STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for N1 SW 12.04.24.SWS

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	24.199	0.605	40.0	0.096	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	8.010	0.061	131.3	0.046	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	50.884	2.031	25.1	0.112	0.00	0.0	0.600	o	300	Pipe/Conduit	
2.002	30.216	0.759	39.8	0.101	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.001	60.562	2.137	28.3	0.183	0.00	0.0	0.600	o	375	Pipe/Conduit	
3.000	11.219	0.594	18.9	0.056	5.00	0.0	0.600	o	225	Pipe/Conduit	
3.001	15.745	0.693	22.7	0.017	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	8.742	0.410	21.3	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.003	13.362	0.908	14.7	0.147	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.004	13.362	0.850	15.7	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.005	41.972	3.254	12.9	0.044	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.006	29.833	1.441	20.7	0.208	0.00	0.0	0.600	o	450	Pipe/Conduit	
4.000	33.485	0.419	79.9	0.108	5.00	0.0	0.600	o	225	Pipe/Conduit	
4.001	33.636	1.958	17.2	0.148	0.00	0.0	0.600	o	300	Pipe/Conduit	
4.002	18.956	1.122	16.9	0.062	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	5.19	97.582	0.096	0.0	0.0	0.0	2.07	82.5	13.0
2.000	50.00	5.12	99.828	0.046	0.0	0.0	0.0	1.14	45.3	6.2
2.001	50.00	5.39	99.692	0.158	0.0	0.0	0.0	3.15	222.9	21.4
2.002	50.00	5.59	97.661	0.259	0.0	0.0	0.0	2.50	176.7	35.1
1.001	50.00	5.88	96.827	0.538	0.0	0.0	0.0	3.41	377.2	72.9
3.000	50.00	5.06	96.127	0.056	0.0	0.0	0.0	3.03	120.3	7.6
3.001	50.00	5.16	95.533	0.073	0.0	0.0	0.0	2.76	109.6	9.9
1.002	50.00	5.92	94.690	0.611	0.0	0.0	0.0	3.94	435.1	82.7
1.003	50.00	5.97	94.280	0.758	0.0	0.0	0.0	4.74	524.0	102.6
1.004	50.00	6.02	93.372	0.758	0.0	0.0	0.0	4.59	506.9	102.6
1.005	50.00	6.15	92.522	0.802	0.0	0.0	0.0	5.07	559.8	108.6
1.006	50.00	6.26	89.193	1.010	0.0	0.0	0.0	4.48	713.1	136.8
4.000	50.00	5.38	91.758	0.108	0.0	0.0	0.0	1.46	58.2	14.6
4.001	50.00	5.53	91.264	0.256	0.0	0.0	0.0	3.81	269.4	34.7
4.002	50.00	5.61	89.306	0.318	0.0	0.0	0.0	3.84	271.7	43.1

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for N1 SW 12.04.24.SWS

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
5.000	43.558	0.527	82.7	0.181	5.00	0.0	0.600	o	300	Pipe/Conduit	
4.003	44.801	0.546	82.1	0.064	0.00	0.0	0.600	o	525	Pipe/Conduit	
4.004	17.264	0.089	194.0	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.007	18.892	0.420	45.0	0.017	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.008	92.761	2.061	45.0	0.118	0.00	0.0	0.600	o	600	Pipe/Conduit	
6.000	4.697	0.100	47.0	0.280	5.00	0.0	0.600	o	300	Pipe/Conduit	
1.009	45.498	0.942	48.3	0.298	0.00	0.0	0.600	o	600	Pipe/Conduit	
7.000	70.861	1.598	44.3	0.319	5.00	0.0	0.600	o	375	Pipe/Conduit	
8.000	28.666	0.358	80.1	0.067	5.00	0.0	0.600	o	375	Pipe/Conduit	
7.001	75.252	3.272	23.0	0.270	0.00	0.0	0.600	o	375	Pipe/Conduit	
7.002	34.098	0.136	250.0	0.208	0.00	0.0	0.600	o	600	Pipe/Conduit	
7.003	83.636	0.335	250.0	0.043	0.00	0.0	0.600	o	600	Pipe/Conduit	
7.004	13.067	0.469	27.9	0.000	0.00	0.0	0.600	o	600	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)
5.000	50.00	5.42	87.650	0.181	0.0	0.0	0.0	1.73	122.3	24.5
4.003	50.00	5.91	86.898	0.563	0.0	0.0	0.0	2.47	535.6	76.2
4.004	50.00	6.09	86.352	0.563	0.0	0.0	0.0	1.60	347.4	76.2
1.007	50.00	6.36	86.263	1.590	0.0	0.0	0.0	3.35	724.4	215.3
1.008	50.00	6.78	85.768	1.708	0.0	0.0	0.0	3.64	1028.2	231.3
6.000	50.00	5.03	85.900	0.280	0.0	0.0	0.0	2.30	162.6	37.9
1.009	50.00	7.00	83.707	2.286	0.0	0.0	0.0	3.51	992.4	309.6
7.000	50.00	5.43	88.800	0.319	0.0	0.0	0.0	2.73	301.2	43.2
8.000	50.00	5.24	87.560	0.067	0.0	0.0	0.0	2.03	223.8	9.1
7.001	50.00	5.76	87.202	0.656	0.0	0.0	0.0	3.79	418.8	88.8
7.002	50.00	6.13	83.705	0.864	0.0	0.0	0.0	1.54	434.2	117.0
7.003	50.00	7.04	83.569	0.907	0.0	0.0	0.0	1.54	434.2	122.8
7.004	50.00	7.09	83.234	0.907	0.0	0.0	0.0	4.63	1307.8	122.8

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for N1 SW 12.04.24.SWS

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
1.010	20.378	0.045	450.0	0.024	0.00	0.0	0.600	o	900	Pipe/Conduit	
1.011	13.810	0.031	450.0	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
1.012	65.389	0.131	500.0	0.000	0.00	0.0	0.600	o	900	Pipe/Conduit	
1.013	14.173	0.085	166.7	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)
1.010	50.00	7.32	82.465	3.217	0.0	0.0	0.0	1.47	935.5	435.6
1.011	50.00	7.48	82.420	3.217	0.0	0.0	0.0	1.47	935.5	435.6
1.012	49.17	8.26	82.389	3.217	0.0	0.0	0.0	1.39	887.1	435.6
1.013	50.00	5.23	82.158	0.000	21.0	0.0	0.0	1.01	40.1	21.0

Simulation Criteria for N1 SW 12.04.24.SWS

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	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)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.340		

Online Controls for N1 SW 12.04.24.SWS

Hydro-Brake® Optimum Manhole: 14, DS/PN: 1.013, Volume (m³): 49.9

Unit Reference	MD-SHE-0176-1750-1750-1750
Design Head (m)	1.750
Design Flow (l/s)	17.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	176
Invert Level (m)	82.158
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.750	17.5
Flush-Flo™	0.504	17.5
Kick-Flo®	1.087	14.0
Mean Flow over Head Range	-	15.2

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	6.2	1.200	14.6	3.000	22.6	7.000	34.0
0.200	15.2	1.400	15.7	3.500	24.4	7.500	35.2
0.300	16.7	1.600	16.8	4.000	26.0	8.000	36.3
0.400	17.3	1.800	17.7	4.500	27.5	8.500	37.4
0.500	17.5	2.000	18.6	5.000	28.9	9.000	38.4
0.600	17.4	2.200	19.5	5.500	30.3	9.500	39.4
0.800	16.8	2.400	20.3	6.000	31.6		
1.000	15.3	2.600	21.1	6.500	32.8		

Storage Structures for N1 SW 12.04.24.SWS

Tank or Pond Manhole: 14, DS/PN: 1.013

Invert Level (m) 82.258

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1257.0	1.650	2357.0	2.090	2676.0

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for N1 SW 12.04.24.SWS

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 0.338
Region	England and Wales	Cv (Summer)	1.000
M5-60 (mm)	19.000	Cv (Winter)	1.000

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

Profile(s)	Summer and Winter
Duration(s) (mins)	30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	30 Summer	1	+0%	100/30 Summer			
2.000	17	30 Summer	1	+0%				
2.001	18	30 Summer	1	+0%				
2.002	19	30 Summer	1	+0%	100/30 Summer			
1.001	2	30 Summer	1	+0%	100/30 Summer			
3.000	20	30 Summer	1	+0%	100/30 Summer			
3.001	21	30 Summer	1	+0%	100/30 Summer			
1.002	3	30 Summer	1	+0%	100/30 Summer			
1.003	4	30 Summer	1	+0%	100/30 Summer			
1.004	5	30 Summer	1	+0%	100/30 Summer			
1.005	6	30 Summer	1	+0%	100/30 Summer			
1.006	7	30 Summer	1	+0%	100/30 Summer			
4.000	22	30 Summer	1	+0%	100/30 Summer			
4.001	23	30 Summer	1	+0%				
4.002	24	30 Summer	1	+0%	100/30 Summer			
5.000	27	30 Summer	1	+0%	100/30 Summer			
4.003	25	30 Summer	1	+0%	100/30 Summer			
4.004	26	30 Summer	1	+0%	30/30 Summer	100/30 Summer		
1.007	8	30 Summer	1	+0%	30/30 Summer			
1.008	9	30 Summer	1	+0%	100/30 Summer			

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for N1 SW 12.04.24.SWS

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	1	97.647	-0.160	0.000	0.19			14.1	OK	
2.000	17	99.895	-0.158	0.000	0.19			6.8	OK	
2.001	18	99.755	-0.237	0.000	0.10			21.1	OK	
2.002	19	97.754	-0.207	0.000	0.21			34.0	OK	
1.001	2	96.941	-0.261	0.000	0.20			71.3	OK	
3.000	20	96.169	-0.183	0.000	0.08			8.2	OK	
3.001	21	95.582	-0.176	0.000	0.11			10.4	OK	
1.002	3	94.837	-0.228	0.000	0.32			81.4	OK	
1.003	4	94.412	-0.243	0.000	0.27			99.8	OK	
1.004	5	93.507	-0.240	0.000	0.28			99.8	OK	
1.005	6	92.638	-0.259	0.000	0.21			105.5	OK	
1.006	7	89.334	-0.309	0.000	0.21			131.2	OK	
4.000	22	91.840	-0.143	0.000	0.29			15.8	OK	
4.001	23	91.339	-0.225	0.000	0.14			34.8	OK	
4.002	24	89.392	-0.214	0.000	0.18			42.7	OK	
5.000	27	87.748	-0.202	0.000	0.23			26.6	OK	
4.003	25	87.040	-0.383	0.000	0.16			76.8	OK	
4.004	26	86.556	-0.321	0.000	0.31			77.0	OK	1
1.007	8	86.502	-0.286	0.000	0.42			210.9	OK	
1.008	9	85.965	-0.403	0.000	0.23			222.8	OK	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for N1 SW 12.04.24.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
6.000	28	30 Summer	1	+0%	30/30 Summer			
1.009	10	30 Summer	1	+0%	30/30 Summer			
7.000	29	30 Summer	1	+0%	100/30 Summer			
8.000	34	30 Summer	1	+0%	100/30 Summer			
7.001	30	30 Summer	1	+0%	100/30 Summer			
7.002	31	30 Summer	1	+0%	100/30 Summer			
7.003	32	30 Summer	1	+0%	100/30 Summer	100/30 Summer		
7.004	33	30 Summer	1	+0%	100/30 Summer			
1.010	11	30 Summer	1	+0%	30/30 Summer			
1.011	12	30 Summer	1	+0%	30/30 Summer			
1.012	13	30 Summer	1	+0%	30/30 Summer			
1.013	14	480 Summer	1	+0%	1/30 Summer			

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
6.000	28	86.053	-0.147	0.000	0.52			41.1	OK
1.009	10	83.951	-0.356	0.000	0.35			296.8	OK
7.000	29	88.901	-0.274	0.000	0.16			46.6	OK
8.000	34	87.614	-0.321	0.000	0.05			9.8	OK
7.001	30	87.323	-0.254	0.000	0.23			90.6	OK
7.002	31	83.940	-0.365	0.000	0.32			116.1	OK
7.003	32	83.794	-0.375	0.000	0.29			117.8	OK
7.004	33	83.400	-0.434	0.000	0.17			117.5	OK
1.010	11	83.112	-0.253	0.000	0.69			408.8	OK
1.011	12	83.070	-0.249	0.000	0.89			404.1	OK
1.012	13	82.860	-0.429	0.000	0.53			400.7	OK
1.013	14	82.584	0.201	0.000	0.50			17.4	SURCHARGED

PN	US/MH Name	Level Exceeded
6.000	28	
1.009	10	
7.000	29	
8.000	34	
7.001	30	
7.002	31	
7.003	32	1
7.004	33	
1.010	11	
1.011	12	
1.012	13	
1.013	14	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for N1 SW 12.04.24.SWS

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 0.338
Region	England and Wales	Cv (Summer)	1.000
M5-60 (mm)	19.000	Cv (Winter)	1.000

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

Profile(s)	Summer and Winter
Duration(s) (mins)	30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	30 Summer	30	+0%	100/30 Summer			
2.000	17	30 Summer	30	+0%				
2.001	18	30 Summer	30	+0%				
2.002	19	30 Summer	30	+0%	100/30 Summer			
1.001	2	30 Summer	30	+0%	100/30 Summer			
3.000	20	30 Summer	30	+0%	100/30 Summer			
3.001	21	30 Summer	30	+0%	100/30 Summer			
1.002	3	30 Summer	30	+0%	100/30 Summer			
1.003	4	30 Summer	30	+0%	100/30 Summer			
1.004	5	30 Summer	30	+0%	100/30 Summer			
1.005	6	30 Summer	30	+0%	100/30 Summer			
1.006	7	30 Summer	30	+0%	100/30 Summer			
4.000	22	30 Summer	30	+0%	100/30 Summer			
4.001	23	30 Summer	30	+0%				
4.002	24	30 Summer	30	+0%	100/30 Summer			
5.000	27	30 Summer	30	+0%	100/30 Summer			
4.003	25	30 Summer	30	+0%	100/30 Summer			
4.004	26	30 Summer	30	+0%	30/30 Summer	100/30 Summer		
1.007	8	30 Summer	30	+0%	30/30 Summer			
1.008	9	30 Summer	30	+0%	100/30 Summer			

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for N1 SW 12.04.24.SWS

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
1.000	1	97.688	-0.119	0.000	0.46			34.6	OK
2.000	17	99.937	-0.116	0.000	0.48			16.6	OK
2.001	18	99.801	-0.191	0.000	0.28			59.1	OK
2.002	19	97.832	-0.129	0.000	0.61			97.3	OK
1.001	2	97.033	-0.169	0.000	0.57			200.5	OK
3.000	20	96.195	-0.157	0.000	0.20			20.2	OK
3.001	21	95.613	-0.145	0.000	0.27			26.5	OK
1.002	3	94.973	-0.092	0.000	0.91			228.5	OK
1.003	4	94.529	-0.126	0.000	0.76			283.8	OK
1.004	5	93.625	-0.122	0.000	0.79			284.1	OK
1.005	6	92.729	-0.168	0.000	0.59			299.9	OK
1.006	7	89.449	-0.194	0.000	0.61			375.9	OK
4.000	22	91.899	-0.084	0.000	0.71			38.8	OK
4.001	23	91.394	-0.170	0.000	0.38			93.8	OK
4.002	24	89.458	-0.148	0.000	0.50			117.2	OK
5.000	27	87.813	-0.137	0.000	0.57			65.3	OK
4.003	25	87.143	-0.280	0.000	0.44			206.8	OK
4.004	26	86.954	0.077	0.000	0.83			207.1	SURCHARGED
1.007	8	86.904	0.116	0.000	1.14			568.6	SURCHARGED
1.008	9	86.118	-0.250	0.000	0.63			600.8	OK

PN	US/MH Name	Level Exceeded
1.000	1	
2.000	17	
2.001	18	
2.002	19	
1.001	2	
3.000	20	
3.001	21	
1.002	3	
1.003	4	
1.004	5	
1.005	6	
1.006	7	
4.000	22	
4.001	23	
4.002	24	
5.000	27	
4.003	25	
4.004	26	1
1.007	8	
1.008	9	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for N1 SW 12.04.24.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
6.000	28	30 Summer	30	+0%	30/30 Summer			
1.009	10	30 Summer	30	+0%	30/30 Summer			
7.000	29	30 Summer	30	+0%	100/30 Summer			
8.000	34	30 Summer	30	+0%	100/30 Summer			
7.001	30	30 Summer	30	+0%	100/30 Summer			
7.002	31	30 Summer	30	+0%	100/30 Summer			
7.003	32	30 Summer	30	+0%	100/30 Summer	100/30 Summer		
7.004	33	30 Summer	30	+0%	100/30 Summer			
1.010	11	30 Summer	30	+0%	30/30 Summer			
1.011	12	30 Summer	30	+0%	30/30 Summer			
1.012	13	30 Summer	30	+0%	30/30 Summer			
1.013	14	600 Winter	30	+0%	1/30 Summer			

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
6.000	28	86.247	0.047	0.000	1.27			101.0	SURCHARGED
1.009	10	84.399	0.092	0.000	0.88			759.1	SURCHARGED
7.000	29	88.965	-0.210	0.000	0.40			114.6	OK
8.000	34	87.647	-0.288	0.000	0.12			24.2	OK
7.001	30	87.414	-0.163	0.000	0.60			239.1	OK
7.002	31	84.144	-0.161	0.000	0.87			314.3	OK
7.003	32	83.986	-0.183	0.000	0.79			314.4	OK
7.004	33	83.768	-0.066	0.000	0.48			327.2	OK
1.010	11	83.722	0.357	0.000	1.65			985.1	SURCHARGED
1.011	12	83.527	0.207	0.000	2.17			986.5	SURCHARGED
1.012	13	83.335	0.046	0.000	1.29			973.8	SURCHARGED
1.013	14	83.083	0.700	0.000	0.50			17.4	SURCHARGED

PN	US/MH Name	Level Exceeded
6.000	28	
1.009	10	
7.000	29	
8.000	34	
7.001	30	
7.002	31	
7.003	32	1
7.004	33	
1.010	11	
1.011	12	
1.012	13	
1.013	14	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for N1 SW 12.04.24.SWS

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 0.338
Region	England and Wales	Cv (Summer)	1.000
M5-60 (mm)	19.000	Cv (Winter)	1.000

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

Profile(s)	Summer and Winter
Duration(s) (mins)	30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	30 Summer	100	+45%	100/30 Summer			
2.000	17	30 Summer	100	+45%				
2.001	18	30 Summer	100	+45%				
2.002	19	30 Summer	100	+45%	100/30 Summer			
1.001	2	30 Summer	100	+45%	100/30 Summer			
3.000	20	30 Summer	100	+45%	100/30 Summer			
3.001	21	30 Summer	100	+45%	100/30 Summer			
1.002	3	30 Summer	100	+45%	100/30 Summer			
1.003	4	30 Summer	100	+45%	100/30 Summer			
1.004	5	30 Summer	100	+45%	100/30 Summer			
1.005	6	30 Summer	100	+45%	100/30 Summer			
1.006	7	30 Summer	100	+45%	100/30 Summer			
4.000	22	30 Summer	100	+45%	100/30 Summer			
4.001	23	30 Summer	100	+45%				
4.002	24	30 Summer	100	+45%	100/30 Summer			
5.000	27	30 Summer	100	+45%	100/30 Summer			
4.003	25	30 Summer	100	+45%	100/30 Summer			
4.004	26	30 Summer	100	+45%	30/30 Summer	100/30 Summer		
1.007	8	30 Summer	100	+45%	30/30 Summer			
1.008	9	30 Summer	100	+45%	100/30 Summer			

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for N1 SW 12.04.24.SWS

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
1.000	1	98.495	0.688	0.000	0.80			60.6	SURCHARGED
2.000	17	99.995	-0.058	0.000	0.90			31.4	OK
2.001	18	99.850	-0.142	0.000	0.53			112.0	OK
2.002	19	98.924	0.963	0.000	1.01			162.6	SURCHARGED
1.001	2	98.154	0.952	0.000	0.92			326.7	FLOOD RISK
3.000	20	96.537	0.185	0.000	0.37			37.6	SURCHARGED
3.001	21	96.479	0.721	0.000	0.45			43.3	SURCHARGED
1.002	3	96.367	1.302	0.000	1.43			358.0	FLOOD RISK
1.003	4	95.556	0.901	0.000	1.18			438.5	SURCHARGED
1.004	5	94.338	0.591	0.000	1.20			431.3	SURCHARGED
1.005	6	93.160	0.263	0.000	0.89			455.6	SURCHARGED
1.006	7	90.750	1.107	0.000	0.94			573.9	SURCHARGED
4.000	22	92.308	0.325	0.000	1.31			71.9	SURCHARGED
4.001	23	91.455	-0.109	0.000	0.71			175.5	OK
4.002	24	90.595	0.989	0.000	0.91			213.0	SURCHARGED
5.000	27	90.391	2.441	0.000	0.90			103.4	FLOOD RISK
4.003	25	89.897	2.474	0.000	0.66			310.6	FLOOD RISK
4.004	26	89.643	2.766	3.067	1.31			324.5	FLOOD
1.007	8	89.566	2.778	0.000	1.72			856.8	FLOOD RISK
1.008	9	88.463	2.095	0.000	0.94			891.3	SURCHARGED

PN	US/MH Name	Level Exceeded
1.000	1	
2.000	17	
2.001	18	
2.002	19	
1.001	2	
3.000	20	
3.001	21	
1.002	3	
1.003	4	
1.004	5	
1.005	6	
1.006	7	
4.000	22	
4.001	23	
4.002	24	
5.000	27	
4.003	25	
4.004	26	1
1.007	8	
1.008	9	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for N1 SW 12.04.24.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
6.000	28	30 Summer	100	+45%	30/30 Summer			
1.009	10	30 Summer	100	+45%	30/30 Summer			
7.000	29	30 Summer	100	+45%	100/30 Summer			
8.000	34	30 Summer	100	+45%	100/30 Summer			
7.001	30	30 Summer	100	+45%	100/30 Summer			
7.002	31	30 Summer	100	+45%	100/30 Summer			
7.003	32	30 Summer	100	+45%	100/30 Summer	100/30 Summer		
7.004	33	30 Summer	100	+45%	100/30 Summer			
1.010	11	30 Summer	100	+45%	30/30 Summer			
1.011	12	30 Summer	100	+45%	30/30 Summer			
1.012	13	960 Winter	100	+45%	30/30 Summer			
1.013	14	960 Winter	100	+45%	1/30 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
6.000	28	87.141	0.941	0.000	2.34			185.5	SURCHARGED
1.009	10	86.707	2.400	0.000	1.39			1191.8	SURCHARGED
7.000	29	89.413	0.238	0.000	0.75			212.1	SURCHARGED
8.000	34	88.708	0.773	0.000	0.22			42.7	SURCHARGED
7.001	30	88.682	1.105	0.000	0.95			379.1	SURCHARGED
7.002	31	85.820	1.515	0.000	1.37			494.2	SURCHARGED
7.003	32	85.571	1.402	0.732	1.22			487.1	FLOOD
7.004	33	85.091	1.256	0.000	0.71			486.3	FLOOD RISK
1.010	11	84.855	1.490	0.000	2.81			1674.1	SURCHARGED
1.011	12	84.295	0.975	0.000	3.68			1670.8	SURCHARGED
1.012	13	83.848	0.559	0.000	0.21			161.2	SURCHARGED
1.013	14	83.845	1.462	0.000	0.50			17.4	SURCHARGED

PN	US/MH Name	Level Exceeded
6.000	28	
1.009	10	
7.000	29	
8.000	34	
7.001	30	
7.002	31	
7.003	32	1
7.004	33	
1.010	11	
1.011	12	
1.012	13	
1.013	14	