

RSK LDE		Page 1
14 Beecham Court Pemberton Business Park Wigan WN3 6PR		
Date 01/01/0001 File SN1.MDX	Designed by lsteedman Checked by	
XP Solutions	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW1.SWS

Pipe Sizes SNET1 P2 Manhole Sizes UU MH

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.378	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	250	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	50	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	400

Designed with Level Soffits

Time Area Diagram for SW1.SWS

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.164	4-8	1.211	8-12	1.153	12-16	0.049

Total Area Contributing (ha) = 2.576

Total Pipe Volume (m³) = 178.217

Network Design Table for SW1.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	Auto Design
S1.000	45.526	0.569	80.0	0.115	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.001	33.335	0.504	66.1	0.121	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.002	13.822	0.346	39.9	0.018	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.003	32.452	0.406	80.0	0.163	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)
S1.000	58.90	5.52	164.048	0.115	0.0	0.0	0.0	1.46	58.2	18.3
S1.001	57.61	5.81	163.404	0.236	0.0	0.0	0.0	1.94	136.9	36.8
S1.002	57.21	5.90	162.900	0.254	0.0	0.0	0.0	2.50	176.4	39.4
S1.003	55.92	6.21	162.554	0.417	0.0	0.0	0.0	1.76	124.4	63.2

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Pemberton Business Park
Wigan WN3 6PR

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Designed by lsteedman
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Micro Drainage

XP Solutions

Network 2020.1.3

Network Design Table for SW1.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	Auto Design
S1.004	23.775	0.297	80.1	0.097	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.005	17.312	0.216	80.1	0.106	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.006	30.646	0.383	80.0	0.104	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.007	29.563	0.421	70.2	0.072	0.00	0.0	0.600	o	525	Pipe/Conduit	
S2.000	16.823	0.280	60.1	0.104	5.00	0.0	0.600	o	225	Pipe/Conduit	
S2.001	28.444	1.061	26.8	0.064	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.000	25.644	0.366	70.1	0.036	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	29.979	0.428	70.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S2.002	31.750	0.132	240.5	0.127	0.00	0.0	0.600	o	300	Pipe/Conduit	
S2.003	27.219	0.113	240.9	0.045	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.008	35.744	0.089	401.6	0.080	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.009	19.800	0.050	396.0	0.123	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.010	50.988	0.127	401.5	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.011	15.488	0.039	397.1	0.099	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.012	60.902	0.152	400.7	0.048	0.00	0.0	0.600	o	600	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)
S1.004	55.28	6.36	161.923	0.514	0.0	0.0	0.0	2.51	542.3	77.0
S1.005	54.83	6.48	161.626	0.620	0.0	0.0	0.0	2.50	542.0	92.1
S1.006	54.05	6.68	161.410	0.724	0.0	0.0	0.0	2.51	542.4	106.0
S1.007	53.36	6.87	161.027	0.796	0.0	0.0	0.0	2.68	579.2	115.0
S2.000	60.59	5.17	162.493	0.104	0.0	0.0	0.0	1.69	67.2	17.1
S2.001	59.83	5.32	162.138	0.168	0.0	0.0	0.0	3.05	215.5	27.2
S3.000	60.06	5.27	161.946	0.036	0.0	0.0	0.0	1.56	62.2	5.9
S3.001	58.56	5.59	161.580	0.036	0.0	0.0	0.0	1.56	62.2	5.9
S2.002	56.29	6.12	161.077	0.331	0.0	0.0	0.0	1.01	71.3	50.5
S2.003	54.49	6.57	160.945	0.376	0.0	0.0	0.0	1.01	71.3	55.5
S1.008	51.63	7.36	160.531	1.252	0.0	0.0	0.0	1.21	341.8	175.0
S1.009	50.73	7.63	160.442	1.375	0.0	0.0	0.0	1.22	344.3	188.9
S1.010	48.55	8.33	160.392	1.375	0.0	0.0	0.0	1.21	341.9	188.9
S1.011	47.94	8.55	160.265	1.474	0.0	0.0	0.0	1.22	343.8	191.4
S1.012	45.68	9.38	160.226	1.522	0.0	0.0	0.0	1.21	342.2	191.4

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Manhole Schedules for SW1.SWS											
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)
S2	165.573	1.525	Open Manhole	1200	S1.000	164.048	225				
S3	164.985	1.581	Open Manhole	1200	S1.001	163.404	300	S1.000	163.479	225	
S4	164.500	1.600	Open Manhole	1350	S1.002	162.900	300	S1.001	162.900	300	
S5	164.271	1.717	Open Manhole	1500	S1.003	162.554	300	S1.002	162.554	300	
S6	163.684	1.761	Open Manhole	1500	S1.004	161.923	525	S1.003	162.148	300	
S7	163.967	2.341	Open Manhole	1500	S1.005	161.626	525	S1.004	161.626	525	
S8	163.796	2.386	Open Manhole	1500	S1.006	161.410	525	S1.005	161.410	525	
S9	164.229	3.202	Open Manhole	1500	S1.007	161.027	525	S1.006	161.027	525	
S10	163.918	1.425	Open Manhole	1200	S2.000	162.493	225				
S11	163.652	1.514	Open Manhole	1200	S2.001	162.138	300	S2.000	162.213	225	
S12	163.171	1.225	Open Manhole	1200	S3.000	161.946	225				
S13	163.690	2.110	Open Manhole	1200	S3.001	161.580	225	S3.000	161.580	225	
S14	164.061	2.984	Open Manhole	1500	S2.002	161.077	300	S2.001	161.077	300	
								S3.001	161.152	225	
S15	164.457	3.512	Open Manhole	1200	S2.003	160.945	300	S2.002	160.945	300	
S16	164.800	4.269	Open Manhole	1500	S1.008	160.531	600	S1.007	160.606	525	
								S2.003	160.832	300	1
S17	165.248	4.806	Open Manhole	1500	S1.009	160.442	600	S1.008	160.442	600	
S18	165.506	5.114	Open Manhole	1500	S1.010	160.392	600	S1.009	160.392	600	
S19	165.278	5.013	Open Manhole	1500	S1.011	160.265	600	S1.010	160.265	600	
S20	164.911	4.685	Open Manhole	1500	S1.012	160.226	600	S1.011	160.226	600	
S21	163.941	1.525	Open Manhole	1200	S4.000	162.416	225				
S22	163.786	1.604	Open Manhole	1500	S4.001	162.182	300	S4.000	162.257	225	
S23	163.589	1.600	Open Manhole	1500	S4.002	161.989	300	S4.001	161.989	300	
S24	163.360	1.574	Open Manhole	1500	S4.003	161.786	300	S4.002	161.786	300	
S25	163.458	3.384	Open Manhole	1500	S1.013	160.074	600	S1.012	160.074	600	
								S4.003	161.522	300	1148
S50	163.919	2.319	Open Manhole	1200	S5.000	161.600	375				
S50	163.596	2.076	Open Manhole	1200	S5.001	161.520	375	S5.000	161.520	375	
S26	163.330	3.462	Open Manhole	1500	S1.014	159.868	600	S1.013	159.868	600	
								S5.001	161.368	375	1275
S27	162.222	2.451	Open Manhole	1500	S1.015	159.771	600	S1.014	159.771	600	
S28	161.049	1.500	Open Manhole	1500	S1.016	159.549	600	S1.015	159.549	600	
S29	161.075	1.585	Open Manhole	1500	S1.017	159.490	600	S1.016	159.490	600	
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Simulation Criteria for SW1.SWS Synthetic Rainfall Details <table><tr><td>Rainfall Model</td><td>FSR</td><td>Profile Type</td><td>Summer</td></tr><tr><td>Return Period (years)</td><td>2</td><td>Cv (Summer)</td><td>0.750</td></tr><tr><td>Region</td><td>England and Wales</td><td>Cv (Winter)</td><td>0.840</td></tr><tr><td>M5-60 (mm)</td><td>18.000</td><td>Storm Duration (mins)</td><td>30</td></tr><tr><td>Ratio R</td><td>0.378</td><td></td><td></td></tr></table>			Rainfall Model	FSR	Profile Type	Summer	Return Period (years)	2	Cv (Summer)	0.750	Region	England and Wales	Cv (Winter)	0.840	M5-60 (mm)	18.000	Storm Duration (mins)	30	Ratio R	0.378		
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Online Controls for SW1.SWS

Hydro-Brake® Optimum Manhole: S50, DS/PN: S5.001, Volume (m³): 4.0

Unit Reference	MD-SHE-0103-5000-1200-5000
Design Head (m)	1.200
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	103
Invert Level (m)	161.520
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)	1.200	5.0	Kick-Flo®	0.745	4.0
Flush-Flo™	0.354	5.0	Mean Flow over Head Range	-	4.4

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	3.4	1.200	5.0	3.000	7.7	7.000	11.5
0.200	4.7	1.400	5.4	3.500	8.3	7.500	11.8
0.300	5.0	1.600	5.7	4.000	8.8	8.000	12.2
0.400	5.0	1.800	6.0	4.500	9.3	8.500	12.6
0.500	4.9	2.000	6.3	5.000	9.8	9.000	12.9
0.600	4.7	2.200	6.6	5.500	10.2	9.500	13.3
0.800	4.1	2.400	6.9	6.000	10.7		
1.000	4.6	2.600	7.2	6.500	11.1		

Hydro-Brake® Optimum Manhole: S31, DS/PN: S1.020, Volume (m³): 21.3

Unit Reference	MD-SHE-0181-2240-2875-2240
Design Head (m)	2.875
Design Flow (l/s)	22.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	181
Invert Level (m)	157.851
Minimum Outlet Pipe Diameter (mm)	225

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SW1.SWS

Simulation Criteria

Areal Reduction Factor 1.000

Hot Start (mins) 0

Hot Start Level (mm) 0

Manhole Headloss Coeff (Global) 0.500

Foul Sewage per hectare (l/s) 0.000

Additional Flow - % of Total Flow 0.000

MADD Factor * 10m³/ha Storage 0.000

Inlet Coeffiecient 0.800

Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0

Number of Offline Controls 0

Number of Time/Area Diagrams 0

Number of Online Controls 2

Number of Storage Structures 2

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR

Region England and Wales Cv (Summer) 0.750

M5-60 (mm) 18.000

Ratio R 0.353

Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status ON

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) 2, 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.	Water Level (m)
S1.000	S2 15	Winter	2	+0%	100/15	Summer			164.136
S1.001	S3 15	Winter	2	+0%	100/15	Summer			163.510
S1.002	S4 15	Winter	2	+0%	100/15	Summer			163.001
S1.003	S5 15	Winter	2	+0%	30/15	Summer			162.704
S1.004	S6 15	Winter	2	+0%	100/15	Summer			162.066
S1.005	S7 15	Winter	2	+0%	100/15	Summer			161.797
S1.006	S8 15	Winter	2	+0%	100/15	Summer			161.573
S1.007	S9 15	Winter	2	+0%	100/15	Summer			161.193
S2.000	S10 15	Winter	2	+0%	100/15	Summer			162.573
S2.001	S11 15	Winter	2	+0%	100/15	Summer			162.209
S3.000	S12 15	Winter	2	+0%	100/15	Summer 100/15	Winter		161.993
S3.001	S13 15	Winter	2	+0%	100/15	Summer			161.627
S2.002	S14 15	Winter	2	+0%	30/15	Summer			161.267
S2.003	S15 15	Winter	2	+0%	30/15	Summer			161.150
S1.008	S16 15	Winter	2	+0%	30/15	Summer			160.890

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for
SW1.SWS

PN	US/MH Name	Surcharged Flooded			Half Drain		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)				
S1.000	S2	-0.137	0.000	0.31		17.4		OK		
S1.001	S3	-0.194	0.000	0.27		33.3		OK		
S1.002	S4	-0.199	0.000	0.25		35.8		OK		
S1.003	S5	-0.149	0.000	0.50		56.9		OK		
S1.004	S6	-0.382	0.000	0.17		69.3		OK		
S1.005	S7	-0.354	0.000	0.23		82.8		OK		
S1.006	S8	-0.362	0.000	0.21		95.8		OK		
S1.007	S9	-0.359	0.000	0.22		104.6		OK		
S2.000	S10	-0.145	0.000	0.27		16.1		OK		
S2.001	S11	-0.229	0.000	0.13		24.4		OK		
S3.000	S12	-0.178	0.000	0.10		5.5		OK		2
S3.001	S13	-0.178	0.000	0.10		5.5		OK		
S2.002	S14	-0.110	0.000	0.71		46.2		OK		
S2.003	S15	-0.095	0.000	0.80		51.2		OK		
S1.008	S16	-0.242	0.000	0.56		161.7		OK		

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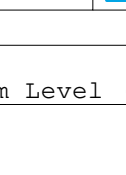
2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for

SW1.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.009	S17	15 Winter	2	+0%	30/15 Summer				160.809
S1.010	S18	15 Winter	2	+0%	30/15 Summer				160.752
S1.011	S19	15 Winter	2	+0%	30/15 Summer				160.670
S1.012	S20	15 Winter	2	+0%	30/15 Summer				160.549
S4.000	S21	15 Winter	2	+0%	100/15 Summer				162.526
S4.001	S22	15 Winter	2	+0%	100/15 Summer				162.279
S4.002	S23	15 Winter	2	+0%	100/15 Summer				162.122
S4.003	S24	15 Winter	2	+0%	100/15 Summer				161.916
S1.013	S25	15 Winter	2	+0%	30/15 Winter				160.406
S5.000	S50	240 Winter	2	+0%	100/30 Winter				161.737
S5.001	S50	240 Winter	2	+0%	30/240 Winter				161.734
S1.014	S26	15 Winter	2	+0%	30/15 Winter				160.220
S1.015	S27	30 Winter	2	+0%	100/15 Summer				160.051
S1.016	S28	30 Winter	2	+0%	30/15 Winter				159.931
S1.017	S29	30 Winter	2	+0%	30/15 Winter				159.862
S1.018	S30	30 Winter	2	+0%	30/15 Winter				159.772
S1.019	S30	1440 Winter	2	+0%	2/120 Summer				158.978
S1.020	S31	1440 Winter	2	+0%	2/15 Summer				158.955

Surcharged Flooded					Half Drain	Pipe		Level
PN	US/MH Name	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status
S1.009	S17	-0.234	0.000	0.66			171.8	OK
S1.010	S18	-0.240	0.000	0.55			164.9	OK
S1.011	S19	-0.195	0.000	0.79			169.8	OK
S1.012	S20	-0.277	0.000	0.55			169.5	OK
S4.000	S21	-0.115	0.000	0.48			23.9	OK
S4.001	S22	-0.203	0.000	0.23			23.6	OK
S4.002	S23	-0.167	0.000	0.40			38.8	OK
S4.003	S24	-0.170	0.000	0.39			39.1	OK
S1.013	S25	-0.268	0.000	0.58			181.3	OK
S5.000	S50	-0.238	0.000	0.04			4.9	OK
S5.001	S50	-0.161	0.000	0.04			4.8	OK
S1.014	S26	-0.249	0.000	0.64			186.2	OK
S1.015	S27	-0.320	0.000	0.43			183.1	OK
S1.016	S28	-0.218	0.000	0.69			184.1	OK
S1.017	S29	-0.228	0.000	0.65			183.1	OK
S1.018	S30	-0.239	0.000	0.67			182.9	OK
S1.019	S30	0.463	0.000	0.10			27.6	SURCHARGED
S1.020	S31	0.804	0.000	0.32			21.7	SURCHARGED

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for SW1.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 Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.353
Region England and Wales Cv (Summer)			0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0

Analysis Timestep 2.5 Second Increment (Extended)

DTS Status ON

DVD Status ON

Inertia Status ON

Profile(s) Summer and Winter

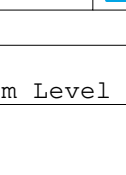
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440

Return Period(s) (years) 2, 30, 100

Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	S2 15	Winter	30	+0%	100/15	Summer			164.176
S1.001	S3 15	Winter	30	+0%	100/15	Summer			163.566
S1.002	S4 15	Winter	30	+0%	100/15	Summer			163.055
S1.003	S5 15	Winter	30	+0%	30/15	Summer			162.916
S1.004	S6 15	Winter	30	+0%	100/15	Summer			162.142
S1.005	S7 15	Winter	30	+0%	100/15	Summer			161.892
S1.006	S8 15	Winter	30	+0%	100/15	Summer			161.662
S1.007	S9 15	Winter	30	+0%	100/15	Summer			161.305
S2.000	S10 15	Winter	30	+0%	100/15	Summer			162.608
S2.001	S11 15	Winter	30	+0%	100/15	Summer			162.242
S3.000	S12 15	Winter	30	+0%	100/15	Summer	100/15	Winter	162.011
S3.001	S13 15	Winter	30	+0%	100/15	Summer			161.726
S2.002	S14 15	Winter	30	+0%	30/15	Summer			161.708
S2.003	S15 15	Winter	30	+0%	30/15	Summer			161.487
S1.008	S16 15	Winter	30	+0%	30/15	Summer			161.239

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1.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 Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.353
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
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)	2, 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.	Water Level (m)
S1.000	S2 15	Winter	100	+40%	100/15	Summer			164.929
S1.001	S3 15	Winter	100	+40%	100/15	Summer			164.511
S1.002	S4 15	Winter	100	+40%	100/15	Summer			164.255
S1.003	S5 15	Winter	100	+40%	30/15	Summer			164.069
S1.004	S6 30	Winter	100	+40%	100/15	Summer			163.588
S1.005	S7 30	Winter	100	+40%	100/15	Summer			163.417
S1.006	S8 30	Winter	100	+40%	100/15	Summer			163.268
S1.007	S9 30	Winter	100	+40%	100/15	Summer			163.074
S2.000	S10 15	Winter	100	+40%	100/15	Summer			163.648
S2.001	S11 15	Winter	100	+40%	100/15	Summer			163.517
S3.000	S12 15	Winter	100	+40%	100/15	Summer	100/15	Winter	163.174
S3.001	S13 15	Winter	100	+40%	100/15	Summer			163.282
S2.002	S14 15	Winter	100	+40%	30/15	Summer			163.323
S2.003	S15 30	Winter	100	+40%	30/15	Summer			163.090
S1.008	S16 30	Winter	100	+40%	30/15	Summer			162.860

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for SW1.SWS

PN	US/MH Name	Surcharged Flooded		Half Drain Pipe		Time (mins)	Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Flow (l/s)				
S1.000	S2	0.656	0.000	0.97	53.7		SURCHARGED		
S1.001	S3	0.807	0.000	0.84	105.0		SURCHARGED		
S1.002	S4	1.055	0.000	0.73	106.2		FLOOD RISK		
S1.003	S5	1.215	0.000	1.57	178.6		FLOOD RISK		
S1.004	S6	1.140	0.000	0.46	193.8		FLOOD RISK		
S1.005	S7	1.266	0.000	0.62	219.5		SURCHARGED		
S1.006	S8	1.333	0.000	0.56	257.1		SURCHARGED		
S1.007	S9	1.521	0.000	0.49	239.0		SURCHARGED		
S2.000	S10	0.930	0.000	0.84	50.3		FLOOD RISK		
S2.001	S11	1.079	0.000	0.38	73.1		FLOOD RISK		
S3.000	S12	1.003	3.421	0.62	35.4		FLOOD		2
S3.001	S13	1.477	0.000	0.63	36.8		SURCHARGED		
S2.002	S14	1.946	0.000	1.83	119.3		SURCHARGED		
S2.003	S15	1.845	0.000	1.77	113.9		SURCHARGED		
S1.008	S16	1.729	0.000	1.28	365.7		SURCHARGED		

