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20 East Sands	19320	
Burbage Marlborough	Ageas Bowl	
Wiltshire SN8 3AN	CA5.1	
Date 21/06/2023	Designed by Robbie Parnham	
File 13920 - AGAES BOWL - CHA...	Checked by	
Micro Drainage	Network 2018.1	

STORM SEWER DESIGN by the Modified Rational Method

Pipe Sizes STANDARD Manhole Sizes STANDARD

Designed with Level Soffits

« - Indicates pipe capacity < flow

Network Results Table

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20 East Sands
Burbage Marlborough
Wiltshire SN8 3AN

Date 21/06/2023
File 13920 - AGAES BOWL - CHA...

Micro Drainage

19320
Ageas Bowl
CA5.1

Designed by Robbie Parnham
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Network 2018.1

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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
2.000	13.770	1.150	12.0	0.016	5.00	0.0	0.600	o	150	Pipe/Conduit	
2.001	6.772	1.884	3.6	0.021	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.009	20.859	0.203	102.8	0.020	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.010	18.321	0.563	32.5	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.011	16.599	0.417	39.8	0.029	0.00	0.0	0.600	o	300	Pipe/Conduit	
3.000	8.220	0.280	29.4	0.024	5.00	0.0	0.600	o	150	Pipe/Conduit	
3.001	17.762	0.172	103.3	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.002	4.706	0.046	102.3	0.011	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.003	11.550	0.902	12.8	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.004	27.483	2.541	10.8	0.036	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.000	5.000	0.000	0.0	0.222	5.00	0.0	0.600	o	150	Pipe/Conduit	
4.001	5.462	1.441	3.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.005	10.374	0.251	41.3	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.012	18.458	1.401	13.2	0.047	0.00	0.0	0.600	o	300	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)
2.000	50.00	5.08	57.500	0.016	0.0	0.0	0.0	2.93	51.7	2.2
2.001	50.00	5.10	56.350	0.037	0.0	0.0	0.0	5.35	94.6	5.0
1.009	45.58	6.36	54.391	0.260	0.0	0.0	0.0	1.29	51.3	32.1
1.010	45.15	6.50	54.188	0.287	0.0	0.0	0.0	2.30	91.5	35.1
1.011	44.79	6.61	53.550	0.316	0.0	0.0	0.0	2.50	176.7	38.3
3.000	50.00	5.07	57.400	0.024	0.0	0.0	0.0	1.87	33.0	3.2
3.001	49.14	5.37	57.120	0.034	0.0	0.0	0.0	0.99	17.5	4.5
3.002	48.83	5.45	56.948	0.045	0.0	0.0	0.0	0.99	17.6	6.0
3.003	48.57	5.52	56.902	0.060	0.0	0.0	0.0	2.83	50.0	7.9
3.004	48.01	5.67	56.000	0.096	0.0	0.0	0.0	3.08	54.4	12.5
4.000	47.17	5.90	54.900	0.222	0.0	0.0	0.0	0.09	1.6	28.4
4.001	47.10	5.92	54.900	0.222	0.0	0.0	0.0	5.21	92.1	28.4
3.005	46.81	6.00	53.384	0.345	0.0	0.0	0.0	2.04	81.1	43.7
1.012	44.57	6.68	53.058	0.708	0.0	0.0	0.0	4.35	307.7	85.5

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Micro
Drainage

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20 East Sands Burbage Marlborough Wiltshire SN8 3AN					19320 Ageas Bowl CA5.1						
Date 21/06/2023 File 13920 - AGAES BOWL - CHA...					Designed by Robbie Parnham Checked by						
Micro Drainage					Network 2018.1						
Manhole Schedules for Storm											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	61.250	1.250	Open Manhole	1200	1.000	60.000	150				
S2	60.500	1.100	Open Manhole	1200	1.001	59.400	150	1.000	59.400	150	
S3	59.600	1.075	Open Manhole	1200	1.002	58.525	225	1.001	58.600	150	
S4	59.700	1.257	Open Manhole	1200	1.003	58.443	225	1.002	58.443	225	
S5	59.350	1.087	Open Manhole	1200	1.004	58.263	225	1.003	58.263	225	
S6	58.600	1.075	Open Manhole	1200	1.005	57.525	225	1.004	57.525	225	
S7	58.200	0.794	Open Manhole	1200	1.006	57.406	225	1.005	57.406	225	
S8	57.850	0.925	Open Manhole	1200	1.007	56.925	225	1.006	56.925	225	
S9	57.850	0.943	Open Manhole	1200	1.008	56.907	225	1.007	56.907	225	
S10	58.500	1.000	Open Manhole	1200	2.000	57.500	150				
S11	57.350	1.000	Open Manhole	1200	2.001	56.350	150	2.000	56.350	150	
S12	57.050	2.659	Open Manhole	1200	1.009	54.391	225	1.008	54.391	225	
								2.001	54.466	150	
S13	55.600	1.412	Open Manhole	1200	1.010	54.188	225	1.009	54.188	225	
S14	54.600	1.050	Open Manhole	1200	1.011	53.550	300	1.010	53.625	225	
S15	58.350	0.950	Open Manhole	1200	3.000	57.400	150				
S16	58.250	1.130	Open Manhole	1200	3.001	57.120	150	3.000	57.120	150	
S17	57.850	0.902	Open Manhole	1200	3.002	56.948	150	3.001	56.948	150	
S18	57.850	0.948	Open Manhole	1200	3.003	56.902	150	3.002	56.902	150	
S19	57.070	1.070	Open Manhole	1200	3.004	56.000	150	3.003	56.000	150	
PCP 1	55.600	0.700	Open Manhole	1200	4.000	54.900	150				
S20	55.600	0.700	Open Manhole	1200	4.001	54.900	150	4.000	54.900	150	
S21	55.500	2.116	Open Manhole	1200	3.005	53.384	225	3.004	53.459	150	
								4.001	53.459	150	
S22	54.350	1.292	Open Manhole	1200	1.012	53.058	300	1.011	53.133	300	75
								3.005	53.133	225	
S23	53.500	0.500	Open Manhole	1200	5.000	53.000	150				
S24	53.500	0.500	Open Manhole	1200	6.000	53.000	150				
S25	53.500	0.790	Open Manhole	1200	5.001	52.710	225	5.000	52.785	150	
								6.000	52.785	150	
PCP 2	53.300	0.740	Open Manhole	1200	5.002	52.560	225	5.001	52.560	225	
S26	53.500	0.940	Open Manhole	1200	5.003	52.560	225	5.002	52.560	225	
S27	53.550	1.893	Open Manhole	1200	1.013	51.657	300	1.012	51.657	300	
								5.003	51.807	225	75
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MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)	
BASIN 1	S28	52.750	1.850	Open Manhole	1350	1.014	50.900	375	1.013	50.900	300	310
		52.500	1.700	Open Manhole	1350	1.015	50.800	225	1.014	50.800	375	
	S29	60.700	0.500	Open Manhole	1200	7.000	60.200	150				
	S30	59.810	0.510	Open Manhole	1200	7.001	59.300	150	7.000	59.300	150	
	S31	59.300	0.575	Open Manhole	1200	7.002	58.725	225	7.001	58.800	150	
	S32	59.000	0.500	Open Manhole	1200	8.000	58.500	150				
	S33	58.850	0.753	Open Manhole	1200	7.003	58.097	225	7.002	58.097	225	
									8.000	58.172	150	
	S34	58.450	0.479	Open Manhole	1200	7.004	57.971	225	7.003	57.971	225	
	S35	57.780	0.655	Open Manhole	1200	7.005	57.125	225	7.004	57.125	225	
S36	57.550	0.675	Open Manhole	1200	7.006	56.875	225	7.005	56.875	225		
S37	57.150	0.950	Open Manhole	1200	7.007	56.200	225	7.006	56.200	225		
S38	56.880	1.255	Open Manhole	1200	7.008	55.625	300	7.007	55.700	225		
S39	55.010	0.885	Open Manhole	1200	7.009	54.125	300	7.008	54.125	300		
S40	54.190	1.140	Open Manhole	1350	7.010	53.050	375	7.009	53.125	300		
S41	62.500	0.500	Open Manhole	1200	9.000	62.000	150					
S42	62.500	1.000	Open Manhole	1200	9.001	61.500	225	9.000	61.575	150		
S43	57.310	1.310	Open Manhole	1200	9.002	56.000	300	9.001	56.075	225		
S44	53.520	2.670	Open Manhole	1500	7.011	50.850	450	7.010	50.925	375		
								9.002	51.000	300		
S45	51.950	1.950	Open Manhole	1350	7.012	50.000	450	7.011	50.000	450		
S46	51.950	2.450	Open Manhole	1350	1.016	49.500	450	1.015	49.725	225		
								7.012	49.500	450		
BASIN 2	S47	51.000	1.800	Open Manhole	1350	1.017	49.200	450	1.016	49.200	450	
		51.000	1.870	Open Manhole	1350	1.018	49.130	150	1.017	49.140	450	
		51.000	1.970	Open Manhole	0		OUTFALL		1.018	49.030	150	
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Online Controls for Storm Orifice Manhole: S20, DS/PN: 4.001, Volume (m³): 0.9 Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 54.900 Orifice Manhole: S26, DS/PN: 5.003, Volume (m³): 1.6 Diameter (m) 0.075 Discharge Coefficient 0.600 Invert Level (m) 52.560 Orifice Manhole: BASIN 1, DS/PN: 1.015, Volume (m³): 6.5 Diameter (m) 0.048 Discharge Coefficient 0.600 Invert Level (m) 50.800 Hydro-Brake® Optimum Manhole: BASIN 2, DS/PN: 1.017, Volume (m³): 6.5 Unit Reference MD-SHE-0123-8000-1600-8000 Design Head (m) 1.600 Design Flow (l/s) 8.0 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 123 Invert Level (m) 49.200 Minimum Outlet Pipe Diameter (mm) 150 Suggested Manhole Diameter (mm) 1200 <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>1.600</td><td>8.0</td><td>Kick-Flo®</td><td>0.977</td><td>6.4</td></tr><tr><td>Flush-Flo™</td><td>0.471</td><td>8.0</td><td>Mean Flow over Head Range</td><td>-</td><td>7.0</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>4.4</td><td>1.200</td><td>7.0</td><td>3.000</td><td>10.8</td><td>7.000</td><td>16.1</td></tr><tr><td>0.200</td><td>7.1</td><td>1.400</td><td>7.5</td><td>3.500</td><td>11.6</td><td>7.500</td><td>16.6</td></tr><tr><td>0.300</td><td>7.7</td><td>1.600</td><td>8.0</td><td>4.000</td><td>12.3</td><td>8.000</td><td>17.2</td></tr><tr><td>0.400</td><td>8.0</td><td>1.800</td><td>8.5</td><td>4.500</td><td>13.0</td><td>8.500</td><td>17.7</td></tr><tr><td>0.500</td><td>8.0</td><td>2.000</td><td>8.9</td><td>5.000</td><td>13.7</td><td>9.000</td><td>18.2</td></tr><tr><td>0.600</td><td>7.9</td><td>2.200</td><td>9.3</td><td>5.500</td><td>14.4</td><td>9.500</td><td>18.6</td></tr><tr><td>0.800</td><td>7.5</td><td>2.400</td><td>9.7</td><td>6.000</td><td>15.0</td><td></td><td></td></tr><tr><td>1.000</td><td>6.4</td><td>2.600</td><td>10.1</td><td>6.500</td><td>15.5</td><td></td><td></td></tr></table>			Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.600	8.0	Kick-Flo®	0.977	6.4	Flush-Flo™	0.471	8.0	Mean Flow over Head Range	-	7.0	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	4.4	1.200	7.0	3.000	10.8	7.000	16.1	0.200	7.1	1.400	7.5	3.500	11.6	7.500	16.6	0.300	7.7	1.600	8.0	4.000	12.3	8.000	17.2	0.400	8.0	1.800	8.5	4.500	13.0	8.500	17.7	0.500	8.0	2.000	8.9	5.000	13.7	9.000	18.2	0.600	7.9	2.200	9.3	5.500	14.4	9.500	18.6	0.800	7.5	2.400	9.7	6.000	15.0			1.000	6.4	2.600	10.1	6.500	15.5		
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0.500	8.0	2.000	8.9	5.000	13.7	9.000	18.2																																																																																					
0.600	7.9	2.200	9.3	5.500	14.4	9.500	18.6																																																																																					
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Storage Structures for Storm

Porous Car Park Manhole: PCP 1, DS/PN: 4.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	14.5
Membrane Percolation (mm/hr)	1000	Length (m)	70.0
Max Percolation (l/s)	281.9	Slope (1:X)	0.0
Safety Factor	1.5	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	54.900	Membrane Depth (mm)	200

Porous Car Park Manhole: PCP 2, DS/PN: 5.002

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	14.5
Membrane Percolation (mm/hr)	1000	Length (m)	33.0
Max Percolation (l/s)	132.9	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	52.560	Membrane Depth (mm)	200

Tank or Pond Manhole: BASIN 1, DS/PN: 1.015

Invert Level (m) 50.900

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	409.0	1.300	833.0	1.301	0.0

Tank or Pond Manhole: BASIN 2, DS/PN: 1.017

Invert Level (m) 49.200

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	360.0	1.500	879.0	1.501	0.0

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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	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 4 Number of Storage Structures 4 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)	19.800	Cv (Winter)	0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S1	15 Winter	1	+0%					60.033
1.001	S2	15 Winter	1	+0%					59.444
1.002	S3	15 Winter	1	+0%	100/15 Summer				58.597
1.003	S4	15 Winter	1	+0%	100/15 Summer				58.514
1.004	S5	15 Winter	1	+0%	100/15 Summer				58.318
1.005	S6	15 Winter	1	+0%	30/15 Summer				57.620
1.006	S7	15 Winter	1	+0%	30/15 Summer				57.481
1.007	S8	15 Winter	1	+0%	30/15 Summer				57.071
1.008	S9	15 Winter	1	+0%	100/15 Summer				56.966
2.000	S10	15 Winter	1	+0%					57.520
2.001	S11	15 Winter	1	+0%	100/15 Summer				56.373
1.009	S12	15 Winter	1	+0%	30/15 Summer				54.521
1.010	S13	15 Winter	1	+0%	30/15 Summer				54.286
1.011	S14	15 Winter	1	+0%	100/15 Summer				53.648
3.000	S15	15 Winter	1	+0%					57.433

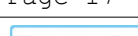
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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
Storm

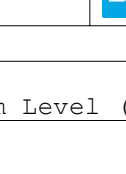
PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)					
1.000	S1	-0.117	0.000	0.11		4.3	OK	
1.001	S2	-0.106	0.000	0.18		5.8	OK	
1.002	S3	-0.153	0.000	0.22		9.0	OK	
1.003	S4	-0.154	0.000	0.22		10.0	OK	
1.004	S5	-0.170	0.000	0.13		13.3	OK	
1.005	S6	-0.130	0.000	0.37		16.2	OK	
1.006	S7	-0.150	0.000	0.24		19.7	OK	
1.007	S8	-0.079	0.000	0.74		21.7	OK	
1.008	S9	-0.166	0.000	0.15		22.8	OK	
2.000	S10	-0.130	0.000	0.04		2.1	OK	
2.001	S11	-0.127	0.000	0.06		4.4	OK	
1.009	S12	-0.095	0.000	0.63		29.2	OK	
1.010	S13	-0.127	0.000	0.39		32.1	OK	
1.011	S14	-0.202	0.000	0.23		35.1	OK	
3.000	S15	-0.117	0.000	0.11		3.2	OK	

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<u>1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>								
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Water Level (m)
3.001	S16	15 Winter	1	+0%	30/15 Summer			57.172
3.002	S17	15 Winter	1	+0%	30/15 Summer			57.015
3.003	S18	15 Winter	1	+0%				56.942
3.004	S19	15 Winter	1	+0%	100/15 Summer			56.047
4.000	PCP 1	480 Winter	1	+0%	30/30 Summer			54.988
4.001	S20	480 Winter	1	+0%	30/30 Summer			54.985
3.005	S21	15 Winter	1	+0%	100/15 Summer			53.453
1.012	S22	15 Winter	1	+0%	100/15 Summer			53.150
5.000	S23	15 Winter	1	+0%	100/120 Winter			53.039
6.000	S24	15 Winter	1	+0%	100/15 Summer			53.051
5.001	S25	15 Winter	1	+0%	30/60 Winter			52.789
5.002	PCP 2	240 Winter	1	+0%	30/15 Winter			52.677
5.003	S26	240 Winter	1	+0%	30/15 Winter			52.665
1.013	S27	15 Winter	1	+0%	30/15 Summer			51.770
1.014	S28	1440 Winter	1	+0%	30/15 Summer			51.166
1.015	BASIN 1	1440 Winter	1	+0%	1/60 Winter			51.164
7.000	S29	15 Winter	1	+0%				60.215
7.001	S30	15 Winter	1	+0%				59.336
7.002	S31	15 Winter	1	+0%				58.773
8.000	S32	15 Winter	1	+0%				58.526
7.003	S33	15 Winter	1	+0%	30/15 Summer			58.175
7.004	S34	15 Winter	1	+0%				58.024
7.005	S35	15 Winter	1	+0%	100/15 Summer			57.199
7.006	S36	15 Winter	1	+0%	100/15 Summer			56.940
7.007	S37	15 Winter	1	+0%	100/15 Summer			56.275
7.008	S38	15 Winter	1	+0%				55.706
7.009	S39	15 Winter	1	+0%	100/15 Winter			54.209
7.010	S40	15 Winter	1	+0%	100/15 Summer			53.117
9.000	S41	15 Winter	1	+0%				62.036
9.001	S42	15 Winter	1	+0%				61.553
9.002	S43	15 Winter	1	+0%				56.074
7.011	S44	15 Winter	1	+0%	30/15 Summer			51.007
7.012	S45	15 Winter	1	+0%	30/15 Summer			50.173
1.016	S46	15 Winter	1	+0%	30/15 Summer			49.692
1.017	BASIN 2	480 Winter	1	+0%	30/15 Summer			49.550
1.018	S47	480 Winter	1	+0%				49.211
PN	US/MH Name	Depth (m)	Surcharged Volume (m³)	Flooded Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
3.001	S16	-0.098	0.000	0.26		4.3	OK	
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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
	Name	Depth (m)	Volume (m³)			Flow (l/s)		
3.002	S17	-0.083	0.000	0.41		5.5		OK
3.003	S18	-0.110	0.000	0.16		7.1		OK
3.004	S19	-0.103	0.000	0.21		11.1		OK
4.000	PCP 1	-0.062	0.000	0.14		1.3		OK
4.001	S20	-0.065	0.000	0.02		1.3		OK
3.005	S21	-0.156	0.000	0.21		14.1		OK
1.012	S22	-0.208	0.000	0.20		53.5		OK
5.000	S23	-0.111	0.000	0.15		2.5		OK
6.000	S24	-0.099	0.000	0.25		7.2		OK
5.001	S25	-0.146	0.000	0.26		12.4		OK
5.002	PCP 2	-0.108	0.000	0.27		3.0		OK
5.003	S26	-0.120	0.000	0.02		3.0		OK
1.013	S27	-0.187	0.000	0.30		53.8		OK
1.014	S28	-0.109	0.000	0.07		6.8		OK
1.015	BASIN 1	0.139	0.000	0.03		2.8	SURCHARGED	
7.000	S29	-0.135	0.000	0.02		0.8		OK
7.001	S30	-0.114	0.000	0.13		3.7		OK
7.002	S31	-0.177	0.000	0.10		8.0		OK
8.000	S32	-0.124	0.000	0.07		2.0		OK
7.003	S33	-0.147	0.000	0.26		11.5		OK
7.004	S34	-0.172	0.000	0.13		15.6		OK
7.005	S35	-0.151	0.000	0.24		16.6		OK
7.006	S36	-0.160	0.000	0.18		21.2		OK
7.007	S37	-0.150	0.000	0.24		24.0		OK
7.008	S38	-0.219	0.000	0.16		33.6		OK
7.009	S39	-0.216	0.000	0.18		40.9		OK
7.010	S40	-0.308	0.000	0.07		42.4		OK
9.000	S41	-0.114	0.000	0.13		3.9		OK
9.001	S42	-0.172	0.000	0.12		16.2		OK
9.002	S43	-0.226	0.000	0.14		40.8		OK
7.011	S44	-0.293	0.000	0.27		104.0		OK
7.012	S45	-0.277	0.000	0.31		106.4		OK
1.016	S46	-0.258	0.000	0.38		110.2		OK
1.017	BASIN 2	-0.100	0.000	0.05		7.8		OK
1.018	S47	-0.069	0.000	0.57		7.8		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	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 Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	4	Number of Storage Structures	4	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)	19.800	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S1	15 Winter	30	+40%					60.063
1.001	S2	15 Winter	30	+40%					59.491
1.002	S3	15 Winter	30	+40%	100/15 Summer				58.689
1.003	S4	15 Winter	30	+40%	100/15 Summer				58.603
1.004	S5	15 Winter	30	+40%	100/15 Summer				58.381
1.005	S6	15 Winter	30	+40%	30/15 Summer				58.079
1.006	S7	15 Winter	30	+40%	30/15 Summer				57.854
1.007	S8	15 Winter	30	+40%	30/15 Summer				57.461
1.008	S9	15 Winter	30	+40%	100/15 Summer				57.030
2.000	S10	15 Winter	30	+40%					57.539
2.001	S11	15 Winter	30	+40%	100/15 Summer				56.397
1.009	S12	15 Winter	30	+40%	30/15 Summer				55.891
1.010	S13	15 Winter	30	+40%	30/15 Summer				54.892
1.011	S14	15 Winter	30	+40%	100/15 Summer				53.756
3.000	S15	15 Winter	30	+40%					57.464

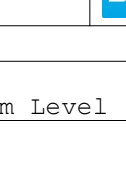
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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Surcharged Flooded		Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)				
1.000	S1	-0.087	0.000	0.37	14.9	OK	
1.001	S2	-0.059	0.000	0.67	21.5	OK	
1.002	S3	-0.061	0.000	0.87	34.9	OK	
1.003	S4	-0.065	0.000	0.84	38.4	OK	
1.004	S5	-0.107	0.000	0.53	52.4	OK	
1.005	S6	0.329	0.000	1.40	61.4	SURCHARGED	
1.006	S7	0.223	0.000	0.89	73.0	SURCHARGED	
1.007	S8	0.311	0.000	2.76	80.8	SURCHARGED	
1.008	S9	-0.102	0.000	0.57	84.6	OK	
2.000	S10	-0.111	0.000	0.15	7.2	OK	
2.001	S11	-0.103	0.000	0.22	17.3	OK	
1.009	S12	1.275	0.000	2.23	103.8	SURCHARGED	
1.010	S13	0.479	0.000	1.36	111.5	SURCHARGED	
1.011	S14	-0.094	0.000	0.80	120.3	OK	
3.000	S15	-0.086	0.000	0.38	10.8	OK	

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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	Water Level Overflow Act. (m)	
3.001	S16	15 Winter	30	+40%	30/15 Summer			57.298	
3.002	S17	15 Winter	30	+40%	30/15 Summer			57.147	
3.003	S18	15 Winter	30	+40%				56.986	
3.004	S19	15 Winter	30	+40%	100/15 Summer			56.106	
4.000	PCP 1	480 Winter	30	+40%	30/30 Summer			55.204	
4.001	S20	480 Winter	30	+40%	30/30 Summer			55.199	
3.005	S21	15 Winter	30	+40%	100/15 Summer			53.544	
1.012	S22	15 Winter	30	+40%	100/15 Summer			53.250	
5.000	S23	15 Winter	30	+40%	100/120 Winter			53.077	
6.000	S24	15 Winter	30	+40%	100/15 Summer			53.108	
5.001	S25	120 Winter	30	+40%	30/60 Winter			52.962	
5.002	PCP 2	120 Winter	30	+40%	30/15 Winter			52.956	
5.003	S26	120 Winter	30	+40%	30/15 Winter			53.081	
1.013	S27	15 Winter	30	+40%	30/15 Summer			52.482	
1.014	S28	1440 Winter	30	+40%	30/15 Summer			51.802	
1.015	BASIN 1	1440 Winter	30	+40%	1/60 Winter			51.799	
7.000	S29	15 Winter	30	+40%				60.227	
7.001	S30	15 Winter	30	+40%				59.379	
7.002	S31	15 Winter	30	+40%				58.829	
8.000	S32	15 Winter	30	+40%				58.550	
7.003	S33	15 Winter	30	+40%	30/15 Summer			58.333	
7.004	S34	15 Winter	30	+40%				58.087	
7.005	S35	15 Winter	30	+40%	100/15 Summer			57.301	
7.006	S36	15 Winter	30	+40%	100/15 Summer			57.022	
7.007	S37	15 Winter	30	+40%	100/15 Summer			56.380	
7.008	S38	15 Winter	30	+40%				55.809	
7.009	S39	15 Winter	30	+40%	100/15 Winter			54.320	
7.010	S40	15 Winter	30	+40%	100/15 Summer			53.195	
9.000	S41	15 Winter	30	+40%				62.072	
9.001	S42	15 Winter	30	+40%				61.615	
9.002	S43	15 Winter	30	+40%				56.165	
7.011	S44	15 Winter	30	+40%	30/15 Summer			51.865	
7.012	S45	15 Winter	30	+40%	30/15 Summer			50.990	
1.016	S46	1440 Winter	30	+40%	30/15 Summer			50.377	
1.017	BASIN 2	1440 Winter	30	+40%	30/15 Summer			50.374	
1.018	S47	1440 Summer	30	+40%				49.212	
Surcharged Flooded									
PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded	
3.001	S16	0.028	0.000	0.93		15.1	SURCHARGED		
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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	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 Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	4	Number of Storage Structures	4	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)	19.800	Cv (Winter)	0.840

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 40, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S1	15 Winter	100	+45%					60.075
1.001	S2	15 Winter	100	+45%					59.513
1.002	S3	15 Winter	100	+45%	100/15 Summer				58.967
1.003	S4	15 Winter	100	+45%	100/15 Summer				58.882
1.004	S5	15 Winter	100	+45%	100/15 Summer				58.741
1.005	S6	15 Winter	100	+45%	30/15 Summer				58.503
1.006	S7	15 Winter	100	+45%	30/15 Summer				58.197
1.007	S8	15 Winter	100	+45%	30/15 Summer				57.805
1.008	S9	15 Winter	100	+45%	100/15 Summer				57.439
2.000	S10	15 Winter	100	+45%					57.546
2.001	S11	15 Winter	100	+45%	100/15 Summer				56.624
1.009	S12	15 Winter	100	+45%	30/15 Summer				56.548
1.010	S13	15 Winter	100	+45%	30/15 Summer				55.350
1.011	S14	15 Winter	100	+45%	100/15 Summer				54.068
3.000	S15	15 Winter	100	+45%					57.518

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Surcharged Flooded		Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)				
1.000	S1	-0.075	0.000	0.49	20.0	OK	
1.001	S2	-0.037	0.000	0.90	28.9	OK	
1.002	S3	0.217	0.000	1.10	44.3	SURCHARGED	
1.003	S4	0.214	0.000	0.99	45.4	SURCHARGED	
1.004	S5	0.253	0.000	0.60	58.7	SURCHARGED	
1.005	S6	0.753	0.000	1.55	68.1	FLOOD RISK	
1.006	S7	0.566	0.000	0.99	81.2	FLOOD RISK	
1.007	S8	0.655	0.000	3.03	88.9	FLOOD RISK	
1.008	S9	0.307	0.000	0.62	91.9	SURCHARGED	
2.000	S10	-0.104	0.000	0.20	9.7	OK	
2.001	S11	0.124	0.000	0.27	22.0	SURCHARGED	
1.009	S12	1.932	0.000	2.44	113.5	SURCHARGED	
1.010	S13	0.937	0.000	1.52	124.6	FLOOD RISK	
1.011	S14	0.218	0.000	0.91	136.7	SURCHARGED	
3.000	S15	-0.032	0.000	0.48	13.8	OK	

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<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>									
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
3.001	S16	15 Winter	100	+45%	30/15 Summer				57.452
3.002	S17	15 Winter	100	+45%	30/15 Summer				57.214
3.003	S18	15 Winter	100	+45%					57.002
3.004	S19	15 Winter	100	+45%	100/15 Summer				56.370
4.000	PCP 1	480 Winter	100	+45%	30/30 Summer				55.320
4.001	S20	480 Winter	100	+45%	30/30 Summer				55.313
3.005	S21	15 Winter	100	+45%	100/15 Summer				53.942
1.012	S22	15 Winter	100	+45%	100/15 Summer				53.732
5.000	S23	120 Winter	100	+45%	100/120 Winter				53.224
6.000	S24	15 Winter	100	+45%	100/15 Summer				53.245
5.001	S25	120 Winter	100	+45%	30/60 Winter				53.219
5.002	PCP 2	120 Winter	100	+45%	30/15 Winter				53.212
5.003	S26	240 Winter	100	+45%	30/15 Winter				53.236
1.013	S27	15 Winter	100	+45%	30/15 Summer				52.808
1.014	S28	1440 Winter	100	+45%	30/15 Summer				52.063
1.015	BASIN 1	1440 Winter	100	+45%	1/60 Winter				52.059
7.000	S29	15 Winter	100	+45%					60.232
7.001	S30	15 Winter	100	+45%					59.396
7.002	S31	15 Winter	100	+45%					58.849
8.000	S32	15 Winter	100	+45%					58.558
7.003	S33	15 Winter	100	+45%	30/15 Summer				58.447
7.004	S34	15 Winter	100	+45%					58.112
7.005	S35	15 Winter	100	+45%	100/15 Summer				57.659
7.006	S36	15 Winter	100	+45%	100/15 Summer				57.283
7.007	S37	15 Winter	100	+45%	100/15 Summer				56.677
7.008	S38	15 Winter	100	+45%					55.838
7.009	S39	15 Winter	100	+45%	100/15 Winter				54.532
7.010	S40	15 Winter	100	+45%	100/15 Summer				53.801
9.000	S41	15 Winter	100	+45%					62.086
9.001	S42	15 Winter	100	+45%					61.638
9.002	S43	15 Winter	100	+45%					56.208
7.011	S44	15 Winter	100	+45%	30/15 Summer				53.296
7.012	S45	15 Winter	100	+45%	30/15 Summer				51.856
1.016	S46	1440 Winter	100	+45%	30/15 Summer				50.700
1.017	BASIN 2	1440 Winter	100	+45%	30/15 Summer				50.697
1.018	S47	1440 Winter	100	+45%					49.212
PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded	
3.001	S16	0.182	0.000	1.18		19.2	SURCHARGED		
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