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5 Waverley Road Huddersfield West Yorkshire, HD1 5NA	H17209 Building B2, Birstall SW Calculations	
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XP Solutions	Network 2016.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.000	Minimum Backdrop Height (m)	0.000
Ratio R	0.350	Maximum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	0.000
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

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.250	4-8	0.105

Total Area Contributing (ha) = 0.355

Total Pipe Volume (m³) = 1.649

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
1.000	10.000	0.100	100.0	0.277	5.00	0.0	0.600	o	150	Pipe/Conduit		
1.001	10.000	0.100	100.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit		
2.000	23.800	0.250	95.2	0.072	5.00	0.0	0.600	o	150	Pipe/Conduit		
2.001	6.000	0.100	60.0	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)	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	5.17	160.820	0.277	0.0	0.0	0.0	1.00	17.8«	37.5
1.001	50.00	5.29	159.520	0.277	0.0	0.0	0.0	1.31	52.0	37.5
2.000	50.00	5.39	160.850	0.072	0.0	0.0	0.0	1.03	18.2	9.7
2.001	50.00	5.46	160.600	0.072	0.0	0.0	0.0	1.30	23.0	9.7

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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
3.000	12.000	0.150	80.0	0.006	5.00	0.0	0.600	o	150	Pipe/Conduit	
3.001	2.000	0.050	40.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.002	7.000	0.150	46.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	10.000	0.150	66.7	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)	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)
3.000	50.00	5.18	161.150	0.006	0.0	0.0	0.0	1.12	19.9	0.8
3.001	50.00	5.20	160.550	0.006	0.0	0.0	0.0	1.60	28.2	0.8
2.002	50.00	5.54	160.450	0.078	0.0	0.0	0.0	1.48	26.1	10.6
1.002	50.00	5.68	159.420	0.355	0.0	0.0	0.0	1.23	21.8«	48.1

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)
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1.002	Ex.SW	162.250	159.270	0.000	1200	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /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	2
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	0.350
Return Period (years)	2	Profile Type	Summer
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

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Synthetic Rainfall Details

Storm Duration (mins) 30

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Online Controls for Storm

Crown Vortex Valve® Manhole: Flow Control, DS/PN: 1.002, Volume (m³): 7.8

Design Head (m) 1.950 Vortex Valve® Type R2 SW Only Invert Level (m) 159.420
 Design Flow (l/s) 18.4 Diameter (mm) 141

Depth (m)	Flow (l/s)						
0.100	3.2	1.200	14.4	3.000	22.8	7.000	34.8
0.200	6.7	1.400	15.5	3.500	24.6	7.500	36.0
0.300	7.2	1.600	16.6	4.000	26.3	8.000	37.2
0.400	8.3	1.800	17.6	4.500	27.9	8.500	38.3
0.500	9.3	2.000	18.6	5.000	29.4	9.000	39.4
0.600	10.2	2.200	19.5	5.500	30.8	9.500	40.5
0.800	11.8	2.400	20.4	6.000	32.2		
1.000	13.1	2.600	21.2	6.500	33.5		

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Storage Structures for Storm

Cellular Storage Manhole: Crate, DS/PN: 1.001

Invert Level (m) 159.520 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 ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	54.0	54.0	1.351	0.0	96.0
1.350	54.0	96.0			

Cellular Storage Manhole: S4, DS/PN: 3.000

Invert Level (m) 160.900 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 ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	50.0	50.0	0.401	0.0	71.6
0.400	50.0	71.6			

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Summary Wizard of 15 minute 1 year Summer I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	25	161.143	0.173	0.000	1.67	26.4	SURCHARGED
1.001	Crate	54	159.747	0.002	0.000	0.15	6.8	SURCHARGED*
2.000	S5	24	160.926	-0.074	0.000	0.49	8.5	OK
2.001	S6	26	160.671	-0.079	0.000	0.45	8.6	OK
3.000	S4	72	160.907	-0.393	0.000	0.00	0.0	OK
3.001	CELLULAR	53	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	31	160.515	-0.085	0.000	0.39	8.6	OK
1.002	Flow Control	57	159.740	0.170	0.000	0.38	7.4	SURCHARGED

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Summary Wizard of 30 minute 1 year Summer I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	27	161.123	0.153	0.000	1.60	25.2	SURCHARGED
1.001	Crate	50	159.788	0.043	0.000	0.16	7.1	SURCHARGED*
2.000	S5	25	160.921	-0.079	0.000	0.46	7.9	OK
2.001	S6	27	160.667	-0.083	0.000	0.41	7.9	OK
3.000	S4	70	160.909	-0.391	0.000	0.00	0.0	OK
3.001	CELLULAR	52	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	32	160.512	-0.088	0.000	0.35	7.9	OK
1.002	Flow Control	54	159.781	0.211	0.000	0.41	7.9	SURCHARGED

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Summary Wizard of 180 minute 1 year Summer I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	44	160.923	-0.047	0.000	0.79	12.5	OK
1.001	Crate	53	159.751	0.006	0.000	0.18	8.1	SURCHARGED*
2.000	S5	44	160.894	-0.106	0.000	0.19	3.3	OK
2.001	S6	44	160.642	-0.108	0.000	0.17	3.3	OK
3.000	S4	63	160.917	-0.383	0.000	0.00	0.0	OK
3.001	CELLULAR	57	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	45	160.488	-0.112	0.000	0.15	3.3	OK
1.002	Flow Control	52	159.787	0.217	0.000	0.39	7.6	SURCHARGED

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Summary Wizard of 720 minute 1 year Summer I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water Surcharged Flooded			Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	64	160.878	-0.092	0.000	0.32	5.0	OK
1.001	Crate	66	159.593	-0.152	0.000	0.10	4.6	OK*
2.000	S5	64	160.877	-0.123	0.000	0.07	1.3	OK
2.001	S6	64	160.625	-0.125	0.000	0.07	1.3	OK
3.000	S4	51	160.926	-0.374	0.000	0.00	0.0	OK
3.001	CELLULAR	44	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	64	160.473	-0.127	0.000	0.06	1.3	OK
1.002	Flow Control	65	159.586	0.016	0.000	0.30	5.8	SURCHARGED

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Summary Wizard of 960 minute 1 year Summer I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	68	160.872	-0.098	0.000	0.26		4.1	OK
1.001	Crate	68	159.577	-0.168	0.000	0.09		3.9	OK*
2.000	S5	68	160.874	-0.126	0.000	0.06		1.1	OK
2.001	S6	68	160.623	-0.127	0.000	0.06		1.1	OK
3.000	S4	48	160.928	-0.372	0.000	0.00		0.0	OK
3.001	CELLULAR	47	160.550	-0.150	0.000	0.00		0.0	OK*
2.002	S7	68	160.471	-0.129	0.000	0.05		1.1	OK
1.002	Flow Control	68	159.564	-0.006	0.000	0.26		5.0	OK

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Summary Wizard of 15 minute 30 year Summer I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	13	161.506	0.536	6.468	2.54	40.1	FLOOD
1.001	Crate	34	160.146	0.401	0.000	0.25	11.2	SURCHARGED*
2.000	S5	16	161.105	0.105	0.000	1.18	20.5	SURCHARGED
2.001	S6	18	160.757	0.007	0.000	1.05	20.2	SURCHARGED
3.000	S4	65	160.916	-0.384	0.000	0.00	0.0	OK
3.001	CELLULAR	21	160.556	-0.144	0.000	0.00	0.0	OK*
2.002	S7	22	160.563	-0.037	0.000	0.91	20.3	OK
1.002	Flow Control	40	160.134	0.564	0.000	0.57	11.1	SURCHARGED

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Summary Wizard of 240 minute 30 year Summer I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	29	161.081	0.111	0.000	1.45	22.9	SURCHARGED	
1.001	Crate	32	160.249	0.504	0.000	0.25	11.1	SURCHARGED*	
2.000	S5	30	160.912	-0.088	0.000	0.36	6.2	OK	
2.001	S6	31	160.659	-0.091	0.000	0.32	6.2	OK	
3.000	S4	36	160.941	-0.359	0.000	0.00	0.0	OK	
3.001	CELLULAR	68	160.550	-0.150	0.000	0.00	0.0	OK*	
2.002	S7	36	160.504	-0.096	0.000	0.28	6.2	OK	
1.002	Flow Control	34	160.274	0.704	0.000	0.61	11.9	SURCHARGED	

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Summary Wizard of 480 minute 30 year Summer I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	41	160.931	-0.039	0.000	0.90	14.3	OK
1.001	Crate	38	160.042	0.297	0.000	0.23	10.4	SURCHARGED*
2.000	S5	41	160.897	-0.103	0.000	0.21	3.7	OK
2.001	S6	41	160.645	-0.105	0.000	0.19	3.7	OK
3.000	S4	32	160.949	-0.351	0.000	0.00	0.0	OK
3.001	CELLULAR	66	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	43	160.491	-0.109	0.000	0.17	3.7	OK
1.002	Flow Control	35	160.249	0.679	0.000	0.52	10.1	SURCHARGED

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Summary Wizard of 15 minute 100 year Summer I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	5	161.529	0.559	28.793	2.58		40.8	FLOOD
1.001	Crate	17	160.622	0.877	0.000	0.35		15.4	SURCHARGED*
2.000	S5	2	162.037	1.037	0.000	1.93		33.4	FLOOD RISK
2.001	S6	15	161.068	0.318	0.000	1.74		33.4	SURCHARGED
3.000	S4	46	160.929	-0.371	0.000	0.00		0.0	OK
3.001	CELLULAR	16	160.776	0.076	0.000	0.09		1.3	SURCHARGED*
2.002	S7	17	160.776	0.176	0.000	1.47		32.7	SURCHARGED
1.002	Flow Control	19	160.606	1.036	0.000	0.74		14.3	SURCHARGED

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Summary Wizard of 120 minute 100 year Summer I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	8	161.516	0.546	15.694	2.56	40.4	FLOOD
1.001	Crate	7	160.871	1.126	0.000	0.48	21.2	SURCHARGED*
2.000	S5	11	161.384	0.384	0.000	1.01	17.4	SURCHARGED
2.001	S6	7	161.357	0.607	0.000	0.90	17.3	SURCHARGED
3.000	S4	5	161.150	-0.150	0.000	0.00	0.0	OK
3.001	CELLULAR	7	161.150	0.450	0.000	0.05	0.7	SURCHARGED*
2.002	S7	7	161.345	0.745	0.000	0.77	17.1	SURCHARGED
1.002	Flow Control	6	161.350	1.780	0.000	0.94	18.3	SURCHARGED

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Summary Wizard of 180 minute 100 year Summer I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	11	161.509	0.539	8.553	2.54	40.1	FLOOD
1.001	Crate	4	160.871	1.126	0.000	0.49	21.9	SURCHARGED*
2.000	S5	8	161.411	0.411	0.000	0.81	14.0	SURCHARGED
2.001	S6	3	161.374	0.624	0.000	0.72	13.9	SURCHARGED
3.000	S4	4	161.153	-0.147	0.000	0.00	0.1	OK
3.001	CELLULAR	9	161.150	0.450	0.000	0.07	1.0	SURCHARGED*
2.002	S7	3	161.358	0.758	0.000	0.62	13.7	SURCHARGED
1.002	Flow Control	3	161.356	1.786	0.000	0.94	18.3	SURCHARGED

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Summary Wizard of 480 minute 100 year Summer I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	26	161.128	0.158	0.000	1.62	25.6	SURCHARGED	
1.001	Crate	14	160.782	1.037	0.000	0.37	16.4	SURCHARGED*	
2.000	S5	29	160.915	-0.085	0.000	0.39	6.7	OK	
2.001	S6	16	160.829	0.079	0.000	0.35	6.7	SURCHARGED	
3.000	S4	19	160.989	-0.311	0.000	0.00	0.0	OK	
3.001	CELLULAR	14	160.813	0.113	0.000	0.06	0.8	SURCHARGED*	
2.002	S7	14	160.955	0.355	0.000	0.29	6.6	SURCHARGED	
1.002	Flow Control	14	160.991	1.421	0.000	0.75	14.5	SURCHARGED	

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Summary Wizard of 600 minute 100 year Summer I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	30	161.052	0.082	0.000	1.37	21.7		SURCHARGED
1.001	Crate	16	160.706	0.961	0.000	0.28	12.5		SURCHARGED*
2.000	S5	33	160.909	-0.091	0.000	0.33	5.7		OK
2.001	S6	19	160.739	-0.011	0.000	0.29	5.7		OK
3.000	S4	18	160.994	-0.306	0.000	0.00	0.0		OK
3.001	CELLULAR	17	160.725	0.025	0.000	0.01	0.2		SURCHARGED*
2.002	S7	16	160.784	0.184	0.000	0.25	5.7		SURCHARGED
1.002	Flow Control	15	160.801	1.231	0.000	0.76	14.7		SURCHARGED

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Summary Wizard of 720 minute 100 year Summer I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	34	161.006	0.036	0.000	1.20	18.9	SURCHARGED	
1.001	Crate	19	160.577	0.832	0.000	0.26	11.7	SURCHARGED*	
2.000	S5	35	160.904	-0.096	0.000	0.28	4.9	OK	
2.001	S6	35	160.651	-0.099	0.000	0.26	4.9	OK	
3.000	S4	16	160.998	-0.302	0.000	0.00	0.0	OK	
3.001	CELLULAR	19	160.573	-0.127	0.000	0.00	0.0	OK*	
2.002	S7	19	160.596	-0.004	0.000	0.22	4.9	OK	
1.002	Flow Control	18	160.609	1.039	0.000	0.72	14.0	SURCHARGED	

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Summary Wizard of 15 minute 1 year Winter I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	24	161.168	0.198	0.000	1.74	27.5	SURCHARGED
1.001	Crate	51	159.781	0.036	0.000	0.16	7.3	SURCHARGED*
2.000	S5	23	160.928	-0.072	0.000	0.52	8.9	OK
2.001	S6	25	160.673	-0.077	0.000	0.47	9.0	OK
3.000	S4	71	160.907	-0.393	0.000	0.00	0.0	OK
3.001	CELLULAR	60	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	30	160.517	-0.083	0.000	0.41	9.0	OK
1.002	Flow Control	55	159.773	0.203	0.000	0.40	7.8	SURCHARGED

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Summary Wizard of 30 minute 1 year Winter I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	28	161.101	0.131	0.000	1.54	24.3		SURCHARGED
1.001	Crate	45	159.827	0.082	0.000	0.17	7.5		SURCHARGED*
2.000	S5	28	160.917	-0.083	0.000	0.42	7.2		OK
2.001	S6	30	160.664	-0.086	0.000	0.37	7.2		OK
3.000	S4	69	160.910	-0.390	0.000	0.00	0.0		OK
3.001	CELLULAR	59	160.550	-0.150	0.000	0.00	0.0		OK*
2.002	S7	35	160.508	-0.092	0.000	0.32	7.2		OK
1.002	Flow Control	48	159.819	0.249	0.000	0.43	8.3		SURCHARGED

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Summary Wizard of 180 minute 1 year Winter I+0% 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 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 Storage Structures 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water Surcharged Flooded			Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	52	160.904	-0.066	0.000	0.60	9.5	OK
1.001	Crate	55	159.742	-0.003	0.000	0.18	8.1	OK*
2.000	S5	52	160.888	-0.112	0.000	0.14	2.5	OK
2.001	S6	52	160.636	-0.114	0.000	0.13	2.5	OK
3.000	S4	60	160.919	-0.381	0.000	0.00	0.0	OK
3.001	CELLULAR	64	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	52	160.483	-0.117	0.000	0.11	2.5	OK
1.002	Flow Control	53	159.785	0.215	0.000	0.39	7.5	SURCHARGED

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Summary Wizard of 600 minute 1 year Winter I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	67	160.872	-0.098	0.000	0.27		4.2	OK
1.001	Crate	67	159.579	-0.166	0.000	0.09		4.1	OK*
2.000	S5	67	160.874	-0.126	0.000	0.06		1.1	OK
2.001	S6	67	160.623	-0.127	0.000	0.06		1.1	OK
3.000	S4	50	160.927	-0.373	0.000	0.00		0.0	OK
3.001	CELLULAR	27	160.550	-0.150	0.000	0.00		0.0	OK*
2.002	S7	67	160.471	-0.129	0.000	0.05		1.1	OK
1.002	Flow Control	67	159.567	-0.003	0.000	0.27		5.2	OK

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Summary Wizard of 720 minute 1 year Winter I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	69	160.869	-0.101	0.000	0.23	3.7	OK	
1.001	Crate	69	159.570	-0.175	0.000	0.08	3.7	OK*	
2.000	S5	69	160.873	-0.127	0.000	0.06	1.0	OK	
2.001	S6	69	160.621	-0.129	0.000	0.05	1.0	OK	
3.000	S4	47	160.929	-0.371	0.000	0.00	0.0	OK	
3.001	CELLULAR	26	160.550	-0.150	0.000	0.00	0.0	OK*	
2.002	S7	69	160.470	-0.130	0.000	0.04	1.0	OK	
1.002	Flow Control	69	159.553	-0.017	0.000	0.24	4.6	OK	

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Summary Wizard of 960 minute 1 year Winter I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water			Surcharged		Flooded		Pipe Flow (l/s)	Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)				
1.000	Ex.SW	71	160.864	-0.106	0.000	0.19			3.0	OK	
1.001	Crate	71	159.561	-0.184	0.000	0.07			3.0	OK*	
2.000	S5	71	160.870	-0.130	0.000	0.05			0.8	OK	
2.001	S6	71	160.619	-0.131	0.000	0.04			0.8	OK	
3.000	S4	44	160.932	-0.368	0.000	0.00			0.0	OK	
3.001	CELLULAR	29	160.550	-0.150	0.000	0.00			0.0	OK*	
2.002	S7	71	160.468	-0.132	0.000	0.04			0.8	OK	
1.002	Flow Control	71	159.534	-0.036	0.000	0.20			3.8	OK	

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Summary Wizard of 30 minute 30 year Winter I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	12	161.507	0.537	6.807	2.54	40.1	FLOOD
1.001	Crate	24	160.424	0.679	0.000	0.28	12.3	SURCHARGED*
2.000	S5	19	161.001	0.001	0.000	1.00	17.3	SURCHARGED
2.001	S6	21	160.711	-0.039	0.000	0.90	17.3	OK
3.000	S4	54	160.924	-0.376	0.000	0.00	0.0	OK
3.001	CELLULAR	24	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	24	160.550	-0.050	0.000	0.78	17.3	OK
1.002	Flow Control	26	160.410	0.840	0.000	0.67	13.1	SURCHARGED

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Summary Wizard of 60 minute 30 year Winter I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	18	161.500	0.530	0.403	2.53	39.9	FLOOD
1.001	Crate	20	160.509	0.764	0.000	0.28	12.3	SURCHARGED*
2.000	S5	21	160.942	-0.058	0.000	0.68	11.8	OK
2.001	S6	23	160.686	-0.064	0.000	0.62	11.9	OK
3.000	S4	45	160.931	-0.369	0.000	0.00	0.0	OK
3.001	CELLULAR	39	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	27	160.528	-0.072	0.000	0.53	11.9	OK
1.002	Flow Control	23	160.497	0.927	0.000	0.70	13.6	SURCHARGED

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Summary Wizard of 480 minute 30 year Winter I+0% 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 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 Storage Structures 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	49	160.910	-0.060	0.000	0.67	10.6	OK
1.001	Crate	39	160.008	0.263	0.000	0.24	10.8	SURCHARGED*
2.000	S5	49	160.890	-0.110	0.000	0.16	2.8	OK
2.001	S6	49	160.638	-0.112	0.000	0.14	2.8	OK
3.000	S4	28	160.955	-0.345	0.000	0.00	0.0	OK
3.001	CELLULAR	40	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	49	160.485	-0.115	0.000	0.12	2.8	OK
1.002	Flow Control	38	160.211	0.641	0.000	0.51	9.8	SURCHARGED

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Summary Wizard of 720 minute 30 year Winter I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	58	160.895	-0.075	0.000	0.50	7.9	OK
1.001	Crate	46	159.821	0.076	0.000	0.17	7.7	SURCHARGED*
2.000	S5	58	160.884	-0.116	0.000	0.12	2.0	OK
2.001	S6	58	160.632	-0.118	0.000	0.11	2.0	OK
3.000	S4	25	160.961	-0.339	0.000	0.00	0.0	OK
3.001	CELLULAR	32	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	58	160.480	-0.120	0.000	0.09	2.0	OK
1.002	Flow Control	44	159.927	0.357	0.000	0.42	8.2	SURCHARGED

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Summary Wizard of 960 minute 30 year Winter I+0% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water Surcharged Flooded			Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	60	160.886	-0.084	0.000	0.40	6.3	OK
1.001	Crate	59	159.677	-0.068	0.000	0.13	5.9	OK*
2.000	S5	60	160.881	-0.119	0.000	0.10	1.6	OK
2.001	S6	60	160.629	-0.121	0.000	0.09	1.6	OK
3.000	S4	23	160.966	-0.334	0.000	0.00	0.0	OK
3.001	CELLULAR	31	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	60	160.477	-0.123	0.000	0.07	1.6	OK
1.002	Flow Control	56	159.769	0.199	0.000	0.37	7.3	SURCHARGED

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Summary Wizard of 15 minute 100 year Winter I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	2	161.535	0.565	34.864	2.59	41.0	FLOOD	
1.001	Crate	15	160.739	0.994	0.000	0.38	17.0	SURCHARGED*	
2.000	S5	1	162.168	1.168	0.000	2.01	34.7	FLOOD RISK	
2.001	S6	12	161.122	0.372	0.000	1.81	34.8	SURCHARGED	
3.000	S4	42	160.933	-0.367	0.000	0.00	0.0	OK	
3.001	CELLULAR	15	160.804	0.104	0.000	0.10	1.4	SURCHARGED*	
2.002	S7	15	160.804	0.204	0.000	1.54	34.2	SURCHARGED	
1.002	Flow Control	16	160.722	1.152	0.000	0.77	15.0	SURCHARGED	

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Summary Wizard of 60 minute 100 year Winter I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	4	161.530	0.560	29.938	2.58	40.8	FLOOD
1.001	Crate	2	160.871	1.126	0.000	0.56	25.2	SURCHARGED*
2.000	S5	10	161.388	0.388	0.000	1.25	21.7	SURCHARGED
2.001	S6	6	161.360	0.610	0.000	1.13	21.6	SURCHARGED
3.000	S4	6	161.122	-0.178	0.000	0.00	0.0	OK
3.001	CELLULAR	6	161.150	0.450	0.000	0.10	1.4	SURCHARGED*
2.002	S7	6	161.348	0.748	0.000	0.97	21.5	SURCHARGED
1.002	Flow Control	4	161.356	1.786	0.000	0.94	18.3	SURCHARGED

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Summary Wizard of 240 minute 100 year Winter I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	15	161.505	0.535	5.335	2.02	32.0	FLOOD
1.001	Crate	11	160.871	1.126	0.000	0.43	19.2	SURCHARGED*
2.000	S5	7	161.412	0.412	0.000	0.49	8.4	SURCHARGED
2.001	S6	4	161.370	0.620	0.000	0.44	8.4	SURCHARGED
3.000	S4	3	161.240	-0.060	0.000	0.27	4.9	OK
3.001	CELLULAR	3	161.150	0.450	0.000	0.38	5.3	SURCHARGED*
2.002	S7	4	161.354	0.754	0.000	0.36	8.1	SURCHARGED
1.002	Flow Control	5	161.353	1.783	0.000	0.94	18.3	SURCHARGED

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Summary Wizard of 360 minute 100 year Winter I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Flow / Cap.	Overflow	Pipe	Status
			Level (m)	Depth (m)	Volume (m ³)		Flow (l/s)	Flow (l/s)	
1.000	Ex.SW	20	161.285	0.315	0.000	1.51	23.8	FLOOD RISK	
1.001	Crate	12	160.871	1.126	0.000	0.33	14.8	SURCHARGED*	
2.000	S5	13	161.225	0.225	0.000	0.36	6.2	SURCHARGED	
2.001	S6	10	161.205	0.455	0.000	0.32	6.2	SURCHARGED	
3.000	S4	17	160.998	-0.302	0.000	0.00	0.0	OK	
3.001	CELLULAR	10	161.150	0.450	0.000	0.05	0.7	SURCHARGED*	
2.002	S7	10	161.196	0.596	0.000	0.28	6.2	SURCHARGED	
1.002	Flow Control	11	161.187	1.617	0.000	0.90	17.5	SURCHARGED	

Patrick Parsons Ltd		Page 76
5 Waverley Road Huddersfield West Yorkshire, HD1 5NA	H17209 Building B2, Birstall SW Calculations	
Date AUG 2018 File H17209-R1 SW Calculatio...	Designed by TB Checked by	
XP Solutions	Network 2016.1	

Summary Wizard of 960 minute 100 year Winter I+40% 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 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 2
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 0.350
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

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) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm Rank	Water	Surcharged	Flooded	Pipe		Status
			Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	
1.000	Ex.SW	47	160.914	-0.056	0.000	0.71	11.3	OK
1.001	Crate	31	160.263	0.518	0.000	0.25	11.1	SURCHARGED*
2.000	S5	47	160.891	-0.109	0.000	0.17	2.9	OK
2.001	S6	47	160.639	-0.111	0.000	0.15	2.9	OK
3.000	S4	10	161.017	-0.283	0.000	0.00	0.0	OK
3.001	CELLULAR	34	160.550	-0.150	0.000	0.00	0.0	OK*
2.002	S7	48	160.486	-0.114	0.000	0.13	2.9	OK
1.002	Flow Control	30	160.320	0.750	0.000	0.60	11.7	SURCHARGED

