STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SWS1.SWS

Pipe Sizes Circular Manhole Sizes Adoptable

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	17.000	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	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)	1000

Designed with Level Soffits

Network Design Table for SWS1.SWS

« - Indicates pipe capacity < flow

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
1.000	61.174	0.255	239.9	0.224	4.00	0.0	0.600	o	300	Pipe/Conduit	
1.001	24.904	0.104	239.5	0.033	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.002	21.048	0.088	239.2	0.056	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	16.086	0.067	240.1	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	21.589	0.029	744.4	0.476	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.005	13.977	0.019	735.6	0.039	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.006	52.435	0.070	750.0	0.047	0.00	0.0	0.600	o	750	Pipe/Conduit	
2.000	6.035	0.060	100.6	0.045	4.00	0.0	0.600	o	150	Pipe/Conduit	
2.001	24.113	0.144	167.5	0.077	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.002	36.779	0.220	167.2	0.028	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.003	22.434	0.093	241.2	0.089	0.00	0.0	0.600	o	300	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)
1.000	50.00	5.01	5.602	0.224	0.0	0.0	0.0	1.01	71.4	30.3
1.001	50.00	5.42	5.347	0.257	0.0	0.0	0.0	1.01	71.5	34.8
1.002	50.00	5.77	5.243	0.313	0.0	0.0	0.0	1.01	71.6	42.4
1.003	50.00	6.03	5.155	0.345	0.0	0.0	0.0	1.01	71.4	46.7
1.004	50.00	6.38	4.638	0.821	0.0	0.0	0.0	1.02	449.7	111.2
1.005	50.00	6.61	4.609	0.860	0.0	0.0	0.0	1.02	452.4	116.5
1.006	49.65	7.47	4.530	0.907	0.0	0.0	0.0	1.01	448.0	122.0
2.000	50.00	4.10	6.038	0.045	0.0	0.0	0.0	1.00	17.7	6.1
2.001	50.00	4.50	5.993	0.122	0.0	0.0	0.0	1.01	40.1	16.5
2.002	50.00	5.11	5.759	0.150	0.0	0.0	0.0	1.01	40.1	20.3
2.003	50.00	5.48	5.464	0.239	0.0	0.0	0.0	1.01	71.2	32.4

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Network Design Table for SWS1.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
2.004	41.969	0.131	320.4	0.213	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.005	12.561	0.039	322.1	0.024	0.00	0.0	0.600	o	375	Pipe/Conduit	
3.000	14.321	0.143	100.1	0.038	4.00	0.0	0.600	o	150	Pipe/Conduit	
3.001	14.271	0.143	99.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.002	10.153	0.102	99.5	0.026	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.003	8.978	0.096	93.5	0.021	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.006	50.587	0.158	320.2	0.092	0.00	0.0	0.600	o	375	Pipe/Conduit	
2.007	19.120	0.048	398.3	0.075	0.00	0.0	0.600	o	450	Pipe/Conduit	
2.008	9.884	0.025	395.4	0.042	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.007	61.096	0.081	754.3	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
4.000	56.093	0.336	166.9	0.139	4.00	0.0	0.600	o	225	Pipe/Conduit	
4.001	10.481	0.063	166.4	0.024	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.002	12.985	0.078	166.5	0.044	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.003	25.597	0.107	239.2	0.153	0.00	0.0	0.600	o	300	Pipe/Conduit	
4.004	13.081	0.041	319.0	0.072	0.00	0.0	0.600	o	375	Pipe/Conduit	
5.000	32.481	0.222	146.3	0.083	4.00	0.0	0.600	o	225	Pipe/Conduit	
4.005	40.476	0.126	321.2	0.054	0.00	0.0	0.600	o	375	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)
2.004	50.00	6.17	5.236	0.452	0.0	0.0	0.0	1.01	111.2	61.2
2.005	50.00	6.38	5.165	0.476	0.0	0.0	0.0	1.00	110.9	64.5
3.000	50.00	4.24	5.835	0.038	0.0	0.0	0.0	1.00	17.7	5.1
3.001	50.00	4.47	5.692	0.038	0.0	0.0	0.0	1.01	17.8	5.1
3.002	50.00	4.64	5.549	0.064	0.0	0.0	0.0	1.01	17.8	8.7
3.003	50.00	4.75	5.372	0.085	0.0	0.0	0.0	1.35	53.8	11.5
2.006	50.00	7.22	5.126	0.653	0.0	0.0	0.0	1.01	111.2	88.4
2.007	49.45	7.53	4.883	0.728	0.0	0.0	0.0	1.01	161.0	97.5
2.008	48.93	7.70	4.845	0.770	0.0	0.0	0.0	1.02	161.6	102.0
1.007	45.95	8.70	4.520	1.677	0.0	0.0	0.0	1.01	446.7	208.7
4.000	50.00	4.93	5.695	0.139	0.0	0.0	0.0	1.01	40.1	18.8
4.001	50.00	5.10	5.359	0.163	0.0	0.0	0.0	1.01	40.2	22.1
4.002	50.00	5.31	5.298	0.207	0.0	0.0	0.0	1.01	40.2	28.0
4.003	50.00	5.73	5.143	0.360	0.0	0.0	0.0	1.01	71.5	48.7
4.004	50.00	5.95	4.980	0.432	0.0	0.0	0.0	1.01	111.4	58.5
5.000	50.00	4.50	5.321	0.083	0.0	0.0	0.0	1.08	42.9	11.2
4.005	50.00	6.62	4.340	0.569	0.0	0.0	0.0	1.01	111.0	77.0

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Network Design Table for SWS1.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
4.006	24.959	0.062	402.6	0.102	0.00	0.0	0.600	o	450	Pipe/Conduit	
4.007	8.809	0.022	400.4	0.069	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	68.194	0.091	749.4	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.009	85.674	0.150	571.2	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
6.000	13.282	0.133	99.9	0.036	4.00	0.0	0.600	o	150	Pipe/Conduit	
6.001	13.332	0.080	166.7	0.158	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.002	23.235	0.097	239.5	0.072	0.00	0.0	0.600	o	300	Pipe/Conduit	
6.003	49.860	0.156	319.6	0.069	0.00	0.0	0.600	o	375	Pipe/Conduit	
6.004	32.072	0.100	320.7	0.064	0.00	0.0	0.600	o	375	Pipe/Conduit	
6.005	14.931	0.047	317.7	0.078	0.00	0.0	0.600	o	375	Pipe/Conduit	
6.006	21.803	0.068	320.6	0.039	0.00	0.0	0.600	o	375	Pipe/Conduit	
7.000	16.574	0.166	99.8	0.062	4.00	0.0	0.600	o	150	Pipe/Conduit	
6.007	32.681	0.087	375.6	0.103	0.00	0.0	0.600	o	450	Pipe/Conduit	
6.008	30.268	0.150	201.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.010	68.818	0.287	239.8	0.073	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.000	22.986	0.138	167.0	0.053	4.00	0.0	0.600	o	225	Pipe/Conduit	
8.001	8.932	0.053	167.0	0.032	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)
4.006	50.00	7.04	4.823	0.671	0.0	0.0	0.0	1.01	160.2	90.9
4.007	50.00	7.18	4.761	0.740	0.0	0.0	0.0	1.01	160.6	100.2
1.008	43.09	9.82	4.439	2.417	0.0	0.0	0.0	1.01	448.2	282.0
1.009	40.39	11.05	4.348	2.417	0.0	0.0	0.0	1.16	514.1	282.0
6.000	50.00	4.22	5.416	0.036	0.0	0.0	0.0	1.01	17.8	4.9
6.001	50.00	4.44	5.208	0.194	0.0	0.0	0.0	1.01	40.2	26.3
6.002	50.00	4.82	5.053	0.266	0.0	0.0	0.0	1.01	71.5	36.0
6.003	50.00	5.65	4.881	0.335	0.0	0.0	0.0	1.01	111.3	45.4
6.004	50.00	6.18	4.725	0.399	0.0	0.0	0.0	1.01	111.1	54.0
6.005	50.00	6.42	4.625	0.477	0.0	0.0	0.0	1.01	111.7	64.6
6.006	50.00	6.79	4.578	0.516	0.0	0.0	0.0	1.01	111.2	69.9
7.000	50.00	4.27	4.901	0.062	0.0	0.0	0.0	1.01	17.8	8.4
6.007	50.00	7.31	4.435	0.681	0.0	0.0	0.0	1.04	165.9	92.2
6.008	49.04	7.66	4.348	0.681	0.0	0.0	0.0	1.43	227.0	92.2
1.010	38.22	12.18	4.198	3.171	0.0	0.0	0.0	1.01	71.5w	328.2
8.000	50.00	4.38	5.187	0.053	0.0	0.0	0.0	1.01	40.1	7.2
8.001	50.00	4.53	5.049	0.085	0.0	0.0	0.0	1.01	40.1	11.5

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Network Design Table for SWS1.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
8.002	14.477	0.321	45.1	0.021	0.00	0.0	0.600	o	225	Pipe/Conduit	
9.000	13.921	0.083	167.0	0.103	4.00	0.0	0.600	o	225	Pipe/Conduit	
8.003	49.533	0.395	125.4	0.057	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.004	18.111	0.294	61.6	0.020	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.011	42.911	0.179	240.0	0.050	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.012	71.836	0.150	478.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.013	9.753	0.058	168.2	0.000	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)
8.002	50.00	4.65	4.996	0.106	0.0	0.0	0.0	1.95	77.7	14.4
9.000	50.00	4.23	4.758	0.103	0.0	0.0	0.0	1.01	40.1	13.9
8.003	50.00	5.24	4.600	0.266	0.0	0.0	0.0	1.40	99.2	36.0
8.004	50.00	5.39	4.205	0.286	0.0	0.0	0.0	2.01	141.8	38.7
1.011	37.00	12.89	3.911	3.507	0.0	0.0	0.0	1.01	71.4*	351.4
1.012	34.47	14.57	3.732	3.507	0.0	0.0	0.0	0.71	50.3*	351.4
1.013	34.24	14.74	3.582	3.507	0.0	0.0	0.0	1.01	40.6*	351.4

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Online Controls for SWS1.SWS

Hydro-Brake® Optimum Manhole: 43, DS/PN: 1.010, Volume (m³): 45.6

Unit Reference	MD-SHE-0127-8500-1518-8500
Design Head (m)	1.518
Design Flow (l/s)	8.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	127
Invert Level (m)	4.198
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)	1.518	8.5	Kick-Flo®	0.940	6.8
Flush-Flo™	0.449	8.5	Mean Flow over Head Range	-	7.4

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)	Depth (m)	Flow (l/s)
0.100	4.6	0.800	7.8	2.000	9.7	4.000	13.4	7.000	17.5
0.200	7.6	1.000	7.0	2.200	10.1	4.500	14.2	7.500	18.1
0.300	8.3	1.200	7.6	2.400	10.5	5.000	14.9	8.000	18.7
0.400	8.5	1.400	8.2	2.600	10.9	5.500	15.6	8.500	19.2
0.500	8.5	1.600	8.7	3.000	11.7	6.000	16.3	9.000	19.8
0.600	8.4	1.800	9.2	3.500	12.6	6.500	16.9	9.500	20.3

Hydro-Brake® Optimum Manhole: 54, DS/PN: 1.013, Volume (m³): 8.8

Unit Reference	MD-SHE-0160-1230-1018-1230
Design Head (m)	1.018
Design Flow (l/s)	12.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	160
Invert Level (m)	3.582
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.018	12.3	Kick-Flo®	0.699	10.3
Flush-Flo™	0.317	12.3	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

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Hydro-Brake® Optimum Manhole: 54, DS/PN: 1.013, Volume (m³): 8.8

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.7	0.800	11.0	2.000	16.9	4.000	23.6	7.000	30.9
0.200	11.9	1.000	12.2	2.200	17.7	4.500	25.0	7.500	31.9
0.300	12.3	1.200	13.3	2.400	18.5	5.000	26.3	8.000	33.0
0.400	12.2	1.400	14.3	2.600	19.2	5.500	27.5	8.500	33.9
0.500	11.9	1.600	15.2	3.000	20.6	6.000	28.7	9.000	34.9
0.600	11.5	1.800	16.1	3.500	22.1	6.500	29.8	9.500	35.8

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Storage Structures for SWS1.SWS

Tank or Pond Manhole: 43, DS/PN: 1.010

Invert Level (m) 4.218

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1095.0	1.800	2846.0

Tank or Pond Manhole: 54, DS/PN: 1.013

Invert Level (m) 3.600

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	562.0	1.300	1415.0

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 17.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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, 7200, 8640, 10080
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)	Surcharged Depth (m)
1.000	1	15 Winter	2	+0%	100/15 Summer				5.756	-0.146
1.001	2	15 Winter	2	+0%	30/15 Summer				5.514	-0.133
1.002	3	15 Winter	2	+0%	30/15 Summer				5.430	-0.113
1.003	4	15 Winter	2	+0%	30/15 Summer				5.356	-0.099
1.004	5	15 Winter	2	+0%	100/15 Summer				5.035	-0.353
1.005	6	15 Winter	2	+0%	100/15 Summer				5.001	-0.358
1.006	7	15 Winter	2	+0%	100/15 Summer				4.972	-0.368
2.000	8	15 Summer	2	+0%	30/15 Winter	100/15 Winter			6.111	-0.077
2.001	9	15 Winter	2	+0%	30/15 Summer	100/15 Winter			6.012	-0.116
2.002	10	15 Winter	2	+0%	30/15 Summer	100/15 Winter			5.877	-0.107
2.003	11	15 Winter	2	+0%	30/15 Summer	100/15 Winter			5.614	-0.150
2.004	12	15 Winter	2	+0%	30/15 Summer				5.498	-0.173
2.005	13	15 Winter	2	+0%	30/15 Summer				5.408	-0.132
3.000	14	15 Summer	2	+0%	100/15 Summer				5.898	-0.087
3.001	15	15 Summer	2	+0%	100/15 Summer				5.756	-0.086
3.002	16	15 Winter	2	+0%	30/15 Summer				5.634	-0.065
3.003	17	15 Winter	2	+0%	30/15 Summer				5.453	-0.144
2.006	18	15 Winter	2	+0%	30/15 Summer				5.371	-0.130
2.007	19	15 Winter	2	+0%	30/15 Summer				5.204	-0.139
2.008	20	15 Winter	2	+0%	30/15 Winter				5.166	-0.129
1.007	21	15 Winter	2	+0%	100/15 Summer				4.942	-0.328
4.000	22	15 Winter	2	+0%	30/15 Summer	100/15 Summer			5.818	-0.102
4.001	23	15 Winter	2	+0%	30/15 Summer				5.501	-0.083
4.002	24	15 Winter	2	+0%	30/15 Summer	100/15 Winter			5.458	-0.063
4.003	25	15 Winter	2	+0%	30/15 Summer				5.341	-0.102
4.004	26	15 Winter	2	+0%	30/15 Summer				5.229	-0.136

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ARUN DISTRICT COUNCIL P/68/22/DOC

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	0.49			34.3	OK	
1.001	2	0.000	0.59			37.4	OK	
1.002	3	0.000	0.70			43.9	OK	
1.003	4	0.000	0.78			47.2	OK	
1.004	5	0.000	0.40			98.7	OK	
1.005	6	0.000	0.52			101.3	OK	
1.006	7	0.000	0.26			98.4	OK	
2.000	8	0.000	0.48			7.4	OK	1
2.001	9	0.000	0.46			17.1	OK	1
2.002	10	0.000	0.53			20.1	OK	1
2.003	11	0.000	0.49			31.0	OK	1
2.004	12	0.000	0.55			55.8	OK	
2.005	13	0.000	0.70			57.9	OK	
3.000	14	0.000	0.37			6.2	OK	
3.001	15	0.000	0.38			6.2	OK	
3.002	16	0.000	0.60			9.5	OK	
3.003	17	0.000	0.28			12.3	OK	
2.006	18	0.000	0.73			75.6	OK	
2.007	19	0.000	0.63			79.6	OK	
2.008	20	0.000	0.85			83.2	OK	
1.007	21	0.000	0.43			165.0	OK	
4.000	22	0.000	0.54			21.4	OK	4
4.001	23	0.000	0.72			24.4	OK	
4.002	24	0.000	0.85			29.5	OK	1
4.003	25	0.000	0.75			48.2	OK	
4.004	26	0.000	0.66			55.6	OK	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
5.000	27	15 Winter	2	+0%	100/15 Summer				5.409	-0.137	0.000
4.005	28	15 Winter	2	+0%	30/15 Summer				5.195	-0.129	0.000
4.006	29	15 Winter	2	+0%	30/15 Summer				5.134	-0.139	0.000
4.007	30	15 Winter	2	+0%	30/15 Summer				5.092	-0.119	0.000
1.008	31	15 Winter	2	+0%	100/15 Summer				4.863	-0.326	0.000
1.009	32	15 Winter	2	+0%	100/15 Summer				4.714	-0.384	0.000
6.000	33	15 Summer	2	+0%	30/15 Summer				5.477	-0.089	0.000
6.001	34	15 Winter	2	+0%	30/15 Summer				5.356	-0.077	0.000
6.002	35	15 Winter	2	+0%	30/15 Summer				5.214	-0.139	0.000
6.003	36	15 Winter	2	+0%	100/15 Summer				5.052	-0.204	0.000
6.004	37	15 Winter	2	+0%	30/15 Winter				4.916	-0.184	0.000
6.005	38	15 Winter	2	+0%	30/15 Summer				4.844	-0.156	0.000
6.006	39	15 Winter	2	+0%	30/15 Winter				4.794	-0.159	0.000
7.000	40	15 Winter	2	+0%	30/15 Summer				4.984	-0.067	0.000
6.007	41	15 Winter	2	+0%	30/600 Winter				4.661	-0.224	0.000
6.008	42	480 Winter	2	+0%	30/180 Winter				4.581	-0.217	0.000
1.010	43	480 Winter	2	+0%	2/120 Summer				4.581	0.083	0.000
8.000	45	15 Winter	2	+0%	100/15 Summer				5.261	-0.151	0.000
8.001	46	15 Winter	2	+0%	100/15 Summer				5.147	-0.127	0.000
8.002	47	15 Winter	2	+0%	100/15 Summer				5.069	-0.152	0.000
9.000	48	15 Summer	2	+0%	100/15 Summer				4.868	-0.115	0.000
8.003	49	15 Winter	2	+0%	100/15 Summer				4.736	-0.164	0.000
8.004	50	15 Winter	2	+0%	100/15 Summer				4.324	-0.180	0.000
1.011	51	15 Winter	2	+0%	30/15 Summer				4.098	-0.113	0.000
1.012	52	15 Winter	2	+0%	30/15 Summer				3.959	-0.073	0.000
1.013	54	960 Winter	2	+0%	100/120 Summer				3.732	-0.075	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
5.000	27	0.32			13.4	OK	
4.005	28	0.69			70.0	OK	
4.006	29	0.57			77.0	OK	
4.007	30	0.89			83.4	OK	
1.008	31	0.57			224.7	OK	
1.009	32	0.47			215.9	OK	
6.000	33	0.35			5.9	OK	
6.001	34	0.75			26.0	OK	
6.002	35	0.56			35.3	OK	
6.003	36	0.41			42.7	OK	
6.004	37	0.49			48.1	OK	
6.005	38	0.63			55.1	OK	
6.006	39	0.62			58.8	OK	
7.000	40	0.59			10.1	OK	
6.007	41	0.50			72.1	OK	
6.008	42	0.06			11.9	OK	
1.010	43	0.12			8.5	SURCHARGED	
8.000	45	0.23			8.6	OK	
8.001	46	0.39			12.6	OK	
8.002	47	0.23			15.3	OK	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
9.000	48	0.48			16.8	OK	
8.003	49	0.41			38.6	OK	
8.004	50	0.34			41.1	OK	
1.011	51	0.68			45.5	OK	
1.012	52	0.90			43.6	OK	
1.013	54	0.30			10.0	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 17.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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, 7200, 8640, 10080
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)	Surcharged Depth (m)
1.000	1	15 Winter	30	+0%	100/15 Summer				5.866	-0.036
1.001	2	15 Winter	30	+0%	30/15 Summer				5.701	0.054
1.002	3	15 Winter	30	+0%	30/15 Summer				5.605	0.062
1.003	4	15 Winter	30	+0%	30/15 Summer				5.486	0.031
1.004	5	15 Winter	30	+0%	100/15 Summer				5.250	-0.138
1.005	6	15 Winter	30	+0%	100/15 Summer				5.258	-0.121
1.006	7	15 Winter	30	+0%	100/15 Summer				5.227	-0.113
2.000	8	15 Winter	30	+0%	30/15 Winter	100/15 Winter			6.203	0.015
2.001	9	15 Winter	30	+0%	30/15 Summer	100/15 Winter			6.183	0.055
2.002	10	15 Winter	30	+0%	30/15 Summer	100/15 Winter			6.104	0.120
2.003	11	15 Winter	30	+0%	30/15 Summer	100/15 Winter			5.930	0.166
2.004	12	15 Winter	30	+0%	30/15 Summer				5.865	0.194
2.005	13	15 Winter	30	+0%	30/15 Summer				5.731	0.191
3.000	14	15 Summer	30	+0%	100/15 Summer				5.927	-0.058
3.001	15	15 Winter	30	+0%	100/15 Summer				5.818	-0.024
3.002	16	15 Winter	30	+0%	30/15 Summer				5.779	0.080
3.003	17	15 Winter	30	+0%	30/15 Summer				5.696	0.099
2.006	18	15 Winter	30	+0%	30/15 Summer				5.673	0.172
2.007	19	15 Winter	30	+0%	30/15 Summer				5.365	0.022
2.008	20	15 Winter	30	+0%	30/15 Winter				5.298	0.003
1.007	21	15 Winter	30	+0%	100/15 Summer				5.210	-0.060
4.000	22	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.092	0.172
4.001	23	15 Winter	30	+0%	30/15 Summer				5.888	0.304
4.002	24	15 Winter	30	+0%	30/15 Summer	100/15 Winter			5.816	0.295
4.003	25	15 Winter	30	+0%	30/15 Summer				5.697	0.254
4.004	26	15 Winter	30	+0%	30/15 Summer				5.525	0.170

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ARUN DISTRICT COUNCIL P/68/22/DOC

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	0.90			62.8	OK	
1.001	2	0.000	0.97			62.0	SURCHARGED	
1.002	3	0.000	1.15			71.8	SURCHARGED	
1.003	4	0.000	1.28			77.3	SURCHARGED	
1.004	5	0.000	0.81			200.8	OK	
1.005	6	0.000	1.07			268.3	OK	
1.006	7	0.000	0.52			197.6	OK	
2.000	8	0.000	0.85			13.1	SURCHARGED	1
2.001	9	0.000	0.93			34.4	SURCHARGED	1
2.002	10	0.000	0.97			36.7	SURCHARGED	1
2.003	11	0.000	0.86			54.4	SURCHARGED	1
2.004	12	0.000	0.98			99.1	SURCHARGED	
2.005	13	0.000	1.26			104.5	SURCHARGED	
3.000	14	0.000	0.69			11.7	OK	
3.001	15	0.000	0.69			11.2	OK	
3.002	16	0.000	1.09			17.4	SURCHARGED	
3.003	17	0.000	0.45			19.7	SURCHARGED	
2.006	18	0.000	1.34			158.3	SURCHARGED	
2.007	19	0.000	1.13			156.8	SURCHARGED	
2.008	20	0.000	1.40			156.9	SURCHARGED	
1.007	21	0.000	0.76			293.1	OK	
4.000	22	0.000	0.89			35.1	SURCHARGED	4
4.001	23	0.000	1.14			38.3	SURCHARGED	
4.002	24	0.000	1.35			46.9	SURCHARGED	1
4.003	25	0.000	1.20			76.7	SURCHARGED	
4.004	26	0.000	1.10			92.3	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
5.000	27	15 Winter	30	+0%	100/15 Summer				5.543	-0.003	0.000
4.005	28	15 Winter	30	+0%	30/15 Summer				5.488	0.164	0.000
4.006	29	15 Winter	30	+0%	30/15 Summer				5.290	0.017	0.000
4.007	30	15 Winter	30	+0%	30/15 Summer				5.215	0.404	0.000
1.008	31	15 Winter	30	+0%	100/15 Summer				5.133	-0.056	0.000
1.009	32	720 Winter	30	+0%	100/15 Summer				4.891	-0.207	0.000
6.000	33	15 Winter	30	+0%	30/15 Summer				5.639	0.073	0.000
6.001	34	15 Winter	30	+0%	30/15 Summer				5.595	0.162	0.000
6.002	35	15 Winter	30	+0%	30/15 Summer				5.385	0.032	0.000
6.003	36	15 Winter	30	+0%	100/15 Summer				5.208	-0.048	0.000
6.004	37	15 Winter	30	+0%	30/15 Winter				5.113	0.013	0.000
6.005	38	15 Winter	30	+0%	30/15 Summer				5.024	0.024	0.000
6.006	39	15 Winter	30	+0%	30/15 Winter				4.959	0.606	0.000
7.000	40	15 Winter	30	+0%	30/15 Summer				5.074	0.023	0.000
6.007	41	720 Winter	30	+0%	30/600 Winter				4.892	0.007	0.000
6.008	42	720 Winter	30	+0%	30/180 Winter				4.891	0.093	0.000
1.010	43	720 Winter	30	+0%	2/120 Summer				4.891	0.393	0.000
8.000	45	15 Winter	30	+0%	100/15 Summer				5.292	-0.120	0.000
8.001	46	15 Winter	30	+0%	100/15 Summer				5.203	-0.072	0.000
8.002	47	15 Winter	30	+0%	100/15 Summer				5.106	-0.115	0.000
9.000	48	15 Summer	30	+0%	100/15 Summer				4.926	-0.057	0.000
8.003	49	15 Winter	30	+0%	100/15 Summer				4.817	-0.083	0.000
8.004	50	15 Winter	30	+0%	100/15 Summer				4.452	-0.052	0.000
1.011	51	15 Winter	30	+0%	30/15 Summer				4.366	0.155	0.000
1.012	52	15 Winter	30	+0%	30/15 Summer				4.179	0.186	0.000
1.013	54	600 Winter	30	+0%	100/120 Summer				3.775	-0.032	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
5.000	27	0.55			22.9	OK	
4.005	28	1.22			123.6	SURCHARGED	
4.006	29	1.07			143.7	SURCHARGED	
4.007	30	1.68			157.5	SURCHARGED	
1.008	31	0.99			391.2	OK	
1.009	32	0.12			54.8	OK	
6.000	33	0.65			11.0	SURCHARGED	
6.001	34	1.58			55.1	SURCHARGED	
6.002	35	1.19			75.5	SURCHARGED	
6.003	36	0.84			86.3	OK	
6.004	37	0.94			92.8	SURCHARGED	
6.005	38	1.20			104.0	SURCHARGED	
6.006	39	1.15			109.0	SURCHARGED	
7.000	40	1.05			18.0	SURCHARGED	
6.007	41	0.11			15.8	SURCHARGED	
6.008	42	0.08			15.1	SURCHARGED	
1.010	43	0.12			8.5	SURCHARGED	
8.000	45	0.44			16.2	OK	
8.001	46	0.79			25.6	OK	
8.002	47	0.47			31.6	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
9.000	48	0.91			31.8	OK	
8.003	49	0.84			78.7	OK	
8.004	50	0.66			79.9	OK	
1.011	51	1.06			76.5	SURCHARGED	
1.012	52	1.37			66.2	SURCHARGED	
1.013	54	0.36			11.8	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 17.000 Cv (Summer)	0.750
Region England and Wales		Ratio R 0.400 Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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, 7200, 8640, 10080
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)	Surcharged Depth (m)
1.000	1	15 Winter	100	+40%	100/15 Summer				6.904	1.002
1.001	2	15 Winter	100	+40%	30/15 Summer				6.527	0.880
1.002	3	15 Winter	100	+40%	30/15 Summer				6.266	0.743
1.003	4	15 Winter	100	+40%	30/15 Summer				5.992	0.537
1.004	5	15 Winter	100	+40%	100/15 Summer				5.763	0.375
1.005	6	15 Winter	100	+40%	100/15 Summer				5.740	0.381
1.006	7	15 Winter	100	+40%	100/15 Summer				5.717	0.377
2.000	8	15 Winter	100	+40%	30/15 Winter	100/15 Winter			7.388	1.200
2.001	9	15 Winter	100	+40%	30/15 Summer	100/15 Winter			7.328	1.200
2.002	10	15 Winter	100	+40%	30/15 Summer	100/15 Winter			7.185	1.201
2.003	11	15 Winter	100	+40%	30/15 Summer	100/15 Winter			6.964	1.200
2.004	12	15 Winter	100	+40%	30/15 Summer				6.871	1.200
2.005	13	15 Winter	100	+40%	30/15 Summer				6.629	1.089
3.000	14	15 Winter	100	+40%	100/15 Summer				6.645	0.660
3.001	15	15 Winter	100	+40%	100/15 Summer				6.604	0.762
3.002	16	15 Winter	100	+40%	30/15 Summer				6.570	0.971
3.003	17	15 Winter	100	+40%	30/15 Summer				6.505	0.908
2.006	18	15 Winter	100	+40%	30/15 Summer				6.483	0.982
2.007	19	15 Winter	100	+40%	30/15 Summer				5.942	0.599
2.008	20	15 Winter	100	+40%	30/15 Winter				5.814	0.519
1.007	21	15 Winter	100	+40%	100/15 Summer				5.670	0.498
4.000	22	15 Winter	100	+40%	30/15 Summer	100/15 Summer			6.928	1.008
4.001	23	15 Winter	100	+40%	30/15 Summer				6.882	1.298
4.002	24	15 Winter	100	+40%	30/15 Summer	100/15 Winter			6.822	1.391
4.003	25	15 Winter	100	+40%	30/15 Summer				6.646	1.205
4.004	26	15 Winter	100	+40%	30/15 Summer				6.298	0.953

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.000	1.34			93.5	FLOOD RISK	
1.001	2	0.000	1.57			109.4	SURCHARGED	
1.002	3	0.000	1.36			116.7	SURCHARGED	
1.003	4	0.000	2.06			124.4	SURCHARGED	
1.004	5	0.000	1.43			352.5	SURCHARGED	
1.005	6	0.000	1.34			357.3	SURCHARGED	
1.006	7	0.000	0.90			343.5	SURCHARGED	
2.000	8	0.024	0.94			14.4	FLOOD	1
2.001	9	0.305	1.04			58.3	FLOOD	1
2.002	10	0.871	1.26			47.8	FLOOD	1
2.003	11	0.153	1.09			68.5	FLOOD	1
2.004	12	0.000	1.50			152.4	FLOOD RISK	
2.005	13	0.000	1.98			156.0	FLOOD RISK	
3.000	14	0.000	0.91			15.4	SURCHARGED	
3.001	15	0.000	0.83			13.6	SURCHARGED	
3.002	16	0.000	1.91			20.7	SURCHARGED	
3.003	17	0.000	0.64			27.8	FLOOD RISK	
2.006	18	0.000	1.92			197.7	FLOOD RISK	
2.007	19	0.000	1.73			216.1	SURCHARGED	
2.008	20	0.000	2.35			229.9	SURCHARGED	
1.007	21	0.000	1.37			530.2	SURCHARGED	
4.000	22	6.563	1.27			49.8	FLOOD	4
4.001	23	0.000	1.42			54.7	FLOOD RISK	
4.002	24	0.001	1.81			62.8	FLOOD	1
4.003	25	0.000	1.92			116.4	FLOOD RISK	
4.004	26	0.000	1.69			142.7	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
5.000	27	15 Winter	100	+40%	100/15 Summer				6.280	0.734	0.000
4.005	28	15 Winter	100	+40%	30/15 Summer				6.176	0.852	0.000
4.006	29	15 Winter	100	+40%	30/15 Summer				5.791	0.516	0.000
4.007	30	15 Winter	100	+40%	30/15 Summer				5.670	0.459	0.000
1.008	31	15 Winter	100	+40%	100/15 Summer				5.550	0.361	0.000
1.009	32	1440 Winter	100	+40%	100/15 Summer				5.405	0.307	0.000
6.000	33	15 Winter	100	+40%	30/15 Summer				6.640	1.074	0.000
6.001	34	15 Winter	100	+40%	30/15 Summer				6.587	1.154	0.000
6.002	35	15 Winter	100	+40%	30/15 Summer				6.229	0.876	0.000
6.003	36	15 Winter	100	+40%	100/15 Summer				5.930	0.734	0.000
6.004	37	15 Winter	100	+40%	30/15 Winter				5.769	0.669	0.000
6.005	38	15 Winter	100	+40%	30/15 Summer				5.555	0.555	0.000
6.006	39	1440 Winter	100	+40%	30/15 Winter				5.408	0.455	0.000
7.000	40	15 Winter	100	+40%	30/15 Summer				5.521	0.470	0.000
6.007	41	1440 Winter	100	+40%	30/600 Winter				5.407	0.522	0.000
6.008	42	1440 Winter	100	+40%	30/180 Winter				5.406	0.608	0.000
1.010	43	1440 Winter	100	+40%	2/120 Summer				5.405	0.907	0.000
8.000	45	15 Winter	100	+40%	100/15 Summer				5.779	0.367	0.000
8.001	46	15 Winter	100	+40%	100/15 Summer				5.739	0.465	0.000
8.002	47	15 Winter	100	+40%	100/15 Summer				5.697	0.476	0.000
9.000	48	15 Winter	100	+40%	100/15 Summer				5.704	0.721	0.000
8.003	49	15 Winter	100	+40%	100/15 Summer				5.606	0.707	0.000
8.004	50	15 Winter	100	+40%	100/15 Summer				5.233	0.729	0.000
1.011	51	15 Winter	100	+40%	30/15 Summer				5.038	0.827	0.000
1.012	52	15 Winter	100	+40%	30/15 Summer				4.584	0.552	0.000
1.013	54	480 Winter	100	+40%	100/120 Summer				3.873	0.066	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
5.000	27	0.82			33.9	SURCHARGED	
4.005	28	1.89			191.1	SURCHARGED	
4.006	29	1.67			224.7	SURCHARGED	
4.007	30	2.64			247.4	SURCHARGED	
1.008	31	1.78			699.8	SURCHARGED	
1.009	32	0.11			52.9	SURCHARGED	
6.000	33	0.98			16.6	FLOOD RISK	
6.001	34	2.10			73.1	FLOOD RISK	
6.002	35	1.56			99.0	SURCHARGED	
6.003	36	1.20			123.2	SURCHARGED	
6.004	37	1.46			144.0	SURCHARGED	
6.005	38	1.96			170.5	SURCHARGED	
6.006	39	0.12			11.4	SURCHARGED	
7.000	40	1.63			28.9	SURCHARGED	
6.007	41	0.11			15.2	SURCHARGED	
6.008	42	0.08			15.1	SURCHARGED	
1.010	43	0.12			8.5	SURCHARGED	
8.000	45	0.70			25.7	SURCHARGED	
8.001	46	1.17			38.0	SURCHARGED	
8.002	47	0.63			42.6	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS1.SWS

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
9.000	49	1.94			47.0	SURCHARGED	
8.003	43	1.18			110.5	SURCHARGED	
8.004	50	0.87			105.7	SURCHARGED	
1.011	51	1.59			106.2	FLOOD RISK	
1.012	52	2.07			99.9	SURCHARGED	
1.013	54	0.37			12.3	SURCHARGED	

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SWS2.SWS

Pipe Sizes Circular Manhole Sizes Adoptable

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	17.000	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	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)	1000

Designed with Level Soffits

Network Design Table for SWS2.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
1.000	48.393	0.285	169.8	0.141	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	8.568	0.051	168.0	0.055	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	28.515	0.170	167.7	0.064	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	45.310	0.189	239.7	0.030	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	42.600	0.178	239.3	0.065	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	27.405	0.114	240.4	0.079	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.005	7.426	0.031	239.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
3.000	10.426	0.104	100.3	0.009	5.00	0.0	0.600	o	150	Pipe/Conduit	
3.001	5.104	0.051	100.1	0.016	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.002	25.829	0.108	239.2	0.193	0.00	0.0	0.600	o	300	Pipe/Conduit	
3.003	9.443	0.039	242.1	0.019	0.00	0.0	0.600	o	300	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)
1.000	50.00	5.81	6.420	0.141	0.0	0.0	0.0	1.00	39.8	19.1
1.001	50.00	5.95	6.135	0.196	0.0	0.0	0.0	1.01	40.0	26.5
2.000	50.00	5.47	6.254	0.064	0.0	0.0	0.0	1.01	40.0	8.7
1.002	50.00	6.70	6.009	0.290	0.0	0.0	0.0	1.01	71.5	39.3
1.003	49.90	7.40	5.820	0.355	0.0	0.0	0.0	1.01	71.5	48.0
1.004	48.45	7.85	5.642	0.434	0.0	0.0	0.0	1.01	71.4	56.9
1.005	48.07	7.97	5.528	0.434	0.0	0.0	0.0	1.01	71.5	56.9
3.000	50.00	5.17	6.453	0.009	0.0	0.0	0.0	1.00	17.7	1.2
3.001	50.00	5.26	6.349	0.025	0.0	0.0	0.0	1.00	17.7	3.4
3.002	50.00	5.68	6.148	0.218	0.0	0.0	0.0	1.01	71.6	29.5
3.003	50.00	5.84	6.040	0.237	0.0	0.0	0.0	1.01	71.1	32.1

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Network Design Table for SWS2.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
3.004	33.024	0.138	239.3	0.121	0.00	0.0	0.600	o	300	Pipe/Conduit	
3.005	18.147	0.076	238.8	0.016	0.00	0.0	0.600	o	300	Pipe/Conduit	
3.006	51.098	0.290	176.2	0.147	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.006	11.997	0.030	399.9	0.080	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.007	26.768	0.072	371.8	0.081	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	72.067	0.150	480.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.009	66.765	0.400	166.9	0.000	0.00	0.0	0.600	o	450	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)
3.004	50.00	6.38	6.001	0.358	0.0	0.0	0.0	1.01	71.5	48.5
3.005	50.00	6.68	5.863	0.374	0.0	0.0	0.0	1.01	71.6	50.6
3.006	50.00	7.31	5.712	0.521	0.0	0.0	0.0	1.36	150.4	70.5
1.006	47.47	8.17	5.347	1.035	0.0	0.0	0.0	1.01	160.7	133.1
1.007	46.25	8.59	5.317	1.116	0.0	0.0	0.0	1.05	166.7	139.8
1.008	42.91	9.90	5.343	1.116	0.0	0.0	0.0	0.92	146.4	139.8
1.009	41.32	10.61	5.095	1.116	0.0	0.0	0.0	1.57	249.8	139.8

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Online Controls for SWS2.SWS

Hydro-Brake® Optimum Manhole: 118, DS/PN: 1.009, Volume (m³): 13.1

Unit Reference	MD-SHE-0094-3900-1000-3900
Design Head (m)	1.000
Design Flow (l/s)	3.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	94
Invert Level (m)	5.095
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)	1.000	3.9	Kick-Flo®	0.632	3.2
Flush-Flo™	0.297	3.9	Mean Flow over Head Range	-	3.4

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)	Depth (m)	Flow (l/s)
0.100	3.0	0.800	3.5	2.000	5.4	4.000	7.4	7.000	9.7
0.200	3.8	1.000	3.9	2.200	5.6	4.500	7.9	7.500	10.0
0.300	3.9	1.200	4.2	2.400	5.9	5.000	8.3	8.000	10.4
0.400	3.8	1.400	4.6	2.600	6.1	5.500	8.7	8.500	10.7
0.500	3.7	1.600	4.8	3.000	6.5	6.000	9.0	9.000	10.9
0.600	3.4	1.800	5.1	3.500	7.0	6.500	9.4	9.500	11.2

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Storage Structures for SWS2.SWS

Tank or Pond Manhole: 118, DS/PN: 1.009

Invert Level (m) 5.095

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	973.0	1.300	1806.0

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS2.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 17.000 Cv (Summer)	0.750
Region England and Wales		Ratio R 0.400 Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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, 7200, 8640, 10080
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)	Surcharged Depth (m)
1.000	101	15 Winter	2	+0%	30/15 Summer	100/15 Summer			6.540	-0.105
1.001	102	15 Winter	2	+0%	30/15 Summer	100/15 Summer			6.297	-0.063
2.000	103	15 Winter	2	+0%	30/15 Summer				6.331	-0.148
1.002	104	15 Winter	2	+0%	30/15 Summer	100/15 Summer			6.178	-0.131
1.003	105	15 Winter	2	+0%	30/15 Summer	100/15 Summer			6.006	-0.114
1.004	106	15 Winter	2	+0%	30/15 Summer	100/15 Summer			5.883	-0.059
1.005	107	15 Winter	2	+0%	30/15 Summer				5.822	-0.006
3.000	108	15 Winter	2	+0%	30/15 Summer	100/15 Summer			6.482	-0.121
3.001	109	15 Winter	2	+0%	30/15 Summer				6.399	-0.100
3.002	110	15 Winter	2	+0%	30/15 Summer	100/15 Summer			6.288	-0.160
3.003	111	15 Winter	2	+0%	30/15 Summer	100/15 Summer			6.210	-0.130
3.004	112	15 Winter	2	+0%	30/15 Summer	100/15 Summer			6.185	-0.116
3.005	113	15 Winter	2	+0%	30/15 Summer				6.058	-0.105
3.006	114	15 Winter	2	+0%	30/15 Summer				5.888	-0.199
1.006	115	15 Winter	2	+0%	30/15 Summer				5.737	0.006
1.007	116	15 Winter	2	+0%	30/15 Summer				5.634	-0.133
1.008	117	15 Winter	2	+0%	30/15 Summer				5.556	-0.139
1.009	118	720 Winter	2	+0%	100/120 Winter				5.260	-0.285

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	101	0.000	0.53			20.8	OK	5
1.001	102	0.000	0.86			27.2	OK	3

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ARUN DISTRICT COUNCIL P/68/22/DOC

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS2.SWS

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
2.000	103	0.000	0.25			9.6	OK	
1.002	104	0.000	0.59			39.6	OK	2
1.003	105	0.000	0.69			45.8	OK	4
1.004	106	0.000	0.80			51.2	OK	4
1.005	107	0.000	0.89			46.8	OK	
3.000	108	0.000	0.08			1.3	OK	4
3.001	109	0.000	0.24			3.4	OK	
3.002	110	0.000	0.44			28.2	OK	4
3.003	111	0.000	0.55			30.0	OK	4
3.004	112	0.000	0.68			44.6	OK	4
3.005	113	0.000	0.74			45.8	OK	
3.006	114	0.000	0.44			61.3	OK	
1.006	115	0.000	1.06			107.3	OK	
1.007	116	0.000	0.79			112.1	OK	
1.008	117	0.000	0.82			111.6	OK	
1.009	118	0.000	0.02			3.7	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS2.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 17.000 Cv (Summer)	0.750
Region England and Wales		Ratio R 0.400 Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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, 7200, 8640, 10080
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)	Surcharged Depth (m)
1.000	101	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.789	0.144
1.001	102	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.657	0.297
2.000	103	15 Winter	30	+0%	30/15 Summer				6.612	0.133
1.002	104	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.585	0.276
1.003	105	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.472	0.352
1.004	106	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.324	0.382
1.005	107	15 Winter	30	+0%	30/15 Summer				6.176	0.348
3.000	108	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.646	0.043
3.001	109	15 Winter	30	+0%	30/15 Summer				6.644	0.145
3.002	110	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.639	0.191
3.003	111	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.581	0.241
3.004	112	15 Winter	30	+0%	30/15 Summer	100/15 Summer			6.546	0.245
3.005	113	15 Winter	30	+0%	30/15 Summer				6.383	0.229
3.006	114	15 Winter	30	+0%	30/15 Summer				6.262	0.175
1.006	115	15 Winter	30	+0%	30/15 Summer				6.035	0.295
1.007	116	15 Winter	30	+0%	30/15 Summer				5.981	0.214
1.008	117	15 Winter	30	+0%	30/15 Summer				5.837	0.142
1.009	118	720 Winter	30	+0%	100/120 Winter				5.416	-0.129

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	101	0.000	0.93			36.0	SURCHARGED	5
1.001	102	0.000	1.47			46.8	SURCHARGED	3

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS2.SWS

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
2.000	103	0.000	0.46			17.8	SURCHARGED	
1.002	104	0.000	0.88			59.0	SURCHARGED	2
1.003	105	0.000	0.92			61.3	SURCHARGED	4
1.004	106	0.000	1.12			72.1	SURCHARGED	4
1.005	107	0.000	1.38			72.7	SURCHARGED	
3.000	108	0.000	0.21			3.5	SURCHARGED	4
3.001	109	0.000	0.70			9.9	SURCHARGED	
3.002	110	0.000	0.83			52.9	SURCHARGED	4
3.003	111	0.000	1.03			56.7	SURCHARGED	4
3.004	112	0.000	1.32			66.4	SURCHARGED	4
3.005	113	0.000	1.36			84.0	SURCHARGED	
3.006	114	0.000	0.78			108.6	SURCHARGED	
1.006	115	0.000	1.05			157.8	SURCHARGED	
1.007	116	0.000	1.41			195.6	SURCHARGED	
1.008	117	0.000	1.44			196.4	SURCHARGED	
1.009	118	0.000	0.02			3.7	OK	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS2.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 17.000 Cv (Summer)	0.750
Region England and Wales		Ratio R 0.400 Cv (Winter)	0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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, 7200, 8640, 10080
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)	Surcharged Depth (m)
1.000	101	15 Winter	100	+40%	30/15 Summer	100/15 Summer			7.557	0.912
1.001	102	15 Winter	100	+40%	30/15 Summer	100/15 Summer			7.561	1.201
2.000	103	15 Winter	100	+40%	30/15 Summer				7.623	1.144
1.002	104	15 Winter	100	+40%	30/15 Summer	100/15 Summer			7.510	1.201
1.003	105	15 Winter	100	+40%	30/15 Summer	100/15 Summer			7.324	1.204
1.004	106	15 Winter	100	+40%	30/15 Summer	100/15 Summer			7.144	1.202
1.005	107	15 Winter	100	+40%	30/15 Summer				6.966	1.140
3.000	108	15 Winter	100	+40%	30/15 Summer	100/15 Summer			7.507	0.904
3.001	109	15 Winter	100	+40%	30/15 Summer				7.632	1.133
3.002	110	15 Winter	100	+40%	30/15 Summer	100/15 Summer			7.650	1.202
3.003	111	15 Winter	100	+40%	30/15 Summer	100/15 Summer			7.543	1.203
3.004	112	15 Winter	100	+40%	30/15 Summer	100/15 Summer			7.504	1.203
3.005	113	15 Winter	100	+40%	30/15 Summer				7.353	1.190
3.006	114	15 Winter	100	+40%	30/15 Summer				7.200	1.121
1.006	115	15 Winter	100	+40%	30/15 Summer				6.850	1.053
1.007	116	15 Winter	100	+40%	30/15 Summer				6.606	0.839
1.008	117	15 Winter	100	+40%	30/15 Summer				6.253	0.558
1.009	118	960 Winter	100	+40%	100/120 Winter				5.698	0.153

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	101	12.194	1.50			58.3	FLOOD	5
1.001	102	0.503	1.90			60.4	FLOOD	3

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS2.SWS

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
2.000	103	0.000	0.74			28.5	FLOOD RISK	
1.002	104	0.503	1.00			67.0	FLOOD	2
1.003	105	3.693	1.35			89.9	FLOOD	4
1.004	106	1.575	1.60			102.7	FLOOD	4
1.005	107	0.000	1.99			104.4	FLOOD RISK	
3.000	108	4.278	1.84			30.7	FLOOD	4
3.001	109	0.000	2.55			36.0	FLOOD RISK	
3.002	110	1.696	1.00			64.1	FLOOD	4
3.003	111	3.174	1.37			75.4	FLOOD	4
3.004	112	3.348	1.62			106.4	FLOOD	4
3.005	113	0.000	1.80			111.0	FLOOD RISK	
3.006	114	0.000	1.10			153.9	FLOOD RISK	
1.006	115	0.000	2.69			273.0	FLOOD RISK	
1.007	116	0.000	2.15			303.7	SURCHARGED	
1.008	117	0.000	2.17			296.7	FLOOD RISK	
1.009	118	0.000	0.02			3.8	SURCHARGED	

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SWS3.SWS

Pipe Sizes Circular Manhole Sizes Adoptable

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	17.000	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	100	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	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)	1000

Designed with Level Soffits

Network Design Table for SWS3.SWS

« - Indicates pipe capacity < flow

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
1.000	51.517	0.308	167.3	0.090	4.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	18.201	0.322	56.5	0.103	4.00	0.0	0.600	o	225	Pipe/Conduit	
3.000	24.572	0.145	169.5	0.089	4.00	0.0	0.600	o	225	Pipe/Conduit	
2.001	33.227	0.138	240.8	0.045	0.00	0.0	0.600	o	300	Pipe/Conduit	
2.002	13.349	0.074	180.4	0.068	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.001	23.113	0.072	321.0	0.084	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.002	23.814	0.074	321.8	0.015	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.003	19.192	0.048	399.8	0.237	0.00	0.0	0.600	o	450	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)
1.000	60.48	4.85	5.186	0.090	0.0	0.0	0.0	1.01	40.1	14.7
2.000	64.26	4.17	5.412	0.103	0.0	0.0	0.0	1.74	69.3	17.9
3.000	62.89	4.41	5.235	0.089	0.0	0.0	0.0	1.00	39.8	15.2
2.001	59.93	4.96	5.015	0.237	0.0	0.0	0.0	1.01	71.3	38.5
2.002	58.98	5.15	4.977	0.305	0.0	0.0	0.0	1.17	82.5	48.7
1.001	57.17	5.53	4.728	0.479	0.0	0.0	0.0	1.01	111.1	74.2
1.002	55.43	5.93	4.656	0.494	0.0	0.0	0.0	1.00	110.9	74.2
1.003	54.12	6.24	4.507	0.731	0.0	0.0	0.0	1.01	160.7	107.1

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Network Design Table for SWS3.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
1.004	14.095	0.035	402.7	0.045	0.00	0.0	0.600	o	450	Pipe/Conduit	
4.000	19.504	0.117	166.7	0.078	4.00	0.0	0.600	o	225	Pipe/Conduit	
4.001	29.427	0.123	239.2	0.120	0.00	0.0	0.600	o	300	Pipe/Conduit	
4.002	22.236	0.093	239.1	0.044	0.00	0.0	0.600	o	300	Pipe/Conduit	
4.003	19.628	0.326	60.2	0.062	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.005	16.246	0.034	477.8	0.013	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.006	30.861	0.064	482.2	0.048	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.007	33.870	0.071	477.0	0.044	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.008	12.331	0.026	474.3	0.065	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.009	14.344	0.030	478.1	0.018	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.010	42.861	0.089	481.6	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
1.011	29.371	0.064	458.9	0.093	0.00	0.0	0.600	o	525	Pipe/Conduit	
5.000	19.690	0.197	99.9	0.008	4.00	0.0	0.600	o	150	Pipe/Conduit	
5.001	16.666	0.100	166.7	0.125	0.00	0.0	0.600	o	225	Pipe/Conduit	
5.002	17.288	0.072	240.1	0.086	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.003	10.144	0.042	241.5	0.010	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.004	12.628	0.056	225.5	0.045	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.005	22.052	0.320	68.9	0.150	0.00	0.0	0.600	o	375	Pipe/Conduit	
5.006	37.617	0.454	82.9	0.031	0.00	0.0	0.600	o	375	Pipe/Conduit	
5.007	13.199	0.041	321.9	0.060	0.00	0.0	0.600	o	375	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)
1.004	53.20	6.48	4.459	0.776	0.0	0.0	0.0	1.01	160.1	111.8
4.000	63.39	4.32	5.308	0.078	0.0	0.0	0.0	1.01	40.2	13.4
4.001	60.71	4.81	5.116	0.198	0.0	0.0	0.0	1.01	71.5	32.6
4.002	58.86	5.17	4.993	0.242	0.0	0.0	0.0	1.01	71.6	38.6
4.003	58.09	5.33	4.900	0.304	0.0	0.0	0.0	2.03	143.5	47.8
1.005	52.20	6.74	4.349	1.093	0.0	0.0	0.0	1.02	220.4	154.5
1.006	50.40	7.25	4.313	1.141	0.0	0.0	0.0	1.01	219.4	155.7
1.007	48.59	7.80	4.251	1.185	0.0	0.0	0.0	1.02	220.6	155.9
1.008	47.97	8.01	4.180	1.250	0.0	0.0	0.0	1.02	221.2	162.4
1.009	47.26	8.24	4.154	1.268	0.0	0.0	0.0	1.02	220.3	162.4
1.010	45.29	8.94	4.124	1.268	0.0	0.0	0.0	1.01	219.5	162.4
1.011	44.08	9.42	4.035	1.361	0.0	0.0	0.0	1.04	224.9	162.5
5.000	63.36	4.33	5.638	0.008	0.0	0.0	0.0	1.01	17.8	1.4
5.001	61.81	4.60	5.368	0.133	0.0	0.0	0.0	1.01	40.2	22.3
5.002	60.30	4.89	5.191	0.219	0.0	0.0	0.0	1.01	71.4	35.8
5.003	59.44	5.05	5.119	0.229	0.0	0.0	0.0	1.01	71.2	36.9
5.004	58.46	5.26	5.077	0.274	0.0	0.0	0.0	1.04	73.7	43.4
5.005	57.66	5.42	4.946	0.424	0.0	0.0	0.0	2.19	241.4	66.2
5.006	56.24	5.74	4.616	0.455	0.0	0.0	0.0	1.99	220.0	69.3
5.007	55.29	5.96	4.162	0.515	0.0	0.0	0.0	1.00	110.9	77.1

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Network Design Table for SWS3.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
1.012	45.294	0.091	497.7	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.013	7.509	0.015	500.6	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.014	82.010	0.150	546.7	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.015	22.816	0.137	166.5	0.000	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)
1.012	42.42	10.11	3.996	1.876	0.0	0.0	0.0	1.08	306.7	215.5
1.013	42.15	10.23	3.805	1.876	0.0	0.0	0.0	1.08	305.8	215.5
1.014	39.40	11.55	3.790	1.876	0.0	0.0	0.0	1.03	292.5	215.5
1.015	38.69	11.93	3.640	1.876	0.0	0.0	0.0	1.01	40.2%	215.5

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Online Controls for SWS3.SWS

Hydro-Brake® Optimum Manhole: 232, DS/PN: 1.015, Volume (m³): 25.1

Unit Reference	MD-SHE-0098-4700-1315-4700
Design Head (m)	1.315
Design Flow (l/s)	4.7
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	98
Invert Level (m)	3.640
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)	1.315	4.7	Kick-Flo®	0.808	3.8
Flush-Flo™	0.391	4.7	Mean Flow over Head Range	-	4.1

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)	Depth (m)	Flow (l/s)
0.100	3.2	0.800	3.8	2.000	5.7	4.000	7.9	7.000	10.3
0.200	4.3	1.000	4.1	2.200	6.0	4.500	8.4	7.500	10.7
0.300	4.6	1.200	4.5	2.400	6.2	5.000	8.8	8.000	11.0
0.400	4.7	1.400	4.8	2.600	6.5	5.500	9.2	8.500	11.3
0.500	4.6	1.600	5.1	3.000	6.9	6.000	9.6	9.000	11.6
0.600	4.5	1.800	5.4	3.500	7.4	6.500	10.0	9.500	11.9

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Storage Structures for SWS3.SWS

Tank or Pond Manhole: 232, DS/PN: 1.015

Invert Level (m) 3.655

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1258.0	1.300	2178.0

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ARUN DISTRICT COUNCIL P/68/22/DOC

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 17.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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, 7200, 8640, 10080
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)	Surcharged Depth (m)
1.000	201	15 Winter	2	+0%	30/15 Winter	100/15 Winter			5.281	-0.130
2.000	202	15 Winter	2	+0%	100/15 Summer				5.489	-0.148
3.000	203	15 Winter	2	+0%	30/15 Summer	100/15 Summer			5.331	-0.129
2.001	204	15 Winter	2	+0%	30/15 Summer	100/15 Summer			5.177	-0.138
2.002	205	15 Winter	2	+0%	30/15 Summer	100/15 Summer			5.055	-0.122
1.001	206	15 Winter	2	+0%	30/15 Summer	100/15 Summer			4.968	-0.135
1.002	207	15 Winter	2	+0%	30/15 Summer	100/15 Summer			4.904	-0.127
1.003	208	15 Winter	2	+0%	30/15 Summer	100/15 Summer			4.841	-0.116
1.004	209	15 Winter	2	+0%	30/15 Summer	100/15 Summer			4.803	-0.106
4.000	210	15 Winter	2	+0%	100/15 Summer				5.397	-0.136
4.001	211	15 Winter	2	+0%	100/15 Summer				5.254	-0.162
4.002	212	15 Winter	2	+0%	100/15 Summer				5.147	-0.146
4.003	213	15 Winter	2	+0%	100/15 Summer	100/720 Winter			5.018	-0.182
1.005	214	15 Winter	2	+0%	30/15 Summer	100/15 Summer			4.760	-0.114
1.006	215	15 Winter	2	+0%	30/15 Summer	100/15 Winter			4.720	-0.120
1.007	216	15 Winter	2	+0%	30/15 Summer	100/15 Winter			4.679	-0.097
1.008	217	15 Winter	2	+0%	30/15 Summer	100/480 Winter			4.636	-0.069
1.009	218	15 Winter	2	+0%	30/15 Summer	100/960 Summer			4.568	-0.111
1.010	219	15 Winter	2	+0%	30/15 Summer	100/720 Winter			4.455	-0.194
1.011	220	30 Winter	2	+0%	30/15 Summer	100/600 Winter			4.367	-0.193
5.000	221	15 Winter	2	+0%	100/15 Summer				5.665	-0.123
5.001	222	15 Winter	2	+0%	30/15 Summer				5.478	-0.113
5.002	223	15 Winter	2	+0%	30/15 Summer				5.335	-0.156
5.003	224	15 Winter	2	+0%	30/15 Summer				5.275	-0.144
5.004	225	15 Winter	2	+0%	30/15 Summer				5.242	-0.135
5.005	226	15 Winter	2	+0%	100/15 Summer				5.076	-0.245

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS3.SWS

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	201	0.000	0.36			14.0	OK	1
2.000	202	0.000	0.26			16.8	OK	
3.000	203	0.000	0.38			14.4	OK	4
2.001	204	0.000	0.55			36.1	OK	4
2.002	205	0.000	0.66			44.7	OK	4
1.001	206	0.000	0.70			66.6	OK	4
1.002	207	0.000	0.70			66.6	OK	4
1.003	208	0.000	0.71			89.9	OK	4
1.004	209	0.000	0.89			93.4	OK	4
4.000	210	0.000	0.33			12.7	OK	
4.001	211	0.000	0.43			27.8	OK	
4.002	212	0.000	0.52			32.6	OK	
4.003	213	0.000	0.32			40.3	OK	
1.005	214	0.000	0.96			130.9	OK	4
1.006	215	0.000	0.71			130.9	OK	1
1.007	216	0.000	0.67			125.8	OK	1
1.008	217	0.000	1.00			123.1	OK	
1.009	218	0.000	0.98			123.9	OK	
1.010	219	0.000	0.64			122.7	OK	
1.011	220	0.000	0.64			119.7	OK	
5.000	221	0.000	0.08			1.3	OK	
5.001	222	0.000	0.49			17.3	OK	
5.002	223	0.000	0.46			28.4	OK	
5.003	224	0.000	0.52			29.3	OK	
5.004	225	0.000	0.58			34.8	OK	
5.005	226	0.000	0.26			52.9	OK	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS3.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
5.006	227	15 Winter	2	+0%	100/15 Summer				4.753	-0.238
5.007	228	15 Winter	2	+0%	30/15 Summer	100/720 Winter			4.407	-0.130
1.012	229	30 Winter	2	+0%	30/15 Summer	100/600 Summer			4.290	-0.206
1.013	230	30 Winter	2	+0%	30/15 Winter	100/600 Winter			4.218	-0.187
1.014	231	30 Winter	2	+0%	30/15 Winter	100/480 Winter			4.111	-0.279
1.015	232	960 Winter	2	+0%	2/360 Winter				3.878	0.013

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
5.006	227	0.000	0.29			56.8	OK	
5.007	228	0.000	0.76			63.5	OK	
1.012	229	0.000	0.57			151.0	OK	1
1.013	230	0.000	0.83			150.6	OK	
1.014	231	0.000	0.55			149.1	OK	
1.015	232	0.000	0.12			4.5	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 17.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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, 7200, 8640, 10080
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)	Surcharged Depth (m)
1.000	201	15 Winter	30	+0%	30/15 Winter	100/15 Winter			5.426	0.015
2.000	202	15 Winter	30	+0%	100/15 Summer				5.552	-0.085
3.000	203	15 Winter	30	+0%	30/15 Summer	100/15 Summer			5.553	0.093
2.001	204	15 Winter	30	+0%	30/15 Summer	100/15 Summer			5.509	0.194
2.002	205	15 Winter	30	+0%	30/15 Summer	100/15 Summer			5.427	0.250
1.001	206	15 Winter	30	+0%	30/15 Summer	100/15 Summer			5.358	0.255
1.002	207	15 Winter	30	+0%	30/15 Summer	100/15 Summer			5.284	0.253
1.003	208	15 Winter	30	+0%	30/15 Summer	100/15 Summer			5.138	0.241
1.004	209	15 Winter	30	+0%	30/15 Summer	100/15 Summer			5.150	0.241
4.000	210	15 Winter	30	+0%	100/15 Summer				5.438	-0.095
4.001	211	15 Winter	30	+0%	100/15 Summer				5.377	-0.039
4.002	212	15 Summer	30	+0%	100/15 Summer				5.293	0.000
4.003	213	15 Winter	30	+0%	100/15 Summer	100/720 Winter			5.176	-0.024
1.005	214	15 Winter	30	+0%	30/15 Summer	100/15 Summer			5.105	0.231
1.006	215	15 Winter	30	+0%	30/15 Summer	100/15 Winter			5.053	0.213
1.007	216	15 Winter	30	+0%	30/15 Summer	100/15 Winter			4.971	0.135
1.008	217	15 Winter	30	+0%	30/15 Summer	100/480 Winter			4.883	0.179
1.009	218	15 Winter	30	+0%	30/15 Summer	100/960 Summer			4.826	0.147
1.010	219	15 Winter	30	+0%	30/15 Summer	100/720 Winter			4.763	0.114
1.011	220	15 Winter	30	+0%	30/15 Summer	100/600 Winter			4.647	0.087
5.000	221	15 Winter	30	+0%	100/15 Summer				5.676	-0.112
5.001	222	15 Winter	30	+0%	30/15 Summer				5.641	0.050
5.002	223	15 Winter	30	+0%	30/15 Summer				5.534	0.043
5.003	224	15 Winter	30	+0%	30/15 Summer				5.462	0.043
5.004	225	15 Winter	30	+0%	30/15 Summer				5.397	0.020
5.005	226	15 Winter	30	+0%	100/15 Summer				5.153	-0.168

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS3.SWS

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	201	0.000	0.66			26.1	SURCHARGED	1
2.000	202	0.000	0.48			31.7	OK	
3.000	203	0.000	0.66			25.1	SURCHARGED	4
2.001	204	0.000	0.89			58.3	SURCHARGED	4
2.002	205	0.000	1.04			70.3	SURCHARGED	4
1.001	206	0.000	1.10			104.6	SURCHARGED	4
1.002	207	0.000	1.12			106.8	SURCHARGED	4
1.003	208	0.000	1.24			156.2	SURCHARGED	4
1.004	209	0.000	1.56			142.8	SURCHARGED	4
4.000	210	0.000	0.63			24.0	OK	
4.001	211	0.000	0.88			56.9	OK	
4.002	212	0.000	1.00			63.4	OK	
4.003	213	0.000	0.64			79.5	OK	
1.005	214	0.000	1.72			233.9	SURCHARGED	4
1.006	215	0.000	1.29			257.7	SURCHARGED	1
1.007	216	0.000	1.27			235.8	SURCHARGED	1
1.008	217	0.000	1.38			243.6	SURCHARGED	
1.009	218	0.000	1.90			240.4	SURCHARGED	
1.010	219	0.000	1.21			232.8	SURCHARGED	
1.011	220	0.000	1.24			232.3	SURCHARGED	
5.000	221	0.000	0.14			2.5	OK	
5.001	222	0.000	1.05			37.6	SURCHARGED	
5.002	223	0.000	0.99			60.3	SURCHARGED	
5.003	224	0.000	1.16			68.0	SURCHARGED	
5.004	225	0.000	1.25			74.9	SURCHARGED	
5.005	226	0.000	0.56			115.5	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS3.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
5.006	227	15 Winter	30	+0%	100/15 Summer				4.833	-0.158
5.007	228	15 Winter	30	+0%	30/15 Summer	100/720 Winter			4.604	0.067
1.012	229	15 Winter	30	+0%	30/15 Summer	100/600 Summer			4.547	0.051
1.013	230	30 Winter	30	+0%	30/15 Winter	100/600 Winter			4.434	0.029
1.014	231	30 Winter	30	+0%	30/15 Winter	100/480 Winter			4.392	0.002
1.015	232	720 Winter	30	+0%	2/360 Winter				4.082	0.217

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
5.006	227	0.000	0.62			124.0	OK	
5.007	228	0.000	1.64			197.6	SURCHARGED	
1.012	229	0.000	1.11			238.8	SURCHARGED	1
1.013	230	0.000	1.63			295.4	SURCHARGED	
1.014	231	0.000	1.96			284.3	SURCHARGED	
1.015	232	0.000	0.13			4.7	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS3.SWS

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model		FSR M5-60 (mm) 17.000	Cv (Summer) 0.750
Region England and Wales		Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS 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, 7200, 8640, 10080
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)	Surcharged Depth (m)
1.000	201	15 Winter	100	+40%	30/15 Winter	100/15 Winter			6.611	1.200
2.000	202	15 Winter	100	+40%	100/15 Summer				6.773	1.136
3.000	203	15 Winter	100	+40%	30/15 Summer	100/15 Summer			6.661	1.201
2.001	204	15 Winter	100	+40%	30/15 Summer	100/15 Summer			6.591	1.276
2.002	205	15 Winter	100	+40%	30/15 Summer	100/15 Summer			6.385	1.208
1.001	206	15 Winter	100	+40%	30/15 Summer	100/15 Summer			6.310	1.207
1.002	207	30 Winter	100	+40%	30/15 Summer	100/15 Summer			6.235	1.204
1.003	208	30 Winter	100	+40%	30/15 Summer	100/15 Summer			6.165	1.208
1.004	209	15 Winter	100	+40%	30/15 Summer	100/15 Summer			6.116	1.207
4.000	210	15 Winter	100	+40%	100/15 Summer				6.642	1.109
4.001	211	15 Winter	100	+40%	100/15 Summer				6.586	1.170
4.002	212	15 Winter	100	+40%	100/15 Summer				6.453	1.160
4.003	213	15 Winter	100	+40%	100/15 Summer	100/720 Winter			6.301	1.101
1.005	214	15 Winter	100	+40%	30/15 Summer	100/15 Summer			6.078	1.204
1.006	215	15 Winter	100	+40%	30/15 Summer	100/15 Winter			6.040	1.200
1.007	216	15 Winter	100	+40%	30/15 Summer	100/15 Winter			5.976	1.200
1.008	217	15 Winter	100	+40%	30/15 Summer	100/480 Winter			5.871	1.166
1.009	218	15 Winter	100	+40%	30/15 Summer	100/960 Summer			5.707	1.028
1.010	219	15 Winter	100	+40%	30/15 Summer	100/720 Winter			5.578	0.929
1.011	220	15 Winter	100	+40%	30/15 Summer	100/960 Winter			5.582	0.822
5.000	221	15 Winter	100	+40%	100/15 Summer				6.412	0.624
5.001	222	15 Winter	100	+40%	30/15 Summer				6.403	0.613
5.002	223	15 Winter	100	+40%	30/15 Summer				6.154	0.460
5.003	224	15 Winter	100	+40%	30/15 Summer				6.003	0.384
5.004	225	15 Winter	100	+40%	30/15 Summer				5.889	0.512
5.005	226	15 Winter	100	+40%	100/15 Summer				5.732	0.411

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS3.SWS

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	201	0.087	0.92			36.3	FLOOD	1
2.000	202	0.000	0.69			45.4	FLOOD RISK	
3.000	203	1.421	0.84			32.0	FLOOD	4
2.001	204	1.048	1.23			80.3	FLOOD	4
2.002	205	7.913	1.26			85.9	FLOOD	4
1.001	206	7.069	1.48			140.7	FLOOD	4
1.002	207	5.620	1.55			147.6	FLOOD	4
1.003	208	8.054	1.52			191.6	FLOOD	4
1.004	209	6.815	2.15			224.8	FLOOD	4
4.000	210	0.000	0.81			30.9	FLOOD RISK	
4.001	211	0.000	1.19			77.2	FLOOD RISK	
4.002	212	0.000	1.38			87.2	FLOOD RISK	
4.003	213	0.000	0.86			106.6	FLOOD RISK	
1.005	214	4.319	2.39			325.0	FLOOD	4
1.006	215	0.396	1.75			328.2	FLOOD	1
1.007	216	0.490	1.71			321.0	FLOOD	1
1.008	217	0.000	2.71			333.1	FLOOD RISK	
1.009	218	0.000	2.60			328.9	FLOOD RISK	
1.010	219	0.000	1.62			311.4	FLOOD RISK	
1.011	220	0.000	1.70			318.7	SURCHARGED	
5.000	221	0.000	0.35			6.1	SURCHARGED	
5.001	222	0.000	1.60			57.3	SURCHARGED	
5.002	223	0.000	1.56			95.4	SURCHARGED	
5.003	224	0.000	1.76			98.2	SURCHARGED	
5.004	225	0.000	1.94			116.5	SURCHARGED	
5.005	226	0.000	0.90			183.7	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SWS3.SWS

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
5.006	227	15 Winter	100	+40%	100/15 Summer				5.567	0.576
5.007	228	15 Winter	100	+40%	30/15 Summer	100/720 Winter			5.346	0.809
1.012	229	960 Summer	100	+40%	30/15 Summer	100/600 Summer			5.403	0.907
1.013	230	720 Winter	100	+40%	30/15 Winter	100/600 Winter			5.093	0.688
1.014	231	4320 Summer	100	+40%	30/15 Winter	100/480 Winter			4.865	0.475
1.015	232	1440 Winter	100	+40%	2/360 Winter				4.464	0.599

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
5.006	227	0.000	0.97			193.3	SURCHARGED	
5.007	228	0.000	2.48			207.6	SURCHARGED	
1.012	229	7.240	0.42			111.5	FLOOD	1
1.013	230	2.134	0.54			98.9	FLOOD	
1.014	231	6.587	0.23			61.3	FLOOD	
1.015	232	0.000	0.13			4.7	SURCHARGED	

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