STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 30571 SW NET 1 240205.SWS

Pipe Sizes 30571 SW NET 1 240205 Manhole Sizes 30571 SW NET 1 240205

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.359	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	0	Maximum Backdrop Height (m)	0.000
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)	0.75
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for 30571 SW NET 1 240205.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	26.862	0.067	400.9	0.129	5.00	0.0	0.600	o	1050	Pipe/Conduit	
1.001	37.125	0.093	399.2	0.089	0.00	0.0	0.600	o	1050	Pipe/Conduit	
2.000	45.197	0.113	400.0	0.198	5.00	0.0	0.600	o	1050	Pipe/Conduit	
1.002	49.895	0.125	399.2	0.111	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.003	59.472	0.149	399.1	0.098	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.004	91.009	0.228	399.2	0.123	0.00	0.0	0.600	o	1050	Pipe/Conduit	
3.000	28.429	0.072	394.8	0.161	5.00	0.0	0.600	o	1050	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	0.00	5.26	61.495	0.129	0.0	0.0	0.0	1.71	1484.9	0.0
1.001	0.00	5.62	61.428	0.218	0.0	0.0	0.0	1.72	1488.1	0.0
2.000	0.00	5.44	61.448	0.198	0.0	0.0	0.0	1.72	1486.7	0.0
1.002	0.00	6.10	61.335	0.527	0.0	0.0	0.0	1.72	1488.2	0.0
1.003	0.00	6.68	61.210	0.625	0.0	0.0	0.0	1.72	1488.2	0.0
1.004	0.00	7.56	61.061	0.748	0.0	0.0	0.0	1.72	1488.2	0.0
3.000	0.00	5.27	60.905	0.161	0.0	0.0	0.0	1.73	1496.4	0.0

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Network Design Table for 30571 SW NET 1 240205.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
1.005	84.263	0.211	399.4	0.129	0.00	0.0	0.600	o	1050	Pipe/Conduit	
4.000	51.187	0.128	399.9	0.230	5.00	0.0	0.600	o	1050	Pipe/Conduit	
5.000	32.738	0.082	399.2	0.102	5.00	0.0	0.600	o	1050	Pipe/Conduit	
4.001	62.960	0.157	401.0	0.095	0.00	0.0	0.600	o	1050	Pipe/Conduit	
4.002	22.445	0.056	400.8	0.160	0.00	0.0	0.600	o	1050	Pipe/Conduit	
4.003	60.754	0.152	399.7	0.102	0.00	10.0	0.600	o	1050	Pipe/Conduit	
4.004	49.885	0.125	399.1	0.156	0.00	0.0	0.600	o	1050	Pipe/Conduit	
6.000	31.593	0.079	399.9	0.111	5.00	0.0	0.600	o	1050	Pipe/Conduit	
6.001	27.712	0.069	401.6	0.040	0.00	0.0	0.600	o	1050	Pipe/Conduit	
7.000	26.240	0.066	397.6	0.137	5.00	0.0	0.600	o	1050	Pipe/Conduit	
6.002	58.701	0.147	399.3	0.071	0.00	0.0	0.600	o	1050	Pipe/Conduit	
8.000	30.128	0.075	401.7	0.094	5.00	0.0	0.600	o	1050	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)
1.005	0.00	8.38	60.833	1.038	0.0	0.0	0.0	1.72	1487.8	0.0
4.000	0.00	5.50	61.394	0.230	0.0	0.0	0.0	1.72	1486.8	0.0
5.000	0.00	5.32	61.348	0.102	0.0	0.0	0.0	1.72	1488.0	0.0
4.001	0.00	6.11	61.266	0.427	0.0	0.0	0.0	1.71	1484.7	0.0
4.002	0.00	6.33	61.109	0.587	0.0	0.0	0.0	1.72	1485.1	0.0
4.003	0.00	6.92	61.053	0.689	10.0	0.0	0.0	1.72	1487.2	10.0
4.004	0.00	7.40	60.901	0.845	10.0	0.0	0.0	1.72	1488.3	10.0
6.000	0.00	5.31	61.222	0.111	0.0	0.0	0.0	1.72	1486.8	0.0
6.001	0.00	5.58	61.143	0.151	0.0	0.0	0.0	1.71	1483.6	0.0
7.000	0.00	5.25	61.140	0.137	0.0	0.0	0.0	1.72	1491.2	0.0
6.002	0.00	6.15	61.074	0.359	0.0	0.0	0.0	1.72	1487.9	0.0
8.000	0.00	5.29	61.105	0.094	0.0	0.0	0.0	1.71	1483.4	0.0

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Network Design Table for 30571 SW NET 1 240205.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
8.001	41.308	0.103	401.0	0.095	0.00	0.0	0.600	o	1050	Pipe/Conduit	
6.003	60.327	0.151	399.5	0.174	0.00	0.0	0.600	o	1050	Pipe/Conduit	
4.005	61.306	0.154	398.1	0.160	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.006	36.752	0.092	399.5	0.073	0.00	0.0	0.600	o	1050	Pipe/Conduit	
1.007	55.692	0.186	299.4	0.059	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.008	61.776	0.206	299.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.009	11.526	0.038	300.0	0.000	0.00	0.0	0.600	o	375	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)
8.001	0.00	5.69	61.030	0.189	0.0	0.0	0.0	1.71	1484.7	0.0
6.003	0.00	6.73	60.927	0.722	0.0	0.0	0.0	1.72	1487.5	0.0
4.005	0.00	7.99	60.776	1.727	10.0	0.0	0.0	1.72	1490.2	10.0
1.006	0.00	8.74	60.622	2.838	10.0	0.0	0.0	1.72	1487.6	10.0
1.007	0.00	9.63	60.530	2.897	10.0	0.0	0.0	1.04	115.1	10.0
1.008	0.00	10.62	60.344	2.897	10.0	0.0	0.0	1.04	115.0	10.0
1.009	0.00	10.80	60.138	2.897	10.0	0.0	0.0	1.04	115.0	10.0

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Online Controls for 30571 SW NET 1 240205.SWS

Complex Manhole: 4, DS/PN: 1.007, Volume (m³): 40.8

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0242-3100-0870-3100
Design Head (m)	0.870
Design Flow (l/s)	31.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	242
Invert Level (m)	60.530
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.870	31.0	Kick-Flo®	0.675	27.5
Flush-Flo™	0.373	31.0	Mean Flow over Head Range	-	25.1

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	7.9	1.200	36.2	3.000	56.3	7.000	84.9
0.200	24.5	1.400	38.9	3.500	60.6	7.500	87.9
0.300	30.7	1.600	41.5	4.000	64.7	8.000	90.7
0.400	31.0	1.800	44.0	4.500	68.5	8.500	93.4
0.500	30.4	2.000	46.3	5.000	72.1	9.000	95.4
0.600	29.3	2.200	48.4	5.500	75.5	9.500	98.1
0.800	29.8	2.400	50.5	6.000	78.8		
1.000	33.1	2.600	52.5	6.500	81.9		

Hydro-Brake® Optimum

Unit Reference	MD-SCU-0148-3200-2215-3200
Design Head (m)	2.215
Design Flow (l/s)	32.0
Flush-Flo™	Calculated
Objective	Linear discharge profile
Application	Surface
Sump Available	Yes

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Hydro-Brake® Optimum

Diameter (mm)	148
Invert Level (m)	61.450
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.215	32.0	Kick-Flo®	0.220	10.7
Flush-Flo™	0.174	11.0	Mean Flow over Head Range	-	21.6

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	5.9	1.200	23.8	3.000	37.0	7.000	55.9
0.200	10.9	1.400	25.7	3.500	39.9	7.500	57.8
0.300	12.4	1.600	27.4	4.000	42.6	8.000	59.6
0.400	14.1	1.800	29.0	4.500	45.1	8.500	61.4
0.500	15.7	2.000	30.5	5.000	47.4	9.000	63.1
0.600	17.1	2.200	31.9	5.500	49.7	9.500	64.8
0.800	19.6	2.400	33.3	6.000	51.8		
1.000	21.8	2.600	34.6	6.500	53.9		

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Storage Structures for 30571 SW NET 1 240205.SWS

Cellular Storage Manhole: 7, DS/PN: 1.004

Invert Level (m) 61.500 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	245.0	0.0	0.801	0.0	0.0
0.800	245.0	0.0			

Cellular Storage Manhole: 19, DS/PN: 4.000

Invert Level (m) 61.650 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	114.0	0.0	0.801	0.0	0.0
0.800	114.0	0.0			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
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, 2160, 2880
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	11	15 Winter	1	+0%	100/180 Winter				61.596
1.001	10	15 Winter	1	+0%	100/180 Winter				61.548
2.000	12	15 Winter	1	+0%	100/180 Winter				61.564
1.002	9	15 Winter	1	+0%	100/120 Winter				61.491
1.003	8	15 Winter	1	+0%	100/120 Winter				61.371
1.004	7	120 Winter	1	+0%	100/60 Winter				61.301
3.000	13	120 Winter	1	+0%	100/60 Summer				61.301
1.005	6	120 Winter	1	+0%	30/120 Winter				61.301
4.000	19	15 Winter	1	+0%	100/180 Winter				61.512
5.000	20	15 Winter	1	+0%	100/120 Winter				61.444
4.001	18	15 Winter	1	+0%	100/120 Winter				61.411
4.002	17	120 Winter	1	+0%	100/120 Summer				61.329
4.003	16	120 Winter	1	+0%	100/60 Winter				61.329
4.004	15	120 Winter	1	+0%	100/60 Summer				61.323

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	11	-0.949	0.000	0.01		15.0	OK	
1.001	10	-0.930	0.000	0.02		23.0	OK	
2.000	12	-0.934	0.000	0.02		23.1	OK	
1.002	9	-0.894	0.000	0.05		53.2	OK	
1.003	8	-0.889	0.000	0.05		59.6	OK	
1.004	7	-0.810	0.000	0.02		28.9	OK	
3.000	13	-0.654	0.000	0.01		5.5	OK	
1.005	6	-0.582	0.000	0.02		21.9	OK	
4.000	19	-0.932	0.000	0.02		26.9	OK	
5.000	20	-0.954	0.000	0.01		11.6	OK	
4.001	18	-0.905	0.000	0.04		44.1	OK	
4.002	17	-0.830	0.000	0.02		23.1	OK	
4.003	16	-0.774	0.000	0.03		36.4	OK	
4.004	15	-0.628	0.000	0.03		35.9	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
6.000	24	120 Winter	1	+0%	100/120 Winter				61.317
6.001	23	120 Winter	1	+0%	100/120 Winter				61.317
7.000	25	120 Winter	1	+0%	100/120 Winter				61.317
6.002	22	120 Winter	1	+0%	100/60 Winter				61.317
8.000	27	120 Winter	1	+0%	100/120 Summer				61.316
8.001	26	120 Winter	1	+0%	100/60 Winter				61.316
6.003	21	120 Winter	1	+0%	100/60 Summer				61.317
4.005	14	120 Winter	1	+0%	30/120 Summer				61.316
1.006	5	120 Winter	1	+0%	30/60 Summer				61.299
1.007	4	120 Winter	1	+0%	1/15 Summer				61.272
1.008	3	960 Winter	1	+0%					60.480
1.009	2	960 Winter	1	+0%					60.292

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	24	-0.955	0.000	0.00		4.6	OK	
6.001	23	-0.876	0.000	0.01		6.0	OK	
7.000	25	-0.873	0.000	0.01		5.5	OK	
6.002	22	-0.807	0.000	0.01		13.7	OK	
8.000	27	-0.839	0.000	0.00		3.6	OK	
8.001	26	-0.764	0.000	0.01		6.6	OK	
6.003	21	-0.660	0.000	0.02		20.4	OK	
4.005	14	-0.510	0.000	0.04		44.5	OK	
1.006	5	-0.373	0.000	0.03		37.5	OK	
1.007	4	0.367	0.000	0.29		30.9	SURCHARGED	
1.008	3	-0.239	0.000	0.29		31.0	OK	
1.009	2	-0.221	0.000	0.35		31.0	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
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, 2160, 2880
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	11	240 Winter	30	+40%	100/180 Winter				61.945
1.001	10	240 Winter	30	+40%	100/180 Winter				61.945
2.000	12	240 Winter	30	+40%	100/180 Winter				61.945
1.002	9	240 Winter	30	+40%	100/120 Winter				61.945
1.003	8	240 Winter	30	+40%	100/120 Winter				61.943
1.004	7	240 Winter	30	+40%	100/60 Winter				61.938
3.000	13	240 Winter	30	+40%	100/60 Summer				61.933
1.005	6	240 Winter	30	+40%	30/120 Winter				61.930
4.000	19	240 Winter	30	+40%	100/180 Winter				62.034
5.000	20	240 Winter	30	+40%	100/120 Winter				62.033
4.001	18	240 Winter	30	+40%	100/120 Winter				62.033
4.002	17	240 Winter	30	+40%	100/120 Summer				62.029
4.003	16	240 Winter	30	+40%	100/60 Winter				62.020
4.004	15	360 Winter	30	+40%	100/60 Summer				61.951

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	11	-0.600	0.000	0.01		10.3	OK	
1.001	10	-0.533	0.000	0.01		16.2	OK	
2.000	12	-0.553	0.000	0.01		16.1	OK	
1.002	9	-0.440	0.000	0.03		35.3	OK	
1.003	8	-0.317	0.000	0.03		37.7	OK	
1.004	7	-0.173	0.000	0.02		29.6	OK	
3.000	13	-0.022	0.000	0.01		12.9	OK	
1.005	6	0.047	0.000	0.02		25.8	SURCHARGED	
4.000	19	-0.410	0.000	0.01		17.3	OK	
5.000	20	-0.365	0.000	0.01		7.9	OK	
4.001	18	-0.283	0.000	0.02		20.5	OK	
4.002	17	-0.130	0.000	0.02		20.6	OK	
4.003	16	-0.083	0.000	0.03		32.3	OK	
4.004	15	0.000	0.000	0.02		26.8	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
6.000	24	240 Winter	30	+40%	100/120 Winter				61.986
6.001	23	240 Winter	30	+40%	100/120 Winter				61.985
7.000	25	240 Winter	30	+40%	100/120 Winter				61.985
6.002	22	240 Winter	30	+40%	100/60 Winter				61.985
8.000	27	240 Winter	30	+40%	100/120 Summer				61.980
8.001	26	240 Winter	30	+40%	100/60 Winter				61.980
6.003	21	240 Winter	30	+40%	100/60 Summer				61.977
4.005	14	240 Winter	30	+40%	30/120 Summer				61.932
1.006	5	240 Winter	30	+40%	30/60 Summer				61.930
1.007	4	240 Winter	30	+40%	1/15 Summer				61.927
1.008	3	240 Winter	30	+40%					60.532
1.009	2	240 Winter	30	+40%					60.352

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	24	-0.286	0.000	0.01		8.4	OK	
6.001	23	-0.208	0.000	0.01		5.6	OK	
7.000	25	-0.205	0.000	0.01		10.5	OK	
6.002	22	-0.139	0.000	0.01		13.0	OK	
8.000	27	-0.175	0.000	0.01		6.9	OK	
8.001	26	-0.100	0.000	0.01		8.3	OK	
6.003	21	0.000	0.000	0.02		25.8	OK	
4.005	14	0.106	0.000	0.05		58.2	SURCHARGED	
1.006	5	0.258	0.000	0.05		53.8	SURCHARGED	
1.007	4	1.022	0.000	0.50		54.1	SURCHARGED	
1.008	3	-0.187	0.000	0.50		54.1	OK	
1.009	2	-0.161	0.000	0.62		54.1	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	150.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
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, 2160, 2880
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	11	240 Winter	100	+45%	100/180 Winter				62.743
1.001	10	240 Winter	100	+45%	100/180 Winter				62.743
2.000	12	240 Winter	100	+45%	100/180 Winter				62.743
1.002	9	240 Winter	100	+45%	100/120 Winter				62.743
1.003	8	240 Winter	100	+45%	100/120 Winter				62.743
1.004	7	240 Winter	100	+45%	100/60 Winter				62.744
3.000	13	240 Winter	100	+45%	100/60 Summer				62.744
1.005	6	240 Winter	100	+45%	30/120 Winter				62.744
4.000	19	240 Winter	100	+45%	100/180 Winter				62.749
5.000	20	240 Winter	100	+45%	100/120 Winter				62.749
4.001	18	240 Winter	100	+45%	100/120 Winter				62.749
4.002	17	240 Winter	100	+45%	100/120 Summer				62.749
4.003	16	240 Winter	100	+45%	100/60 Winter				62.749
4.004	15	240 Winter	100	+45%	100/60 Summer				62.747

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	11	0.198	0.000	0.01		13.8	SURCHARGED	
1.001	10	0.265	0.000	0.02		19.1	SURCHARGED	
2.000	12	0.245	0.000	0.02		21.7	SURCHARGED	
1.002	9	0.358	0.000	0.03		38.4	SURCHARGED	
1.003	8	0.483	0.000	0.03		40.4	SURCHARGED	
1.004	7	0.633	0.000	0.03		40.2	SURCHARGED	
3.000	13	0.789	0.000	0.03		29.6	SURCHARGED	
1.005	6	0.861	0.000	0.03		35.7	SURCHARGED	
4.000	19	0.305	0.000	0.02		19.0	SURCHARGED	
5.000	20	0.351	0.000	0.01		10.4	SURCHARGED	
4.001	18	0.433	0.000	0.02		24.6	SURCHARGED	
4.002	17	0.590	0.000	0.04		39.5	SURCHARGED	
4.003	16	0.646	0.000	0.04		54.3	SURCHARGED	
4.004	15	0.796	0.000	0.05		58.3	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 30571 SW NET 1 240205.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
6.000	24	240 Winter	100	+45%	100/120 Winter				62.744
6.001	23	240 Winter	100	+45%	100/120 Winter				62.744
7.000	25	240 Winter	100	+45%	100/120 Winter				62.744
6.002	22	240 Winter	100	+45%	100/60 Winter				62.745
8.000	27	240 Winter	100	+45%	100/120 Summer				62.745
8.001	26	240 Winter	100	+45%	100/60 Winter				62.745
6.003	21	240 Winter	100	+45%	100/60 Summer				62.745
4.005	14	240 Winter	100	+45%	30/120 Summer				62.745
1.006	5	240 Winter	100	+45%	30/60 Summer				62.742
1.007	4	240 Winter	100	+45%	1/15 Summer				62.738
1.008	3	240 Winter	100	+45%					60.569
1.009	2	240 Winter	100	+45%					60.399

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	24	0.472	0.000	0.01		12.5	SURCHARGED	
6.001	23	0.551	0.000	0.03		28.1	SURCHARGED	
7.000	25	0.554	0.000	0.01		14.8	SURCHARGED	
6.002	22	0.621	0.000	0.03		40.8	SURCHARGED	
8.000	27	0.590	0.000	0.01		13.8	SURCHARGED	
8.001	26	0.665	0.000	0.03		36.8	SURCHARGED	
6.003	21	0.768	0.000	0.07		79.9	SURCHARGED	
4.005	14	0.919	0.000	0.10		123.2	SURCHARGED	
1.006	5	1.070	0.000	0.07		82.3	SURCHARGED	
1.007	4	1.833	0.000	0.67		72.4	SURCHARGED	
1.008	3	-0.150	0.000	0.67		72.4	OK	
1.009	2	-0.114	0.000	0.83		72.4	OK	

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