1.40	396.0	214.1
1.018	32.23	14.40	129.175	2.406	0.0	0.0	0.0	0.84	33.4	214.1

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)
1.018	S49	131.000	129.075	0.000	1200	0

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Simulation Criteria for Surface Network 1

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 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 Storage Structures	1
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)	20.300	Storm Duration (mins)	30
Ratio R	0.400		

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Online Controls for Surface Network 1

Hydro-Brake® Optimum Manhole: S19, DS/PN: 1.017, Volume (m³): 17.4

Unit Reference	MD-SHE-0214-2350-0900-2350
Design Head (m)	0.900
Design Flow (l/s)	23.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	214
Invert Level (m)	129.225
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.900	23.5
Flush-Flo™	0.343	23.4
Kick-Flo®	0.674	20.4
Mean Flow over Head Range	-	19.4

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	7.3	1.200	26.9	3.000	41.8	7.000	63.1
0.200	20.9	1.400	29.0	3.500	45.0	7.500	65.2
0.300	23.4	1.600	30.9	4.000	48.1	8.000	67.3
0.400	23.3	1.800	32.7	4.500	50.9	8.500	69.3
0.500	22.9	2.000	34.4	5.000	53.5	9.000	71.3
0.600	21.9	2.200	36.0	5.500	56.1	9.500	72.8
0.800	22.2	2.400	37.5	6.000	58.5		
1.000	24.7	2.600	39.0	6.500	60.8		

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Storage Structures for Surface Network 1

Tank or Pond Manhole: S20, DS/PN: 1.016

Invert Level (m) 129.400

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	1243.4	0.400	1466.8	0.800	1700.5	1.200	1943.5
0.100	1297.5	0.500	1524.4	0.900	1760.4		
0.200	1353.4	0.600	1582.5	1.000	1820.8		
0.300	1409.8	0.700	1641.2	1.100	1881.9		

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1 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	0.000
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 Storage Structures	1
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	0.400
Region England and Wales Cv (Summer)	0.750		
M5-60 (mm)	20.300	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 35, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surgecharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	S50	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
1.001	S38	15 Winter	1	+0%	30/15 Summer			
1.002	S5	15 Winter	1	+0%	30/15 Summer			
1.003	S6	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
1.004	S36	15 Winter	1	+0%	30/15 Summer			
1.005	S35	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
1.006	S7	15 Winter	1	+0%	30/15 Summer			
1.007	S27	15 Winter	1	+0%	30/15 Summer			
2.000	S30	15 Winter	1	+0%				
2.001	S31	15 Winter	1	+0%	100/120 Winter			
2.002	S32	15 Winter	1	+0%				
2.003	S33	15 Winter	1	+0%				
2.004	S44	15 Winter	1	+0%				
2.005	S45	15 Winter	1	+0%				
1.008	S9	15 Winter	1	+0%				
1.009	S46	15 Winter	1	+0%				
1.010	S47	15 Winter	1	+0%				
3.000	S10	15 Winter	1	+0%	30/15 Summer			
3.001	S11	15 Winter	1	+0%	30/15 Summer			
3.002	S12	15 Winter	1	+0%	30/15 Summer			
1.011	S13	15 Winter	1	+0%				

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

for Surface Network 1

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S50	130.857	-0.148	0.000	0.25			9.3	OK	4
1.001	S38	130.623	-0.194	0.000	0.26			17.5	OK	
1.002	S5	130.469	-0.170	0.000	0.38			25.1	OK	
1.003	S6	130.346	-0.164	0.000	0.42			26.8	OK	2
1.004	S36	130.213	-0.202	0.000	0.37			35.7	OK	
1.005	S35	130.154	-0.162	0.000	0.55			53.6	OK	4
1.006	S7	130.092	-0.147	0.000	0.60			56.2	OK	
1.007	S27	130.042	-0.138	0.000	0.72			56.4	OK	
2.000	S30	130.244	-0.220	0.000	0.16			10.8	OK	
2.001	S31	130.148	-0.207	0.000	0.21			11.1	OK	
2.002	S32	130.130	-0.694	0.000	0.01			31.4	OK	
2.003	S33	130.043	-0.678	0.000	0.04			37.6	OK	
2.004	S44	130.021	-0.680	0.000	0.02			37.4	OK	
2.005	S45	129.961	-0.649	0.000	0.02			33.3	OK	
1.008	S9	129.949	-0.622	0.000	0.03			88.8	OK	
1.009	S46	129.895	-0.609	0.000	0.04			87.3	OK	
1.010	S47	129.836	-0.597	0.000	0.04			94.7	OK	
3.000	S10	130.232	-0.190	0.000	0.28			20.5	OK	
3.001	S11	129.962	-0.209	0.000	0.40			48.5	OK	
3.002	S12	129.850	-0.205	0.000	0.42			51.4	OK	
1.011	S13	129.786	-0.558	0.000	0.05			124.3	OK	

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

for Surface Network 1

	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level
									(m)
1.012	S23	15 Winter	1	+0%					129.726
1.013	S22	15 Winter	1	+0%					129.682
1.014	S21	30 Winter	1	+0%					129.652
4.000	S40	15 Winter	1	+0%	30/15 Summer				130.134
4.001	S39	15 Winter	1	+0%	30/15 Summer				130.078
5.000	S29	15 Winter	1	+0%	30/15 Summer				130.194
4.002	S14	15 Winter	1	+0%	30/15 Summer				129.999
4.003	S15	15 Winter	1	+0%	30/15 Summer				129.663
1.015	S16	120 Winter	1	+0%					129.580
1.016	S20	240 Winter	1	+0%	100/120 Winter				129.569
6.000	S17	15 Winter	1	+0%	30/15 Summer				130.262
6.001	S41	15 Winter	1	+0%	30/15 Summer				129.971
6.002	S18	15 Winter	1	+0%	30/15 Winter				129.823
1.017	S19	240 Winter	1	+0%	30/60 Winter				129.558
1.018	S48	240 Winter	1	+0%					129.316

	US/MH	Depth	Surcharged	Flooded	Flow /	Half Drain	Pipe		Level
PN	Name	(m)		Volume	Overflow	Time	Flow	Status	Exceeded
				(m³)	Cap.	(l/s)	(l/s)		
						(mins)			
1.012	S23	-0.553		0.000	0.07		126.2	OK	
1.013	S22	-0.547		0.000	0.10		125.4	OK	
1.014	S21	-0.542		0.000	0.08		124.5	OK	
4.000	S40	-0.256		0.000	0.21		22.8	OK	
4.001	S39	-0.239		0.000	0.28		31.3	OK	
5.000	S29	-0.158		0.000	0.19		8.6	OK	
4.002	S14	-0.211		0.000	0.38		46.4	OK	
4.003	S15	-0.179		0.000	0.53		56.0	OK	
1.015	S16	-0.614		0.000	0.11		88.4	OK	
1.016	S20	-0.431		0.000	0.05		20.7	OK*	
6.000	S17	-0.136		0.000	0.32		11.2	OK	
6.001	S41	-0.168		0.000	0.40		28.3	OK	
6.002	S18	-0.232		0.000	0.31		35.8	OK	
1.017	S19	-0.267		0.000	0.08		21.9	OK	
1.018	S48	-0.084		0.000	0.71		21.9	OK	

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Micro Drainage

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 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 1

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 0.400

Region England and Wales Cv (Summer) 0.750

M5-60 (mm)

20.300 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0

DVD Status ON

Analysis Timestep

Fine Inertia Status ON

DTS Status

OFF

Profile(s)

Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440

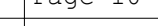
Return Period(s) (years) 1, 30, 100

Climate Change (%) 0, 35, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	S50	15 Winter	30	+35%	30/15 Summer	100/15 Summer		
1.001	S38	15 Winter	30	+35%	30/15 Summer			
1.002	S5	15 Winter	30	+35%	30/15 Summer			
1.003	S6	15 Winter	30	+35%	30/15 Summer	100/15 Summer		
1.004	S36	15 Winter	30	+35%	30/15 Summer			
1.005	S35	15 Winter	30	+35%	30/15 Summer	100/15 Summer		
1.006	S7	15 Winter	30	+35%	30/15 Summer			
1.007	S27	15 Winter	30	+35%	30/15 Summer			
2.000	S30	15 Winter	30	+35%				
2.001	S31	15 Winter	30	+35%	100/120 Winter			
2.002	S32	15 Winter	30	+35%				
2.003	S33	15 Winter	30	+35%				
2.004	S44	15 Winter	30	+35%				
2.005	S45	15 Winter	30	+35%				
1.008	S9	15 Winter	30	+35%				
1.009	S46	240 Winter	30	+35%				
1.010	S47	240 Winter	30	+35%				
3.000	S10	15 Winter	30	+35%	30/15 Summer			
3.001	S11	15 Winter	30	+35%	30/15 Summer			
3.002	S12	15 Winter	30	+35%	30/15 Summer			
1.011	S13	240 Winter	30	+35%				

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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	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status
		Level (m)	Depth (m)	Volume (m³)			Time (mins)	Flow (l/s)	
1.000	S50	131.540	0.535	0.000	0.78			29.5	FLOOD RISK
1.001	S38	131.506	0.689	0.000	0.75			50.1	SURCHARGED
1.002	S5	131.401	0.762	0.000	1.15			75.1	SURCHARGED
1.003	S6	131.221	0.711	0.000	1.29			82.0	SURCHARGED
1.004	S36	131.069	0.654	0.000	1.14			110.7	FLOOD RISK
1.005	S35	130.931	0.615	0.000	1.84			177.6	FLOOD RISK
1.006	S7	130.643	0.404	0.000	2.06			192.0	FLOOD RISK
1.007	S27	130.378	0.199	0.000	2.47			192.7	SURCHARGED
2.000	S30	130.324	-0.140	0.000	0.52			35.9	OK
2.001	S31	130.266	-0.089	0.000	0.69			36.6	OK
2.002	S32	130.252	-0.572	0.000	0.04			117.5	FLOOD RISK*
2.003	S33	130.189	-0.532	0.000	0.15			137.4	OK
2.004	S44	130.169	-0.532	0.000	0.06			131.4	OK
2.005	S45	130.132	-0.479	0.000	0.08			115.9	OK
1.008	S9	130.120	-0.451	0.000	0.10			300.6	OK
1.009	S46	130.105	-0.398	0.000	0.04			73.8	OK
1.010	S47	130.086	-0.348	0.000	0.04			82.5	OK
3.000	S10	130.686	0.264	0.000	0.89			65.7	SURCHARGED
3.001	S11	130.476	0.305	0.000	1.42			171.1	SURCHARGED
3.002	S12	130.221	0.167	0.000	1.50			183.8	SURCHARGED
1.011	S13	130.066	-0.278	0.000	0.04			114.8	OK

	US/MH	Level
PN	Name	Exceeded
1.000	S50	4
1.001	S38	
1.002	S5	
1.003	S6	2
1.004	S36	
1.005	S35	4
1.006	S7	
1.007	S27	
2.000	S30	
2.001	S31	
2.002	S32	
2.003	S33	
2.004	S44	
2.005	S45	
1.008	S9	
1.009	S46	
1.010	S47	
3.000	S10	
3.001	S11	
3.002	S12	

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<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Surface Network 1</u>											
<table><tr><td></td><td>US/MH</td><td>Level</td></tr><tr><td>PN</td><td>Name</td><td>Exceeded</td></tr><tr><td>1.011</td><td>S13</td><td></td></tr></table>				US/MH	Level	PN	Name	Exceeded	1.011	S13	
	US/MH	Level									
PN	Name	Exceeded									
1.011	S13										
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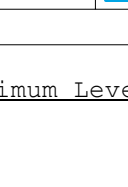


30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Surface Network 1

								Water	
US/MH	Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level		
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)
1.012	S23	240	Winter	30	+35%				130.045
1.013	S22	240	Winter	30	+35%				130.022
1.014	S21	240	Winter	30	+35%				130.004
4.000	S40	15	Winter	30	+35%	30/15	Summer		130.779
4.001	S39	15	Winter	30	+35%	30/15	Summer		130.688
5.000	S29	15	Winter	30	+35%	30/15	Summer		130.673
4.002	S14	15	Winter	30	+35%	30/15	Summer		130.590
4.003	S15	15	Winter	30	+35%	30/15	Summer		129.969
1.015	S16	360	Winter	30	+35%				129.957
1.016	S20	360	Winter	30	+35%	100/120	Winter		129.947
6.000	S17	15	Winter	30	+35%	30/15	Summer		130.636
6.001	S41	15	Winter	30	+35%	30/15	Summer		130.379
6.002	S18	15	Winter	30	+35%	30/15	Winter		130.064
1.017	S19	360	Winter	30	+35%	30/60	Winter		129.898
1.018	S48	360	Summer	30	+35%				129.322

Surcharged Flooded					Half Drain	Pipe		
US/MH	Depth	Volume	Flow /	Overflow	Time	Flow	Status	Level
PN	Name	(m)	(m³)	Cap.	(l/s)	(mins)	(l/s)	Exceeded
1.012	S23	-0.234	0.000	0.07		117.4	OK	
1.013	S22	-0.207	0.000	0.09		114.3	OK	
1.014	S21	-0.190	0.000	0.08		120.5	OK	
4.000	S40	0.389	0.000	0.67		71.0	SURCHARGED	
4.001	S39	0.371	0.000	0.89		99.9	SURCHARGED	
5.000	S29	0.321	0.000	0.59		26.3	SURCHARGED	
4.002	S14	0.380	0.000	1.21		150.1	SURCHARGED	
4.003	S15	0.127	0.000	1.69		178.2	SURCHARGED	
1.015	S16	-0.237	0.000	0.13		108.9	OK	
1.016	S20	-0.053	0.000	0.06		23.1	OK*	
6.000	S17	0.238	0.000	1.01		35.6	SURCHARGED	
6.001	S41	0.240	0.000	1.36		97.5	SURCHARGED	
6.002	S18	0.009	0.000	1.08		125.8	SURCHARGED	
1.017	S19	0.072	0.000	0.08		23.4	SURCHARGED	
1.018	S48	-0.078	0.000	0.76		23.4	OK	

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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	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	1
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	0.400
Region England and Wales Cv (Summer)	0.750		
M5-60 (mm)	20.300	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 35, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	S50	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
1.001	S38	15 Summer	100	+40%	30/15 Summer			
1.002	S5	15 Summer	100	+40%	30/15 Summer			
1.003	S6	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
1.004	S36	15 Winter	100	+40%	30/15 Summer			
1.005	S35	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
1.006	S7	15 Summer	100	+40%	30/15 Summer			
1.007	S27	15 Winter	100	+40%	30/15 Summer			
2.000	S30	240 Winter	100	+40%				
2.001	S31	240 Winter	100	+40%	100/120 Winter			
2.002	S32	240 Winter	100	+40%				
2.003	S33	240 Winter	100	+40%				
2.004	S44	240 Winter	100	+40%				
2.005	S45	240 Winter	100	+40%				
1.008	S9	240 Winter	100	+40%				
1.009	S46	240 Winter	100	+40%				
1.010	S47	240 Winter	100	+40%				
3.000	S10	15 Winter	100	+40%	30/15 Summer			
3.001	S11	15 Winter	100	+40%	30/15 Summer			
3.002	S12	15 Winter	100	+40%	30/15 Summer			
1.011	S13	360 Winter	100	+40%				

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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	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S50	131.554	0.549	12.283	1.73		65.0	FLOOD
1.001	S38	131.784	0.967	0.000	1.01		67.6	FLOOD RISK
1.002	S5	131.741	1.102	0.000	1.18		77.2	FLOOD RISK
1.003	S6	131.532	1.022	0.131	1.42		90.2	FLOOD
1.004	S36	131.347	0.932	0.000	1.45		140.4	FLOOD RISK
1.005	S35	131.112	0.796	7.218	2.10		203.0	FLOOD
1.006	S7	130.801	0.562	0.000	2.36		219.5	FLOOD RISK
1.007	S27	130.469	0.290	0.000	2.82		219.7	FLOOD RISK
2.000	S30	130.419	-0.044	0.000	0.13		9.3	OK
2.001	S31	130.418	0.063	0.000	0.18		9.4	SURCHARGED
2.002	S32	130.417	-0.407	0.000	0.01		29.8	FLOOD RISK*
2.003	S33	130.417	-0.304	0.000	0.04		36.7	FLOOD RISK
2.004	S44	130.416	-0.285	0.000	0.02		36.4	FLOOD RISK
2.005	S45	130.415	-0.195	0.000	0.02		33.6	FLOOD RISK
1.008	S9	130.414	-0.157	0.000	0.03		93.4	FLOOD RISK*
1.009	S46	130.403	-0.100	0.000	0.05		89.0	FLOOD RISK
1.010	S47	130.381	-0.052	0.000	0.05		98.7	FLOOD RISK
3.000	S10	131.336	0.914	0.000	1.20		88.6	FLOOD RISK
3.001	S11	130.966	0.795	0.000	1.90		229.4	FLOOD RISK
3.002	S12	130.513	0.458	0.000	2.02		248.0	SURCHARGED
1.011	S13	130.344	0.000	0.000	0.04		98.7	FLOOD RISK*

PN	US/MH Name	Level Exceeded
1.000	S50	4
1.001	S38	
1.002	S5	
1.003	S6	2
1.004	S36	
1.005	S35	4
1.006	S7	
1.007	S27	
2.000	S30	
2.001	S31	
2.002	S32	
2.003	S33	
2.004	S44	
2.005	S45	
1.008	S9	
1.009	S46	
1.010	S47	
3.000	S10	
3.001	S11	
3.002	S12	

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	US/MH	Level									
PN	Name	Exceeded									
1.011	S13										
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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	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.012	S23	360 Winter	100	+40%				
1.013	S22	360 Winter	100	+40%				
1.014	S21	360 Winter	100	+40%				
4.000	S40	15 Winter	100	+40%	30/15 Summer			
4.001	S39	15 Winter	100	+40%	30/15 Summer			
5.000	S29	15 Winter	100	+40%	30/15 Summer			
4.002	S14	15 Winter	100	+40%	30/15 Summer			
4.003	S15	15 Winter	100	+40%	30/15 Summer			
1.015	S16	480 Winter	100	+40%				
1.016	S20	480 Winter	100	+40%	100/120 Winter			
6.000	S17	15 Winter	100	+40%	30/15 Summer			
6.001	S41	15 Winter	100	+40%	30/15 Summer			
6.002	S18	15 Winter	100	+40%	30/15 Winter			
1.017	S19	360 Winter	100	+40%	30/60 Winter			
1.018	S48	1440 Winter	100	+40%				

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.012	S23	130.279	0.000	0.000	0.06			99.2	FLOOD RISK
1.013	S22	130.229	0.000	0.000	0.07			96.1	FLOOD RISK
1.014	S21	130.176	-0.018	0.000	0.06			101.3	OK
4.000	S40	131.501	1.111	0.000	0.89			94.8	FLOOD RISK
4.001	S39	131.411	1.094	0.000	1.18			133.1	SURCHARGED
5.000	S29	131.359	1.007	0.000	0.77			34.4	SURCHARGED
4.002	S14	131.258	1.048	0.000	1.62			200.2	SURCHARGED
4.003	S15	130.158	0.316	0.000	2.31			243.6	SURCHARGED
1.015	S16	130.090	-0.104	0.000	0.13			103.3	OK
1.016	S20	130.072	0.072	0.000	0.06			23.9	SURCHARGED*
6.000	S17	131.260	0.862	0.000	1.38			48.5	SURCHARGED
6.001	S41	130.766	0.627	0.000	1.88			134.2	SURCHARGED
6.002	S18	130.162	0.107	0.000	1.50			175.0	SURCHARGED
1.017	S19	130.141	0.316	0.000	0.08			23.4	SURCHARGED
1.018	S48	129.322	-0.078	0.000	0.76			23.4	OK

PN	US/MH Name	Level Exceeded
1.012	S23	
1.013	S22	
1.014	S21	
4.000	S40	
4.001	S39	
5.000	S29	

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

US/MH Level		
PN	Name	Exceeded
4.002	S14	
4.003	S15	
1.015	S16	
1.016	S20	
6.000	S17	
6.001	S41	
6.002	S18	
1.017	S19	
1.018	S48	