

Appendix H

Drainage Strategy Calculations

Character Area 1

447850 114250

Area: 6.6ha

Impermeable Area: 2.7ha

QBAR: 10.7 l/s

Volume required to accommodate 100yrcc: between 1998 & 2787m³

The 'Quick Storage Estimate' dialog box is shown with the 'Variables' tab selected. The left sidebar contains buttons for 'Variables', 'Results', 'Design', 'Overview 2D', 'Overview 3D', and 'Vt'. The main area contains the following settings:

Variable	Value
FSR Rainfall	[Dropdown]
Return Period (years)	100
Region	England and Wales
Map	M5-60 (mm)
M5-60 (mm)	19.800
Ratio R	0.350
Cv (Summer)	0.750
Cv (Winter)	0.840
Impermeable Area (ha)	2.700
Maximum Allowable Discharge (l/s)	10.7
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	40

Buttons at the bottom: Analyse, OK, Cancel, Help. A footer note states: 'Enter Climate Change between -100 and 600'.

The 'Quick Storage Estimate' dialog box is shown with the 'Results' tab selected. The left sidebar contains buttons for 'Variables', 'Results', 'Design', 'Overview 2D', 'Overview 3D', and 'Vt'. The main area displays the following results:

Global Variables require approximate storage of between 1998 m³ and 2787 m³.

These values are estimates only and should not be used for design purposes.

Buttons at the bottom: Analyse, OK, Cancel, Help. A footer note states: 'Enter Climate Change between -100 and 600'.

Area 2 & 3

447850 114000

Area: 0.65ha

Impermeable Area: 0.61ha

QBAR: 2.4 l/s

Volume required to accommodate 100yrcc: between 452 and 631m³

The 'Quick Storage Estimate' dialog box is shown with the 'Variables' tab selected. The left sidebar contains buttons for 'Variables', 'Results', 'Design', 'Overview 2D', 'Overview 3D', and 'Vt'. The main area contains the following fields:

Variable	Value
FSR Rainfall	100
Return Period (years)	100
Region	England and Wales
Map	M5-60 (nm)
Ratio R	19.800
Cv (Summer)	0.750
Cv (Winter)	0.840
Impermeable Area (ha)	0.610
Maximum Allowable Discharge (l/s)	2.4
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	40

Buttons at the bottom: Analyse, OK, Cancel, Help. A status bar at the bottom reads: 'Enter Maximum Allowable Discharge between 0.0 and 999999.0'.

The 'Quick Storage Estimate' dialog box is shown with the 'Results' tab selected. The left sidebar contains buttons for 'Variables', 'Results', 'Design', 'Overview 2D', 'Overview 3D', and 'Vt'. The main area displays the following text:

Global Variables require approximate storage of between 452 m³ and 631 m³.

These values are estimates only and should not be used for design purposes.

Buttons at the bottom: Analyse, OK, Cancel, Help. A status bar at the bottom reads: 'Enter Maximum Allowable Discharge between 0.0 and 999999.0'.

Area 4

447700 113850

Area: 1.7ha

Impermeable Area: 0.52

QBAR: 2.1

Volume required to accommodate 100yrcc: Between 383m³ and 534m³

Quick Storage Estimate

Results

Global Variables require approximate storage of between 383 m³ and 534 m³.

These values are estimates only and should not be used for design purposes.

Buttons: Analyse, OK, Cancel, Help

Enter Area between 0.000 and 999.999

Quick Storage Estimate

Variables

FSR Rainfall: [dropdown]
 Return Period (years): 100
 Region: England and Wales [dropdown]
 Map: M5-60 (mm) 19.800
 Ratio R: 0.350
 Cv (Summer): 0.750
 Cv (Winter): 0.840
 Impervious Area (ha): 0.52
 Maximum Allowable Discharge (l/s): 2.1
 Infiltration Coefficient (m/hr): 0.00000
 Safety Factor: 2.0
 Climate Change (%): 40

Buttons: Analyse, OK, Cancel, Help

Enter Area between 0.000 and 999.999

Area 5 (residential)

447500 114050

Area: 7.2ha

Impermeable Area: 2ha

QBAR: 8 l/s

Volume required to accommodate 100yrcc: between 1476 and 2059m³

Quick Storage Estimate

Micro Drainage

Variables

FSR Rainfall

Return Period (years)

Region

Map

Ratio R

Cv (Summer)

Cv (Winter)

Impervious Area (ha)

Maximum Allowable Discharge (l/s)

Infiltration Coefficient (m/hr)

Safety Factor

Climate Change (%)

Analyse OK Cancel Help

Enter Climate Change between -100 and 600

Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 1476 m³ and 2059 m³.

These values are estimates only and should not be used for design purposes.

Analyse OK Cancel Help

Enter Climate Change between -100 and 600

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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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Micro Drainage

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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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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)	Diameter (mm)	PN	Pipes In Invert Level (m)	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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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)	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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20 East Sands Burbage Marlborough Wiltshire SN8 3AN		
Date 21/06/2023 11:45 File 13920 - AGAES BOWL - CHA...	Designed by RobbieParnham Checked by	
Micro Drainage		Network 2018.1
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Additional Flow - % of Total Flow 0.000 Areal Reduction Factor 1.000 MADD Factor * 10m³/ha Storage 2.000 Hot Start (mins) 0 Inlet Coefficient 0.800 Hot Start Level (mm) 0 Flow per Person per Day (l/per/day) 0.000 Manhole Headloss Coeff (Global) 0.500 Run Time (mins) 60 Foul Sewage per hectare (l/s) 0.000 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of 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 <u>Synthetic Rainfall Details</u> Rainfall Model FSR Profile Type Summer Return Period (years) 1 Cv (Summer) 0.750 Region England and Wales Cv (Winter) 0.840 M5-60 (mm) 19.800 Storm Duration (mins) 30 Ratio R 0.350		
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Micro Drainage Network 2018.1																																																																																												
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		
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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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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Micro Drainage Network 2018.1		
<u>Storage Structures for Storm</u>		
<u>Porous Car Park Manhole: PCP 1, DS/PN: 4.000</u>		
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
<u>Porous Car Park Manhole: PCP 2, DS/PN: 5.002</u>		
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
<u>Tank or Pond Manhole: BASIN 1, DS/PN: 1.015</u>		
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
<u>Tank or Pond Manhole: BASIN 2, DS/PN: 1.017</u>		
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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Storm

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 Online Controls 4 Number of Storage Structures 4 Number of Real Time Controls 0

Rainfall Model	FSR	Ratio R	0.350
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.800	Cv (Winter)	0.840

```
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

										Water	
	US/MH			Return	Climate	First (X)		First (Y)	First (Z)	Overflow	Level
PN	Name	Storm	Period	Change		Surcharge		Flood	Overflow	Act.	(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

for Storm

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 Online Controls 4 Number of Storage Structures 4 Number of Real Time Controls 0

Rainfall Model	FSR	Ratio R	0.350
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.800	Cv (Winter)	0.840

Analysis Timestep 2.5 Second Increment (Extended)

Profile(s) Summer and Winter

										Water	
	US/MH			Return	Climate	First (X)		First (Y)	First (Z)	Overflow	Level
PN	Name	Storm	Period		Change	Surcharge		Flood	Overflow	Act.	(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%						57.466

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Micro Drainage					Network 2018.1				
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	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

PN	US/MH Name	Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)			
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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Micro Drainage						Network 2018.1			
<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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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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PIPELINE SCHEDULES for Storm

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W
S1.000	o	150	SS48	56.000	55.500	0.350	Open Manhole		1200
S1.001	o	150	SS49	55.500	55.000	0.350	Open Manhole		1200
S1.002	o	150	SS50	55.000	54.500	0.350	Open Manhole		1200
S1.003	o	150	SS51	53.000	52.500	0.350	Open Manhole		1200
S1.004	o	150	SS52	52.000	51.500	0.350	Open Manhole		1200
S1.005	o	150	SS53	51.500	51.000	0.350	Open Manhole		1200
S1.006	o	150	SS54	51.500	50.896	0.454	Open Manhole		1200
S1.007	o	150	SPCP3	51.600	50.796	0.654	Open Manhole		1200
S1.008	o	150	SS55	51.600	50.796	0.654	Open Manhole		1200
S1.009	o	150	SS56	50.000	49.500	0.350	Open Manhole		1200
S1.010	o	150	SS57	50.000	49.402	0.448	Open Manhole		1200

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W
S1.000	12.999	26.0	SS49	55.500	55.000	0.350	Open Manhole		1200
S1.001	26.207	52.4	SS50	55.000	54.500	0.350	Open Manhole		1200
S1.002	30.937	15.5	SS51	53.000	52.500	0.350	Open Manhole		1200
S1.003	14.180	14.2	SS52	52.000	51.500	0.350	Open Manhole		1200
S1.004	13.911	27.8	SS53	51.500	51.000	0.350	Open Manhole		1200
S1.005	10.667	102.6	SS54	51.500	50.896	0.454	Open Manhole		1200
S1.006	7.489	74.9	SPCP3	51.600	50.796	0.654	Open Manhole		1200
S1.007	8.989	0.0	SS55	51.600	50.796	0.654	Open Manhole		1200
S1.008	23.887	18.4	SS56	50.000	49.500	0.350	Open Manhole		1200
S1.009	14.694	149.9	SS57	50.000	49.402	0.448	Open Manhole		1200
S1.010	2.534	149.1	S	50.000	49.385	0.465	Open Manhole		

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
S1.010	S	50.000	49.385	0.000	0	0

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<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Additional Flow - % of Total Flow 0.000 Areal Reduction Factor 1.000 MADD Factor * 10m³/ha Storage 2.000 Hot Start (mins) 0 Inlet Coefficient 0.800 Hot Start Level (mm) 0 Flow per Person per Day (l/per/day) 0.000 Manhole Headloss Coeff (Global) 0.500 Run Time (mins) 60 Foul Sewage per hectare (l/s) 0.000 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0 <u>Synthetic Rainfall Details</u> Rainfall Model FSR Profile Type Summer Return Period (years) 1 Cv (Summer) 0.750 Region England and Wales Cv (Winter) 0.840 M5-60 (mm) 19.800 Storm Duration (mins) 30 Ratio R 0.350		
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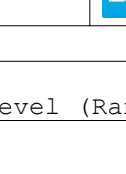
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Micro Drainage	Network 2018.1	
<u>Online Controls for Storm</u> <u>Orifice Manhole: SPCP3, DS/PN: S1.007, Volume (m³): 1.0</u> Diameter (m) 0.036 Discharge Coefficient 0.600 Invert Level (m) 50.796		
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Micro Drainage	Network 2018.1	

Storage Structures for Storm

Porous Car Park Manhole: SPCP3, DS/PN: S1.007

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	15.0
Membrane Percolation (mm/hr)	1000	Length (m)	32.0
Max Percolation (l/s)	133.3	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	50.796	Membrane Depth (mm)	200

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Micro Drainage		Network 2018.1	

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	1	Number of Storage Structures	1	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.
S1.000	SS48	15 Winter	1	+0%				
S1.001	SS49	15 Winter	1	+0%				
S1.002	SS50	15 Winter	1	+0%				
S1.003	SS51	15 Winter	1	+0%				
S1.004	SS52	15 Winter	1	+0%	100/15 Summer			
S1.005	SS53	15 Winter	1	+0%	30/15 Summer	100/15 Winter		
S1.006	SS54	1440 Winter	1	+0%	30/15 Summer			
S1.007	SPCP3	1440 Winter	1	+0%	1/360 Winter			
S1.008	SS55	1440 Winter	1	+0%				
S1.009	SS56	1440 Winter	1	+0%				
S1.010	SS57	1440 Winter	1	+0%				

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<u>30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>																																																																																																																																																					
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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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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)																																																																																																																																																					
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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																																																																																																																																																					
<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>S1.000</td><td>SS48</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>55.526</td></tr><tr><td>S1.001</td><td>SS49</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>55.045</td></tr><tr><td>S1.002</td><td>SS50</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>54.554</td></tr><tr><td>S1.003</td><td>SS51</td><td>15 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>52.563</td></tr><tr><td>S1.004</td><td>SS52</td><td>15 Winter</td><td>30</td><td>+40%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>51.588</td></tr><tr><td>S1.005</td><td>SS53</td><td>15 Winter</td><td>30</td><td>+40%</td><td>30/15 Summer</td><td>100/15 Winter</td><td></td><td></td><td>51.303</td></tr><tr><td>S1.006</td><td>SS54</td><td>960 Winter</td><td>30</td><td>+40%</td><td>30/15 Summer</td><td></td><td></td><td></td><td>51.276</td></tr><tr><td>S1.007</td><td>SPCP3</td><td>960 Winter</td><td>30</td><td>+40%</td><td>1/360 Winter</td><td></td><td></td><td></td><td>51.275</td></tr><tr><td>S1.008</td><td>SS55</td><td>960 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>50.815</td></tr><tr><td>S1.009</td><td>SS56</td><td>960 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>49.534</td></tr><tr><td>S1.010</td><td>SS57</td><td>960 Winter</td><td>30</td><td>+40%</td><td></td><td></td><td></td><td></td><td>49.440</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)	S1.000	SS48	15 Winter	30	+40%					55.526	S1.001	SS49	15 Winter	30	+40%					55.045	S1.002	SS50	15 Winter	30	+40%					54.554	S1.003	SS51	15 Winter	30	+40%					52.563	S1.004	SS52	15 Winter	30	+40%	100/15 Summer				51.588	S1.005	SS53	15 Winter	30	+40%	30/15 Summer	100/15 Winter			51.303	S1.006	SS54	960 Winter	30	+40%	30/15 Summer				51.276	S1.007	SPCP3	960 Winter	30	+40%	1/360 Winter				51.275	S1.008	SS55	960 Winter	30	+40%					50.815	S1.009	SS56	960 Winter	30	+40%					49.534	S1.010	SS57	960 Winter	30	+40%					49.440
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water																																																																																																																																												
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20 East Sands Burbage Marlborough Wiltshire SN8 3AN		
Date 22/06/2023 15:37	Designed by RobbieParnham	
File 13920 - AGAES BOWL - CHA...	Checked by	
Micro Drainage	Network 2018.1	

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

PN	US/MH Name	Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)			
S1.000	SS48	-0.124	0.000	0.07		2.3	OK	
S1.001	SS49	-0.105	0.000	0.20		4.6	OK	
S1.002	SS50	-0.096	0.000	0.28		12.3	OK	
S1.003	SS51	-0.087	0.000	0.37		16.1	OK	
S1.004	SS52	-0.062	0.000	0.64		19.9	OK	
S1.005	SS53	0.153	0.000	1.43		22.5	FLOOD RISK	4
S1.006	SS54	0.230	0.000	0.09		1.6	FLOOD RISK	
S1.007	SPCP3	0.329	0.000	0.27		1.6	SURCHARGED	
S1.008	SS55	-0.131	0.000	0.04		1.6	OK	
S1.009	SS56	-0.116	0.000	0.12		1.6	OK	
S1.010	SS57	-0.112	0.000	0.15		1.6	OK	

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20 East Sands Burbage Marlborough Wiltshire SN8 3AN		
Date 22/06/2023 15:36 File 13920 - AGAES BOWL - CHA...	Designed by RobbieParnham Checked by	
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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

Tumu Consulting		Page 5
20 East Sands Burbage Marlborough Wiltshire SN8 3AN		
Date 22/06/2023 15:36 File 13920 - AGAES BOWL - CHA...	Designed by RobbieParnham Checked by	
Micro Drainage		Network 2018.1
<u>Simulation Criteria for Storm</u> Volumetric Runoff Coeff 0.750 Additional Flow - % of Total Flow 0.000 Areal Reduction Factor 1.000 MADD Factor * 10m³/ha Storage 2.000 Hot Start (mins) 0 Inlet Coefficient 0.800 Hot Start Level (mm) 0 Flow per Person per Day (l/per/day) 0.000 Manhole Headloss Coeff (Global) 0.500 Run Time (mins) 60 Foul Sewage per hectare (l/s) 0.000 Output Interval (mins) 1 Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0 Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0 <u>Synthetic Rainfall Details</u> Rainfall Model FSR Profile Type Summer Return Period (years) 1 Cv (Summer) 0.750 Region England and Wales Cv (Winter) 0.840 M5-60 (mm) 19.800 Storm Duration (mins) 30 Ratio R 0.350		
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20 East Sands Burbage Marlborough Wiltshire SN8 3AN		
Date 22/06/2023 15:36	Designed by RobbieParnham	
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Micro Drainage	Network 2018.1	
Online Controls for Storm Orifice Manhole: SPCP3, DS/PN: S1.007, Volume (m³): 1.0 Diameter (m) 0.036 Discharge Coefficient 0.600 Invert Level (m) 50.796		
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Micro Drainage		Network 2018.1

Storage Structures for Storm

Porous Car Park Manhole: SPCP3, DS/PN: S1.007

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	15.0
Membrane Percolation (mm/hr)	1000	Length (m)	32.0
Max Percolation (l/s)	133.3	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	50.796	Membrane Depth (mm)	200

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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	Water	Surcharged	Flooded	Pipe		Status	Level
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)		Flow (l/s)
S1.000	SS48	55.515	-0.135	0.000	0.02		0.6	OK
S1.001	SS49	55.022	-0.128	0.000	0.05		1.2	OK
S1.002	SS50	54.526	-0.124	0.000	0.07		3.0	OK
S1.003	SS51	52.530	-0.120	0.000	0.09		3.9	OK
S1.004	SS52	51.539	-0.111	0.000	0.15		4.7	OK
S1.005	SS53	51.062	-0.088	0.000	0.36		5.6	OK
S1.006	SS54	50.989	-0.057	0.000	0.02		0.4	OK
S1.007	SPCP3	50.988	0.042	0.000	0.07		0.4	SURCHARGED
S1.008	SS55	50.804	-0.142	0.000	0.01		0.4	OK
S1.009	SS56	49.518	-0.132	0.000	0.03		0.4	OK
S1.010	SS57	49.421	-0.131	0.000	0.04		0.4	OK

