

James Eaton Design		Page 0
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage		Network 2017.1.2

Existing Network Details for WOMBWELL SW.SWS

- Indicates pipe length does not match coordinates

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
S1.000	41.017	0.249	165.0	0.118	5.00	0.0	0.600	o	225	Pipe/Conduit
S2.000	12.009	0.812	14.8	0.014	5.00	0.0	0.600	o	150	Pipe/Conduit
S1.001	24.639	0.209	117.9	0.024	0.00	0.0	0.600	o	225	Pipe/Conduit
S1.002	14.049	1.404	10.0	0.031	0.00	0.0	0.600	o	225	Pipe/Conduit
S3.000	33.850	0.147	230.3	0.047	5.00	0.0	0.600	o	375	Pipe/Conduit
S1.003	80.415	0.333	241.5	0.104	0.00	0.0	0.600	o	450	Pipe/Conduit
S1.004	18.885	0.060	314.8	0.100	0.00	0.0	0.600	o	450	Pipe/Conduit
S4.000	42.623	1.625	26.2	0.073	5.00	0.0	0.600	o	225	Pipe/Conduit
S4.001	9.972	0.478	20.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
S4.002	40.105	2.342	17.1	0.081	0.00	0.0	0.600	o	225	Pipe/Conduit
S4.003	12.121	1.185	10.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
S1.005	61.185	0.412	148.5	0.099	0.00	0.0	0.600	o	450	Pipe/Conduit
S5.000	13.892	0.200	69.5	0.059	5.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
S1.000	44.367	0.118	0.0	1.02	40.4
S2.000	46.430	0.014	0.0	2.63	46.5
S1.001	44.118	0.156	0.0	1.20	47.8
S1.002	43.909	0.187	0.0	4.16	165.4
S3.000	41.077	0.047	0.0	1.19	131.4
S1.003	40.855	0.338	0.0	1.30	207.4
S1.004	40.522	0.438	0.0	1.14	181.4
S4.000	46.317	0.073	0.0	2.56	102.0
S4.001	44.692	0.073	0.0	2.88	114.4
S4.002	44.214	0.154	0.0	3.18	126.3
S4.003	41.872	0.154	0.0	4.12	163.6
S1.005	40.462	0.691	0.0	1.67	265.0
S5.000	40.475	0.059	0.0	1.57	62.5

James Eaton Design		Page 1
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage Network 2017.1.2		

Network 2017.1.2

Existing Network Details for WOMBWELL SW.SWS

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
S1.006	25.663	0.193	133.0	0.019	0.00	0.0	0.600	o	450	Pipe/Conduit
S1.007	37.702	0.526	71.7	0.085	0.00	0.0	0.600	o	450	Pipe/Conduit
S1.008	30.827	2.016	15.3	0.141	0.00	0.0	0.600	o	450	Pipe/Conduit
S1.009	26.691	0.115	232.1	0.426	0.00	0.0	0.600	o	450	Pipe/Conduit
S1.010	44.837	0.287	156.2	0.095	0.00	0.0	0.600	o	450	Pipe/Conduit
S1.011	25.423	0.572	44.4	0.066	0.00	0.0	0.600	o	450	Pipe/Conduit
S1.012	40.331	2.163	18.6	0.099	0.00	0.0	0.600	o	450	Pipe/Conduit
S6.000	25.913	0.721	35.9	0.107	5.00	0.0	0.600	o	225	Pipe/Conduit
S6.001	42.977	1.045	41.1	0.104	0.00	0.0	0.600	o	300	Pipe/Conduit
S6.002	28.003	0.867	32.3	0.064	0.00	0.0	0.600	o	300	Pipe/Conduit
S6.003	11.489	0.076	151.2	0.013	0.00	0.0	0.600	o	300	Pipe/Conduit
S6.004	10.308	0.068	151.6	0.009	0.00	0.0	0.600	o	300	Pipe/Conduit
S1.013	9.224	0.892	10.3	0.082	0.00	0.0	0.600	o	525	Pipe/Conduit
S1.014	6.521	0.652	10.0	0.101	0.00	0.0	0.600	o	525	Pipe/Conduit
S7.000	83.000#	0.100	830.0	0.000	5.00	0.0	0.600	[]	-1	Pipe/Conduit
S7.001	15.717	0.032	491.2	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit
S7.002	3.857	0.009	428.6	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
S1.006	40.050	0.769	0.0	1.76	280.1
S1.007	39.857	0.854	0.0	2.40	382.3
S1.008	39.331	0.995	0.0	5.22	830.1
S1.009	37.315	1.421	0.0	1.33	211.6
S1.010	37.200	1.516	0.0	1.62	258.3
S1.011	36.913	1.582	0.0	3.06	486.1
S1.012	36.341	1.681	0.0	4.73	751.6
S6.000	37.180	0.107	0.0	2.19	87.1
S6.001	36.384	0.211	0.0	2.46	173.8
S6.002	35.339	0.275	0.0	2.78	196.2
S6.003	34.472	0.288	0.0	1.28	90.2
S6.004	34.396	0.297	0.0	1.27	90.1
S1.013	34.103	2.060	0.0	6.99	1513.9
S1.014	33.211	2.161	0.0	7.11	1539.4
S7.000	32.800	0.000	0.0	2.26	36605.9
S7.001	32.525	0.000	0.0	1.26	554.8
S7.002	32.493	0.000	0.0	1.35	594.4

James Eaton Design		Page 2
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage Network 2017.1.2		

Network 2017.1.2

Existing Network Details for WOMBWELL SW.SWS

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
S1.015	3.552#	0.036	100.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit
S1.016	114.951#	-4.549	-25.3	0.000	0.00	0.0	0.600	o	101	Pipe/Conduit
S1.017	9.779	0.097	100.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
S1.015	32.434	2.161	0.0	1.00	17.8
S1.016	31.648	2.161	0.0	0.00	0.0
S1.017	36.147	2.161	0.0	1.00	17.7

James Eaton Design		Page 3
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage Network 2017.1.2		

PIPELINE SCHEDULES for WOMBWELL SW.SWS

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	225	S1	45.892	44.367	1.300	Open Manhole	1200
S2.000	o	150	S20	47.880	46.430	1.300	Open Manhole	1200
S1.001	o	225	S2	47.227	44.118	2.884	Open Manhole	1200
S1.002	o	225	S3	45.766	43.909	1.632	Open Manhole	1200
S3.000	o	375	S21	42.752	41.077	1.300	Open Manhole	1500
S1.003	o	450	S4	45.046	40.855	3.741	Open Manhole	1500
S1.004	o	450	S5	43.221	40.522	2.249	Open Manhole	1500
S4.000	o	225	S22	47.842	46.317	1.300	Open Manhole	1200
S4.001	o	225	S23	46.217	44.692	1.300	Open Manhole	1200
S4.002	o	225	S24	45.739	44.214	1.300	Open Manhole	1200
S4.003	o	225	S25	43.397	41.872	1.300	Open Manhole	1200
S1.005	o	450	S6	42.824	40.462	1.912	Open Manhole	1500

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)
S1.000	41.017	165.0	S2	47.227	44.118	2.884	Open Manhole	1200
S2.000	12.009	14.8	S2	47.227	45.618	1.459	Open Manhole	1200
S1.001	24.639	117.9	S3	45.766	43.909	1.632	Open Manhole	1200
S1.002	14.049	10.0	S4	45.046	42.505	2.316	Open Manhole	1500
S3.000	33.850	230.3	S4	45.046	40.930	3.741	Open Manhole	1500
S1.003	80.415	241.5	S5	43.221	40.522	2.249	Open Manhole	1500
S1.004	18.885	314.8	S6	42.824	40.462	1.912	Open Manhole	1500
S4.000	42.623	26.2	S23	46.217	44.692	1.300	Open Manhole	1200
S4.001	9.972	20.9	S24	45.739	44.214	1.300	Open Manhole	1200
S4.002	40.105	17.1	S25	43.397	41.872	1.300	Open Manhole	1200
S4.003	12.121	10.2	S6	42.824	40.687	1.912	Open Manhole	1500
S1.005	61.185	148.5	S7	42.139	40.050	1.639	Open Manhole	1500

James Eaton Design		Page 4
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage	Network 2017.1.2	

Network 2017.1.2

PIPELINE SCHEDULES for WOMBWELL SW.SWS

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)
S5.000	o	225	S26	42.732	40.475	2.032	Open Manhole	1200
S1.006	o	450	S7	42.139	40.050	1.639	Open Manhole	1500
S1.007	o	450	S8	41.737	39.857	1.430	Open Manhole	1500
S1.008	o	450	S9	41.211	39.331	1.430	Open Manhole	1500
S1.009	o	450	S10	40.274	37.315	2.509	Open Manhole	1500
S1.010	o	450	S11	39.590	37.200	1.940	Open Manhole	1500
S1.011	o	450	S12	38.793	36.913	1.430	Open Manhole	1500
S1.012	o	450	S13	38.221	36.341	1.430	Open Manhole	1500
S6.000	o	225	S27	38.705	37.180	1.300	Open Manhole	1500
S6.001	o	300	S28	37.984	36.384	1.300	Open Manhole	1200
S6.002	o	300	S29	36.939	35.339	1.300	Open Manhole	1200
S6.003	o	300	S30	36.072	34.472	1.300	Open Manhole	1200
S6.004	o	300	S31	35.996	34.396	1.300	Open Manhole	1200
S1.013	o	525	S14	36.347	34.103	1.719	Open Manhole	1800
S1.014	o	525	S15	36.152	33.211	2.416	Open Manhole	1500
S7.000	[]	-1	S32	35.400	32.800	0.800	Open Manhole	1200
S7.001	o	750	S33	35.400	32.525	2.125	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)
S5.000	13.892	69.5	S7	42.139	40.275	1.639	Open Manhole	1500
S1.006	25.663	133.0	S8	41.737	39.857	1.430	Open Manhole	1500
S1.007	37.702	71.7	S9	41.211	39.331	1.430	Open Manhole	1500
S1.008	30.827	15.3	S10	40.274	37.315	2.509	Open Manhole	1500
S1.009	26.691	232.1	S11	39.590	37.200	1.940	Open Manhole	1500
S1.010	44.837	156.2	S12	38.793	36.913	1.430	Open Manhole	1500
S1.011	25.423	44.4	S13	38.221	36.341	1.430	Open Manhole	1500
S1.012	40.331	18.6	S14	36.347	34.178	1.719	Open Manhole	1800
S6.000	25.913	35.9	S28	37.984	36.459	1.300	Open Manhole	1200
S6.001	42.977	41.1	S29	36.939	35.339	1.300	Open Manhole	1200
S6.002	28.003	32.3	S30	36.072	34.472	1.300	Open Manhole	1200
S6.003	11.489	151.2	S31	35.996	34.396	1.300	Open Manhole	1200
S6.004	10.308	151.6	S14	36.347	34.328	1.719	Open Manhole	1800
S1.013	9.224	10.3	S15	36.152	33.211	2.416	Open Manhole	1500
S1.014	6.521	10.0	S16	36.150	32.559	3.066	Open Manhole	2400
S7.000	83.000#	830.0	S33	35.400	32.700	0.900	Open Manhole	1200
S7.001	15.717	491.2	S34	36.000	32.493	2.757	Open Manhole	1500

James Eaton Design		Page 5
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage Network 2017.1.2		

PIPELINE SCHEDULES for WOMBWELL SW.SWS

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)
S7.002	o	750	S34	36.000	32.493	2.757	Open Manhole	1500
S1.015	o	150	S16	36.150	32.434	3.566	Open Manhole	2400
S1.016	o	101	S17	36.150	31.648	4.401	Open Manhole	1800
S1.017	o	150	S18	37.200	36.147	0.903	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)
S7.002	3.857	428.6	S16	36.150	32.484	2.916	Open Manhole	2400
S1.015	3.552#	100.0	S17	36.150	32.398	3.602	Open Manhole	1800
S1.016	114.951#	-25.3	S18	37.200	36.197	0.902	Open Manhole	1200
S1.017	9.779	100.8	S19	36.750	36.050	0.550	Open Manhole	1200

Free Flowing Outfall Details for WOMBWELL SW.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
---------------------	--------------	--------------	--------------	------------------	----------	--------

S1.017	S19	36.750	36.050	36.050	1200	0
--------	-----	--------	--------	--------	------	---

Simulation Criteria for WOMBWELL SW.SWS

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	0.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.359		

James Eaton Design		Page 6
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage Network 2017.1.2		

Network 2017.1.2

Online Controls for WOMBWELL SW.SWS

Hydro-Brake® Optimum Manhole: S16, DS/PN: S1.015, Volume (m³): 18.6

Unit Reference	MD-SHE-0142-1210-2166-1210
Design Head (m)	2.166
Design Flow (l/s)	12.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	142
Invert Level (m)	32.434
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.166	12.1
Flush-Flo™	0.618	11.9
Kick-Flo®	1.267	9.4
Mean Flow over Head Range	-	10.5

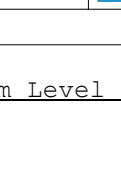
The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.1	1.200	10.0	3.000	14.1	7.000	21.2
0.200	9.8	1.400	9.8	3.500	15.2	7.500	21.9
0.300	10.9	1.600	10.5	4.000	16.2	8.000	22.6
0.400	11.5	1.800	11.1	4.500	17.1	8.500	23.2
0.500	11.8	2.000	11.6	5.000	18.0	9.000	23.9
0.600	11.9	2.200	12.2	5.500	18.8	9.500	24.5
0.800	11.7	2.400	12.7	6.000	19.6		
1.000	11.2	2.600	13.2	6.500	20.4		

Pump Manhole: S17, DS/PN: S1.016, Volume (m³): 11.5

Invert Level (m) 31.648

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	13.1000	0.900	13.1000	1.700	13.1000	2.500	13.1000
0.200	13.1000	1.000	13.1000	1.800	13.1000	2.600	13.1000
0.300	13.1000	1.100	13.1000	1.900	13.1000	2.700	13.1000
0.400	13.1000	1.200	13.1000	2.000	13.1000	2.800	13.1000
0.500	13.1000	1.300	13.1000	2.100	13.1000	2.900	13.1000
0.600	13.1000	1.400	13.1000	2.200	13.1000	3.000	13.1000
0.700	13.1000	1.500	13.1000	2.300	13.1000		
0.800	13.1000	1.600	13.1000	2.400	13.1000		

James Eaton Design		Page 7
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage		Network 2017.1.2

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for WOMBWELL SW.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region England and Wales Cv (Summer)	0.750		
M5-60 (mm)	19.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	450.0
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, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1	15 Winter	1	+0%	100/15 Summer			
S2.000	S20	15 Winter	1	+0%				
S1.001	S2	15 Winter	1	+0%	30/15 Winter			
S1.002	S3	15 Winter	1	+0%				
S3.000	S21	15 Winter	1	+0%	100/15 Summer			
S1.003	S4	15 Winter	1	+0%	100/15 Summer			
S1.004	S5	15 Winter	1	+0%	100/15 Summer			
S4.000	S22	15 Winter	1	+0%				
S4.001	S23	15 Winter	1	+0%				
S4.002	S24	15 Winter	1	+0%				
S4.003	S25	15 Winter	1	+0%	100/15 Winter			
S1.005	S6	15 Winter	1	+0%	100/15 Summer			
S5.000	S26	15 Winter	1	+0%	100/15 Summer			
S1.006	S7	15 Winter	1	+0%	100/15 Summer			
S1.007	S8	15 Winter	1	+0%	100/15 Summer			
S1.008	S9	15 Winter	1	+0%	100/15 Summer			
S1.009	S10	15 Winter	1	+0%	30/15 Summer	100/15 Winter		
S1.010	S11	15 Winter	1	+0%	30/15 Summer	100/15 Winter		

©1982-2017 XP Solutions

James Eaton Design		Page 8
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage		Network 2017.1.2

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for WOMBWELL SW.SWS

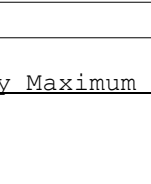
PN	US/MH Name	Water		Surcharged		Flooded		Pipe		Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)				
S1.000	S1	44.465	-0.127	0.000	0.38		14.7	OK			
S2.000	S20	46.450	-0.130	0.000	0.04		1.8	OK			
S1.001	S2	44.221	-0.122	0.000	0.43		18.9	OK			
S1.002	S3	43.968	-0.166	0.000	0.15		22.0	OK			
S3.000	S21	41.131	-0.321	0.000	0.05		5.9	OK			
S1.003	S4	40.991	-0.314	0.000	0.19		37.3	OK			
S1.004	S5	40.697	-0.275	0.000	0.32		46.1	OK			
S4.000	S22	46.364	-0.178	0.000	0.10		9.2	OK			
S4.001	S23	44.739	-0.178	0.000	0.10		9.1	OK			
S4.002	S24	44.272	-0.167	0.000	0.15		17.9	OK			
S4.003	S25	41.926	-0.171	0.000	0.13		18.0	OK			
S1.005	S6	40.629	-0.284	0.000	0.29		70.9	OK			
S5.000	S26	40.531	-0.169	0.000	0.14		7.5	OK			
S1.006	S7	40.229	-0.271	0.000	0.33		78.3	OK			
S1.007	S8	40.010	-0.296	0.000	0.25		85.8	OK			
S1.008	S9	39.442	-0.339	0.000	0.14		97.9	OK			
S1.009	S10	37.614	-0.151	0.000	0.76		135.4	OK			1
S1.010	S11	37.458	-0.192	0.000	0.62		143.8	OK			1

James Eaton Design		Page 9
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage		Network 2017.1.2

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for WOMBWELL SW.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow Overflow	Overflow Act.
S1.011	S12	15 Winter	1	+0%	100/15 Summer			
S1.012	S13	15 Winter	1	+0%	100/15 Summer			
S6.000	S27	15 Winter	1	+0%				
S6.001	S28	15 Winter	1	+0%	100/15 Summer			
S6.002	S29	15 Winter	1	+0%	100/15 Summer			
S6.003	S30	15 Winter	1	+0%	30/15 Summer	100/15 Summer		
S6.004	S31	15 Winter	1	+0%	30/15 Summer	100/15 Winter		
S1.013	S14	15 Winter	1	+0%	100/15 Summer			
S1.014	S15	15 Winter	1	+0%	30/15 Summer			
S7.000	S32	180 Winter	1	+0%	100/240 Winter			
S7.001	S33	180 Winter	1	+0%	30/30 Summer			
S7.002	S34	15 Winter	1	+0%	30/15 Summer			
S1.015	S16	15 Winter	1	+0%	1/15 Summer			
S1.016	S17	240 Summer	1	+0%	100/480 Winter			
S1.017	S18	180 Summer	1	+0%				

PN	US/MH Name	Water Surcharged Flooded			Pipe		Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)		
S1.011	S12	37.100	-0.262	0.000	0.37	149.1	OK	
S1.012	S13	36.488	-0.302	0.000	0.24	157.1	OK	
S6.000	S27	37.242	-0.163	0.000	0.17	13.6	OK	
S6.001	S28	36.462	-0.222	0.000	0.15	24.5	OK	
S6.002	S29	35.425	-0.214	0.000	0.18	31.6	OK	
S6.003	S30	34.619	-0.153	0.000	0.48	33.2	OK	2
S6.004	S31	34.550	-0.146	0.000	0.52	34.1	OK	1
S1.013	S14	34.287	-0.340	0.000	0.27	193.9	OK	
S1.014	S15	33.418	-0.318	0.000	0.33	202.7	OK	
S7.000	S32	33.141	-1.459	0.000	0.00	0.0	OK	
S7.001	S33	33.142	-0.133	0.000	0.04	11.6	OK	
S7.002	S34	33.212	-0.031	0.000	0.03	11.7	OK	
S1.015	S16	33.259	0.675	0.000	1.01	11.9	SURCHARGED	
S1.016	S17	31.739	-0.010	0.000	6.29	11.9	OK	
S1.017	S18	36.245	-0.052	0.000	0.76	11.9	OK	

James Eaton Design		Page 10
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX		
Designed by James Checked by		
Micro Drainage		Network 2017.1.2

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for WOMBWELL SW.SWS

Simulation Criteria

Areal Reduction Factor 1.000	Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0	MADD Factor * 10m³/ha Storage 0.000
Hot Start Level (mm) 0	Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500	Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000	

Number of Input Hydrographs 0	Number of Storage Structures 0
Number of Online Controls 2	Number of Time/Area Diagrams 0
Number of Offline Controls 0	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R 0.359
Region England and Wales Cv (Summer)	0.750	
M5-60 (mm)	19.000 Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	450.0
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, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1 15	Winter	30	+0%	100/15	Summer		
S2.000	S20 15	Winter	30	+0%				
S1.001	S2 15	Winter	30	+0%	30/15	Winter		
S1.002	S3 15	Winter	30	+0%				
S3.000	S21 15	Winter	30	+0%	100/15	Summer		
S1.003	S4 15	Winter	30	+0%	100/15	Summer		
S1.004	S5 15	Winter	30	+0%	100/15	Summer		
S4.000	S22 15	Winter	30	+0%				
S4.001	S23 15	Winter	30	+0%				
S4.002	S24 15	Winter	30	+0%				
S4.003	S25 15	Winter	30	+0%	100/15	Winter		
S1.005	S6 15	Winter	30	+0%	100/15	Summer		
S5.000	S26 15	Winter	30	+0%	100/15	Summer		
S1.006	S7 15	Winter	30	+0%	100/15	Summer		
S1.007	S8 15	Winter	30	+0%	100/15	Summer		
S1.008	S9 15	Winter	30	+0%	100/15	Summer		
S1.009	S10 15	Winter	30	+0%	30/15	Summer	100/15	Winter
S1.010	S11 15	Winter	30	+0%	30/15	Summer	100/15	Winter

©1982-2017 XP Solutions

James Eaton Design		Page 11
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage Network 2017.1.2		

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for WOMBWELL SW.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	44.552	-0.040	0.000	0.93		35.7	OK	
S2.000	S20	46.462	-0.118	0.000	0.10		4.4	OK	
S1.001	S2	44.347	0.004	0.000	1.02		44.8	SURCHARGED	
S1.002	S3	44.005	-0.130	0.000	0.37		53.2	OK	
S3.000	S21	41.166	-0.286	0.000	0.12		14.4	OK	
S1.003	S4	41.087	-0.218	0.000	0.49		94.7	OK	
S1.004	S5	40.836	-0.136	0.000	0.82		119.2	OK	
S4.000	S22	46.391	-0.151	0.000	0.23		22.6	OK	
S4.001	S23	44.767	-0.150	0.000	0.23		22.4	OK	
S4.002	S24	44.315	-0.124	0.000	0.41		49.2	OK	
S4.003	S25	41.965	-0.132	0.000	0.35		48.9	OK	
S1.005	S6	40.763	-0.149	0.000	0.76		186.4	OK	
S5.000	S26	40.566	-0.134	0.000	0.34		18.4	OK	
S1.006	S7	40.376	-0.124	0.000	0.87		206.0	OK	
S1.007	S8	40.126	-0.181	0.000	0.66		223.0	OK	
S1.008	S9	39.519	-0.262	0.000	0.35		253.3	OK	
S1.009	S10	38.641	0.876	0.000	2.00		358.7	SURCHARGED	1
S1.010	S11	38.148	0.498	0.000	1.65		382.9	SURCHARGED	1

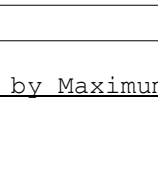
James Eaton Design		Page 12
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage Network 2017.1.2		

Network 2017.1.2

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for WOMBWELL SW.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.011	S12	15 Winter	30	+0%	100/15 Summer			
S1.012	S13	15 Winter	30	+0%	100/15 Summer			
S6.000	S27	15 Winter	30	+0%				
S6.001	S28	15 Winter	30	+0%	100/15 Summer			
S6.002	S29	15 Winter	30	+0%	100/15 Summer			
S6.003	S30	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
S6.004	S31	15 Winter	30	+0%	30/15 Summer	100/15 Winter		
S1.013	S14	15 Winter	30	+0%	100/15 Summer			
S1.014	S15	15 Winter	30	+0%	30/15 Summer			
S7.000	S32	360 Winter	30	+0%	100/240 Winter			
S7.001	S33	360 Winter	30	+0%	30/30 Summer			
S7.002	S34	180 Winter	30	+0%	30/15 Summer			
S1.015	S16	180 Winter	30	+0%	1/15 Summer			
S1.016	S17	2880 Winter	30	+0%	100/480 Winter			
S1.017	S18	2880 Winter	30	+0%				

PN	US/MH Name	Water Surcharged Flooded			Pipe		Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)		
S1.011	S12	37.266	-0.097	0.000	0.97	397.0	OK	
S1.012	S13	36.601	-0.190	0.000	0.62	417.7	OK	
S6.000	S27	37.281	-0.124	0.000	0.41	33.4	OK	
S6.001	S28	36.520	-0.164	0.000	0.42	67.5	OK	
S6.002	S29	35.490	-0.149	0.000	0.50	88.4	OK	
S6.003	S30	34.905	0.133	0.000	1.33	91.8	SURCHARGED	2
S6.004	S31	34.763	0.067	0.000	1.46	95.6	SURCHARGED	1
S1.013	S14	34.539	-0.089	0.000	0.72	525.0	OK	
S1.014	S15	34.163	0.428	0.000	0.88	544.9	SURCHARGED	
S7.000	S32	33.737	-0.863	0.000	0.00	0.0	OK	
S7.001	S33	33.737	0.462	0.000	0.08	24.9	SURCHARGED	
S7.002	S34	33.807	0.564	0.000	0.06	20.8	SURCHARGED	
S1.015	S16	33.865	1.281	0.000	1.01	11.9	SURCHARGED	
S1.016	S17	31.739	-0.010	0.000	6.29	11.9	OK	
S1.017	S18	36.245	-0.052	0.000	0.76	11.9	OK	

James Eaton Design		Page 13
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX		
Designed by James Checked by		
Micro Drainage		Network 2017.1.2

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for WOMBWELL SW.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	0.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.359
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	450.0
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, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1	15 Winter	100	+40%	100/15 Summer			
S2.000	S20	15 Winter	100	+40%				
S1.001	S2	15 Winter	100	+40%	30/15 Winter			
S1.002	S3	15 Winter	100	+40%				
S3.000	S21	15 Winter	100	+40%	100/15 Summer			
S1.003	S4	15 Winter	100	+40%	100/15 Summer			
S1.004	S5	15 Winter	100	+40%	100/15 Summer			
S4.000	S22	15 Winter	100	+40%				
S4.001	S23	15 Winter	100	+40%				
S4.002	S24	15 Winter	100	+40%				
S4.003	S25	15 Winter	100	+40%	100/15 Winter			
S1.005	S6	15 Winter	100	+40%	100/15 Summer			
S5.000	S26	15 Winter	100	+40%	100/15 Summer			
S1.006	S7	15 Winter	100	+40%	100/15 Summer			
S1.007	S8	15 Winter	100	+40%	100/15 Summer			
S1.008	S9	15 Winter	100	+40%	100/15 Summer			
S1.009	S10	15 Winter	100	+40%	30/15 Summer	100/15 Winter		
S1.010	S11	15 Winter	100	+40%	30/15 Summer	100/15 Winter		

©1982-2017 XP Solutions

James Eaton Design		Page 14
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage		Network 2017.1.2

100 year Return Period Summary of Critical Results by Maximum Level (Rank
1) for WOMBWELL SW.SWS

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	45.498	0.906	0.000	1.59		60.9	FLOOD RISK	
S2.000	S20	46.474	-0.106	0.000	0.19		7.9	OK	
S1.001	S2	44.835	0.492	0.000	1.81		79.6	SURCHARGED	
S1.002	S3	44.044	-0.090	0.000	0.65		94.2	OK	
S3.000	S21	42.364	0.912	0.000	0.20		23.2	FLOOD RISK	
S1.003	S4	42.353	1.048	0.000	0.71		138.1	SURCHARGED	
S1.004	S5	42.178	1.206	0.000	1.17		169.2	SURCHARGED	
S4.000	S22	46.420	-0.122	0.000	0.42		41.0	OK	
S4.001	S23	44.796	-0.121	0.000	0.43		40.5	OK	
S4.002	S24	44.361	-0.078	0.000	0.74		89.0	OK	
S4.003	S25	42.299	0.201	0.000	0.63		88.5	SURCHARGED	
S1.005	S6	42.086	1.174	0.000	1.08		264.4	SURCHARGED	
S5.000	S26	41.634	0.934	0.000	0.56		30.7	SURCHARGED	
S1.006	S7	41.587	1.087	0.000	1.25		293.5	SURCHARGED	
S1.007	S8	41.293	0.986	0.000	0.94		317.4	FLOOD RISK	
S1.008	S9	40.843	1.062	0.000	0.52		374.7	FLOOD RISK	
S1.009	S10	40.279	2.514	5.094	2.77		495.5	FLOOD	1
S1.010	S11	39.590	1.940	0.013	2.22		516.0	FLOOD	1

James Eaton Design		Page 15
Stoneycroft Brackenhill Ackworth Pontefract WF7 7BG		
Date 01/01/0001 File WOMBWELL SW.MDX	Designed by James Checked by	
Micro Drainage Network 2017.1.2		

Network 2017.1.2

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for WOMBWELL SW.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.011	S12	15 Winter	100	+40%	100/15 Summer			
S1.012	S13	15 Winter	100	+40%	100/15 Summer			
S6.000	S27	15 Winter	100	+40%				
S6.001	S28	15 Winter	100	+40%	100/15 Summer			
S6.002	S29	15 Winter	100	+40%	100/15 Summer			
S6.003	S30	15 Winter	100	+40%	30/15 Summer	100/15 Summer		
S6.004	S31	30 Winter	100	+40%	30/15 Summer	100/15 Winter		
S1.013	S14	30 Winter	100	+40%	100/15 Summer			
S1.014	S15	60 Winter	100	+40%	30/15 Summer			
S7.000	S32	600 Winter	100	+40%	100/240 Winter			
S7.001	S33	600 Winter	100	+40%	30/30 Summer			
S7.002	S34	600 Winter	100	+40%	30/15 Summer			
S1.015	S16	60 Winter	100	+40%	1/15 Summer			
S1.016	S17	600 Winter	100	+40%	100/480 Winter			
S1.017	S18	720 Winter	100	+40%				

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Pipe Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.011	S12	38.272	0.909	0.000	1.32	539.7	SURCHARGED	
S1.012	S13	37.318	0.528	0.000	0.86	573.4	SURCHARGED	
S6.000	S27	37.327	-0.078	0.000	0.75	60.5	OK	
S6.001	S28	36.988	0.304	0.000	0.72	116.4	SURCHARGED	
S6.002	S29	36.572	0.933	0.000	0.73	129.2	FLOOD RISK	
S6.003	S30	36.074	1.302	2.275	1.76	121.3	FLOOD	2
S6.004	S31	35.997	1.301	1.499	1.64	107.0	FLOOD	1
S1.013	S14	36.084	1.456	0.000	0.91	659.8	FLOOD RISK	
S1.014	S15	35.614	1.878	0.000	0.95	587.0	SURCHARGED	
S7.000	S32	35.306	0.706	0.000	0.00	0.6	FLOOD RISK	
S7.001	S33	35.306	2.031	0.000	0.07	21.6	FLOOD RISK	
S7.002	S34	35.306	2.063	0.000	0.05	18.4	SURCHARGED	
S1.015	S16	35.563	2.979	0.000	1.04	12.2	SURCHARGED	
S1.016	S17	32.216	0.467	0.000	6.94	13.1	SURCHARGED	
S1.017	S18	36.252	-0.045	0.000	0.83	13.1	OK	