


Barnsley Marshall		Page 1
1 Birch Court Blackpole East Worcester, WR3 8SG		
Date 15/08/2023 16:05 File 700m3 Pond @ 5.0 lps - R...	Designed by AlexMavhunga Checked by	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes Alex003

FSR Rainfall Model - England and Wales

Return Period (years)	3	PIMP (%)	100
M5-60 (mm)	18.500	Add Flow / Climate Change (%)	40
Ratio R	0.334	Minimum Backdrop Height (m)	4.000
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	4.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	0.500
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

Time Area Diagram for Storm




Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.000	8-12	0.514	12-16	0.408

Total Area Contributing (ha) = 0.921

Total Pipe Volume (m³) = 43.434

Network Design Table for Storm















« - 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
S1.000	51.808	0.310	167.1	0.082	5.00	0.0	0.600	o	300	Pipe/Conduit	
S1.001	53.261	0.318	167.5	0.065	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.002	18.299	0.109	167.9	0.054	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)
S1.000	50.00	5.71	107.200	0.082	0.0	0.0	4.4	1.21	85.8	15.5
S1.001	50.00	6.44	106.890	0.147	0.0	0.0	8.0	1.21	85.7	27.9
S1.002	50.00	6.70	106.572	0.201	0.0	0.0	10.9	1.21	85.6	38.0

Network Design Table 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	Auto Design
S2.000	51.694	0.309	167.3	0.107	5.00	0.0	0.600	o	300	Pipe/Conduit		
S2.001	53.305	0.429	124.3	0.097	0.00	0.0	0.600	o	300	Pipe/Conduit		
S1.003	18.300	0.057	321.0	0.043	0.00	0.0	0.600	o	375	Pipe/Conduit		
S3.000	51.810	0.310	167.1	0.068	5.00	0.0	0.600	o	300	Pipe/Conduit		
S3.001	53.421	0.485	110.1	0.061	0.00	0.0	0.600	o	300	Pipe/Conduit		
S1.004	20.574	0.430	47.8	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit		
S4.000	90.127	0.857	105.2	0.163	5.00	0.0	0.600	o	300	Pipe/Conduit		
S4.001	36.903	0.351	105.2	0.155	0.00	0.0	0.600	o	300	Pipe/Conduit		
S4.002	20.280	0.192	105.6	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit		
S1.005	16.057	0.161	100.0	0.029	0.00	0.0	0.600	o	150	Pipe/Conduit		
S1.006	26.778	0.268	100.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit		
S1.007	113.978	1.140	100.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit		
S1.008	18.090	0.181	99.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit		
S1.009	116.390	0.150	775.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit		

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S2.000	50.00	5.71	107.200	0.107	0.0	0.0	5.8	1.21	85.7	20.2
S2.001	50.00	6.34	106.891	0.204	0.0	0.0	11.0	1.41	99.6	38.6
S1.003	50.00	7.00	106.387	0.447	0.0	0.0	24.2	1.01	111.1	84.7
S3.000	50.00	5.71	107.200	0.068	0.0	0.0	3.7	1.21	85.8	12.8
S3.001	50.00	6.31	106.890	0.128	0.0	0.0	7.0	1.50	105.9	24.4
S1.004	50.00	7.13	106.330	0.575	0.0	0.0	31.2	2.63	289.9	109.1
S4.000	50.00	5.98	107.300	0.163	0.0	0.0	8.8	1.53	108.3	30.8
S4.001	50.00	6.38	106.443	0.317	0.0	0.0	17.2	1.53	108.3	60.1
S4.002	50.00	6.60	106.092	0.317	0.0	0.0	17.2	1.53	108.1	60.1
S1.005	50.00	7.40	105.900	0.921	0.0	0.0	49.9	1.00	17.8<<	174.7
S1.006	50.00	7.84	105.739	0.921	0.0	0.0	49.9	1.00	17.8<<	174.7
S1.007	49.81	9.73	105.471	0.921	0.0	0.0	49.9	1.00	17.8<<	174.7
S1.008	49.06	10.03	104.331	0.921	0.0	0.0	49.9	1.01	17.8<<	174.7
S1.009	38.84	15.52	104.150	0.921	0.0	0.0	49.9	0.35	6.2<<	174.7

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.082	0.082	0.082
1.001	User	-	100	0.065	0.065	0.065
1.002	User	-	100	0.054	0.054	0.054
2.000	User	-	100	0.107	0.107	0.107
2.001	User	-	100	0.097	0.097	0.097
1.003	User	-	100	0.043	0.043	0.043
3.000	User	-	100	0.068	0.068	0.068
3.001	User	-	100	0.061	0.061	0.061
1.004	-	-	100	0.000	0.000	0.000
4.000	User	-	100	0.163	0.163	0.163
4.001	User	-	100	0.155	0.155	0.155
4.002	-	-	100	0.000	0.000	0.000
1.005	User	-	50	0.058	0.029	0.029
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
1.009	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.950	0.921	0.921

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)
S1.009	SexDitch	105.000	104.000	104.000	0	0


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	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)	1920
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	16

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 1 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Region England and Wales
 Return Period (years) 1000 M5-60 (mm) 18.500

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Synthetic Rainfall Details

Ratio R 0.334 Cv (Winter) 0.840
 Profile Type Winter Storm Duration (mins) 960
 Cv (Summer) 0.750

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Online Controls for Storm


Hydro-Brake® Optimum Manhole: S10, DS/PN: S1.005, Volume (m³): 6.8

Unit Reference	MD-SHE-0097-5000-1600-5000
Design Head (m)	1.600
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	97
Invert Level (m)	105.900
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)	1.600	5.0	Kick-Flo®	0.865	3.8
Flush-Flo™	0.425	4.7	Mean Flow over Head Range	-	4.2

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	3.1	1.200	4.4	3.000	6.7	7.000	10.0
0.200	4.3	1.400	4.7	3.500	7.2	7.500	10.3
0.300	4.6	1.600	5.0	4.000	7.7	8.000	10.7
0.400	4.7	1.800	5.3	4.500	8.1	8.500	11.0
0.500	4.7	2.000	5.5	5.000	8.5	9.000	11.3
0.600	4.6	2.200	5.8	5.500	8.9	9.500	11.6
0.800	4.1	2.400	6.0	6.000	9.3		
1.000	4.0	2.600	6.3	6.500	9.7		


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Storage Structures for Storm

Tank or Pond Manhole: S10, DS/PN: S1.005

Invert Level (m) 105.900

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	272.9	1.600	626.4	1.900	708.8

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


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.279
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 200, 300, 400, 500, 600, 700, 800, 900, 1000
Climate Change (%) 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S01	15 Winter	200	+0%	700/600 Winter			
S1.001	S02	960 Winter	200	+0%	200/600 Winter			
S1.002	S03	960 Winter	200	+0%	200/15 Summer			
S2.000	S04	15 Winter	200	+0%	600/15 Winter			
S2.001	S05	960 Winter	200	+0%	200/600 Winter			
S1.003	S06	960 Winter	200	+0%	200/15 Summer			
S3.000	S07	15 Winter	200	+0%	700/600 Winter			
S3.001	S08	960 Winter	200	+0%	200/600 Winter			
S1.004	S09	960 Winter	200	+0%	200/60 Winter			
S4.000	S15	15 Winter	200	+0%	400/15 Winter	900/15 Winter		
S4.001	S16	960 Winter	200	+0%	200/15 Summer			
S4.002	S17	960 Winter	200	+0%	200/15 Summer			
S1.005	S10	960 Winter	200	+0%	200/15 Summer			
S1.006	S11	8640 Winter	200	+0%				
S1.007	S12	4320 Summer	200	+0%				

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


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S01	107.337	-0.163	0.000	0.41		33.3	OK	
S1.001	S02	107.215	0.025	0.000	0.07		5.5	SURCHARGED	
S1.002	S03	107.214	0.342	0.000	0.10		7.2	SURCHARGED	
S2.000	S04	107.360	-0.140	0.000	0.54		43.3	OK	
S2.001	S05	107.214	0.023	0.000	0.08		7.6	SURCHARGED	
S1.003	S06	107.212	0.450	0.000	0.17		15.4	SURCHARGED	
S3.000	S07	107.323	-0.177	0.000	0.34		27.5	OK	
S3.001	S08	107.212	0.022	0.000	0.05		4.8	SURCHARGED	
S1.004	S09	107.211	0.506	0.000	0.08		19.4	SURCHARGED	
S4.000	S15	107.478	-0.122	0.000	0.62		65.1	OK	3
S4.001	S16	107.213	0.470	0.000	0.11		11.3	SURCHARGED	
S4.002	S17	107.211	0.819	0.000	0.12		11.2	SURCHARGED	
S1.005	S10	107.209	1.159	0.000	0.29		4.7	SURCHARGED	
S1.006	S11	105.793	-0.096	0.000	0.28		4.7	OK	
S1.007	S12	105.523	-0.098	0.000	0.27		4.7	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S13	2160 Winter	200	+0%					104.385
S1.009	S14	8640 Winter	200	+0%					104.248

PN	US/MH Name	Surcharged		Flooded		Half Drain		Pipe		Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Time (mins)	Flow (l/s)	Status		
S1.008	S13	-0.096	0.000	0.28			4.7	OK		
S1.009	S14	-0.052	0.000	0.76			4.7	OK		

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


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.279
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 200, 300, 400, 500, 600, 700, 800, 900, 1000
Climate Change (%) 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S01	15 Winter	300	+0%	700/600	Winter		
S1.001	S02	960 Winter	300	+0%	200/600	Winter		
S1.002	S03	960 Winter	300	+0%	200/15	Summer		
S2.000	S04	15 Winter	300	+0%	600/15	Winter		
S2.001	S05	960 Winter	300	+0%	200/600	Winter		
S1.003	S06	960 Winter	300	+0%	200/15	Summer		
S3.000	S07	15 Winter	300	+0%	700/600	Winter		
S3.001	S08	960 Winter	300	+0%	200/600	Winter		
S1.004	S09	960 Winter	300	+0%	200/60	Winter		
S4.000	S15	15 Winter	300	+0%	400/15	Winter	900/15	Winter
S4.001	S16	960 Winter	300	+0%	200/15	Summer		
S4.002	S17	960 Winter	300	+0%	200/15	Summer		
S1.005	S10	960 Winter	300	+0%	200/15	Summer		
S1.006	S11	960 Winter	300	+0%				
S1.007	S12	960 Winter	300	+0%				

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


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	Level Exceeded
S1.000	S01	107.344	-0.156	0.000	0.45		36.2	OK	
S1.001	S02	107.310	0.120	0.000	0.07		5.9	SURCHARGED	
S1.002	S03	107.309	0.437	0.000	0.10		7.5	SURCHARGED	
S2.000	S04	107.369	-0.131	0.000	0.58		47.2	OK	
S2.001	S05	107.309	0.118	0.000	0.09		8.2	SURCHARGED	
S1.003	S06	107.308	0.545	0.000	0.18		16.5	SURCHARGED	
S3.000	S07	107.329	-0.171	0.000	0.37		29.9	OK	
S3.001	S08	107.307	0.117	0.000	0.05		5.2	SURCHARGED	
S1.004	S09	107.306	0.601	0.000	0.09		20.9	SURCHARGED	
S4.000	S15	107.488	-0.112	0.000	0.68		70.9	OK	3
S4.001	S16	107.308	0.565	0.000	0.12		12.2	SURCHARGED	
S4.002	S17	107.306	0.914	0.000	0.13		12.1	SURCHARGED	
S1.005	S10	107.304	1.254	0.000	0.29		4.7	SURCHARGED	
S1.006	S11	105.793	-0.096	0.000	0.28		4.7	OK	
S1.007	S12	105.524	-0.097	0.000	0.27		4.7	OK	

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300 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S13	960 Winter	300	+0%					104.385
S1.009	S14	960 Winter	300	+0%					104.248

PN	US/MH Name	Surcharged		Flooded		Flow / Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Overflow (l/s)	Cap.					
S1.008	S13	-0.096	0.000	0.28				4.7	OK	
S1.009	S14	-0.052	0.000	0.76				4.7	OK	

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


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.279
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 200, 300, 400, 500, 600, 700, 800, 900, 1000
Climate Change (%) 0, 0, 0, 0, 0, 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S01	960 Winter	400	+0%	700/600	Winter		
S1.001	S02	960 Winter	400	+0%	200/600	Winter		
S1.002	S03	960 Winter	400	+0%	200/15	Summer		
S2.000	S04	15 Winter	400	+0%	600/15	Winter		
S2.001	S05	960 Winter	400	+0%	200/600	Winter		
S1.003	S06	960 Winter	400	+0%	200/15	Summer		
S3.000	S07	960 Winter	400	+0%	700/600	Winter		
S3.001	S08	960 Winter	400	+0%	200/600	Winter		
S1.004	S09	960 Winter	400	+0%	200/60	Winter		
S4.000	S15	15 Winter	400	+0%	400/15	Winter	900/15	Winter
S4.001	S16	960 Winter	400	+0%	200/15	Summer		
S4.002	S17	960 Winter	400	+0%	200/15	Summer		
S1.005	S10	960 Winter	400	+0%	200/15	Summer		
S1.006	S11	960 Winter	400	+0%				
S1.007	S12	960 Winter	400	+0%				

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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400 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S01	107.381	-0.119	0.000	0.04		3.5	OK	
S1.001	S02	107.381	0.191	0.000	0.08		6.3	SURCHARGED	
S1.002	S03	107.380	0.508	0.000	0.11		7.8	SURCHARGED	
S2.000	S04	107.394	-0.106	0.000	0.62		50.0	OK	
S2.001	S05	107.381	0.190	0.000	0.09		8.7	SURCHARGED	
S1.003	S06	107.379	0.616	0.000	0.19		17.4	SURCHARGED	
S3.000	S07	107.378	-0.122	0.000	0.04		2.9	OK	
S3.001	S08	107.378	0.188	0.000	0.05		5.5	SURCHARGED	
S1.004	S09	107.377	0.672	0.000	0.09		22.2	SURCHARGED	
S4.000	S15	107.612	0.012	0.000	0.71		74.0	SURCHARGED	3
S4.001	S16	107.380	0.637	0.000	0.13		12.9	SURCHARGED	
S4.002	S17	107.377	0.985	0.000	0.14		12.9	SURCHARGED	
S1.005	S10	107.376	1.326	0.000	0.29		4.8	SURCHARGED	
S1.006	S11	105.793	-0.096	0.000	0.28		4.8	OK	
S1.007	S12	105.524	-0.097	0.000	0.27		4.8	OK	

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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400 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S13	960 Winter	400	+0%					104.386
S1.009	S14	960 Winter	400	+0%					104.250

PN	US/MH Name	Surcharged		Flooded		Half Drain		Pipe		Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Overflow (l/s)	Time (mins)	Flow (l/s)	Status		
S1.008	S13	-0.095	0.000	0.29			4.8	OK		
S1.009	S14	-0.050	0.000	0.78			4.8	OK		

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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500 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.279
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 200, 300, 400, 500, 600, 700, 800, 900, 1000
Climate Change (%) 0, 0, 0, 0, 0, 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S01	960 Winter	500	+0%	700/600 Winter			
S1.001	S02	960 Winter	500	+0%	200/600 Winter			
S1.002	S03	960 Winter	500	+0%	200/15 Summer			
S2.000	S04	15 Winter	500	+0%	600/15 Winter			
S2.001	S05	960 Winter	500	+0%	200/600 Winter			
S1.003	S06	960 Winter	500	+0%	200/15 Summer			
S3.000	S07	960 Winter	500	+0%	700/600 Winter			
S3.001	S08	960 Winter	500	+0%	200/600 Winter			
S1.004	S09	960 Winter	500	+0%	200/60 Winter			
S4.000	S15	15 Winter	500	+0%	400/15 Winter	900/15 Winter		
S4.001	S16	960 Winter	500	+0%	200/15 Summer			
S4.002	S17	960 Winter	500	+0%	200/15 Summer			
S1.005	S10	960 Winter	500	+0%	200/15 Summer			
S1.006	S11	960 Winter	500	+0%				
S1.007	S12	960 Winter	500	+0%				

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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500 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S01	107.439	-0.061	0.000	0.04		3.6	OK	
S1.001	S02	107.439	0.249	0.000	0.08		6.5	SURCHARGED	
S1.002	S03	107.438	0.566	0.000	0.11		8.0	SURCHARGED	
S2.000	S04	107.458	-0.042	0.000	0.64		51.8	OK	
S2.001	S05	107.438	0.247	0.000	0.10		9.0	SURCHARGED	
S1.003	S06	107.436	0.674	0.000	0.20		18.2	SURCHARGED	
S3.000	S07	107.436	-0.064	0.000	0.04		3.0	OK	
S3.001	S08	107.436	0.246	0.000	0.06		5.7	SURCHARGED	
S1.004	S09	107.435	0.730	0.000	0.10		23.2	SURCHARGED	
S4.000	S15	107.726	0.126	0.000	0.73		76.7	SURCHARGED	3
S4.001	S16	107.437	0.694	0.000	0.14		13.5	SURCHARGED	
S4.002	S17	107.435	1.043	0.000	0.14		13.4	SURCHARGED	
S1.005	S10	107.433	1.383	0.000	0.30		4.9	SURCHARGED	
S1.006	S11	105.794	-0.095	0.000	0.29		4.9	OK	
S1.007	S12	105.525	-0.096	0.000	0.28		4.9	OK	

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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500 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S13	960 Winter	500	+0%					104.386
S1.009	S14	960 Winter	500	+0%					104.251

PN	US/MH Name	Surcharged		Flooded		Flow / Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Overflow (l/s)	Cap.					
S1.008	S13	-0.095	0.000	0.30				4.9	OK	
S1.009	S14	-0.049	0.000	0.79				4.9	OK	

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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600 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.279
 Region England and Wales Cv (Summer) 0.750
 M5-60 (mm) 18.600 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON


Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
 10080
 Return Period(s) (years) 200, 300, 400, 500, 600, 700, 800, 900, 1000
 Climate Change (%) 0, 0, 0, 0, 0, 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S01	960 Winter	600	+0%	700/600	Winter		
S1.001	S02	960 Winter	600	+0%	200/600	Winter		
S1.002	S03	960 Winter	600	+0%	200/15	Summer		
S2.000	S04	15 Winter	600	+0%	600/15	Winter		
S2.001	S05	960 Winter	600	+0%	200/600	Winter		
S1.003	S06	960 Winter	600	+0%	200/15	Summer		
S3.000	S07	960 Winter	600	+0%	700/600	Winter		
S3.001	S08	960 Winter	600	+0%	200/600	Winter		
S1.004	S09	960 Winter	600	+0%	200/60	Winter		
S4.000	S15	15 Winter	600	+0%	400/15	Winter	900/15	Winter
S4.001	S16	960 Winter	600	+0%	200/15	Summer		
S4.002	S17	960 Winter	600	+0%	200/15	Summer		
S1.005	S10	960 Winter	600	+0%	200/15	Summer		
S1.006	S11	960 Winter	600	+0%				
S1.007	S12	960 Winter	600	+0%				

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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600 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S01	107.488	-0.012	0.000	0.05		3.8	OK	
S1.001	S02	107.488	0.298	0.000	0.08		6.7	SURCHARGED	
S1.002	S03	107.486	0.614	0.000	0.11		8.3	SURCHARGED	
S2.000	S04	107.515	0.015	0.000	0.66		53.5	SURCHARGED	
S2.001	S05	107.487	0.296	0.000	0.10		9.4	SURCHARGED	
S1.003	S06	107.485	0.723	0.000	0.21		18.9	SURCHARGED	
S3.000	S07	107.485	-0.015	0.000	0.04		3.1	OK	
S3.001	S08	107.485	0.295	0.000	0.06		5.9	SURCHARGED	
S1.004	S09	107.484	0.779	0.000	0.10		24.1	SURCHARGED	
S4.000	S15	107.827	0.227	0.000	0.76		79.1	SURCHARGED	3
S4.001	S16	107.486	0.743	0.000	0.14		14.0	SURCHARGED	
S4.002	S17	107.484	1.092	0.000	0.15		13.9	SURCHARGED	
S1.005	S10	107.482	1.432	0.000	0.30		5.0	SURCHARGED	
S1.006	S11	105.794	-0.095	0.000	0.29		5.0	OK	
S1.007	S12	105.525	-0.096	0.000	0.28		5.0	OK	

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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600 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S13	960 Winter	600	+0%					104.387
S1.009	S14	960 Winter	600	+0%					104.252

PN	US/MH Name	Surcharged		Flooded		Flow / Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Pipe Level Exceeded
		Depth (m)	Volume (m³)	Flow / Overflow (l/s)	Cap.					
S1.008	S13	-0.094	0.000	0.30				5.0	OK	
S1.009	S14	-0.048	0.000	0.80				5.0	OK	

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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700 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.279
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 200, 300, 400, 500, 600, 700, 800, 900, 1000
Climate Change (%) 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S01	960 Winter	700	+0%	700/600	Winter		
S1.001	S02	960 Winter	700	+0%	200/600	Winter		
S1.002	S03	960 Winter	700	+0%	200/15	Summer		
S2.000	S04	15 Winter	700	+0%	600/15	Winter		
S2.001	S05	960 Winter	700	+0%	200/600	Winter		
S1.003	S06	960 Winter	700	+0%	200/15	Summer		
S3.000	S07	960 Winter	700	+0%	700/600	Winter		
S3.001	S08	960 Winter	700	+0%	200/600	Winter		
S1.004	S09	960 Winter	700	+0%	200/60	Winter		
S4.000	S15	15 Winter	700	+0%	400/15	Winter	900/15	Winter
S4.001	S16	960 Winter	700	+0%	200/15	Summer		
S4.002	S17	960 Winter	700	+0%	200/15	Summer		
S1.005	S10	960 Winter	700	+0%	200/15	Summer		
S1.006	S11	960 Winter	700	+0%				
S1.007	S12	960 Winter	700	+0%				

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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700 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

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	Level Exceeded
S1.000	S01	107.530	0.030	0.000	0.05		3.9	SURCHARGED	
S1.001	S02	107.530	0.340	0.000	0.09		6.9	SURCHARGED	
S1.002	S03	107.529	0.657	0.000	0.12		8.6	SURCHARGED	
S2.000	S04	107.590	0.090	0.000	0.68		54.9	SURCHARGED	
S2.001	S05	107.530	0.339	0.000	0.10		9.6	SURCHARGED	
S1.003	S06	107.527	0.765	0.000	0.21		19.4	SURCHARGED	
S3.000	S07	107.527	0.027	0.000	0.04		3.2	SURCHARGED	
S3.001	S08	107.527	0.337	0.000	0.06		6.1	SURCHARGED	
S1.004	S09	107.526	0.821	0.000	0.10		24.8	SURCHARGED	
S4.000	S15	107.924	0.324	0.000	0.78		81.3	SURCHARGED	3
S4.001	S16	107.528	0.785	0.000	0.14		14.4	SURCHARGED	
S4.002	S17	107.526	1.134	0.000	0.15		14.3	SURCHARGED	
S1.005	S10	107.524	1.474	0.000	0.31		5.0	SURCHARGED	
S1.006	S11	105.795	-0.094	0.000	0.30		5.0	OK	
S1.007	S12	105.526	-0.095	0.000	0.29		5.0	OK	

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1 Birch Court Blackpole East Worcester, WR3 8SG		
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700 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S13	960 Winter	700	+0%					104.387
S1.009	S14	960 Winter	700	+0%					104.253

PN	US/MH Name	Surcharged		Flooded		Flow / Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Overflow (l/s)	Cap.					
S1.008	S13	-0.094	0.000	0.30				5.0	OK	
S1.009	S14	-0.047	0.000	0.81				5.0	OK	

1 Birch Court
Blackpole East
Worcester, WR3 8SG



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


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.279
 Region England and Wales Cv (Summer) 0.750
 M5-60 (mm) 18.600 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON


Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
 10080
 Return Period(s) (years) 200, 300, 400, 500, 600, 700, 800, 900, 1000
 Climate Change (%) 0, 0, 0, 0, 0, 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S01	960 Winter	800	+0%	700/600	Winter		
S1.001	S02	960 Winter	800	+0%	200/600	Winter		
S1.002	S03	960 Winter	800	+0%	200/15	Summer		
S2.000	S04	15 Winter	800	+0%	600/15	Winter		
S2.001	S05	960 Winter	800	+0%	200/600	Winter		
S1.003	S06	960 Winter	800	+0%	200/15	Summer		
S3.000	S07	960 Winter	800	+0%	700/600	Winter		
S3.001	S08	960 Winter	800	+0%	200/600	Winter		
S1.004	S09	960 Winter	800	+0%	200/60	Winter		
S4.000	S15	15 Winter	800	+0%	400/15	Winter	900/15	Winter
S4.001	S16	960 Winter	800	+0%	200/15	Summer		
S4.002	S17	960 Winter	800	+0%	200/15	Summer		
S1.005	S10	960 Winter	800	+0%	200/15	Summer		
S1.006	S11	960 Winter	800	+0%				
S1.007	S12	960 Winter	800	+0%				

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


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S01	107.567	0.067	0.000	0.05		4.0	SURCHARGED	
S1.001	S02	107.567	0.377	0.000	0.09		7.1	SURCHARGED	
S1.002	S03	107.566	0.694	0.000	0.12		8.8	SURCHARGED	
S2.000	S04	107.658	0.158	0.000	0.69		56.1	SURCHARGED	
S2.001	S05	107.567	0.376	0.000	0.10		9.9	SURCHARGED	
S1.003	S06	107.564	0.802	0.000	0.22		19.9	SURCHARGED	
S3.000	S07	107.564	0.064	0.000	0.04		3.3	SURCHARGED	
S3.001	S08	107.564	0.374	0.000	0.06		6.2	SURCHARGED	
S1.004	S09	107.563	0.858	0.000	0.10		25.3	SURCHARGED	
S4.000	S15	108.026	0.426	0.000	0.79		83.1	SURCHARGED	3
S4.001	S16	107.565	0.822	0.000	0.15		14.8	SURCHARGED	
S4.002	S17	107.563	1.171	0.000	0.16		14.7	SURCHARGED	
S1.005	S10	107.561	1.511	0.000	0.31		5.1	SURCHARGED	
S1.006	S11	105.795	-0.094	0.000	0.30		5.1	OK	
S1.007	S12	105.526	-0.095	0.000	0.29		5.1	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S13	960 Winter	800	+0%					104.388
S1.009	S14	960 Winter	800	+0%					104.254

PN	US/MH Name	Surcharged		Flooded		Flow / Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Overflow (l/s)	Cap.					
S1.008	S13	-0.093	0.000	0.31				5.1	OK	
S1.009	S14	-0.046	0.000	0.82				5.1	OK	

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


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.279
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 200, 300, 400, 500, 600, 700, 800, 900, 1000
Climate Change (%) 0, 0, 0, 0, 0, 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S01	960 Winter	900	+0%	700/600	Winter		
S1.001	S02	960 Winter	900	+0%	200/600	Winter		
S1.002	S03	960 Winter	900	+0%	200/15	Summer		
S2.000	S04	15 Winter	900	+0%	600/15	Winter		
S2.001	S05	960 Winter	900	+0%	200/600	Winter		
S1.003	S06	960 Winter	900	+0%	200/15	Summer		
S3.000	S07	960 Winter	900	+0%	700/600	Winter		
S3.001	S08	960 Winter	900	+0%	200/600	Winter		
S1.004	S09	960 Winter	900	+0%	200/60	Winter		
S4.000	S15	15 Winter	900	+0%	400/15	Winter	900/15	Winter
S4.001	S16	15 Winter	900	+0%	200/15	Summer		
S4.002	S17	960 Winter	900	+0%	200/15	Summer		
S1.005	S10	960 Winter	900	+0%	200/15	Summer		
S1.006	S11	960 Winter	900	+0%				
S1.007	S12	960 Winter	900	+0%				

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


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	Level Exceeded
S1.000	S01	107.600	0.100	0.000	0.05		4.1	SURCHARGED	
S1.001	S02	107.600	0.410	0.000	0.09		7.2	SURCHARGED	
S1.002	S03	107.599	0.727	0.000	0.12		8.9	SURCHARGED	
S2.000	S04	107.733	0.233	0.000	0.71		57.1	SURCHARGED	
S2.001	S05	107.600	0.409	0.000	0.11		10.1	SURCHARGED	
S1.003	S06	107.598	0.835	0.000	0.22		20.3	SURCHARGED	
S3.000	S07	107.597	0.097	0.000	0.04		3.4	SURCHARGED	
S3.001	S08	107.597	0.407	0.000	0.06		6.3	SURCHARGED	
S1.004	S09	107.596	0.891	0.000	0.11		26.0	SURCHARGED	
S4.000	S15	108.100	0.500	0.106	0.81		84.6	FLOOD	3
S4.001	S16	107.609	0.866	0.000	1.51		150.9	SURCHARGED	
S4.002	S17	107.596	1.204	0.000	0.16		15.1	SURCHARGED	
S1.005	S10	107.594	1.544	0.000	0.31		5.1	SURCHARGED	
S1.006	S11	105.795	-0.094	0.000	0.30		5.1	OK	
S1.007	S12	105.526	-0.095	0.000	0.29		5.1	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S13	960 Winter	900	+0%					104.388
S1.009	S14	960 Winter	900	+0%					104.255

PN	US/MH Name	Surcharged		Flooded		Flow / Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Overflow (l/s)	Cap.					
S1.008	S13	-0.093	0.000	0.31				5.1	OK	
S1.009	S14	-0.045	0.000	0.83				5.1	OK	

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1000 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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.279
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.600 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 200, 300, 400, 500, 600, 700, 800, 900, 1000
Climate Change (%) 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S01	960 Winter	1000	+0%	700/600	Winter		
S1.001	S02	960 Winter	1000	+0%	200/600	Winter		
S1.002	S03	960 Winter	1000	+0%	200/15	Summer		
S2.000	S04	15 Winter	1000	+0%	600/15	Winter		
S2.001	S05	15 Winter	1000	+0%	200/600	Winter		
S1.003	S06	960 Winter	1000	+0%	200/15	Summer		
S3.000	S07	960 Winter	1000	+0%	700/600	Winter		
S3.001	S08	960 Winter	1000	+0%	200/600	Winter		
S1.004	S09	960 Winter	1000	+0%	200/60	Winter		
S4.000	S15	15 Winter	1000	+0%	400/15	Winter	900/15	Winter
S4.001	S16	15 Winter	1000	+0%	200/15	Summer		
S4.002	S17	960 Winter	1000	+0%	200/15	Summer		
S1.005	S10	960 Winter	1000	+0%	200/15	Summer		
S1.006	S11	960 Winter	1000	+0%				
S1.007	S12	960 Winter	1000	+0%				

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1000 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S01	107.630	0.130	0.000	0.05		4.2	SURCHARGED	
S1.001	S02	107.630	0.440	0.000	0.09		7.3	SURCHARGED	
S1.002	S03	107.629	0.757	0.000	0.12		9.1	SURCHARGED	
S2.000	S04	107.799	0.299	0.000	0.72		58.1	SURCHARGED	
S2.001	S05	107.642	0.451	0.000	1.11		104.9	SURCHARGED	
S1.003	S06	107.627	0.865	0.000	0.23		20.7	SURCHARGED	
S3.000	S07	107.627	0.127	0.000	0.04		3.4	SURCHARGED	
S3.001	S08	107.627	0.437	0.000	0.06		6.4	SURCHARGED	
S1.004	S09	107.626	0.921	0.000	0.11		26.5	SURCHARGED	
S4.000	S15	108.101	0.501	0.552	0.81		84.8	FLOOD	3
S4.001	S16	107.710	0.967	0.000	1.54		153.9	SURCHARGED	
S4.002	S17	107.626	1.234	0.000	0.16		15.4	SURCHARGED	
S1.005	S10	107.624	1.574	0.000	0.31		5.2	SURCHARGED	
S1.006	S11	105.796	-0.093	0.000	0.31		5.2	OK	
S1.007	S12	105.526	-0.095	0.000	0.29		5.2	OK	

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1000 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.008	S13	960 Winter	1000	+0%					104.388
S1.009	S14	960 Winter	1000	+0%					104.255

PN	US/MH Name	Surcharged		Flooded		Flow / Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Overflow (l/s)	Cap.					
S1.008	S13	-0.093	0.000	0.31				5.2	OK	
S1.009	S14	-0.045	0.000	0.84				5.2	OK	