



Micro
Drainage

Tumu Consulting											Page 2	
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						
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
1.009	30.076	0.500	60.2	0.059	0.00	0.0	0.600	o	300	Pipe/Conduit		
1.010	9.105	1.000	9.1	0.064	0.00	0.0	0.600	o	300	Pipe/Conduit		
1.011	16.599	1.312	12.7	0.040	0.00	0.0	0.600	o	300	Pipe/Conduit		
2.000	2.913	0.350	8.3	0.035	5.00	0.0	0.600	o	150	Pipe/Conduit		
2.001	29.286	1.400	20.9	0.019	0.00	0.0	0.600	o	150	Pipe/Conduit		
3.000	5.000	0.100	50.0	0.265	5.00	0.0	0.600	o	225	Pipe/Conduit		
3.001	5.462	1.025	5.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit		
2.002	10.374	2.892	3.6	0.033	0.00	0.0	0.600	o	225	Pipe/Conduit		
1.012	23.072	0.675	34.2	0.021	0.00	0.0	0.600	o	300	Pipe/Conduit		
4.000	17.345	0.120	144.5	0.017	5.00	0.0	0.600	o	225	Pipe/Conduit		
5.000	7.212	0.120	60.1	0.013	5.00	0.0	0.600	o	225	Pipe/Conduit		
4.001	12.738	0.100	127.4	0.031	0.00	0.0	0.600	o	225	Pipe/Conduit		
4.002	14.657	0.000	0.0	0.131	0.00	0.0	0.600	o	225	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)		
1.009	46.01	6.23	54.520	0.273	0.0	0.0	0.0	2.03	143.6	34.0		
1.010	45.92	6.26	54.020	0.337	0.0	0.0	0.0	5.24	370.4	41.9		
1.011	45.71	6.32	53.020	0.377	0.0	0.0	0.0	4.44	314.1	46.7		
2.000	50.00	5.01	56.500	0.035	0.0	0.0	0.0	3.51	62.1	4.7		
2.001	49.69	5.23	56.150	0.054	0.0	0.0	0.0	2.21	39.1	7.3		
3.000	50.00	5.04	55.800	0.265	0.0	0.0	0.0	1.85	73.7	35.9		
3.001	50.00	5.06	55.700	0.265	0.0	0.0	0.0	5.71	226.9	35.9		
2.002	49.59	5.26	54.675	0.352	0.0	0.0	0.0	6.96	276.7	47.3		
1.012	45.24	6.47	51.708	0.750	0.0	0.0	0.0	2.70	190.7	91.9		
4.000	49.56	5.27	53.500	0.017	0.0	0.0	0.0	1.09	43.2	2.3		
5.000	50.00	5.07	53.500	0.013	0.0	0.0	0.0	1.69	67.2	1.8		
4.001	48.84	5.45	53.380	0.061	0.0	0.0	0.0	1.16	46.0	8.1		
4.002	42.32	7.44	53.250	0.192	0.0	0.0	0.0	0.12	4.9	22.0		
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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)	
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	1.275	Open Manhole	1200	1.002	58.325	225	1.001	58.400	150	
S4	59.700	1.575	Open Manhole	1200	1.003	58.125	225	1.002	58.125	225	
S5	59.350	1.405	Open Manhole	1200	1.004	57.945	225	1.003	57.945	225	
S6	58.400	1.355	Open Manhole	1200	1.005	57.045	225	1.004	57.045	225	
S7	58.000	1.655	Open Manhole	1200	1.006	56.345	225	1.005	56.345	225	
S8	58.000	2.430	Open Manhole	1200	1.007	55.570	300	1.006	55.645	225	
S9	58.000	2.480	Open Manhole	1200	1.008	55.520	300	1.007	55.520	300	
S10	57.050	2.530	Open Manhole	1200	1.009	54.520	300	1.008	54.520	300	
S11	55.400	1.380	Open Manhole	1200	1.010	54.020	300	1.009	54.020	300	
S12	55.500	2.480	Open Manhole	1200	1.011	53.020	300	1.010	53.020	300	
S13	57.500	1.000	Open Manhole	1200	2.000	56.500	150				
S14	57.400	1.250	Open Manhole	1200	2.001	56.150	150	2.000	56.150	150	
PCP 1	56.500	0.700	Open Manhole	1200	3.000	55.800	225				
S15	56.500	0.800	Open Manhole	1200	3.001	55.700	225	3.000	55.700	225	
S16	55.750	1.075	Open Manhole	1200	2.002	54.675	225	2.001	54.750	150	
								3.001	54.675	225	
S17	54.900	3.192	Open Manhole	1200	1.012	51.708	300	1.011	51.708	300	
								2.002	51.783	225	
S18	54.000	0.500	Open Manhole	1200	4.000	53.500	225				
S19	54.000	0.500	Open Manhole	1200	5.000	53.500	225				
S20	54.000	0.620	Open Manhole	1200	4.001	53.380	225	4.000	53.380	225	
								5.000	53.380	225	
PCP 2	54.000	0.750	Open Manhole	1200	4.002	53.250	225	4.001	53.280	225	
S21	54.500	1.250	Open Manhole	1200	4.003	53.250	150	4.002	53.250	225	
S22	55.000	3.967	Open Manhole	1200	1.013	51.033	300	1.012	51.033	300	
								4.003	51.183	150	
S23	53.000	2.242	Open Manhole	1350	1.014	50.758	375	1.013	50.833	300	
BASIN 1	52.500	1.850	Open Manhole	1350	1.015	50.650	150	1.014	50.650	375	
S24	61.000	0.800	Open Manhole	1200	6.000	60.200	150				
S25	59.750	1.050	Open Manhole	1200	6.001	58.700	150	6.000	58.700	150	
S26	59.300	0.925	Open Manhole	1200	6.002	58.375	225	6.001	58.450	150	
S27	58.500	1.125	Open Manhole	1200	6.003	57.375	225	6.002	57.375	225	
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Micro Drainage					Network 2018.1						
<u>Manhole Schedules for Storm</u>											
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)
S28	57.890	1.390	Open Manhole	1200	6.004	56.500	300	6.003	56.575	225	
S29	57.450	1.750	Open Manhole	1200	6.005	55.700	300	6.004	55.700	300	
S30	56.800	1.900	Open Manhole	1200	6.006	54.900	300	6.005	54.900	300	
S31	56.430	2.130	Open Manhole	1200	6.007	54.300	300	6.006	54.300	300	
S32	54.750	1.250	Open Manhole	1200	6.008	53.500	300	6.007	53.500	300	
S33	54.190	1.290	Open Manhole	1200	6.009	52.900	300	6.008	52.900	300	
S34	62.500	1.700	Open Manhole	1200	7.000	60.800	150				
S35	62.500	1.850	Open Manhole	1200	7.001	60.650	150	7.000	60.650	150	
S36	62.000	1.475	Open Manhole	1200	7.002	60.525	225	7.001	60.600	150	
S37	58.500	0.975	Open Manhole	1200	7.003	57.525	225	7.002	57.525	225	
PCP4	58.000	0.700	Open Manhole	1200	8.000	57.300	150				
S38	58.000	1.000	Open Manhole	1200	8.001	57.000	150	8.000	57.000	150	
PCP5	59.000	0.700	Open Manhole	1200	9.000	58.300	150				
S39	59.000	0.700	Open Manhole	1200	9.001	58.300	150	9.000	58.300	150	
S40	58.100	1.930	Open Manhole	1200	7.004	56.170	300	7.003	56.245	225	
								8.001	56.320	150	
								9.001	56.320	150	
S41	53.500	2.616	Open Manhole	1500	6.010	50.884	450	6.009	51.034	300	100
								7.004	51.134	300	
S42	51.950	2.066	Open Manhole	1350	6.011	49.884	450	6.010	49.884	450	
S43	51.950	2.450	Open Manhole	1350	1.016	49.500	450	1.015	49.800	150	
								6.011	49.550	450	50
BASIN 2	51.000	1.900	Open Manhole	1350	1.017	49.100	450	1.016	49.200	450	100
S44	51.000	2.000	Open Manhole	1350	1.018	49.000	150	1.017	49.000	450	
	51.000	2.120	Open Manhole	0		OUTFALL		1.018	48.880	150	
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Burbage Marlborough
Wiltshire SN8 3AN

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CA5.1

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	S1	61.250	60.000	1.100	Open Manhole	1200
1.001	o	150	S2	60.500	59.400	0.950	Open Manhole	1200
1.002	o	225	S3	59.600	58.325	1.050	Open Manhole	1200
1.003	o	225	S4	59.700	58.125	1.350	Open Manhole	1200
1.004	o	225	S5	59.350	57.945	1.180	Open Manhole	1200
1.005	o	225	S6	58.400	57.045	1.130	Open Manhole	1200
1.006	o	225	S7	58.000	56.345	1.430	Open Manhole	1200
1.007	o	300	S8	58.000	55.570	2.130	Open Manhole	1200
1.008	o	300	S9	58.000	55.520	2.180	Open Manhole	1200
1.009	o	300	S10	57.050	54.520	2.230	Open Manhole	1200
1.010	o	300	S11	55.400	54.020	1.080	Open Manhole	1200
1.011	o	300	S12	55.500	53.020	2.180	Open Manhole	1200
2.000	o	150	S13	57.500	56.500	0.850	Open Manhole	1200
2.001	o	150	S14	57.400	56.150	1.100	Open Manhole	1200
3.000	o	225	PCP 1	56.500	55.800	0.475	Open Manhole	1200
3.001	o	225	S15	56.500	55.700	0.575	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	9.049	15.1	S2	60.500	59.400	0.950	Open Manhole	1200
1.001	22.047	22.0	S3	59.600	58.400	1.050	Open Manhole	1200
1.002	8.468	42.3	S4	59.700	58.125	1.350	Open Manhole	1200
1.003	17.221	95.7	S5	59.350	57.945	1.180	Open Manhole	1200
1.004	18.207	20.2	S6	58.400	57.045	1.130	Open Manhole	1200
1.005	15.588	22.3	S7	58.000	56.345	1.430	Open Manhole	1200
1.006	12.731	18.2	S8	58.000	55.645	2.130	Open Manhole	1200
1.007	9.084	181.7	S9	58.000	55.520	2.180	Open Manhole	1200
1.008	17.335	17.3	S10	57.050	54.520	2.230	Open Manhole	1200
1.009	30.076	60.2	S11	55.400	54.020	1.080	Open Manhole	1200
1.010	9.105	9.1	S12	55.500	53.020	2.180	Open Manhole	1200
1.011	16.599	12.7	S17	54.900	51.708	2.892	Open Manhole	1200
2.000	2.913	8.3	S14	57.400	56.150	1.100	Open Manhole	1200
2.001	29.286	20.9	S16	55.750	54.750	0.850	Open Manhole	1200
3.000	5.000	50.0	S15	56.500	55.700	0.575	Open Manhole	1200
3.001	5.462	5.3	S16	55.750	54.675	0.850	Open Manhole	1200

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Online Controls for Storm Orifice Manhole: S15, DS/PN: 3.001, Volume (m³): 1.1 Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 55.700 Orifice Manhole: S21, DS/PN: 4.003, Volume (m³): 1.9 Diameter (m) 0.056 Discharge Coefficient 0.600 Invert Level (m) 53.250 Orifice Manhole: BASIN 1, DS/PN: 1.015, Volume (m³): 6.6 Diameter (m) 0.036 Discharge Coefficient 0.600 Invert Level (m) 50.650 Orifice Manhole: S38, DS/PN: 8.001, Volume (m³): 1.2 Diameter (m) 0.032 Discharge Coefficient 0.600 Invert Level (m) 57.000 Orifice Manhole: S39, DS/PN: 9.001, Volume (m³): 0.9 Diameter (m) 0.036 Discharge Coefficient 0.600 Invert Level (m) 58.300 Hydro-Brake® Optimum Manhole: BASIN 2, DS/PN: 1.017, Volume (m³): 6.7 <table><tr><td>Unit Reference</td><td>MD-SHE-0123-8000-1600-8000</td></tr><tr><td>Design Head (m)</td><td>1.600</td></tr><tr><td>Design Flow (l/s)</td><td>8.0</td></tr><tr><td>Flush-Flo™</td><td>Calculated</td></tr><tr><td>Objective</td><td>Minimise upstream storage</td></tr><tr><td>Application</td><td>Surface</td></tr><tr><td>Sump Available</td><td>Yes</td></tr><tr><td>Diameter (mm)</td><td>123</td></tr><tr><td>Invert Level (m)</td><td>49.100</td></tr><tr><td>Minimum Outlet Pipe Diameter (mm)</td><td>150</td></tr><tr><td>Suggested Manhole Diameter (mm)</td><td>1200</td></tr></table> <table><tr><td>Control Points</td><td>Head (m)</td><td>Flow (l/s)</td><td>Control Points</td><td>Head (m)</td><td>Flow (l/s)</td></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			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)	49.100	Minimum Outlet Pipe Diameter (mm)	150	Suggested Manhole Diameter (mm)	1200	Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.600	8.0	Kick-Flo®	0.977	6.4	Flush-Flo™	0.471	8.0	Mean Flow over Head Range	-	7.0
Unit Reference	MD-SHE-0123-8000-1600-8000																																									
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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																																					
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Storage Structures for Storm

Porous Car Park Manhole: PCP 1, DS/PN: 3.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	16.0
Membrane Percolation (mm/hr)	1000	Length (m)	83.0
Max Percolation (l/s)	368.9	Slope (1:X)	0.0
Safety Factor	1.5	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	55.800	Membrane Depth (mm)	150

Porous Car Park Manhole: PCP 2, DS/PN: 4.002

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	16.0
Membrane Percolation (mm/hr)	1000	Length (m)	42.0
Max Percolation (l/s)	186.7	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	53.250	Membrane Depth (mm)	150

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

Invert Level (m) 50.650

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	346.0	1.500	833.0	1.501	0.0

Porous Car Park Manhole: PCP4, DS/PN: 8.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	44.0
Max Percolation (l/s)	122.2	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	57.300	Membrane Depth (mm)	150

Porous Car Park Manhole: PCP5, DS/PN: 9.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	11.0
Membrane Percolation (mm/hr)	1000	Length (m)	43.0
Max Percolation (l/s)	131.4	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	58.500	Membrane Depth (mm)	150

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Tank or Pond Manhole: BASIN 2, DS/PN: 1.017 Invert Level (m) 49.100 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>334.0</td><td>1.900</td><td>880.0</td></tr></tbody></table>			Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	334.0	1.900	880.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)							
0.000	334.0	1.900	880.0							
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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 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	6	Number of Storage Structures	6	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	OFF
Inertia Status	OFF

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%					60.034
1.001	S2	15 Winter	1	+0%					59.443
1.002	S3	15 Winter	1	+0%					58.385
1.003	S4	15 Winter	1	+0%	100/15 Summer				58.196
1.004	S5	15 Winter	1	+0%					58.000
1.005	S6	15 Winter	1	+0%	100/15 Summer				57.110
1.006	S7	15 Winter	1	+0%	100/15 Summer				56.410
1.007	S8	15 Winter	1	+0%	30/15 Summer				55.689
1.008	S9	15 Winter	1	+0%	100/15 Winter				55.585
1.009	S10	15 Winter	1	+0%	100/15 Summer				54.619
1.010	S11	15 Winter	1	+0%	100/15 Summer				54.097
1.011	S12	15 Winter	1	+0%	30/15 Summer				53.099
2.000	S13	15 Winter	1	+0%					56.535
2.001	S14	15 Winter	1	+0%					56.193
3.000	PCP 1	360 Winter	1	+0%	30/120 Winter				55.864

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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		Pipe		Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	
1.000	S1	-0.116	0.000	0.12		4.7	OK	
1.001	S2	-0.107	0.000	0.18		6.4	OK	
1.002	S3	-0.165	0.000	0.16		9.8	OK	
1.003	S4	-0.154	0.000	0.22		10.3	OK	
1.004	S5	-0.170	0.000	0.13		14.0	OK	
1.005	S6	-0.160	0.000	0.18		18.1	OK	
1.006	S7	-0.160	0.000	0.19		19.6	OK	
1.007	S8	-0.181	0.000	0.33		20.4	OK	
1.008	S9	-0.235	0.000	0.11		24.3	OK	
1.009	S10	-0.201	0.000	0.23		30.6	OK	
1.010	S11	-0.223	0.000	0.15		37.4	OK	
1.011	S12	-0.221	0.000	0.16		41.6	OK	
2.000	S13	-0.115	0.000	0.12		4.6	OK	
2.001	S14	-0.107	0.000	0.18		6.7	OK	
3.000	PCP 1	-0.161	0.000	0.04		1.9	OK	

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Burbage Marlborough					Ageas Bowl					
Wiltshire SN8 3AN					CA5.1					
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Micro Drainage					Network 2018.1					
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) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	
3.001	S15	360 Winter	1	+0%	30/30 Summer				55.862	
2.002	S16	15 Winter	1	+0%					54.706	
1.012	S17	15 Winter	1	+0%	30/15 Summer				51.825	
4.000	S18	15 Winter	1	+0%					53.535	
5.000	S19	15 Winter	1	+0%					53.527	
4.001	S20	15 Winter	1	+0%	100/60 Winter				53.446	
4.002	PCP 2	360 Winter	1	+0%	30/30 Winter				53.350	
4.003	S21	360 Winter	1	+0%	30/15 Winter				53.344	
1.013	S22	15 Winter	1	+0%	30/15 Summer				51.192	
1.014	S23	1440 Winter	1	+0%	30/15 Summer				51.118	
1.015	BASIN 1	1440 Winter	1	+0%	1/60 Summer				51.117	
6.000	S24	15 Winter	1	+0%					60.212	
6.001	S25	15 Winter	1	+0%					58.741	
6.002	S26	15 Winter	1	+0%					58.433	
6.003	S27	15 Winter	1	+0%					57.431	
6.004	S28	15 Winter	1	+0%					56.561	
6.005	S29	15 Winter	1	+0%					55.765	
6.006	S30	15 Winter	1	+0%	100/15 Summer				54.975	
6.007	S31	15 Winter	1	+0%	30/15 Summer				54.400	
6.008	S32	15 Winter	1	+0%	100/15 Summer				53.600	
6.009	S33	15 Winter	1	+0%	100/15 Winter				52.975	
7.000	S34	15 Winter	1	+0%	30/15 Summer				60.854	
7.001	S35	15 Winter	1	+0%	30/15 Summer				60.731	
7.002	S36	15 Winter	1	+0%					60.573	
7.003	S37	15 Winter	1	+0%					57.583	
8.000	PCP4	240 Winter	1	+0%	30/15 Winter				57.356	
8.001	S38	30 Summer	1	+0%	1/15 Summer				57.464	
9.000	PCP5	120 Winter	1	+0%	1/15 Summer				58.534	
9.001	S39	120 Winter	1	+0%	1/15 Summer				58.532	
7.004	S40	15 Winter	1	+0%					56.239	
6.010	S41	15 Winter	1	+0%	30/15 Summer				51.026	
6.011	S42	15 Winter	1	+0%	30/15 Summer				50.066	
1.016	S43	15 Winter	1	+0%	30/15 Summer				49.680	
1.017	BASIN 2	480 Winter	1	+0%	30/15 Summer				49.451	
1.018	S44	480 Winter	1	+0%					49.082	
PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded		
3.001	S15	-0.063	0.000	0.01		1.9	OK			
2.002	S16	-0.194	0.000	0.04		10.4	OK			
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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm																																																																																																																																																																																													
Simulation Criteria <table><tr><td>Areal Reduction Factor</td><td>1.000</td><td>Additional Flow - % of Total Flow</td><td>0.000</td></tr><tr><td>Hot Start (mins)</td><td>0</td><td>MADD Factor * 10m³/ha Storage</td><td>2.000</td></tr><tr><td>Hot Start Level (mm)</td><td>0</td><td>Inlet Coefficient</td><td>0.800</td></tr><tr><td>Manhole Headloss Coeff (Global)</td><td>0.500</td><td>Flow per Person per Day (l/per/day)</td><td>0.000</td></tr><tr><td>Foul Sewage per hectare (l/s)</td><td>0.000</td><td></td><td></td></tr></table>										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																																																																																																																																																																		
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Synthetic Rainfall Details <table><tr><td>Rainfall Model</td><td>FSR</td><td>Ratio R</td><td>0.350</td></tr><tr><td>Region England and Wales</td><td>Cv (Summer)</td><td>0.750</td><td></td></tr><tr><td>M5-60 (mm)</td><td>19.800</td><td>Cv (Winter)</td><td>0.840</td></tr></table> Margin for Flood Risk Warning (mm) 300.0 Analysis Timestep 2.5 Second Increment (Extended) DTS Status OFF DVD Status OFF Inertia Status OFF										Rainfall Model	FSR	Ratio R	0.350	Region England and Wales	Cv (Summer)	0.750		M5-60 (mm)	19.800	Cv (Winter)	0.840																																																																																																																																																																								
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<table><tr><th></th><th>US/MH</th><th></th><th>Return</th><th>Climate</th><th>First (X)</th><th>First (Y)</th><th>First (Z)</th><th>Overflow</th><th>Water</th></tr><tr><th>PN</th><th>Name</th><th>Storm</th><th>Period</th><th>Change</th><th>Surcharge</th><th>Flood</th><th>Overflow</th><th>Act.</th><th>Level</th></tr><tr><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>(m)</th></tr><tr><td>1.000</td><td>S1</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>60.066</td></tr><tr><td>1.001</td><td>S2</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>59.489</td></tr><tr><td>1.002</td><td>S3</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>58.453</td></tr><tr><td>1.003</td><td>S4</td><td>15 Winter</td><td>30</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>58.286</td></tr><tr><td>1.004</td><td>S5</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>58.063</td></tr><tr><td>1.005</td><td>S6</td><td>15 Winter</td><td>30</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>57.192</td></tr><tr><td>1.006</td><td>S7</td><td>15 Winter</td><td>30</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>56.493</td></tr><tr><td>1.007</td><td>S8</td><td>15 Winter</td><td>30</td><td>+40%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>55.920</td></tr><tr><td>1.008</td><td>S9</td><td>15 Winter</td><td>30</td><td>+40%</td><td>100/15 Winter</td><td></td><td></td><td></td><td>55.659</td></tr><tr><td>1.009</td><td>S10</td><td>15 Winter</td><td>30</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>54.758</td></tr><tr><td>1.010</td><td>S11</td><td>15 Winter</td><td>30</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>54.196</td></tr><tr><td>1.011</td><td>S12</td><td>15 Winter</td><td>30</td><td>+40%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>53.866</td></tr><tr><td>2.000</td><td>S13</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>56.569</td></tr><tr><td>2.001</td><td>S14</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>56.240</td></tr><tr><td>3.000</td><td>PCP 1</td><td>360 Winter</td><td>30</td><td>+40%</td><td>30/120 Winter</td><td></td><td></td><td></td><td>56.067</td></tr></table>											US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water	PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level										(m)	1.000	S1	15 Winter	30	+40%					60.066	1.001	S2	15 Winter	30	+40%					59.489	1.002	S3	15 Winter	30	+40%					58.453	1.003	S4	15 Winter	30	+40%	100/15 Summer				58.286	1.004	S5	15 Winter	30	+40%					58.063	1.005	S6	15 Winter	30	+40%	100/15 Summer				57.192	1.006	S7	15 Winter	30	+40%	100/15 Summer				56.493	1.007	S8	15 Winter	30	+40%	30/15 Summer				55.920	1.008	S9	15 Winter	30	+40%	100/15 Winter				55.659	1.009	S10	15 Winter	30	+40%	100/15 Summer				54.758	1.010	S11	15 Winter	30	+40%	100/15 Summer				54.196	1.011	S12	15 Winter	30	+40%	30/15 Summer				53.866	2.000	S13	15 Winter	30	+40%					56.569	2.001	S14	15 Winter	30	+40%					56.240	3.000	PCP 1	360 Winter	30	+40%	30/120 Winter				56.067
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water																																																																																																																																																																																				
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1.003	S4	15 Winter	30	+40%	100/15 Summer				58.286																																																																																																																																																																																				
1.004	S5	15 Winter	30	+40%					58.063																																																																																																																																																																																				
1.005	S6	15 Winter	30	+40%	100/15 Summer				57.192																																																																																																																																																																																				
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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	-0.084	0.000	0.40	16.3	OK	
1.001	S2	-0.061	0.000	0.65	23.4	OK	
1.002	S3	-0.097	0.000	0.61	38.2	OK	
1.003	S4	-0.064	0.000	0.84	39.9	OK	
1.004	S5	-0.107	0.000	0.53	55.4	OK	
1.005	S6	-0.078	0.000	0.74	72.6	OK	
1.006	S7	-0.077	0.000	0.74	78.6	OK	
1.007	S8	0.050	0.000	1.34	82.3	SURCHARGED	
1.008	S9	-0.161	0.000	0.43	98.5	OK	
1.009	S10	-0.062	0.000	0.95	124.5	OK	
1.010	S11	-0.124	0.000	0.61	152.5	OK	
1.011	S12	0.546	0.000	0.61	162.0	SURCHARGED	
2.000	S13	-0.081	0.000	0.43	15.8	OK	
2.001	S14	-0.060	0.000	0.66	24.8	OK	
3.000	PCP 1	0.042	0.000	0.07	3.3	SURCHARGED	

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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	Overflow Act.	Water Level (m)
3.001	S15	480 Winter	30	+40%	30/30 Summer				56.076
2.002	S16	15 Winter	30	+40%					54.740
1.012	S17	15 Winter	30	+40%	30/15 Summer				53.388
4.000	S18	360 Winter	30	+40%					53.589
5.000	S19	360 Winter	30	+40%					53.588
4.001	S20	360 Winter	30	+40%	100/60 Winter				53.588
4.002	PCP 2	360 Winter	30	+40%	30/30 Winter				53.586
4.003	S21	360 Winter	30	+40%	30/15 Winter				53.628
1.013	S22	15 Winter	30	+40%	30/15 Summer				52.370
1.014	S23	1440 Winter	30	+40%	30/15 Summer				51.844
1.015	BASIN 1	1440 Winter	30	+40%	1/60 Summer				51.842
6.000	S24	15 Winter	30	+40%					60.223
6.001	S25	15 Winter	30	+40%					58.791
6.002	S26	15 Winter	30	+40%					58.506
6.003	S27	15 Winter	30	+40%					57.501
6.004	S28	15 Winter	30	+40%					56.630
6.005	S29	15 Winter	30	+40%					55.842
6.006	S30	15 Winter	30	+40%	100/15 Summer				55.071
6.007	S31	15 Winter	30	+40%	30/15 Summer				54.649
6.008	S32	15 Winter	30	+40%	100/15 Summer				53.795
6.009	S33	15 Winter	30	+40%	100/15 Winter				53.066
7.000	S34	15 Winter	30	+40%	30/15 Summer				61.074
7.001	S35	15 Winter	30	+40%	30/15 Summer				60.949
7.002	S36	15 Winter	30	+40%					60.623
7.003	S37	15 Winter	30	+40%					57.651
8.000	PCP4	240 Winter	30	+40%	30/15 Winter				57.618
8.001	S38	240 Winter	30	+40%	1/15 Summer				57.616
9.000	PCP5	240 Winter	30	+40%	1/15 Summer				58.716
9.001	S39	240 Winter	30	+40%	1/15 Summer				58.712
7.004	S40	15 Winter	30	+40%					56.316
6.010	S41	15 Winter	30	+40%	30/15 Summer				51.416
6.011	S42	15 Winter	30	+40%	30/15 Summer				50.704
1.016	S43	1440 Winter	30	+40%	30/15 Summer				50.337
1.017	BASIN 2	1440 Winter	30	+40%	30/15 Summer				50.334
1.018	S44	1440 Summer	30	+40%					49.083

PN	US/MH Name	Depth (m)	Surcharged Volume (m³)	Flooded Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
3.001	S15	0.151	0.000	0.02		3.1	SURCHARGED	
2.002	S16	-0.160	0.000	0.18		42.1	OK	

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Micro Drainage		Network 2018.1	

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	6	Number of Storage Structures	6	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	OFF
Inertia Status	OFF

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%					60.079
1.001	S2	15 Winter	100	+45%					59.510
1.002	S3	15 Winter	100	+45%					58.521
1.003	S4	15 Winter	100	+45%	100/15 Summer				58.387
1.004	S5	15 Winter	100	+45%					58.086
1.005	S6	15 Winter	100	+45%	100/15 Summer				57.288
1.006	S7	15 Winter	100	+45%	100/15 Summer				56.645
1.007	S8	15 Winter	100	+45%	30/15 Summer				56.059
1.008	S9	15 Winter	100	+45%	100/15 Winter				55.914
1.009	S10	15 Winter	100	+45%	100/15 Summer				55.670
1.010	S11	15 Winter	100	+45%	100/15 Summer				55.122
1.011	S12	15 Winter	100	+45%	30/15 Summer				54.703
2.000	S13	15 Winter	100	+45%					56.582
2.001	S14	15 Winter	100	+45%					56.261
3.000	PCP 1	360 Winter	100	+45%	30/120 Winter				56.179

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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	

100 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	-0.071	0.000	0.54	21.8	OK	
1.001	S2	-0.040	0.000	0.87	31.3	OK	
1.002	S3	-0.029	0.000	0.80	50.2	OK	
1.003	S4	0.037	0.000	1.11	52.8	SURCHARGED	
1.004	S5	-0.084	0.000	0.69	72.0	OK	
1.005	S6	0.018	0.000	0.96	93.8	SURCHARGED	
1.006	S7	0.075	0.000	0.96	101.4	SURCHARGED	
1.007	S8	0.189	0.000	1.71	104.7	SURCHARGED	
1.008	S9	0.094	0.000	0.55	125.7	SURCHARGED	
1.009	S10	0.850	0.000	1.12	145.5	SURCHARGED	
1.010	S11	0.802	0.000	0.66	165.4	FLOOD RISK	
1.011	S12	1.383	0.000	0.68	182.1	SURCHARGED	
2.000	S13	-0.068	0.000	0.57	21.2	OK	
2.001	S14	-0.039	0.000	0.89	33.3	OK	
3.000	PCP 1	0.154	0.000	0.09	3.9	SURCHARGED	

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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	



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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
3.001	S15	360 Winter	100	+45%	30/30 Summer				56.191
2.002	S16	15 Winter	100	+45%					54.751
1.012	S17	15 Winter	100	+45%	30/15 Summer				54.109
4.000	S18	360 Winter	100	+45%					53.719
5.000	S19	360 Winter	100	+45%					53.719
4.001	S20	360 Winter	100	+45%	100/60 Winter				53.719
4.002	PCP 2	360 Winter	100	+45%	30/30 Winter				53.717
4.003	S21	360 Winter	100	+45%	30/15 Winter				53.781
1.013	S22	15 Winter	100	+45%	30/15 Summer				52.778
1.014	S23	1440 Winter	100	+45%	30/15 Summer				52.108
1.015	BASIN 1	1440 Winter	100	+45%	1/60 Summer				52.106
6.000	S24	15 Winter	100	+45%					60.228
6.001	S25	15 Winter	100	+45%					58.812
6.002	S26	15 Winter	100	+45%					58.536
6.003	S27	15 Winter	100	+45%					57.528
6.004	S28	15 Winter	100	+45%					56.654
6.005	S29	15 Winter	100	+45%					55.985
6.006	S30	15 Winter	100	+45%	100/15 Summer				55.751
6.007	S31	15 Winter	100	+45%	30/15 Summer				55.419
6.008	S32	15 Winter	100	+45%	100/15 Summer				54.150
6.009	S33	15 Winter	100	+45%	100/15 Winter				53.268
7.000	S34	15 Winter	100	+45%	30/15 Summer				61.309
7.001	S35	15 Winter	100	+45%	30/15 Summer				61.099
7.002	S36	15 Winter	100	+45%					60.641
7.003	S37	15 Winter	100	+45%					57.679
8.000	PCP4	240 Winter	100	+45%	30/15 Winter				57.766
8.001	S38	240 Winter	100	+45%	1/15 Summer				57.764
9.000	PCP5	240 Winter	100	+45%	1/15 Summer				58.822
9.001	S39	240 Winter	100	+45%	1/15 Summer				58.818
7.004	S40	15 Winter	100	+45%					56.344
6.010	S41	15 Winter	100	+45%	30/15 Summer				52.350
6.011	S42	15 Winter	100	+45%	30/15 Summer				51.269
1.016	S43	1440 Winter	100	+45%	30/15 Summer				50.676
1.017	BASIN 2	1440 Winter	100	+45%	30/15 Summer				50.673
1.018	S44	1440 Winter	100	+45%					49.083

PN	US/MH Name	Surcharged		Flooded		Pipe		Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	
3.001	S15	0.266	0.000	0.02		3.5	SURCHARGED	
2.002	S16	-0.149	0.000	0.24		56.5	OK	

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