

GGP Consult		Page 1
2 Hallam Road Priory Park East, Hull Humberside, HU4 7DY		
Date 20/05/2025 08:41 File Network Model - 19.05.2...	Designed by GGPAeecOne Checked by	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes Jensen H Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

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Area Summary for Storm <table><thead><tr><th>Pipe Number</th><th>PIMP Type</th><th>PIMP Name</th><th>PIMP (%)</th><th>Gross Area (ha)</th><th>Imp. Area (ha)</th><th>Pipe Total (ha)</th></tr></thead><tbody><tr><td>1.000</td><td>User</td><td>-</td><td>100</td><td>0.010</td><td>0.010</td><td>0.010</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.006</td><td>0.006</td><td>0.016</td></tr><tr><td>1.001</td><td>User</td><td>-</td><td>100</td><td>0.003</td><td>0.003</td><td>0.003</td></tr><tr><td>1.002</td><td>User</td><td>-</td><td>100</td><td>0.004</td><td>0.004</td><td>0.004</td></tr><tr><td>2.000</td><td>User</td><td>-</td><td>100</td><td>0.014</td><td>0.014</td><td>0.014</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.008</td><td>0.008</td><td>0.022</td></tr><tr><td>3.000</td><td>User</td><td>-</td><td>100</td><td>0.024</td><td>0.024</td><td>0.024</td></tr><tr><td>2.001</td><td>User</td><td>-</td><td>100</td><td>0.022</td><td>0.022</td><td>0.022</td></tr><tr><td>1.003</td><td>User</td><td>-</td><td>100</td><td>0.008</td><td>0.008</td><td>0.008</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.011</td><td>0.011</td><td>0.020</td></tr><tr><td>1.004</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>4.000</td><td>User</td><td>-</td><td>100</td><td>0.010</td><td>0.010</td><td>0.010</td></tr><tr><td>4.001</td><td>User</td><td>-</td><td>100</td><td>0.009</td><td>0.009</td><td>0.009</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.007</td><td>0.007</td><td>0.017</td></tr><tr><td>5.000</td><td>User</td><td>-</td><td>100</td><td>0.014</td><td>0.014</td><td>0.014</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.008</td><td>0.008</td><td>0.022</td></tr><tr><td>5.001</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>4.002</td><td>User</td><td>-</td><td>100</td><td>0.001</td><td>0.001</td><td>0.001</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.003</td><td>0.003</td><td>0.004</td></tr><tr><td>4.003</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>6.000</td><td>User</td><td>-</td><td>100</td><td>0.003</td><td>0.003</td><td>0.003</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.006</td><td>0.006</td><td>0.009</td></tr><tr><td>7.000</td><td>User</td><td>-</td><td>100</td><td>0.002</td><td>0.002</td><td>0.002</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.003</td><td>0.003</td><td>0.005</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.002</td><td>0.002</td><td>0.007</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.004</td><td>0.004</td><td>0.011</td></tr><tr><td>8.000</td><td>User</td><td>-</td><td>100</td><td>0.003</td><td>0.003</td><td>0.003</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.002</td><td>0.002</td><td>0.006</td></tr><tr><td>8.001</td><td>User</td><td>-</td><td>100</td><td>0.011</td><td>0.011</td><td>0.011</td></tr><tr><td>9.000</td><td>User</td><td>-</td><td>100</td><td>0.005</td><td>0.005</td><td>0.005</td></tr><tr><td>10.000</td><td>User</td><td>-</td><td>100</td><td>0.002</td><td>0.002</td><td>0.002</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.003</td><td>0.003</td><td>0.006</td></tr><tr><td>8.002</td><td>User</td><td>-</td><td>100</td><td>0.006</td><td>0.006</td><td>0.006</td></tr><tr><td>11.000</td><td>User</td><td>-</td><td>100</td><td>0.007</td><td>0.007</td><td>0.007</td></tr><tr><td>12.000</td><td>User</td><td>-</td><td>100</td><td>0.003</td><td>0.003</td><td>0.003</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.004</td><td>0.004</td><td>0.007</td></tr><tr><td>11.001</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>6.001</td><td>User</td><td>-</td><td>100</td><td>0.006</td><td>0.006</td><td>0.006</td></tr><tr><td>13.000</td><td>User</td><td>-</td><td>100</td><td>0.004</td><td>0.004</td><td>0.004</td></tr><tr><td>13.001</td><td>User</td><td>-</td><td>100</td><td>0.006</td><td>0.006</td><td>0.006</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.005</td><td>0.005</td><td>0.011</td></tr><tr><td>14.000</td><td>User</td><td>-</td><td>100</td><td>0.012</td><td>0.012</td><td>0.012</td></tr><tr><td>15.000</td><td>User</td><td>-</td><td>100</td><td>0.002</td><td>0.002</td><td>0.002</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.003</td><td>0.003</td><td>0.005</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.006</td><td>0.006</td><td>0.011</td></tr><tr><td>15.001</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>6.002</td><td>User</td><td>-</td><td>100</td><td>0.005</td><td>0.005</td><td>0.005</td></tr><tr><td></td><td>User</td><td>-</td><td>100</td><td>0.051</td><td>0.051</td><td>0.055</td></tr><tr><td>4.004</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>1.005</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>1.006</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr></tbody></table>				Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)	1.000	User	-	100	0.010	0.010	0.010		User	-	100	0.006	0.006	0.016	1.001	User	-	100	0.003	0.003	0.003	1.002	User	-	100	0.004	0.004	0.004	2.000	User	-	100	0.014	0.014	0.014		User	-	100	0.008	0.008	0.022	3.000	User	-	100	0.024	0.024	0.024	2.001	User	-	100	0.022	0.022	0.022	1.003	User	-	100	0.008	0.008	0.008		User	-	100	0.011	0.011	0.020	1.004	-	-	100	0.000	0.000	0.000	4.000	User	-	100	0.010	0.010	0.010	4.001	User	-	100	0.009	0.009	0.009		User	-	100	0.007	0.007	0.017	5.000	User	-	100	0.014	0.014	0.014		User	-	100	0.008	0.008	0.022	5.001	-	-	100	0.000	0.000	0.000	4.002	User	-	100	0.001	0.001	0.001		User	-	100	0.003	0.003	0.004	4.003	-	-	100	0.000	0.000	0.000	6.000	User	-	100	0.003	0.003	0.003		User	-	100	0.006	0.006	0.009	7.000	User	-	100	0.002	0.002	0.002		User	-	100	0.003	0.003	0.005		User	-	100	0.002	0.002	0.007		User	-	100	0.004	0.004	0.011	8.000	User	-	100	0.003	0.003	0.003		User	-	100	0.002	0.002	0.006	8.001	User	-	100	0.011	0.011	0.011	9.000	User	-	100	0.005	0.005	0.005	10.000	User	-	100	0.002	0.002	0.002		User	-	100	0.003	0.003	0.006	8.002	User	-	100	0.006	0.006	0.006	11.000	User	-	100	0.007	0.007	0.007	12.000	User	-	100	0.003	0.003	0.003		User	-	100	0.004	0.004	0.007	11.001	-	-	100	0.000	0.000	0.000	6.001	User	-	100	0.006	0.006	0.006	13.000	User	-	100	0.004	0.004	0.004	13.001	User	-	100	0.006	0.006	0.006		User	-	100	0.005	0.005	0.011	14.000	User	-	100	0.012	0.012	0.012	15.000	User	-	100	0.002	0.002	0.002		User	-	100	0.003	0.003	0.005		User	-	100	0.006	0.006	0.011	15.001	-	-	100	0.000	0.000	0.000	6.002	User	-	100	0.005	0.005	0.005		User	-	100	0.051	0.051	0.055	4.004	-	-	100	0.000	0.000	0.000	1.005	-	-	100	0.000	0.000	0.000	1.006	-	-	100	0.000	0.000	0.000
Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)																																																																																																																																																																																																																																																																																																																																																																									
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Date 20/05/2025 08:41 File Network Model - 19.05.2...	Designed by GGPAeecOne Checked by	
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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
				Total	Total	Total
				0.329	0.329	0.329

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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S1.006	SHEADWALL	3.000	1.660	0.000	150	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	1.000
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	9
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.400		

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: SHYDROBRAKE.08, DS/PN: S1.004, Volume (m³):

2.8

Unit Reference	MD-SHE-0067-2000-1000-2000
Design Head (m)	1.000
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	67
Invert Level (m)	1.780
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	2.0
Flush-Flo™	0.296	1.9
Kick-Flo®	0.599	1.6
Mean Flow over Head Range	-	1.7

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	1.6	1.200	2.2	3.000	3.3	7.000	4.9
0.200	1.9	1.400	2.3	3.500	3.5	7.500	5.1
0.300	1.9	1.600	2.5	4.000	3.8	8.000	5.2
0.400	1.9	1.800	2.6	4.500	4.0	8.500	5.4
0.500	1.8	2.000	2.7	5.000	4.2	9.000	5.5
0.600	1.6	2.200	2.9	5.500	4.4	9.500	5.7
0.800	1.8	2.400	3.0	6.000	4.6		
1.000	2.0	2.600	3.1	6.500	4.7		

Hydro-Brake® Optimum Manhole: SHYDROBRAKE.21, DS/PN: S4.004, Volume (m³):

3.7

Unit Reference	MD-SHE-0082-3000-1000-3000
Design Head (m)	1.000
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	82
Invert Level (m)	1.735
Minimum Outlet Pipe Diameter (mm)	100

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Hydro-Brake® Optimum Manhole: SHYDROBRAKE.21, DS/PN: S4.004, Volume (m³): <u>3.7</u> Suggested Manhole Diameter (mm) 1200 <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>1.000</td><td>3.0</td></tr><tr><td>Flush-Flo™</td><td>0.297</td><td>3.0</td></tr><tr><td>Kick-Flo®</td><td>0.623</td><td>2.4</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>2.6</td></tr></table> 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 <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>2.4</td><td>1.200</td><td>3.3</td><td>3.000</td><td>5.0</td><td>7.000</td><td>7.4</td></tr><tr><td>0.200</td><td>2.9</td><td>1.400</td><td>3.5</td><td>3.500</td><td>5.4</td><td>7.500</td><td>7.7</td></tr><tr><td>0.300</td><td>3.0</td><td>1.600</td><td>3.7</td><td>4.000</td><td>5.7</td><td>8.000</td><td>7.9</td></tr><tr><td>0.400</td><td>2.9</td><td>1.800</td><td>3.9</td><td>4.500</td><td>6.0</td><td>8.500</td><td>8.2</td></tr><tr><td>0.500</td><td>2.8</td><td>2.000</td><td>4.1</td><td>5.000</td><td>6.3</td><td>9.000</td><td>8.4</td></tr><tr><td>0.600</td><td>2.5</td><td>2.200</td><td>4.3</td><td>5.500</td><td>6.6</td><td>9.500</td><td>8.6</td></tr><tr><td>0.800</td><td>2.7</td><td>2.400</td><td>4.5</td><td>6.000</td><td>6.9</td><td></td><td></td></tr><tr><td>1.000</td><td>3.0</td><td>2.600</td><td>4.7</td><td>6.500</td><td>7.2</td><td></td><td></td></tr></table>			Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.000	3.0	Flush-Flo™	0.297	3.0	Kick-Flo®	0.623	2.4	Mean Flow over Head Range	-	2.6	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	2.4	1.200	3.3	3.000	5.0	7.000	7.4	0.200	2.9	1.400	3.5	3.500	5.4	7.500	7.7	0.300	3.0	1.600	3.7	4.000	5.7	8.000	7.9	0.400	2.9	1.800	3.9	4.500	6.0	8.500	8.2	0.500	2.8	2.000	4.1	5.000	6.3	9.000	8.4	0.600	2.5	2.200	4.3	5.500	6.6	9.500	8.6	0.800	2.7	2.400	4.5	6.000	6.9			1.000	3.0	2.600	4.7	6.500	7.2		
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Storage Structures for Storm

Tank or Pond Manhole: SSW.TANK, DS/PN: S1.003

Invert Level (m) 1.790

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	71.5	0.800	71.5	0.801	1.0	1.500	1.0

Porous Car Park Manhole: SPOROUS.01, DS/PN: S4.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.0
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	16.7	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	2.301	Cap Volume Depth (m)	0.599

Porous Car Park Manhole: SPOROUS.06, DS/PN: S7.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.6
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	7.2	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	2.425	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: SPOROUS.03, DS/PN: S8.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.3
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	6.4	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	2.400	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: SPOROUS.04, DS/PN: S10.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.3
Membrane Percolation (mm/hr)	1000	Length (m)	10.0
Max Percolation (l/s)	6.4	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	2.450	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: SPOROUS.05, DS/PN: S12.000

Infiltration Coefficient Base (m/hr)	0.00000	Safety Factor	2.0
Membrane Percolation (mm/hr)	1000	Porosity	0.30
Max Percolation (l/s)	10.6	Invert Level (m)	2.450

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<u>Porous Car Park Manhole: SPOROUS.05, DS/PN: S12.000</u> <table><tr><td>Width (m)</td><td>3.8</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Length (m)</td><td>10.0</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Slope (1:X)</td><td>10000.0</td><td>Cap Volume Depth (m)</td><td>0.600</td></tr></table> <u>Porous Car Park Manhole: SPOROUS.02, DS/PN: S13.001</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Width (m)</td><td>6.4</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>10.0</td></tr><tr><td>Max Percolation (l/s)</td><td>17.8</td><td>Slope (1:X)</td><td>10000.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>2.210</td><td>Cap Volume Depth (m)</td><td>0.600</td></tr></table> <u>Porous Car Park Manhole: SPOROUS.07, DS/PN: S15.000</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Width (m)</td><td>3.1</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>10.0</td></tr><tr><td>Max Percolation (l/s)</td><td>8.6</td><td>Slope (1:X)</td><td>10000.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>2.500</td><td>Cap Volume Depth (m)</td><td>0.600</td></tr></table> <u>Tank or Pond Manhole: SSW.TANK.02, DS/PN: S6.002</u> Invert Level (m) 1.785 <table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td></tr><tr><td>0.000</td><td>205.8</td><td>0.400</td><td>205.8</td><td>0.401</td><td>1.0</td><td>0.900</td><td>1.0</td></tr></table>			Width (m)	3.8	Depression Storage (mm)	5	Length (m)	10.0	Evaporation (mm/day)	3	Slope (1:X)	10000.0	Cap Volume Depth (m)	0.600	Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.4	Membrane Percolation (mm/hr)	1000	Length (m)	10.0	Max Percolation (l/s)	17.8	Slope (1:X)	10000.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	2.210	Cap Volume Depth (m)	0.600	Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.1	Membrane Percolation (mm/hr)	1000	Length (m)	10.0	Max Percolation (l/s)	8.6	Slope (1:X)	10000.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	2.500	Cap Volume Depth (m)	0.600	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	205.8	0.400	205.8	0.401	1.0	0.900	1.0
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<u>Volume Summary (Static)</u> Length Calculations based on True Length <table><thead><tr><th>Pipe Number</th><th>USMH Name</th><th>Manhole Volume (m³)</th><th>Pipe Volume (m³)</th><th>Storage Structure Volume (m³)</th><th>Total Volume (m³)</th></tr></thead><tbody><tr><td>S1.000</td><td>SSWMH.02</td><td>0.162</td><td>0.555</td><td>0.000</td><td>0.718</td></tr><tr><td>S1.001</td><td>SSWMH.03</td><td>0.121</td><td>0.164</td><td>0.000</td><td>0.285</td></tr><tr><td>S1.002</td><td>SSWMH.04</td><td>0.168</td><td>0.173</td><td>0.000</td><td>0.341</td></tr><tr><td>S2.000</td><td>SSWMH.05</td><td>0.164</td><td>0.453</td><td>0.000</td><td>0.617</td></tr><tr><td>S3.000</td><td>SSWMH.06</td><td>0.145</td><td>0.075</td><td>0.000</td><td>0.219</td></tr><tr><td>S2.001</td><td>SSWMH.07</td><td>0.168</td><td>0.293</td><td>0.000</td><td>0.460</td></tr><tr><td>S1.003</td><td>SSW.TANK</td><td>1.696</td><td>0.571</td><td>57.926</td><td>60.193</td></tr><tr><td>S1.004</td><td>SHYDROBRAKE.08</td><td>2.244</td><td>0.065</td><td>0.000</td><td>2.309</td></tr><tr><td>S4.000</td><td>SSWMH.08</td><td>0.119</td><td>0.081</td><td>0.000</td><td>0.200</td></tr><tr><td>S4.001</td><td>SPOROUS.01</td><td>0.677</td><td>0.081</td><td>10.773</td><td>11.531</td></tr><tr><td>S5.000</td><td>SSWMH.09a</td><td>0.153</td><td>0.575</td><td>0.000</td><td>0.729</td></tr><tr><td>S5.001</td><td>SSWMH.09b</td><td>0.118</td><td>0.375</td><td>0.000</td><td>0.493</td></tr><tr><td>S4.002</td><td>SSWMH.09</td><td>0.095</td><td>0.057</td><td>0.000</td><td>0.152</td></tr><tr><td>S4.003</td><td>SSWMH.10</td><td>0.095</td><td>-0.003</td><td>0.000</td><td>0.092</td></tr><tr><td>S6.000</td><td>SSWMH.17</td><td>0.108</td><td>0.233</td><td>0.000</td><td>0.341</td></tr><tr><td>S7.000</td><td>SPOROUS.06</td><td>0.679</td><td>0.089</td><td>4.676</td><td>5.444</td></tr><tr><td>S8.000</td><td>SPOROUS.03</td><td>0.679</td><td>0.087</td><td>4.137</td><td>4.902</td></tr><tr><td>S8.001</td><td>SSWMH.12</td><td>0.116</td><td>0.114</td><td>0.000</td><td>0.230</td></tr><tr><td>S9.000</td><td>SSWMH.13</td><td>0.107</td><td>0.131</td><td>0.000</td><td>0.237</td></tr><tr><td>S10.000</td><td>SPOROUS.04</td><td>0.679</td><td>0.125</td><td>4.137</td><td>4.941</td></tr><tr><td>S8.002</td><td>SSWMH.14</td><td>0.209</td><td>0.081</td><td>0.000</td><td>0.290</td></tr><tr><td>S11.000</td><td>SSWMH.15</td><td>0.109</td><td>0.221</td><td>0.000</td><td>0.330</td></tr><tr><td>S12.000</td><td>SPOROUS.05</td><td>0.679</td><td>0.101</td><td>6.834</td><td>7.614</td></tr><tr><td>S11.001</td><td>SSWMH.16</td><td>0.212</td><td>0.067</td><td>0.000</td><td>0.279</td></tr><tr><td>S6.001</td><td>SSWMH.18</td><td>0.221</td><td>0.480</td><td>0.000</td><td>0.700</td></tr><tr><td>S13.000</td><td>SSWMH.11</td><td>0.123</td><td>0.126</td><td>0.000</td><td>0.249</td></tr><tr><td>S13.001</td><td>SPOROUS.02</td><td>0.679</td><td>0.225</td><td>11.510</td><td>12.414</td></tr><tr><td>S14.000</td><td>SSWMH.20</td><td>0.250</td><td>0.098</td><td>0.000</td><td>0.348</td></tr><tr><td>S15.000</td><td>SPOROUS.07</td><td>0.679</td><td>0.074</td><td>5.575</td><td>6.328</td></tr><tr><td>S15.001</td><td>SSWMH.19</td><td>0.095</td><td>0.199</td><td>0.000</td><td>0.294</td></tr><tr><td>S6.002</td><td>SSW.TANK.02</td><td>1.018</td><td>1.833</td><td>82.893</td><td>85.744</td></tr><tr><td>S4.004</td><td>SHYDROBRAKE.21</td><td>1.856</td><td>-0.002</td><td>0.000</td><td>1.854</td></tr><tr><td>S1.005</td><td>SSWMH.22</td><td>0.322</td><td>1.612</td><td>0.000</td><td>1.935</td></tr><tr><td>S1.006</td><td>SSWMH.23</td><td>1.510</td><td>0.068</td><td>0.000</td><td>1.577</td></tr><tr><td colspan="2">Total</td><td>16.454</td><td>9.476</td><td>188.461</td><td>214.391</td></tr></tbody></table>						Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)	S1.000	SSWMH.02	0.162	0.555	0.000	0.718	S1.001	SSWMH.03	0.121	0.164	0.000	0.285	S1.002	SSWMH.04	0.168	0.173	0.000	0.341	S2.000	SSWMH.05	0.164	0.453	0.000	0.617	S3.000	SSWMH.06	0.145	0.075	0.000	0.219	S2.001	SSWMH.07	0.168	0.293	0.000	0.460	S1.003	SSW.TANK	1.696	0.571	57.926	60.193	S1.004	SHYDROBRAKE.08	2.244	0.065	0.000	2.309	S4.000	SSWMH.08	0.119	0.081	0.000	0.200	S4.001	SPOROUS.01	0.677	0.081	10.773	11.531	S5.000	SSWMH.09a	0.153	0.575	0.000	0.729	S5.001	SSWMH.09b	0.118	0.375	0.000	0.493	S4.002	SSWMH.09	0.095	0.057	0.000	0.152	S4.003	SSWMH.10	0.095	-0.003	0.000	0.092	S6.000	SSWMH.17	0.108	0.233	0.000	0.341	S7.000	SPOROUS.06	0.679	0.089	4.676	5.444	S8.000	SPOROUS.03	0.679	0.087	4.137	4.902	S8.001	SSWMH.12	0.116	0.114	0.000	0.230	S9.000	SSWMH.13	0.107	0.131	0.000	0.237	S10.000	SPOROUS.04	0.679	0.125	4.137	4.941	S8.002	SSWMH.14	0.209	0.081	0.000	0.290	S11.000	SSWMH.15	0.109	0.221	0.000	0.330	S12.000	SPOROUS.05	0.679	0.101	6.834	7.614	S11.001	SSWMH.16	0.212	0.067	0.000	0.279	S6.001	SSWMH.18	0.221	0.480	0.000	0.700	S13.000	SSWMH.11	0.123	0.126	0.000	0.249	S13.001	SPOROUS.02	0.679	0.225	11.510	12.414	S14.000	SSWMH.20	0.250	0.098	0.000	0.348	S15.000	SPOROUS.07	0.679	0.074	5.575	6.328	S15.001	SSWMH.19	0.095	0.199	0.000	0.294	S6.002	SSW.TANK.02	1.018	1.833	82.893	85.744	S4.004	SHYDROBRAKE.21	1.856	-0.002	0.000	1.854	S1.005	SSWMH.22	0.322	1.612	0.000	1.935	S1.006	SSWMH.23	1.510	0.068	0.000	1.577	Total		16.454	9.476	188.461	214.391
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Micro
Drainage

1 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 1.000

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 9

Number of Online Controls 2

Number of Time/Area Diagrams 0

Number of Offline Controls 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR

Ratio R 0.400

Region England and Wales Cv (Summer) 1.000

M5-60 (mm) 19.000

Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status ON

DVD Status OFF

Inertia Status OFF

Profile(s) Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Period(s) (years) 1, 30, 100

Climate Change (%) 40, 40, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
S1.000	SSWMH.02	15 Summer	1	+40%	100/240 Winter		
S1.001	SSWMH.03	15 Summer	1	+40%	100/180 Summer		
S1.002	SSWMH.04	15 Summer	1	+40%	100/180 Summer		
S2.000	SSWMH.05	15 Summer	1	+40%	100/15 Summer		
S3.000	SSWMH.06	15 Summer	1	+40%	30/15 Summer		
S2.001	SSWMH.07	15 Summer	1	+40%	100/180 Summer		
S1.003	SSW.TANK	180 Summer	1	+40%	30/15 Summer		
S1.004	SHYDROBRAKE.08	240 Summer	1	+40%	1/240 Summer		
S4.000	SSWMH.08	30 Summer	1	+40%	30/15 Summer		
S4.001	SPOROUS.01	30 Summer	1	+40%	30/15 Summer		
S5.000	SSWMH.09a	15 Summer	1	+40%	100/120 Summer		
S5.001	SSWMH.09b	15 Summer	1	+40%	100/15 Summer		
S4.002	SSWMH.09	30 Summer	1	+40%	30/15 Summer		
S4.003	SSWMH.10	30 Summer	1	+40%	30/15 Summer		
S6.000	SSWMH.17	15 Summer	1	+40%	30/15 Summer		
S7.000	SPOROUS.06	15 Summer	1	+40%	100/15 Summer		
S8.000	SPOROUS.03	30 Summer	1	+40%	30/15 Summer		

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

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.000	SSWMH.02		2.548	-0.177	0.000	0.10			3.7
S1.001	SSWMH.03		2.457	-0.168	0.000	0.14			4.3
S1.002	SSWMH.04		2.430	-0.165	0.000	0.16			5.1
S2.000	SSWMH.05		2.614	-0.086	0.000	0.37			5.2
S3.000	SSWMH.06		2.476	-0.074	0.000	0.51			5.6
S2.001	SSWMH.07		2.442	-0.153	0.000	0.22			14.9
S1.003	SSW.TANK		1.996	-0.094	0.000	0.06			2.9
S1.004	SHYDROBRAKE.08		2.007	0.002	0.000	0.07			1.9
S4.000	SSWMH.08		2.399	-0.053	0.000	0.22			1.9
S4.001	SPOROUS.01		2.396	-0.055	0.000	0.46		14	4.0
S5.000	SSWMH.09a		2.521	-0.169	0.000	0.14			5.2
S5.001	SSWMH.09b		2.415	-0.168	0.000	0.14			5.1
S4.002	SSWMH.09		2.389	-0.061	0.000	0.65			7.1
S4.003	SSWMH.10		2.359	-0.061	0.000	0.66			7.2
S6.000	SSWMH.17		2.407	-0.115	0.000	0.12			2.1
S7.000	SPOROUS.06		2.467	-0.108	0.000	0.17		8	2.1
S8.000	SPOROUS.03		2.428	-0.122	0.000	0.08		11	0.9

PN	US/MH Name	Status	Level Exceeded
S1.000	SSWMH.02	OK	
S1.001	SSWMH.03	OK	
S1.002	SSWMH.04	OK	
S2.000	SSWMH.05	OK	
S3.000	SSWMH.06	OK	
S2.001	SSWMH.07	OK	
S1.003	SSW.TANK	OK	
S1.004	SHYDROBRAKE.08	SURCHARGED	
S4.000	SSWMH.08	OK	
S4.001	SPOROUS.01	OK	
S5.000	SSWMH.09a	OK	
S5.001	SSWMH.09b	OK	
S4.002	SSWMH.09	OK	
S4.003	SSWMH.10	OK	
S6.000	SSWMH.17	OK	
S7.000	SPOROUS.06	OK	
S8.000	SPOROUS.03	OK	

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1 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) Surge	First (Y) Flood	First (Z) Overflow
S8.001	SSWMH.12	15 Summer	1	+40%	30/15 Summer		
S9.000	SSWMH.13	15 Summer	1	+40%	30/15 Summer		
S10.000	SPOROUS.04	30 Summer	1	+40%	100/15 Summer		
S8.002	SSWMH.14	15 Summer	1	+40%	30/15 Summer		
S11.000	SSWMH.15	15 Summer	1	+40%	30/15 Summer		
S12.000	SPOROUS.05	30 Summer	1	+40%	100/15 Summer		
S11.001	SSWMH.16	30 Summer	1	+40%	30/15 Summer		
S6.001	SSWMH.18	15 Summer	1	+40%	30/15 Summer		
S13.000	SSWMH.11	15 Summer	1	+40%	30/240 Summer		
S13.001	SPOROUS.02	30 Summer	1	+40%	30/180 Summer		
S14.000	SSWMH.20	15 Summer	1	+40%	30/120 Summer		
S15.000	SPOROUS.07	30 Summer	1	+40%	100/120 Summer		
S15.001	SSWMH.19	30 Summer	1	+40%	100/120 Summer		
S6.002	SSW.TANK.02	360 Summer	1	+40%	30/60 Summer		
S4.004	SHYDROBRAKE.21	360 Summer	1	+40%	30/15 Summer		
S1.005	SSWMH.22	240 Summer	1	+40%			
S1.006	SSWMH.23	240 Summer	1	+40%			

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap. (l/s)	Half Drain Time (mins)
S8.001	SSWMH.12		2.367	-0.101	0.000	0.22	
S9.000	SSWMH.13		2.404	-0.126	0.000	0.06	
S10.000	SPOROUS.04		2.477	-0.123	0.000	0.08	11
S8.002	SSWMH.14		2.345	-0.075	0.000	0.41	
S11.000	SSWMH.15		2.400	-0.115	0.000	0.12	
S12.000	SPOROUS.05		2.478	-0.122	0.000	0.08	14
S11.001	SSWMH.16		2.346	-0.104	0.000	0.20	
S6.001	SSWMH.18		2.332	-0.038	0.000	0.90	
S13.000	SSWMH.11		2.302	-0.123	0.000	0.07	
S13.001	SPOROUS.02		2.247	-0.113	0.000	0.14	15
S14.000	SSWMH.20		2.149	-0.101	0.000	0.23	
S15.000	SPOROUS.07		2.550	-0.100	0.000	0.21	14
S15.001	SSWMH.19		2.538	-0.112	0.000	0.14	
S6.002	SSW.TANK.02		1.944	-0.141	0.000	0.04	
S4.004	SHYDROBRAKE.21		1.942	-0.018	0.000	0.09	
S1.005	SSWMH.22		1.786	-0.244	0.000	0.08	
S1.006	SSWMH.23		1.722	-0.243	0.000	0.08	

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S8.001	SSWMH.12	2.7	OK	
S9.000	SSWMH.13	1.1	OK	

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<u>1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>				
PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S10.000	SPOROUS.04	1.0	OK	
S8.002	SSWMH.14	5.5	OK	
S11.000	SSWMH.15	1.6	OK	
S12.000	SPOROUS.05	0.9	OK	
S11.001	SSWMH.16	2.1	OK	
S6.001	SSWMH.18	12.5	OK	
S13.000	SSWMH.11	0.9	OK	
S13.001	SPOROUS.02	1.8	OK	
S14.000	SSWMH.20	2.8	OK	
S15.000	SPOROUS.07	1.9	OK	
S15.001	SSWMH.19	1.9	OK	
S6.002	SSW.TANK.02	2.2	OK	
S4.004	SHYDROBRAKE.21	2.6	OK	4
S1.005	SSWMH.22	4.5	OK	
S1.006	SSWMH.23	4.5	OK	
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30 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 1.000

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 9

Number of Online Controls 2

Number of Time/Area Diagrams 0

Number of Offline Controls 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR

Ratio R 0.400

Region England and Wales Cv (Summer) 1.000

M5-60 (mm) 19.000

Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status ON

DVD Status OFF

Inertia Status OFF

Profile(s) Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Period(s) (years) 1, 30, 100

Climate Change (%) 40, 40, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
S1.000	SSWMH.02	15 Summer	30	+40%	100/240 Winter		
S1.001	SSWMH.03	15 Summer	30	+40%	100/180 Summer		
S1.002	SSWMH.04	15 Summer	30	+40%	100/180 Summer		
S2.000	SSWMH.05	15 Summer	30	+40%	100/15 Summer		
S3.000	SSWMH.06	15 Summer	30	+40%	30/15 Summer		
S2.001	SSWMH.07	15 Summer	30	+40%	100/180 Summer		
S1.003	SSW.TANK	180 Winter	30	+40%	30/15 Summer		
S1.004	SHYDROBRAKE.08	240 Summer	30	+40%	1/240 Summer		
S4.000	SSWMH.08	30 Summer	30	+40%	30/15 Summer		
S4.001	SPOROUS.01	30 Summer	30	+40%	30/15 Summer		
S5.000	SSWMH.09a	30 Summer	30	+40%	100/120 Summer		
S5.001	SSWMH.09b	30 Summer	30	+40%	100/15 Summer		
S4.002	SSWMH.09	30 Summer	30	+40%	30/15 Summer		
S4.003	SSWMH.10	30 Summer	30	+40%	30/15 Summer		
S6.000	SSWMH.17	15 Summer	30	+40%	30/15 Summer		
S7.000	SPOROUS.06	15 Summer	30	+40%	100/15 Summer		
S8.000	SPOROUS.03	15 Summer	30	+40%	30/15 Summer		

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm									
PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.000	SSWMH.02		2.576	-0.149	0.000	0.25			9.2
S1.001	SSWMH.03		2.495	-0.130	0.000	0.37			11.0
S1.002	SSWMH.04		2.473	-0.122	0.000	0.42			13.6
S2.000	SSWMH.05		2.665	-0.035	0.000	0.92			12.6
S3.000	SSWMH.06		2.560	0.010	0.000	1.24			13.8
S2.001	SSWMH.07		2.496	-0.099	0.000	0.59			39.8
S1.003	SSW.TANK		2.396	0.306	0.000	0.15			7.4
S1.004	SHYDROBRAKE.08		2.477	0.472	0.000	0.07			1.9
S4.000	SSWMH.08		2.561	0.109	0.000	0.54			4.8
S4.001	SPOROUS.01		2.553	0.102	0.000	1.04		10	9.2
S5.000	SSWMH.09a		2.566	-0.124	0.000	0.30			11.3
S5.001	SSWMH.09b		2.548	-0.035	0.000	0.28			9.8
S4.002	SSWMH.09		2.537	0.087	0.000	1.50			16.5
S4.003	SSWMH.10		2.467	0.047	0.000	1.52			16.5
S6.000	SSWMH.17		2.582	0.060	0.000	0.29			5.0
S7.000	SPOROUS.06		2.570	-0.005	0.000	0.40		6	4.8
S8.000	SPOROUS.03		2.588	0.038	0.000	0.35		8	4.2
PN	US/MH Name	Status	Level Exceeded						
S1.000	SSWMH.02	OK							
S1.001	SSWMH.03	OK							
S1.002	SSWMH.04	OK							
S2.000	SSWMH.05	OK							
S3.000	SSWMH.06	SURCHARGED							
S2.001	SSWMH.07	OK							
S1.003	SSW.TANK	SURCHARGED							
S1.004	SHYDROBRAKE.08	SURCHARGED							
S4.000	SSWMH.08	SURCHARGED							
S4.001	SPOROUS.01	SURCHARGED							
S5.000	SSWMH.09a	OK							
S5.001	SSWMH.09b	OK							
S4.002	SSWMH.09	SURCHARGED							
S4.003	SSWMH.10	SURCHARGED							
S6.000	SSWMH.17	SURCHARGED							
S7.000	SPOROUS.06	OK							
S8.000	SPOROUS.03	SURCHARGED							
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Micro Drainage

30 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
S8.001	SSWMH.12	15 Summer	30	+40%	30/15 Summer		
S9.000	SSWMH.13	15 Summer	30	+40%	30/15 Summer		
S10.000	SPOROUS.04	15 Summer	30	+40%	100/15 Summer		
S8.002	SSWMH.14	15 Summer	30	+40%	30/15 Summer		
S11.000	SSWMH.15	15 Summer	30	+40%	30/15 Summer		
S12.000	SPOROUS.05	30 Summer	30	+40%	100/15 Summer		
S11.001	SSWMH.16	15 Summer	30	+40%	30/15 Summer		
S6.001	SSWMH.18	15 Summer	30	+40%	30/15 Summer		
S13.000	SSWMH.11	240 Winter	30	+40%	30/240 Summer		
S13.001	SPOROUS.02	240 Winter	30	+40%	30/180 Summer		
S14.000	SSWMH.20	240 Winter	30	+40%	30/120 Summer		
S15.000	SPOROUS.07	15 Summer	30	+40%	100/120 Summer		
S15.001	SSWMH.19	15 Summer	30	+40%	100/120 Summer		
S6.002	SSW.TANK.02	240 Winter	30	+40%	30/60 Summer		
S4.004	SHYDROBRAKE.21	240 Winter	30	+40%	30/15 Summer		
S1.005	SSWMH.22	180 Summer	30	+40%			
S1.006	SSWMH.23	960 Winter	30	+40%			

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap. (l/s)	Half Drain Time (mins)
S8.001	SSWMH.12		2.587	0.119	0.000	0.42	
S9.000	SSWMH.13		2.584	0.054	0.000	0.15	
S10.000	SPOROUS.04		2.578	-0.022	0.000	0.24	6
S8.002	SSWMH.14		2.577	0.157	0.000	0.66	
S11.000	SSWMH.15		2.581	0.066	0.000	0.29	
S12.000	SPOROUS.05		2.564	-0.036	0.000	0.31	6
S11.001	SSWMH.16		2.567	0.117	0.000	0.46	
S6.001	SSWMH.18		2.563	0.193	0.000	1.43	
S13.000	SSWMH.11		2.441	0.016	0.000	0.03	
S13.001	SPOROUS.02		2.442	0.082	0.000	0.14	52
S14.000	SSWMH.20		2.441	0.191	0.000	0.10	
S15.000	SPOROUS.07		2.587	-0.063	0.000	0.63	8
S15.001	SSWMH.19		2.569	-0.081	0.000	0.43	
S6.002	SSW.TANK.02		2.441	0.356	0.000	0.07	
S4.004	SHYDROBRAKE.21		2.439	0.479	0.000	0.10	
S1.005	SSWMH.22		1.789	-0.241	0.000	0.09	
S1.006	SSWMH.23		1.725	-0.240	0.000	0.09	

PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S8.001	SSWMH.12	5.2	SURCHARGED	
S9.000	SSWMH.13	2.6	SURCHARGED	

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<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>				
PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S10.000	SPOROUS.04	3.0	OK	
S8.002	SSWMH.14	9.0	SURCHARGED	
S11.000	SSWMH.15	3.8	SURCHARGED	
S12.000	SPOROUS.05	3.8	OK	
S11.001	SSWMH.16	4.9	SURCHARGED	
S6.001	SSWMH.18	19.8	SURCHARGED	
S13.000	SSWMH.11	0.4	SURCHARGED	
S13.001	SPOROUS.02	1.8	SURCHARGED*	
S14.000	SSWMH.20	1.2	SURCHARGED	
S15.000	SPOROUS.07	5.7	OK	
S15.001	SSWMH.19	5.7	OK	
S6.002	SSW.TANK.02	3.8	FLOOD RISK*	
S4.004	SHYDROBRAKE.21	3.0	SURCHARGED*	4
S1.005	SSWMH.22	4.9	OK	
S1.006	SSWMH.23	4.9	OK	
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100 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 1.000

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 9

Number of Online Controls 2

Number of Time/Area Diagrams 0

Number of Offline Controls 0

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR

Ratio R 0.400

Region England and Wales Cv (Summer) 1.000

M5-60 (mm) 19.000 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status ON

DVD Status OFF

Inertia Status OFF

Profile(s) Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Period(s) (years) 1, 30, 100

Climate Change (%) 40, 40, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
S1.000	SSWMH.02	240 Winter	100	+40%	100/240 Winter		
S1.001	SSWMH.03	240 Winter	100	+40%	100/180 Summer		
S1.002	SSWMH.04	240 Winter	100	+40%	100/180 Summer		
S2.000	SSWMH.05	15 Summer	100	+40%	100/15 Summer		
S3.000	SSWMH.06	240 Winter	100	+40%	30/15 Summer		
S2.001	SSWMH.07	240 Winter	100	+40%	100/180 Summer		
S1.003	SSW.TANK	240 Winter	100	+40%	30/15 Summer		
S1.004	SHYDROBRAKE.08	240 Winter	100	+40%	1/240 Summer		
S4.000	SSWMH.08	240 Winter	100	+40%	30/15 Summer		
S4.001	SPOROUS.01	240 Winter	100	+40%	30/15 Summer		
S5.000	SSWMH.09a	240 Winter	100	+40%	100/120 Summer		
S5.001	SSWMH.09b	240 Winter	100	+40%	100/15 Summer		
S4.002	SSWMH.09	240 Winter	100	+40%	30/15 Summer		
S4.003	SSWMH.10	240 Winter	100	+40%	30/15 Summer		
S6.000	SSWMH.17	240 Winter	100	+40%	30/15 Summer		
S7.000	SPOROUS.06	240 Winter	100	+40%	100/15 Summer		
S8.000	SPOROUS.03	240 Winter	100	+40%	30/15 Summer		

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<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>				
PN	US/MH Name	Pipe Flow (l/s)	Status	Level Exceeded
S10.000	SPOROUS.04	0.8	FLOOD RISK	
S8.002	SSWMH.14	4.4	FLOOD RISK	
S11.000	SSWMH.15	0.9	FLOOD RISK	
S12.000	SPOROUS.05	0.9	FLOOD RISK	
S11.001	SSWMH.16	1.9	FLOOD RISK	
S6.001	SSWMH.18	9.7	FLOOD RISK	
S13.000	SSWMH.11	0.5	FLOOD RISK	
S13.001	SPOROUS.02	2.0	FLOOD RISK*	
S14.000	SSWMH.20	1.6	FLOOD RISK	
S15.000	SPOROUS.07	1.5	FLOOD RISK	
S15.001	SSWMH.19	1.5	FLOOD RISK	
S6.002	SSW.TANK.02	3.7	FLOOD RISK*	
S4.004	SHYDROBRAKE.21	3.0	FLOOD RISK*	4
S1.005	SSWMH.22	5.0	OK	
S1.006	SSWMH.23	5.0	OK	
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