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York House Edison Park Dorcan Way Swindon SN3 3RB	Parcel KMF, Bicester  SW NW2	
Date Nov 2018 File 6008-SW NW2.mdx	Designed by NP Checked by RB	
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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 6008-SW NW2.SWS









Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	Add Flow / Climate Change (%)	0
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.900
Ratio R	0.400	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	0	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

Network Design Table for 6008-SW NW2.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	10.207	1.125	9.1	0.028	5.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	16.027	0.100	160.3	0.092	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	3.824	0.725	5.3	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	26.574	0.175	151.9	0.089	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	9.366	0.050	187.3	0.054	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	26.822	0.090	298.0	0.017	0.00	0.0	0.600	o	750	Pipe/Conduit	
3.000	15.549	0.090	172.8	0.014	5.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	11.997	0.040	299.9	0.052	0.00	0.0	0.600	o	750	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	5.05	71.500	0.028	0.0	0.0	0.0	3.37	59.5	0.0
2.000	0.00	5.26	71.200	0.092	0.0	0.0	0.0	1.03	41.0	0.0
2.001	0.00	5.27	71.100	0.092	0.0	0.0	0.0	4.42	78.1	0.0
1.001	0.00	5.69	70.300	0.209	0.0	0.0	0.0	1.06	42.1	0.0
1.002	0.00	5.83	70.050	0.263	0.0	0.0	0.0	1.15	81.0	0.0
1.003	0.00	6.11	69.550	0.280	0.0	0.0	0.0	1.62	713.8	0.0
3.000	0.00	5.22	70.000	0.014	0.0	0.0	0.0	1.19	84.3	0.0
1.004	0.00	6.23	69.460	0.346	0.0	0.0	0.0	1.61	711.6	0.0


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Network Design Table for 6008-SW NW2.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
4.000	19.693	1.090	18.1	0.012	5.00	0.0	0.600	o	150	Pipe/Conduit	
5.000	13.540	0.135	100.3	0.064	5.00	0.0	0.600	o	150	Pipe/Conduit	
5.001	5.231	0.055	95.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.001	13.996	0.140	100.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.002	14.276	0.145	98.5	0.025	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.003	36.737	0.505	72.7	0.039	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.005	25.912	0.086	300.0	0.072	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.006	18.682	0.064	291.9	0.163	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.007	6.877	1.037	6.6	0.000	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)
4.000	0.00	5.14	71.900	0.012	0.0	0.0	0.0	2.38	42.1	0.0
5.000	0.00	5.22	71.000	0.064	0.0	0.0	0.0	1.00	17.7	0.0
5.001	0.00	5.31	70.865	0.064	0.0	0.0	0.0	1.03	18.2	0.0
4.001	0.00	5.54	70.810	0.076	0.0	0.0	0.0	1.00	17.8	0.0
4.002	0.00	5.78	70.670	0.101	0.0	0.0	0.0	1.01	17.9	0.0
4.003	0.00	6.18	70.450	0.140	0.0	0.0	0.0	1.54	61.0	0.0
1.005	0.00	6.50	69.420	0.558	0.0	0.0	0.0	1.61	711.5	0.0
1.006	0.00	6.69	69.334	0.721	0.0	0.0	0.0	1.63	721.3	0.0
1.007	0.00	6.71	69.270	0.721	0.0	0.0	0.0	6.14	434.2	0.0

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PIPELINE SCHEDULES for 6008-SW NW2.SWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	13	72.909	71.500	1.259	Open Manhole	1200
2.000	o	225	22	73.000	71.200	1.575	Open Manhole	1200
2.001	o	150	23	73.000	71.100	1.750	Open Manhole	1200
1.001	o	225	14	73.003	70.300	2.478	Open Manhole	1200
1.002	o	300	15	73.141	70.050	2.791	Open Manhole	1200
1.003	o	750	16	73.108	69.550	2.808	Open Manhole	1800
3.000	o	300	24	72.582	70.000	2.282	Open Manhole	1200
1.004	o	750	17	72.872	69.460	2.662	Open Manhole	1800
4.000	o	150	25	73.283	71.900	1.233	Open Manhole	1200
5.000	o	150	29	72.860	71.000	1.710	Open Manhole	1200
5.001	o	150	30	72.867	70.865	1.852	Open Manhole	1200
4.001	o	150	26	73.408	70.810	2.448	Open Manhole	1200
4.002	o	150	27	73.272	70.670	2.452	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	10.207	9.1	14	73.003	70.375	2.478	Open Manhole	1200
2.000	16.027	160.3	23	73.000	71.100	1.675	Open Manhole	1200
2.001	3.824	5.3	14	73.003	70.375	2.478	Open Manhole	1200
1.001	26.574	151.9	15	73.141	70.125	2.791	Open Manhole	1200
1.002	9.366	187.3	16	73.108	70.000	2.808	Open Manhole	1800
1.003	26.822	298.0	17	72.872	69.460	2.662	Open Manhole	1800
3.000	15.549	172.8	17	72.872	69.910	2.662	Open Manhole	1800
1.004	11.997	299.9	18	72.827	69.420	2.657	Open Manhole	1800
4.000	19.693	18.1	26	73.408	70.810	2.448	Open Manhole	1200
5.000	13.540	100.3	30	72.867	70.865	1.852	Open Manhole	1200
5.001	5.231	95.1	26	73.408	70.810	2.448	Open Manhole	1200
4.001	13.996	100.0	27	73.272	70.670	2.452	Open Manhole	1200
4.002	14.276	98.5	28	73.183	70.525	2.508	Open Manhole	1200

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PIPELINE SCHEDULES for 6008-SW NW2.SWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
4.003	o	225	28	73.183	70.450	2.508	Open Manhole	1200
1.005	o	750	18	72.827	69.420	2.657	Open Manhole	1800
1.006	o	750	19	72.256	69.334	2.172	Open Manhole	1800
1.007	o	300	20	71.416	69.270	1.846	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
4.003	36.737	72.7	18	72.827	69.945	2.657	Open Manhole	1800
1.005	25.912	300.0	19	72.256	69.334	2.172	Open Manhole	1800
1.006	18.682	291.9	20	71.416	69.270	1.396	Open Manhole	1800
1.007	6.877	6.6	21	71.336	68.233	2.803	Open Manhole	1500

Free Flowing Outfall Details for 6008-SW NW2.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.007	21	71.336	68.233	68.008	1500	0


Simulation Criteria for 6008-SW NW2.SWS

Volumetric Runoff Coeff 0.750      Additional Flow - % of Total Flow 0.000  
Areal Reduction Factor 1.000      MADD Factor \* 10m<sup>3</sup>/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 Storage Structures 3  
Number of Online Controls 3      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)      100      Cv (Summer) 0.750  
Region England and Wales      Cv (Winter) 0.840  
M5-60 (mm)      20.000      Storm Duration (mins) 30  
Ratio R      0.400

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Online Controls for 6008-SW NW2.SWS

Orifice Manhole: 23, DS/PN: 2.001, Volume (m³): 2.7

Diameter (m) 0.035 Discharge Coefficient 0.600 Invert Level (m) 71.100

Orifice Manhole: 30, DS/PN: 5.001, Volume (m³): 2.5

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 70.865

Complex Manhole: 20, DS/PN: 1.007, Volume (m³): 12.9


Hydro-Brake Optimum®

Unit Reference MD-SHE-0126-8300-1500-8300  
Design Head (m) 1.500  
Design Flow (l/s) 8.3  
Flush-Flo™ Calculated  
Objective Minimise upstream storage  
Application Surface  
Sump Available Yes  
Diameter (mm) 126  
Invert Level (m) 69.270  
Minimum Outlet Pipe Diameter (mm) 150  
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	8.3
Flush-Flo™	0.442	8.3
Kick-Flo®	0.926	6.6
Mean Flow over Head Range	-	7.2

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	4.5	1.200	7.5	3.000	11.5	7.000	17.2
0.200	7.5	1.400	8.0	3.500	12.4	7.500	17.8
0.300	8.1	1.600	8.6	4.000	13.2	8.000	18.4
0.400	8.3	1.800	9.0	4.500	14.0	8.500	18.9
0.500	8.3	2.000	9.5	5.000	14.7	9.000	19.4
0.600	8.1	2.200	9.9	5.500	15.4	9.500	20.0
0.800	7.6	2.400	10.4	6.000	16.0		
1.000	6.9	2.600	10.8	6.500	16.6		

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Weir

Discharge Coef 0.544 Width (m) 1.500 Invert Level (m) 70.770

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Storage Structures for 6008-SW NW2.SWS

Cellular Storage Manhole: 22, DS/PN: 2.000

Invert Level (m) 71.200 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 <sup>2</sup> )	Inf. Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )
0.000	45.0	45.0	0.801	0.0	66.5
0.800	45.0	66.5			

Cellular Storage Manhole: 24, DS/PN: 3.000


Invert Level (m) 70.000 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 <sup>2</sup> )	Inf. Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )
0.000	70.0	70.0	0.801	0.0	96.8
0.800	70.0	96.8			

Cellular Storage Manhole: 29, DS/PN: 5.000

Invert Level (m) 71.000 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 <sup>2</sup> )	Inf. Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Inf. Area (m <sup>2</sup> )
0.000	35.0	35.0	0.801	0.0	53.9
0.800	35.0	53.9			

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for 6008-SW NW2.SWS

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/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 Storage Structures 3  
Number of Online Controls 3 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) 20.000 Cv (Winter) 0.840  
  
Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON  
  
Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440  
Return Period(s) (years) 1, 10, 30, 100  
Climate Change (%) 0, 0, 0, 40


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	13	15 Winter	1	+0%	100/15 Winter				71.527
2.000	22	120 Winter	1	+0%	10/30 Summer				71.341
2.001	23	120 Winter	1	+0%	1/15 Summer				71.339
1.001	14	15 Winter	1	+0%	10/30 Winter				70.398
1.002	15	15 Winter	1	+0%	10/15 Winter				70.173
1.003	16	60 Winter	1	+0%	10/15 Summer				70.064
3.000	24	60 Winter	1	+0%	10/30 Summer				70.026
1.004	17	60 Winter	1	+0%	10/15 Summer				70.063
4.000	25	15 Winter	1	+0%					71.920
5.000	29	120 Winter	1	+0%	10/15 Summer				71.140
5.001	30	120 Winter	1	+0%	1/15 Summer				71.137
4.001	26	15 Winter	1	+0%	100/15 Summer				70.846
4.002	27	15 Winter	1	+0%	30/120 Winter				70.727
4.003	28	15 Winter	1	+0%	30/15 Winter				70.512
1.005	18	60 Winter	1	+0%	10/15 Summer				70.063
1.006	19	60 Winter	1	+0%	10/15 Summer				70.060
1.007	20	60 Winter	1	+0%	1/15 Summer				70.048



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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for 6008-SW NW2.SWS

PN	US/MH Name	Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m <sup>3</sup> )	Flow / Cap.	Overflow (l/s)			
1.000	13	-0.123	0.000	0.07		3.9	OK	
2.000	22	-0.084	0.000	0.04		1.3	OK	
2.001	23	0.089	0.000	0.02		1.2	SURCHARGED	
1.001	14	-0.127	0.000	0.39		15.2	OK	
1.002	15	-0.177	0.000	0.35		21.5	OK	
1.003	16	-0.236	0.000	0.02		13.2	OK	
3.000	24	-0.274	0.000	0.01		0.9	OK	
1.004	17	-0.147	0.000	0.02		8.5	OK	
4.000	25	-0.130	0.000	0.04		1.7	OK	
5.000	29	-0.010	0.000	0.05		0.8	OK	
5.001	30	0.122	0.000	0.05		0.7	SURCHARGED	
4.001	26	-0.114	0.000	0.13		2.2	OK	
4.002	27	-0.093	0.000	0.31		5.1	OK	
4.003	28	-0.163	0.000	0.17		9.6	OK	
1.005	18	-0.107	0.000	0.03		14.0	OK	
1.006	19	-0.024	0.000	0.03		15.3	OK	
1.007	20	0.478	0.000	0.03		8.3	SURCHARGED	

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10 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for 6008-SW NW2.SWS

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/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 Storage Structures 3  
Number of Online Controls 3 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) 20.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON


Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440  
Return Period(s) (years) 1, 10, 30, 100  
Climate Change (%) 0, 0, 0, 40

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	13	15 Winter	10	+0%	100/15 Winter				71.538
2.000	22	120 Winter	10	+0%	10/30 Summer				71.512
2.001	23	120 Winter	10	+0%	1/15 Summer				71.592
1.001	14	120 Winter	10	+0%	10/30 Winter				70.619
1.002	15	120 Winter	10	+0%	10/15 Winter				70.612
1.003	16	120 Winter	10	+0%	10/15 Summer				70.609
3.000	24	120 Winter	10	+0%	10/30 Summer				70.609
1.004	17	120 Winter	10	+0%	10/15 Summer				70.609
4.000	25	15 Winter	10	+0%					71.929
5.000	29	120 Winter	10	+0%	10/15 Summer				71.303
5.001	30	120 Winter	10	+0%	1/15 Summer				71.299
4.001	26	15 Winter	10	+0%	100/15 Summer				70.860
4.002	27	15 Winter	10	+0%	30/120 Winter				70.760
4.003	28	120 Winter	10	+0%	30/15 Winter				70.614
1.005	18	120 Winter	10	+0%	10/15 Summer				70.609
1.006	19	120 Winter	10	+0%	10/15 Summer				70.608
1.007	20	120 Winter	10	+0%	1/15 Summer				70.607

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10 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for 6008-SW NW2.SWS

PN	US/MH Name	Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m <sup>3</sup> )	Flow / Cap.	Overflow (l/s)			
1.000	13	-0.112	0.000	0.14		7.5	OK	
2.000	22	0.087	0.000	0.07		2.5	SURCHARGED	
2.001	23	0.342	0.000	0.03		1.6	SURCHARGED	
1.001	14	0.094	0.000	0.29		11.2	SURCHARGED	
1.002	15	0.262	0.000	0.26		15.8	SURCHARGED	
1.003	16	0.309	0.000	0.03		17.5	SURCHARGED	
3.000	24	0.309	0.000	0.06		4.1	SURCHARGED	
1.004	17	0.399	0.000	0.02		7.0	SURCHARGED	
4.000	25	-0.121	0.000	0.08		3.2	OK	
5.000	29	0.153	0.000	0.05		0.9	SURCHARGED	
5.001	30	0.284	0.000	0.06		0.8	SURCHARGED	
4.001	26	-0.100	0.000	0.23		3.8	OK	
4.002	27	-0.060	0.000	0.66		10.9	OK	
4.003	28	-0.061	0.000	0.12		7.1	OK	
1.005	18	0.439	0.000	0.02		12.8	SURCHARGED	
1.006	19	0.525	0.000	0.03		14.7	SURCHARGED	
1.007	20	1.037	0.000	0.03		8.3	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for 6008-SW NW2.SWS

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/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 Storage Structures 3  
Number of Online Controls 3 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) 20.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON


Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440  
Return Period(s) (years) 1, 10, 30, 100  
Climate Change (%) 0, 0, 0, 40

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	13	15 Winter	30	+0%	100/15 Winter				71.543
2.000	22	120 Winter	30	+0%	10/30 Summer				71.624
2.001	23	120 Winter	30	+0%	1/15 Summer				71.705
1.001	14	15 Winter	30	+0%	10/30 Winter				70.847
1.002	15	120 Winter	30	+0%	10/15 Winter				70.821
1.003	16	120 Winter	30	+0%	10/15 Summer				70.815
3.000	24	120 Winter	30	+0%	10/30 Summer				70.814
1.004	17	120 Winter	30	+0%	10/15 Summer				70.814
4.000	25	15 Winter	30	+0%					71.932
5.000	29	120 Winter	30	+0%	10/15 Summer				71.410
5.001	30	120 Winter	30	+0%	1/15 Summer				71.407
4.001	26	15 Winter	30	+0%	100/15 Summer				70.865
4.002	27	120 Winter	30	+0%	30/120 Winter				70.834
4.003	28	120 Winter	30	+0%	30/15 Winter				70.824
1.005	18	120 Winter	30	+0%	10/15 Summer				70.813
1.006	19	120 Winter	30	+0%	10/15 Summer				70.810
1.007	20	120 Winter	30	+0%	1/15 Summer				70.807

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for 6008-SW NW2.SWS

PN	US/MH Name	Surcharged		Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m <sup>3</sup> )	Flow (l/s)			Flow (l/s)		
1.000	13	-0.107	0.000	0.18		9.6		OK	
2.000	22	0.199	0.000	0.07		2.7	SURCHARGED		
2.001	23	0.455	0.000	0.03		1.8	SURCHARGED		
1.001	14	0.322	0.000	1.07		41.9	SURCHARGED		
1.002	15	0.471	0.000	0.33		20.5	SURCHARGED		
1.003	16	0.515	0.000	0.04		22.1	SURCHARGED		
3.000	24	0.514	0.000	0.13		9.6	SURCHARGED		
1.004	17	0.604	0.000	0.03		12.7	SURCHARGED		
4.000	25	-0.118	0.000	0.10		4.1		OK	
5.000	29	0.260	0.000	0.06		1.0	SURCHARGED		
5.001	30	0.392	0.000	0.06		0.9	SURCHARGED		
4.001	26	-0.095	0.000	0.29		4.7		OK	
4.002	27	0.014	0.000	0.29		4.8	SURCHARGED		
4.003	28	0.149	0.000	0.16		9.0	SURCHARGED		
1.005	18	0.643	0.000	0.04		19.8	SURCHARGED		
1.006	19	0.727	0.000	0.05		26.5	SURCHARGED		
1.007	20	1.237	0.000	0.10		26.5	SURCHARGED		

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 6008-SW NW2.SWS

Simulation Criteria


Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/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 Storage Structures 3  
Number of Online Controls 3 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) 20.000 Cv (Winter) 0.840  
  
Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON  
  
Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440  
Return Period(s) (years) 1, 10, 30, 100  
Climate Change (%) 0, 0, 0, 40

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	13	15 Winter	100	+40%	100/15 Winter				71.721
2.000	22	120 Winter	100	+40%	10/30 Summer				72.650
2.001	23	120 Winter	100	+40%	1/15 Summer				72.644
1.001	14	15 Winter	100	+40%	10/30 Winter				71.631
1.002	15	30 Winter	100	+40%	10/15 Winter				71.116
1.003	16	60 Winter	100	+40%	10/15 Summer				71.029
3.000	24	60 Winter	100	+40%	10/30 Summer				71.032
1.004	17	60 Winter	100	+40%	10/15 Summer				71.021
4.000	25	15 Winter	100	+40%					71.944
5.000	29	120 Winter	100	+40%	10/15 Summer				72.161
5.001	30	120 Winter	100	+40%	1/15 Summer				72.155
4.001	26	15 Winter	100	+40%	100/15 Summer				71.381
4.002	27	15 Winter	100	+40%	30/120 Winter				71.357
4.003	28	15 Winter	100	+40%	30/15 Winter				71.160
1.005	18	30 Winter	100	+40%	10/15 Summer				70.969
1.006	19	60 Winter	100	+40%	10/15 Summer				70.950
1.007	20	60 Winter	100	+40%	1/15 Summer				70.930

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 6008-SW NW2.SWS

PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m <sup>3</sup> )			Flow (l/s)		
1.000	13	0.071	0.000	0.35		18.5	SURCHARGED	
2.000	22	1.225	0.000	0.12		4.3	SURCHARGED	
2.001	23	1.394	0.000	0.06		3.2	SURCHARGED	
1.001	14	1.106	0.000	1.72		67.1	SURCHARGED	
1.002	15	0.766	0.000	1.35		82.8	SURCHARGED	
1.003	16	0.729	0.000	0.11		60.2	SURCHARGED	
3.000	24	0.732	0.000	0.12		8.7	SURCHARGED	
1.004	17	0.811	0.000	0.18		80.0	SURCHARGED	
4.000	25	-0.106	0.000	0.19		7.4	OK	
5.000	29	1.011	0.000	0.11		1.7	SURCHARGED	
5.001	30	1.140	0.000	0.10		1.5	SURCHARGED	
4.001	26	0.421	0.000	0.51		8.4	SURCHARGED	
4.002	27	0.537	0.000	1.18		19.3	SURCHARGED	
4.003	28	0.485	0.000	0.66		38.1	SURCHARGED	
1.005	18	0.799	0.000	0.25		133.9	SURCHARGED	
1.006	19	0.866	0.000	0.34		171.6	SURCHARGED	
1.007	20	1.360	0.000	0.67		171.0	SURCHARGED	