APPENDIX D

Description

Foul Water Flow Rate Based on Appliances - Existing/Proposed Site		Design/Date	Checked/Date	Ref:	Rev	Suitability
Stage	4 - Tender	PL / 25-10-19		SE1612-ISS-XX-XX-CA-C-0002	P01	

Formula for calculating Foul Water Flow rate:

$(Q_{ww}) = K\sqrt{\text{つ}}$

Q_{ww} = Foul water (waste water) flow in l/s

K = frequency factor

Values and calculation taken from BS EN 12056-2:2000, Part 2 Sanitary Pipework, Layout and Calculation

Frequency Factor

Usage of Appliances		k
Intermittent	i.e. dwelling, guesthouse, office	0.5
Frequent	i.e. hospital, school, restaurant, hotel	0.7
Congested	i.e. toilets/showers open to public	1
Special	i.e. laboratory	1.2

Discharge Unit	DU
Bath	0.8
Dishwasher (household)	0.8
Floor gully DN50	0.8
Floor gully DN70	1.5
Floor gully DN100	2.0
Kitchen sink	0.8
Shower with plug	0.8
Shower without plug	0.6
Slab urinal	0.2
Urinal with flushing valve	0.5
Urinal with cistern	0.8
Wash basin, bidet	0.5
Washing machine (0-6kg)	0.8
Washing machine (6-12kg)	1.5
WC with 6l cistern	2.0
WC with 7.5l cistern	2.0
WC with 9l cistern	2.5
None	

Location	Discharge Unit	Rate	No. of Units	Total DU
Main run along north side of the building and west side as well	Bath	0.8	68	54.4
	Shower without plug	0.6	68	40.8
	Wash basin, bidet	0.5	68	34
Main run along north side of the building and west side as well	Dishwasher (household)	0.8	6	4.8
	Kitchen sink	0.8	7	5.6
	None	0		0
			Net discharge from Units (ij DU in l/s) =	139.6

Calculate foul flow rate with a frequency of usage being: Intermittent

$(Q_{ww}) = K\sqrt{\text{つ}} = 0.5 \times (\ 139.6\ )^{0.5} = 5.908$ l/s

Location	Discharge Unit	Rate	No. of Units	Total DU
Secondary run along south side, stacks at the start of the run	Bath	0.8	7	5.6
	Shower without plug	0.6	7	4.2
	Wash basin, bidet	0.5	7	3.5
			Net discharge from Units (ij DU in l/s) =	13.3

Calculate foul flow rate with a frequency of usage being: Intermittent

$(Q_{ww}) = K\sqrt{\text{つ}} = 0.5 \times (\ 13.3\ )^{0.5} = 1.823$ l/s

ARUN DISTRICT COUNCIL A/18/20/DOC

Description		Design/Date	Checked/Date	Ref:	Rev	Suitability
Surface Water Infiltration Rates		PL/05.02.20		SE1612-ISS-XX-XX-CA-C-0003	P02	
Stage	3 - Prelminary					

Agreed with Planners that the site investigation report by Ashdown Site Investigation Ltd. (ref R18-12844, dated April 2018) is to be used for the soakaways for the westerna area of the site

Test pit ref within the above document to be used is TP01

Rate to be used for western area of site =	16.16	m/hr

Test	1	2	3	m
Pit Length	0.45	0.45	0.45	m
Pit Width	1.90	1.90	1.90	m
Pit depth	2.80	2.50	2.30	m
Volume 100%	2.39	2.14	1.97	m^3
Volume 75%	1.80	1.60	1.47	m^3
Volume 25%	0.60	0.53	0.49	m^3
Volume 0%	0	0	0	m^3
Volume 75%-25%	1.20	1.07	0.98	m^3
Time 100%	0	0	0	s
Time 75%	37.5	37.5	52.5	s
Time 25%	12.5	12.5	17.5	s
Time 0%	50	50	70	s
Time 75% - 25%	25	25	35	s
Perimter at 50%	7.435	6.730	6.260	m^2
Result	0.01	0.01	0.00	m/s
	23.18	22.87	16.16	m/hr

Agreed with Planners that the site investigation report by Ashdown Site Investigation Ltd. (ref R14051, dated January 202) is to be used for the soakaways for the easterna area of the site

Test pit ref within the above document to be used is ST2

The report has caluclated the infiltration for the test pit and this value is to be used for the eastern area

Rate to be used for eastern area of site =	3.60E-04	m/s

Convert as Microdrainage uses different rate, rate =	1.296	m/hr

Test	1	2	3	m
Pit Length				m
Pit Width				m
Pit depth				m
Volume 100%	0.00	0.00	0.00	m^3
Volume 75%	0.00	0.00	0.00	m^3
Volume 25%	0.00	0.00	0.00	m^3
Volume 0%	0	0	0	m^3
Volume 75%-25%	0.00	0.00	0.00	m^3
Time 100%	0	0	0	s
Time 75%	0	0	0	s
Time 25%	0	0	0	s
Time 0%				s
Time 75% - 25%	0	0	0	s
Perimter at 50%	0.000	0.000	0.000	m^2
Result				m/s
				m/hr

ARUN DISTRICT COUNCIL A/18/20/DOC

FOUL SEWERAGE DESIGN

Network Design Table for FW

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F1.000	5.136	0.200	25.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F2.000	2.820	0.130	21.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.001	9.989	0.078	128.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F3.000	3.082	0.080	38.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F3.001	3.355	0.088	38.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.002	16.227	0.132	122.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F4.000	3.212	0.080	40.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F5.000	3.412	0.080	42.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F4.001	2.413	0.220	11.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.003	10.752	0.088	122.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F6.000	3.837	0.298	12.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.004	5.295	0.042	126.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F7.000	3.039	0.490	6.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.000	14.000	0.000	0.0	0	0.0	0	0.00	1.73	30.6	0.0
F2.000	14.000	0.000	0.0	0	0.0	0	0.00	1.89	33.3	0.0
F1.001	13.800	0.000	0.0	0	0.0	0	0.00	0.77	13.7	0.0
F3.000	13.960	0.000	0.0	0	0.0	0	0.00	1.41	25.0	0.0
F3.001	13.810	0.000	0.0	0	0.0	0	0.00	1.42	25.1	0.0
F1.002	13.722	0.000	0.0	0	0.0	0	0.00	0.79	14.0	0.0
F4.000	13.960	0.000	0.0	0	0.0	0	0.00	1.39	24.5	0.0
F5.000	13.960	0.000	0.0	0	0.0	0	0.00	1.34	23.7	0.0
F4.001	13.810	0.000	0.0	0	0.0	0	0.00	2.66	46.9	0.0
F1.003	13.590	0.000	0.0	0	0.0	0	0.00	0.79	14.0	0.0
F6.000	13.800	0.000	0.0	0	0.0	0	0.00	2.45	43.3	0.0
F1.004	13.502	0.000	0.0	0	0.0	0	0.00	0.78	13.8	0.0
F7.000	13.950	0.000	0.0	0	0.0	0	0.00	3.53	62.4	0.0

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FOUL SEWERAGE DESIGN

Network Design Table for FW

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F1.005	7.356	0.059	124.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F8.000	4.717	0.549	8.6	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.006	13.642	0.110	124.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F9.000	3.650	0.659	5.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.007	9.941	0.081	122.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F10.000	3.826	0.100	38.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F10.001	4.123	0.550	7.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.008	8.224	0.100	82.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.009	3.223	0.063	51.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F11.000	4.062	0.903	4.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.010	21.033	0.409	51.4	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F12.000	3.266	0.100	32.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F12.001	17.678	1.192	14.8	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.011	10.686	0.083	128.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.005	13.460	0.000	0.0	0	0.0	0	0.00	0.78	13.9	0.0
F8.000	13.950	0.000	0.0	0	0.0	0	0.00	3.00	53.0	0.0
F1.006	13.401	0.000	0.0	0	0.0	0	0.00	0.79	13.9	0.0
F9.000	13.950	0.000	0.0	0	0.0	0	0.00	3.74	66.1	0.0
F1.007	13.291	0.000	0.0	0	0.0	0	0.00	0.79	14.0	0.0
F10.000	14.000	0.000	0.0	0	0.0	0	0.00	1.42	25.1	0.0
F10.001	13.830	0.000	0.0	0	0.0	0	0.00	3.21	56.8	0.0
F1.008	13.210	0.000	0.0	0	0.0	0	0.00	0.97	17.1	0.0
F1.009	13.110	0.000	0.0	0	0.0	0	0.00	1.23	21.7	0.0
F11.000	13.950	0.000	0.0	0	0.0	0	0.00	4.15	73.3	0.0
F1.010	13.047	0.000	0.0	0	0.0	0	0.00	1.22	21.6	0.0
F12.000	14.000	0.000	0.0	0	0.0	0	0.00	1.54	27.2	0.0
F12.001	13.830	0.000	0.0	0	0.0	0	0.00	2.28	40.3	0.0
F1.011	12.638	0.000	0.0	0	0.0	0	0.00	0.77	13.6	0.0

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FOUL SEWERAGE DESIGN

Network Design Table for FW

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F13.000	10.821	0.230	47.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F13.001	9.588	0.200	47.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F13.002	6.790	0.059	115.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F14.000	4.619	0.519	8.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F13.003	11.869	0.101	117.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F15.000	6.012	0.100	60.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F15.001	4.748	0.132	36.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F16.000	6.530	0.282	23.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F15.002	10.035	0.278	36.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F13.004	6.020	0.051	118.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F17.000	6.446	0.701	9.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F13.005	16.529	0.139	118.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F18.000	2.385	0.100	23.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F13.006	6.293	0.100	62.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F13.000	13.940	0.000	0.0	0	0.0	0	0.00	1.28	22.6	0.0
F13.001	13.710	0.000	0.0	0	0.0	0	0.00	1.27	22.4	0.0
F13.002	13.510	0.000	0.0	0	0.0	0	0.00	0.82	14.4	0.0
F14.000	13.970	0.000	0.0	0	0.0	0	0.00	2.95	52.1	0.0
F13.003	13.451	0.000	0.0	0	0.0	0	0.00	0.81	14.3	0.0
F15.000	14.000	0.000	0.0	0	0.0	0	0.00	1.13	20.0	0.0
F15.001	13.839	0.000	0.0	0	0.0	0	0.00	1.46	25.9	0.0
F16.000	13.980	0.000	0.0	0	0.0	0	0.00	1.83	32.3	0.0
F15.002	13.698	0.000	0.0	0	0.0	0	0.00	1.46	25.8	0.0
F13.004	13.350	0.000	0.0	0	0.0	0	0.00	0.80	14.2	0.0
F17.000	14.000	0.000	0.0	0	0.0	0	0.00	2.90	51.3	0.0
F13.005	13.299	0.000	0.0	0	0.0	0	0.00	0.80	14.2	0.0
F18.000	13.970	0.000	0.0	0	0.0	0	0.00	1.80	31.8	0.0
F13.006	13.160	0.000	0.0	0	0.0	0	0.00	1.11	19.5	0.0

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FOUL SEWERAGE DESIGN

Network Design Table for FW

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F19.000	4.330	0.100	43.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F19.001	11.540	0.760	15.2	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F13.007	12.340	0.099	124.6	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F20.000	8.329	0.670	12.4	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F21.000	2.272	0.209	10.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F22.000	3.905	0.209	18.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F21.001	5.004	0.461	10.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F20.001	9.110	0.369	24.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F13.008	37.180	0.300	123.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F13.009	14.657	0.130	112.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.012	13.642	0.150	90.9	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F23.000	9.229	0.100	92.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.013	15.722	0.200	78.6	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.014	9.104	0.550	16.6	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
F1.015	24.000	0.200	120.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F19.000	13.950	0.000	0.0	0	0.0	0	0.00	1.33	23.6	0.0
F19.001	13.820	0.000	0.0	0	0.0	0	0.00	2.26	39.9	0.0
F13.007	13.060	0.000	0.0	0	0.0	0	0.00	0.78	13.9	0.0
F20.000	14.000	0.000	0.0	0	0.0	0	0.00	2.49	44.1	0.0
F21.000	14.000	0.000	0.0	0	0.0	0	0.00	2.67	47.1	0.0
F22.000	14.000	0.000	0.0	0	0.0	0	0.00	2.03	35.9	0.0
F21.001	13.791	0.000	0.0	0	0.0	0	0.00	2.67	47.2	0.0
F20.001	13.330	0.000	0.0	0	0.0	0	0.00	1.77	31.2	0.0
F13.008	12.961	0.000	0.0	0	0.0	0	0.00	0.79	13.9	0.0
F13.009	12.661	0.000	0.0	0	0.0	0	0.00	0.82	14.6	0.0
F1.012	12.550	0.000	0.0	0	0.0	0	0.00	0.92	16.2	0.0
F23.000	13.400	0.000	0.0	0	0.0	0	0.00	0.91	16.1	0.0
F1.013	12.400	0.000	0.0	0	0.0	0	0.00	0.99	17.5	0.0
F1.014	12.200	0.000	0.0	0	0.0	0	0.00	2.16	38.2	0.0
F1.015	11.650	0.000	0.0	0	0.0	0	0.00	0.80	14.1	0.0

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FOUL SEWERAGE DESIGN

Network Design Table for FW

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
F1.016	9.082	0.650	14.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
F1.016	11.450	0.000	0.0	0	0.0	0	0.00	2.35	41.6	0.0

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Manhole Schedules for FW

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
F1.01	14.750	0.750	Open Manhole	450	F1.000	14.000	150				
F1.11	14.750	0.750	Open Manhole	450	F2.000	14.000	150				
F1.02	14.690	0.890	Open Manhole	450	F1.001	13.800	150	F1.000	13.800	150	
								F2.000	13.870	150	70
F1.12	14.750	0.790	Open Manhole	450	F3.000	13.960	150				
F1.13	14.690	0.880	Open Manhole	450	F3.001	13.810	150	F3.000	13.880	150	70
FNODE	14.690	0.968	Junction		F1.002	13.722	150	F1.001	13.722	150	
								F3.001	13.722	150	
F1.14	14.750	0.790	Open Manhole	450	F4.000	13.960	150				
F1.16	14.750	0.790	Open Manhole	1200	F5.000	13.960	150				
F1.15	14.750	0.940	Open Manhole	450	F4.001	13.810	150	F4.000	13.880	150	70
								F5.000	13.880	150	70
FNODE	14.690	1.100	Junction		F1.003	13.530	150	F1.002	13.590	150	
								F4.001	13.590	150	
F1.17	14.750	0.950	Open Manhole	450	F6.000	13.800	150				
FNODE	14.690	1.188	Junction		F1.004	13.502	150	F1.003	13.502	150	
								F6.000	13.502	150	
F1.18	14.750	0.800	Open Manhole	450	F7.000	13.950	150				
F1.03	14.690	1.230	Open Manhole	450	F1.005	13.460	150	F1.004	13.460	150	
								F7.000	13.460	150	
F1.19	14.750	0.800	Open Manhole	450	F8.000	13.950	150				
FNODE	14.705	1.304	Junction		F1.006	13.401	150	F1.005	13.401	150	
								F8.000	13.401	150	
F1.20	14.750	0.800	Open Manhole	450	F9.000	13.950	150				
FNODE	14.690	1.399	Junction		F1.007	13.291	150	F1.006	13.291	150	
								F9.000	13.291	150	
F1.21	14.750	0.750	Open Manhole	450	F10.000	14.000	150				
F1.22	14.750	0.920	Open Manhole	450	F10.001	13.830	150	F10.000	13.900	150	70
F1.04	14.720	1.510	Open Manhole	450	F1.008	13.210	150	F1.007	13.210	150	
								F10.001	13.280	150	70
F1.05	14.720	1.610	Open Manhole	450	F1.009	13.110	150	F1.008	13.110	150	
F1.23	14.750	0.800	Open Manhole	450	F11.000	13.950	150				
FNODE	14.750	1.703	Junction		F1.010	13.047	150	F1.009	13.047	150	
								F11.000	13.047	150	
F1.40	14.750	0.750	Open Manhole	450	F12.000	14.000	150				
F1.41	14.750	0.920	Open Manhole	450	F12.001	13.930	150	F12.000	13.900	150	70
FNODE	14.700	2.062	Junction		F1.011	12.638	150	F1.010	12.638	150	
								F12.001	12.638	150	
F1.24	14.750	0.810	Open Manhole	450	F13.000	13.940	150				
F1.25	14.740	1.030	Open Manhole	450	F13.001	13.710	150	F13.000	13.710	150	
F1.26	14.650	1.140	Open Manhole	450	F13.002	13.510	150	F13.001	13.510	150	
F1.26A	14.750	0.780	Open Manhole	1200	F14.000	13.970	150				
FNODE	14.650	1.199	Junction		F13.003	13.451	150	F13.002	13.451	150	
								F14.000	13.451	150	

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Manhole Schedules for FW

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)
F1.30	14.750	0.750	Open Manhole	450	F15.000	14.000	150				
F1.31	14.750	0.920	Open Manhole	450	F15.001	13.830	150	F15.000	13.900	150	70
F1.32	14.750	0.770	Open Manhole	450	F16.000	13.980	150				
FNODE	14.700	1.002	Junction		F15.002	13.698	150	F15.001	13.698	150	
								F16.000	13.698	150	
F1.27	14.650	1.300	Open Manhole	450	F13.004	13.350	150	F13.003	13.350	150	
								F15.002	13.420	150	70
F1.33	14.750	0.750	Open Manhole	450	F17.000	14.000	150				
FNODE	14.620	1.321	Junction		F13.005	13.299	150	F13.004	13.299	150	
								F17.000	13.299	150	
F1.28A	14.700	0.730	Open Manhole	1200	F18.000	13.970	150				
F1.28	14.650	1.490	Open Manhole	450 x 600	F13.006	13.160	150	F13.005	13.160	150	
								F18.000	13.870	150	710
F1.34	14.750	0.760	Open Manhole	450	F19.000	13.990	150				
F1.35	14.750	0.930	Open Manhole	450	F19.001	13.820	150	F19.000	13.890	150	70
FNODE	14.530	1.470	Junction		F13.007	13.060	150	F13.006	13.060	150	
								F19.001	13.060	150	
F1.36	14.750	0.750	Open Manhole	450	F20.000	14.000	150				
F1.38	14.750	0.750	Open Manhole	450	F21.000	14.000	150				
F1.39	14.750	0.750	Open Manhole	450	F22.000	14.000	150				
FNODE	14.700	0.909	Junction		F21.001	13.791	150	F21.000	13.791	150	
								F22.000	13.791	150	
F1.37	14.650	1.320	Open Manhole	1200	F20.001	13.330	150	F20.000	13.330	150	
								F21.001	13.330	150	
FNODE	14.540	1.579	Junction		F13.008	12.961	150	F13.007	12.961	150	
								F20.001	12.961	150	
F1.29	14.550	1.889	Open Manhole	450	F13.009	12.661	150	F13.008	12.661	150	
F1.06	14.600	2.069	Open Manhole	1200	F1.012	12.550	150	F1.011	12.555	150	5
								F13.009	12.531	150	
F1.42	14.800	1.400	Open Manhole	1200	F23.000	13.400	150				
F1.07	14.400	2.000	Open Manhole	1200	F1.013	12.400	150	F1.012	12.400	150	
								F23.000	13.300	150	900
F1.08	13.725	1.525	Open Manhole	1200	F1.014	12.200	150	F1.013	12.200	150	
F1.09	13.050	1.400	Open Manhole	1200	F1.015	11.650	150	F1.014	11.650	150	
F1.10	13.050	1.600	Open Manhole	1200	F1.016	11.450	150	F1.015	11.450	150	
F	13.000	2.280	Open Manhole	0		OUTFALL		F1.016	10.800	150	

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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for SW1 - Main West

« - 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
S1.000	3.189	0.530	6.0	0.006	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	5.666	0.058	97.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S2.000	2.629	0.575	4.6	0.007	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	13.656	0.142	96.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S3.000	3.503	0.100	35.0	0.005	5.00	0.0	0.600	o	150	Pipe/Conduit	
S3.001	3.546	0.100	35.5	0.006	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	12.630	0.200	63.2	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S4.000	2.845	0.100	28.5	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.004	11.741	0.200	58.7	0.008	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.005	7.269	0.100	72.7	0.004	0.00	0.0	0.600	o	150	Pipe/Conduit	
S5.000	6.388	0.300	21.3	0.005	5.00	0.0	0.600	o	150	Pipe/Conduit	
S6.000	8.451	0.300	28.2	0.006	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.006	12.560	0.100	125.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.007	5.339	0.050	106.8	0.016	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)
S1.000	50.00	5.01	13.950	0.006	0.0	0.0	0.0	4.14	73.1	0.8
S1.001	50.00	5.11	13.400	0.006	0.0	0.0	0.0	1.02	18.0	0.8
S2.000	50.00	5.01	13.950	0.007	0.0	0.0	0.0	4.75	83.9	1.0
S1.002	50.00	5.33	13.342	0.013	0.0	0.0	0.0	1.02	18.1	1.8
S3.000	50.00	5.03	14.000	0.005	0.0	0.0	0.0	1.71	30.2	0.7
S3.001	50.00	5.07	13.830	0.011	0.0	0.0	0.0	1.70	30.0	1.5
S1.003	50.00	5.49	13.200	0.024	0.0	0.0	0.0	1.27	22.4	3.3
S4.000	50.00	5.03	13.950	0.000	0.0	0.0	0.0	1.89	33.5	0.0
S1.004	50.00	5.64	13.000	0.033	0.0	0.0	0.0	1.32	23.2	4.4
S1.005	50.00	5.75	12.800	0.036	0.0	0.0	0.0	1.18	20.9	4.9
S5.000	50.00	5.05	14.000	0.005	0.0	0.0	0.0	2.19	38.7	0.6
S6.000	50.00	5.07	14.000	0.006	0.0	0.0	0.0	1.90	33.7	0.8
S1.006	50.00	5.92	12.700	0.047	0.0	0.0	0.0	1.17	46.3	6.4
S1.007	50.00	6.00	12.450	0.063	0.0	0.0	0.0	1.26	50.3	8.5

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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for SW1 - Main West

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
S7.000	5.176	0.100	51.8	0.006	5.00	0.0	0.600	o	150	Pipe/Conduit	
S8.000	6.208	0.100	62.1	0.003	5.00	0.0	0.600	o	150	Pipe/Conduit	
S7.001	3.896	0.100	39.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S9.000	2.295	0.100	23.0	0.008	5.00	0.0	0.600	o	150	Pipe/Conduit	
S9.001	11.123	0.360	30.9	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit	
S9.002	3.289	0.300	11.0	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit	
S7.002	7.427	0.220	33.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S10.000	3.729	0.300	12.4	0.004	5.00	0.0	0.600	o	150	Pipe/Conduit	
S10.001	11.463	0.320	35.8	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit	
S7.003	24.914	0.165	151.0	0.029	0.00	0.0	0.600	o	150	Pipe/Conduit	
S7.004	5.986	0.040	150.0	0.015	0.00	0.0	0.600	o	225	Pipe/Conduit	
S11.000	6.825	0.400	17.1	0.007	5.00	0.0	0.600	o	150	Pipe/Conduit	
S12.000	16.382	0.400	41.0	0.002	5.00	0.0	0.600	o	150	Pipe/Conduit	
S11.001	5.440	0.570	9.5	0.003	0.00	0.0	0.600	o	150	Pipe/Conduit	
S7.005	14.043	0.100	140.4	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)
S7.000	50.00	5.06	13.900	0.006	0.0	0.0	0.0	1.40	24.8	0.8
S8.000	50.00	5.08	13.900	0.003	0.0	0.0	0.0	1.28	22.6	0.4
S7.001	50.00	5.12	13.200	0.009	0.0	0.0	0.0	1.62	28.6	1.3
S9.000	50.00	5.02	14.000	0.008	0.0	0.0	0.0	2.11	37.3	1.1
S9.001	50.00	5.12	13.930	0.013	0.0	0.0	0.0	1.82	32.1	1.8
S9.002	50.00	5.14	13.400	0.025	0.0	0.0	0.0	3.06	54.1	3.4
S7.002	50.00	5.21	13.100	0.035	0.0	0.0	0.0	1.74	30.7	4.7
S10.000	50.00	5.02	13.500	0.004	0.0	0.0	0.0	2.87	50.8	0.5
S10.001	50.00	5.13	13.200	0.008	0.0	0.0	0.0	1.69	29.8	1.1
S7.003	50.00	5.72	12.880	0.072	0.0	0.0	0.0	0.82	14.4	9.7
S7.004	50.00	5.81	12.640	0.087	0.0	0.0	0.0	1.07	42.4	11.8
S11.000	50.00	5.05	13.700	0.007	0.0	0.0	0.0	2.45	43.3	0.9
S12.000	50.00	5.17	13.700	0.002	0.0	0.0	0.0	1.58	27.9	0.3
S11.001	50.00	5.20	13.300	0.012	0.0	0.0	0.0	3.28	58.0	1.6
S7.005	50.00	6.02	12.600	0.098	0.0	0.0	0.0	1.10	43.8	13.3

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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for SW1 - Main West

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
S7.006	10.898	0.100	109.0	0.026	0.00	0.0	0.600	o	225	Pipe/Conduit	
S7.007	5.047	0.050	100.9	0.024	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.008	1.376	-2.100	-0.7	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)
S7.006	50.00	6.17	12.500	0.124	0.0	0.0	0.0	1.25	49.8	16.8
S7.007	50.00	6.23	12.400	0.148	0.0	0.0	0.0	1.30	51.7	20.1
S1.008	50.00	6.42	12.350	0.211	0.0	0.0	0.0	0.12	4.9*	28.6

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Manhole Schedules for SW1 - Main West

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1.01	14.650	0.720	Open Manhole	450	S1.000	13.930	150				
S1.02	14.650	1.250	Open Manhole	450	S1.001	13.400	150	S1.000	13.400	150	
S1.08	14.750	0.820	Open Manhole	450	S2.000	13.930	150				
SNODE	14.650	1.308	Junction		S1.002	13.342	150	S1.001	13.342	150	
								S2.000	13.355	150	13
S1.09	14.750	0.750	Open Manhole	450	S3.000	14.000	150				
S1.10	14.700	0.870	Open Manhole	450	S3.001	13.930	150	S3.000	13.900	150	70
S1.03	14.650	1.450	Open Manhole	450 x 600	S1.003	13.200	150	S1.002	13.200	150	
								S3.001	13.730	150	530
S1.11	14.750	0.820	Open Manhole	450	S4.000	13.930	150				
S1.04	14.650	1.650	Open Manhole	450 x 600	S1.004	13.000	150	S1.003	13.000	150	
								S4.000	13.830	150	830
S1.05	14.650	1.850	Open Manhole	450	S1.005	12.800	150	S1.004	12.800	150	
S1.12	14.750	0.750	Open Manhole	450	S5.000	14.000	150				
SRE1.1	14.730	0.730	Junction		S6.000	14.000	150				
S1.06	14.500	1.800	Open Manhole	1200	S1.006	12.700	225	S1.005	12.700	150	
								S5.000	13.700	150	925
								S6.000	13.700	150	925
S1.07	14.500	2.050	Open Manhole	1200	S1.007	12.450	225	S1.006	12.600	225	150
S1.13	14.750	0.850	Open Manhole	450	S7.000	13.900	150				
S1.20	14.750	0.850	Open Manhole	450	S8.000	13.900	150				
S1.14	14.710	1.510	Open Manhole	450 x 600	S7.001	13.200	150	S7.000	13.800	150	600
								S8.000	13.800	150	600
S1.21	14.750	0.750	Open Manhole	450	S9.000	14.000	150				
S1.22	14.700	0.870	Open Manhole	450	S9.001	13.830	150	S9.000	13.900	150	70
S1.23	14.685	1.285	Open Manhole	450	S9.002	13.400	150	S9.001	13.470	150	70
S1.15	14.670	1.570	Open Manhole	1200	S7.002	13.100	150	S7.001	13.100	150	
								S9.002	13.100	150	
S1.24	14.750	1.250	Open Manhole	450	S10.000	13.500	150				
S1.25	14.750	1.550	Open Manhole	450	S10.001	13.200	150	S10.000	13.200	150	
S1.16	14.550	1.670	Open Manhole	1200	S7.003	12.880	150	S7.002	12.880	150	
								S10.001	12.880	150	
S1.17	14.570	1.930	Open Manhole	1200	S7.004	12.640	225	S7.003	12.715	150	
S1.26	14.750	1.050	Open Manhole	450	S11.000	13.700	150				
SRE1.3	14.750	1.050	Junction		S12.000	13.700	150				
S1.27	14.750	1.450	Open Manhole	450	S11.001	13.300	150	S11.000	13.300	150	
								S12.000	13.300	150	
SNODE	14.560	1.960	Junction		S7.005	12.600	225	S7.004	12.600	225	
								S11.001	12.730	150	55
S1.18	14.550	2.050	Open Manhole	1200	S7.006	12.500	225	S7.005	12.500	225	
S1.19	14.480	2.080	Open Manhole	1200	S7.007	12.400	225	S7.006	12.400	225	
SCS1	14.500	2.150	Open Manhole	900	S1.008	12.350	225	S1.007	12.400	225	50
								S7.007	12.350	225	
S	15.000	0.550	Open Manhole	0		OUTFALL		S1.008	14.450	225	

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ARUN DISTRICT COUNCIL A/18/20/DOC

Storage Structures for SW1 - Main West

Porous Car Park Manhole: S1.07, DS/PN: S1.007

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	18.0
Max Percolation (l/s)	24.0	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	12.050	Cap Volume Depth (m)	0.300

Porous Car Park Manhole: S1.19, DS/PN: S7.007

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	18.0
Max Percolation (l/s)	24.0	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	13.930	Cap Volume Depth (m)	0.300

Cellular Storage Manhole: SCS1, DS/PN: S1.008

Invert Level (m)	12.350	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	16.16000		

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	18.0	18.0	1.200	18.0	39.6	1.201	0.0	39.6

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ARUN DISTRICT COUNCIL A/18/20/DOC

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

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 0 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 10, 30, 100
Climate Change (%) 0, 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)
S1.000	S1.01	15 Winter	1	+0%					13.943	-0.137
S1.001	S1.02	15 Winter	1	+0%	100/30 Winter				13.423	-0.127
S2.000	S1.08	15 Winter	1	+0%					13.945	-0.135
S1.002	SNODE	15 Winter	1	+0%	100/30 Winter				13.374	-0.118
S3.000	S1.09	15 Winter	1	+0%					14.018	-0.132
S3.001	S1.10	15 Winter	1	+0%					13.856	-0.124
S1.003	S1.03	15 Winter	1	+0%	100/15 Winter				13.240	-0.110
S4.000	S1.11	60 Winter	1	+0%					13.930	-0.150
S1.004	S1.04	15 Winter	1	+0%	100/15 Summer				13.046	-0.104
S1.005	S1.05	15 Winter	1	+0%	30/30 Winter				12.852	-0.098
S5.000	S1.12	15 Winter	1	+0%					14.014	-0.136
S6.000	SRE1.1	15 Winter	1	+0%					14.016	-0.134
S1.006	S1.06	15 Winter	1	+0%	30/30 Winter				12.759	-0.166
S1.007	S1.07	360 Winter	1	+0%	10/15 Winter				12.475	-0.200
S7.000	S1.13	15 Winter	1	+0%	100/15 Summer				13.920	-0.130
S8.000	S1.20	15 Winter	1	+0%	100/15 Summer				13.916	-0.134
S7.001	S1.14	15 Winter	1	+0%	100/15 Summer				13.225	-0.125
S9.000	S1.21	15 Winter	1	+0%	100/15 Winter				14.023	-0.127
S9.001	S1.22	15 Winter	1	+0%	100/15 Summer				13.854	-0.126
S9.002	S1.23	15 Winter	1	+0%	100/15 Summer				13.431	-0.119
S7.002	S1.15	15 Winter	1	+0%	30/15 Summer				13.142	-0.108
S10.000	S1.24	15 Winter	1	+0%	100/15 Summer				13.510	-0.140
S10.001	S1.25	15 Winter	1	+0%	100/15 Summer				13.219	-0.131
S7.003	S1.16	15 Winter	1	+0%	10/15 Summer				12.969	-0.061
S7.004	S1.17	15 Winter	1	+0%	30/15 Summer				12.732	-0.133
S11.000	S1.26	15 Winter	1	+0%					13.716	-0.134
S12.000	SRE1.3	15 Winter	1	+0%					13.708	-0.142
S11.001	S1.27	15 Winter	1	+0%	100/15 Winter				13.318	-0.132
S7.005	SNODE	15 Winter	1	+0%	30/15 Summer				12.680	-0.145

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.02		0.8	OK	
S1.001	S1.02	0.000	0.05		0.8	OK	
S2.000	S1.08	0.000	0.02		1.0	OK	
S1.002	SNODE	0.000	0.10		1.8	OK*	
S3.000	S1.09	0.000	0.03		0.7	OK	
S3.001	S1.10	0.000	0.07		1.4	OK	
S1.003	S1.03	0.000	0.16		3.2	OK	
S4.000	S1.11	0.000	0.00		0.0	OK	
S1.004	S1.04	0.000	0.20		4.2	OK	
S1.005	S1.05	0.000	0.26		4.7	OK	
S5.000	S1.12	0.000	0.02		0.6	OK	
S6.000	SRE1.1	0.000	0.02		0.8	OK*	
S1.006	S1.06	0.000	0.15		6.1	OK	
S1.007	S1.07	0.000	0.03		0.9	OK	
S7.000	S1.13	0.000	0.04		0.9	OK	
S8.000	S1.20	0.000	0.02		0.5	OK	
S7.001	S1.14	0.000	0.07		1.3	OK	
S9.000	S1.21	0.000	0.05		1.1	OK	
S9.001	S1.22	0.000	0.06		1.7	OK	
S9.002	S1.23	0.000	0.09		3.1	OK	
S7.002	S1.15	0.000	0.17		4.5	OK	
S10.000	S1.24	0.000	0.01		0.5	OK	
S10.001	S1.25	0.000	0.04		1.1	OK	
S7.003	S1.16	0.000	0.65		8.9	OK	
S7.004	S1.17	0.000	0.35		10.6	OK	
S11.000	S1.26	0.000	0.02		0.9	OK	
S12.000	SRE1.3	0.000	0.01		0.3	OK*	
S11.001	S1.27	0.000	0.03		1.5	OK	
S7.005	SNODE	0.000	0.28		12.1	OK*	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

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 (m^3)
S7.006	S1.18	15 Winter	1	+0%	10/15 Summer				12.593	-0.132	0.000
S7.007	S1.19	30 Winter	1	+0%	10/15 Summer				12.568	-0.057	0.000
S1.008	SCS1	30 Winter	1	+0%	10/15 Summer				12.559	-0.016	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.006	S1.18	0.36		14.9	OK	
S7.007	S1.19	0.44		13.9	OK	
S1.008	SCS1	0.00		0.0	OK	

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10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

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 0 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 10, 30, 100
Climate Change (%) 0, 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)
S1.000	S1.01	15 Winter	10	+0%					13.948	-0.132
S1.001	S1.02	15 Winter	10	+0%	100/30 Winter				13.433	-0.117
S2.000	S1.08	15 Winter	10	+0%					13.950	-0.130
S1.002	SNODE	15 Winter	10	+0%	100/30 Winter				13.388	-0.104
S3.000	S1.09	15 Winter	10	+0%					14.025	-0.125
S3.001	S1.10	15 Winter	10	+0%					13.869	-0.111
S1.003	S1.03	15 Winter	10	+0%	100/15 Winter				13.259	-0.091
S4.000	S1.11	60 Winter	10	+0%					13.930	-0.150
S1.004	S1.04	15 Winter	10	+0%	100/15 Summer				13.069	-0.081
S1.005	S1.05	15 Winter	10	+0%	30/30 Winter				12.881	-0.069
S5.000	S1.12	15 Winter	10	+0%					14.019	-0.131
S6.000	SRE1.1	15 Winter	10	+0%					14.021	-0.129
S1.006	S1.06	30 Winter	10	+0%	30/30 Winter				12.788	-0.137
S1.007	S1.07	30 Winter	10	+0%	10/15 Winter				12.782	0.107
S7.000	S1.13	15 Winter	10	+0%	100/15 Summer				13.929	-0.121
S8.000	S1.20	15 Winter	10	+0%	100/15 Summer				13.921	-0.129
S7.001	S1.14	15 Winter	10	+0%	100/15 Summer				13.236	-0.114
S9.000	S1.21	15 Winter	10	+0%	100/15 Winter				14.033	-0.117
S9.001	S1.22	15 Winter	10	+0%	100/15 Summer				13.865	-0.115
S9.002	S1.23	15 Winter	10	+0%	100/15 Summer				13.446	-0.104
S7.002	S1.15	15 Winter	10	+0%	30/15 Summer				13.186	-0.064
S10.000	S1.24	15 Winter	10	+0%	100/15 Summer				13.517	-0.133
S10.001	S1.25	15 Winter	10	+0%	100/15 Summer				13.230	-0.120
S7.003	S1.16	15 Winter	10	+0%	10/15 Summer				13.159	0.129
S7.004	S1.17	30 Winter	10	+0%	30/15 Summer				12.824	-0.041
S11.000	S1.26	15 Winter	10	+0%					13.721	-0.129
S12.000	SRE1.3	15 Winter	10	+0%					13.715	-0.135
S11.001	S1.27	15 Winter	10	+0%	100/15 Winter				13.325	-0.125
S7.005	SNODE	30 Winter	10	+0%	30/15 Summer				12.817	-0.009

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10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.04		1.6	OK	
S1.001	S1.02	0.000	0.11		1.6	OK	
S2.000	S1.08	0.000	0.04		2.0	OK	
S1.002	SNODE	0.000	0.20		3.6	OK*	
S3.000	S1.09	0.000	0.07		1.3	OK	
S3.001	S1.10	0.000	0.15		3.0	OK	
S1.003	S1.03	0.000	0.32		6.5	OK	
S4.000	S1.11	0.000	0.00		0.0	OK	
S1.004	S1.04	0.000	0.42		8.8	OK	
S1.005	S1.05	0.000	0.55		9.8	OK	
S5.000	S1.12	0.000	0.04		1.2	OK	
S6.000	SRE1.1	0.000	0.05		1.6	OK*	
S1.006	S1.06	0.000	0.25		9.8	OK	
S1.007	S1.07	0.000	0.21		6.8	SURCHARGED	
S7.000	S1.13	0.000	0.08		1.7	OK	
S8.000	S1.20	0.000	0.05		0.9	OK	
S7.001	S1.14	0.000	0.13		2.5	OK	
S9.000	S1.21	0.000	0.11		2.1	OK	
S9.001	S1.22	0.000	0.12		3.6	OK	
S9.002	S1.23	0.000	0.21		7.1	OK	
S7.002	S1.15	0.000	0.35		9.2	OK	
S10.000	S1.24	0.000	0.03		1.0	OK	
S10.001	S1.25	0.000	0.09		2.3	OK	
S7.003	S1.16	0.000	1.34		18.3	SURCHARGED	
S7.004	S1.17	0.000	0.58		17.2	OK	
S11.000	S1.26	0.000	0.05		1.8	OK	
S12.000	SRE1.3	0.000	0.02		0.6	OK*	
S11.001	S1.27	0.000	0.07		3.1	OK	
S7.005	SNODE	0.000	0.43		18.7	OK*	

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10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

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 (m^3)
S7.006	S1.18	30 Winter	10	+0%	10/15 Summer				12.802	0.077	0.000
S7.007	S1.19	30 Winter	10	+0%	10/15 Summer				12.787	0.162	0.000
S1.008	SCS1	30 Winter	10	+0%	10/15 Summer				12.778	0.203	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.006	S1.18	0.54		22.6	SURCHARGED	
S7.007	S1.19	0.83		26.2	SURCHARGED	
S1.008	SCS1	0.00		0.0	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

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 0 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 10, 30, 100
Climate Change (%) 0, 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)
S1.000	S1.01	15 Winter	30	+0%					13.950	-0.130
S1.001	S1.02	15 Winter	30	+0%	100/30 Winter				13.437	-0.113
S2.000	S1.08	15 Winter	30	+0%					13.952	-0.128
S1.002	SNODE	15 Winter	30	+0%	100/30 Winter				13.393	-0.099
S3.000	S1.09	15 Winter	30	+0%					14.030	-0.120
S3.001	S1.10	15 Winter	30	+0%					13.875	-0.105
S1.003	S1.03	15 Winter	30	+0%	100/15 Winter				13.267	-0.083
S4.000	S1.11	60 Winter	30	+0%					13.930	-0.150
S1.004	S1.04	15 Winter	30	+0%	100/15 Summer				13.079	-0.071
S1.005	S1.05	30 Winter	30	+0%	30/30 Winter				12.970	0.020
S5.000	S1.12	15 Winter	30	+0%					14.021	-0.129
S6.000	SRE1.1	15 Winter	30	+0%					14.024	-0.126
S1.006	S1.06	30 Winter	30	+0%	30/30 Winter				12.959	0.034
S1.007	S1.07	30 Winter	30	+0%	10/15 Winter				12.951	0.276
S7.000	S1.13	15 Winter	30	+0%	100/15 Summer				13.933	-0.117
S8.000	S1.20	15 Winter	30	+0%	100/15 Summer				13.924	-0.126
S7.001	S1.14	15 Winter	30	+0%	100/15 Summer				13.344	-0.006
S9.000	S1.21	15 Winter	30	+0%	100/15 Winter				14.037	-0.113
S9.001	S1.22	15 Winter	30	+0%	100/15 Summer				13.870	-0.110
S9.002	S1.23	15 Winter	30	+0%	100/15 Summer				13.452	-0.098
S7.002	S1.15	15 Winter	30	+0%	30/15 Summer				13.340	0.090
S10.000	S1.24	15 Winter	30	+0%	100/15 Summer				13.518	-0.132
S10.001	S1.25	15 Winter	30	+0%	100/15 Summer				13.315	-0.035
S7.003	S1.16	15 Winter	30	+0%	10/15 Summer				13.306	0.276
S7.004	S1.17	30 Winter	30	+0%	30/15 Summer				13.012	0.147
S11.000	S1.26	15 Winter	30	+0%					13.724	-0.126
S12.000	SRE1.3	15 Winter	30	+0%					13.717	-0.133
S11.001	S1.27	15 Winter	30	+0%	100/15 Winter				13.329	-0.121
S7.005	SNODE	30 Winter	30	+0%	30/15 Summer				12.880	0.055

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.04		2.0	OK	
S1.001	S1.02	0.000	0.14		2.0	OK	
S2.000	S1.08	0.000	0.05		2.5	OK	
S1.002	SNODE	0.000	0.25		4.5	OK*	
S3.000	S1.09	0.000	0.09		1.7	OK	
S3.001	S1.10	0.000	0.19		3.8	OK	
S1.003	S1.03	0.000	0.40		8.2	OK	
S4.000	S1.11	0.000	0.00		0.0	OK	
S1.004	S1.04	0.000	0.53		11.2	OK	
S1.005	S1.05	0.000	0.54		9.7	SURCHARGED	
S5.000	S1.12	0.000	0.05		1.6	OK	
S6.000	SRE1.1	0.000	0.06		2.0	OK*	
S1.006	S1.06	0.000	0.31		12.5	SURCHARGED	
S1.007	S1.07	0.000	0.29		9.3	SURCHARGED	
S7.000	S1.13	0.000	0.11		2.1	OK	
S8.000	S1.20	0.000	0.06		1.1	OK	
S7.001	S1.14	0.000	0.15		3.0	OK	
S9.000	S1.21	0.000	0.13		2.7	OK	
S9.001	S1.22	0.000	0.16		4.5	OK	
S9.002	S1.23	0.000	0.26		9.0	OK	
S7.002	S1.15	0.000	0.41		10.8	SURCHARGED	
S10.000	S1.24	0.000	0.04		1.2	OK	
S10.001	S1.25	0.000	0.10		2.8	OK	
S7.003	S1.16	0.000	1.56		21.5	SURCHARGED	
S7.004	S1.17	0.000	0.66		19.8	SURCHARGED	
S11.000	S1.26	0.000	0.06		2.2	OK	
S12.000	SRE1.3	0.000	0.03		0.8	OK*	
S11.001	S1.27	0.000	0.08		4.0	OK	
S7.005	SNODE	0.000	0.50		21.9	SURCHARGED*	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

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 (m^3)
S7.006	S1.18	30 Winter	30	+0%	10/15 Summer				12.981	0.255	0.000
S7.007	S1.19	30 Winter	30	+0%	10/15 Summer				12.958	0.333	0.000
S1.008	SCS1	30 Winter	30	+0%	10/15 Summer				12.946	0.371	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.006	S1.18	0.65		27.2	SURCHARGED	
S7.007	S1.19	1.02		32.0	SURCHARGED	
S1.008	SCS1	0.00		0.0	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

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 0 Number of Storage Structures 3 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 10, 30, 100
Climate Change (%) 0, 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)
S1.000	S1.01	15 Winter	100	+40%					13.958	-0.122
S1.001	S1.02	30 Winter	100	+40%	100/30 Winter				13.605	0.055
S2.000	S1.08	15 Winter	100	+40%					13.961	-0.119
S1.002	SNODE	30 Winter	100	+40%	100/30 Winter				13.505	0.013
S3.000	S1.09	15 Winter	100	+40%					14.039	-0.111
S3.001	S1.10	15 Winter	100	+40%					13.892	-0.088
S1.003	S1.03	30 Winter	100	+40%	100/15 Winter				13.592	0.242
S4.000	S1.11	60 Winter	100	+40%					13.930	-0.150
S1.004	S1.04	30 Winter	100	+40%	100/15 Summer				13.571	0.421
S1.005	S1.05	30 Winter	100	+40%	30/30 Winter				13.546	0.596
S5.000	S1.12	15 Winter	100	+40%					14.030	-0.120
S6.000	SRE1.1	15 Winter	100	+40%					14.033	-0.117
S1.006	S1.06	30 Winter	100	+40%	30/30 Winter				13.524	0.599
S1.007	S1.07	30 Winter	100	+40%	10/15 Winter				13.509	0.834
S7.000	S1.13	15 Winter	100	+40%	100/15 Summer				14.237	0.187
S8.000	S1.20	15 Winter	100	+40%	100/15 Summer				14.235	0.185
S7.001	S1.14	15 Winter	100	+40%	100/15 Summer				14.231	0.881
S9.000	S1.21	15 Winter	100	+40%	100/15 Winter				14.267	0.117
S9.001	S1.22	15 Winter	100	+40%	100/15 Summer				14.263	0.283
S9.002	S1.23	15 Winter	100	+40%	100/15 Summer				14.244	0.694
S7.002	S1.15	15 Winter	100	+40%	30/15 Summer				14.225	0.975
S10.000	S1.24	15 Winter	100	+40%	100/15 Summer				14.187	0.537
S10.001	S1.25	15 Winter	100	+40%	100/15 Summer				14.185	0.835
S7.003	S1.16	15 Winter	100	+40%	10/15 Summer				14.173	1.143
S7.004	S1.17	30 Winter	100	+40%	30/15 Summer				13.680	0.815
S11.000	S1.26	15 Winter	100	+40%					13.733	-0.117
S12.000	SRE1.3	15 Winter	100	+40%					13.722	-0.128
S11.001	S1.27	30 Winter	100	+40%	100/15 Winter				13.662	0.212
S7.005	SNODE	240 Winter	100	+40%	30/15 Summer				12.880	0.055

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1.01	0.000	0.08		3.7	OK	
S1.001	S1.02	0.000	0.19		2.9	SURCHARGED	
S2.000	S1.08	0.000	0.10		4.6	OK	
S1.002	SNODE	0.000	0.36		6.5	SURCHARGED*	
S3.000	S1.09	0.000	0.16		3.1	OK	
S3.001	S1.10	0.000	0.35		7.0	OK	
S1.003	S1.03	0.000	0.57		11.5	SURCHARGED	
S4.000	S1.11	0.000	0.00		0.0	OK	
S1.004	S1.04	0.000	0.68		14.4	SURCHARGED	
S1.005	S1.05	0.000	0.84		14.9	SURCHARGED	
S5.000	S1.12	0.000	0.09		2.9	OK	
S6.000	SRE1.1	0.000	0.11		3.7	OK*	
S1.006	S1.06	0.000	0.44		17.4	SURCHARGED	
S1.007	S1.07	0.000	0.67		21.0	SURCHARGED	
S7.000	S1.13	0.000	0.18		3.7	SURCHARGED	
S8.000	S1.20	0.000	0.10		1.9	SURCHARGED	
S7.001	S1.14	0.000	0.24		4.7	SURCHARGED	
S9.000	S1.21	0.000	0.24		4.8	SURCHARGED	
S9.001	S1.22	0.000	0.27		7.7	SURCHARGED	
S9.002	S1.23	0.000	0.37		12.6	SURCHARGED	
S7.002	S1.15	0.000	0.52		13.6	SURCHARGED	
S10.000	S1.24	0.000	0.05		1.7	SURCHARGED	
S10.001	S1.25	0.000	0.14		3.7	SURCHARGED	
S7.003	S1.16	0.000	1.98		27.1	SURCHARGED	
S7.004	S1.17	0.000	0.91		27.3	SURCHARGED	
S11.000	S1.26	0.000	0.11		4.1	OK	
S12.000	SRE1.3	0.000	0.05		1.4	OK*	
S11.001	S1.27	0.000	0.12		5.6	SURCHARGED	
S7.005	SNODE	0.000	0.25		11.1	SURCHARGED*	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW1 - Main West

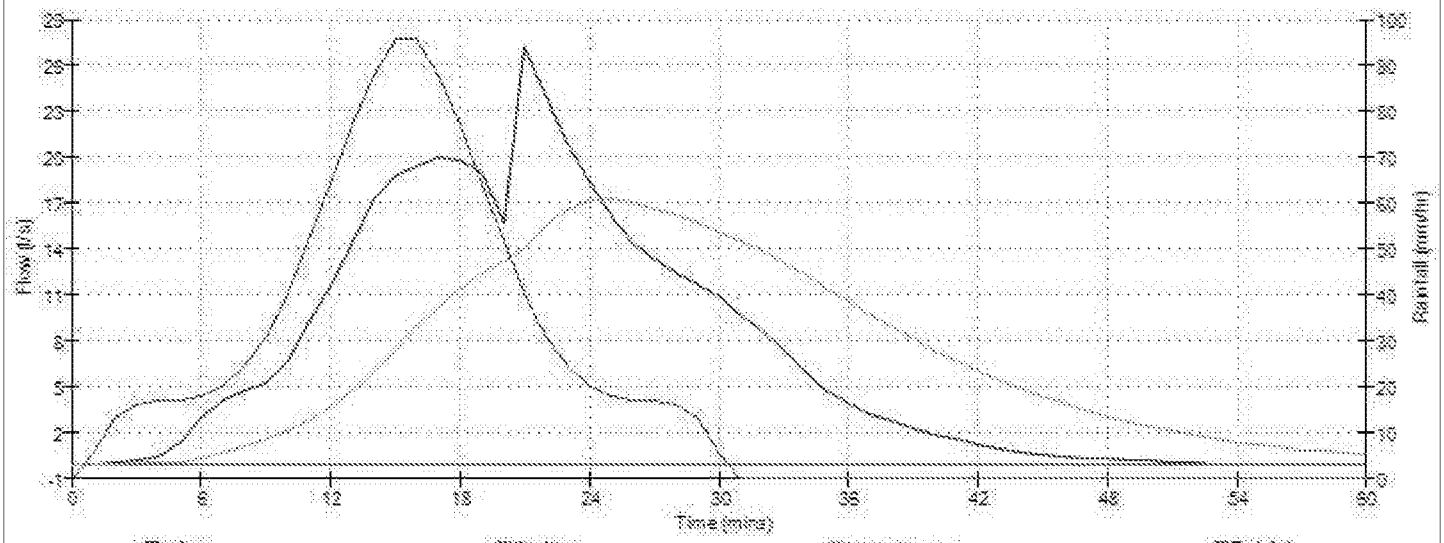
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S7.006	S1.18	30 Winter	100	+40%	10/15 Summer				13.617	0.892	0.000
S7.007	S1.19	30 Winter	100	+40%	10/15 Summer				13.562	0.937	0.000
S1.008	SCS1	30 Winter	100	+40%	10/15 Summer				13.500	0.925	0.000

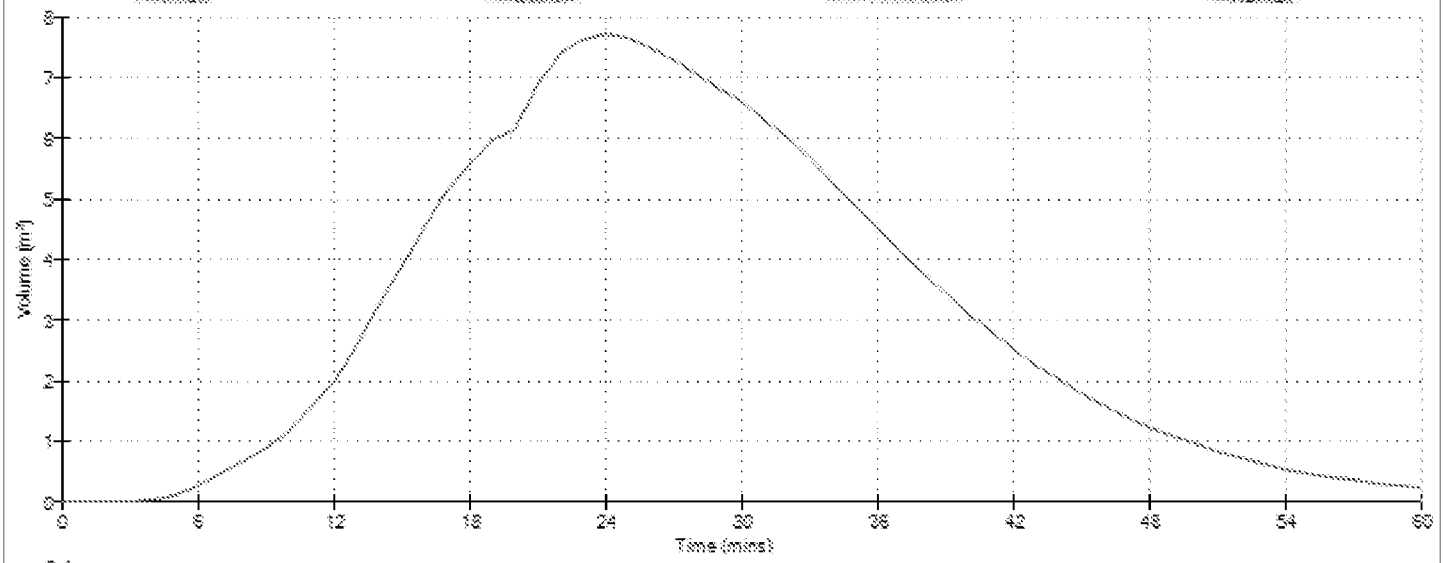
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.006	S1.18	0.92		38.6	SURCHARGED	
S7.007	S1.19	1.49		46.8	SURCHARGED	
S1.008	SCS1	0.00		0.0	SURCHARGED	

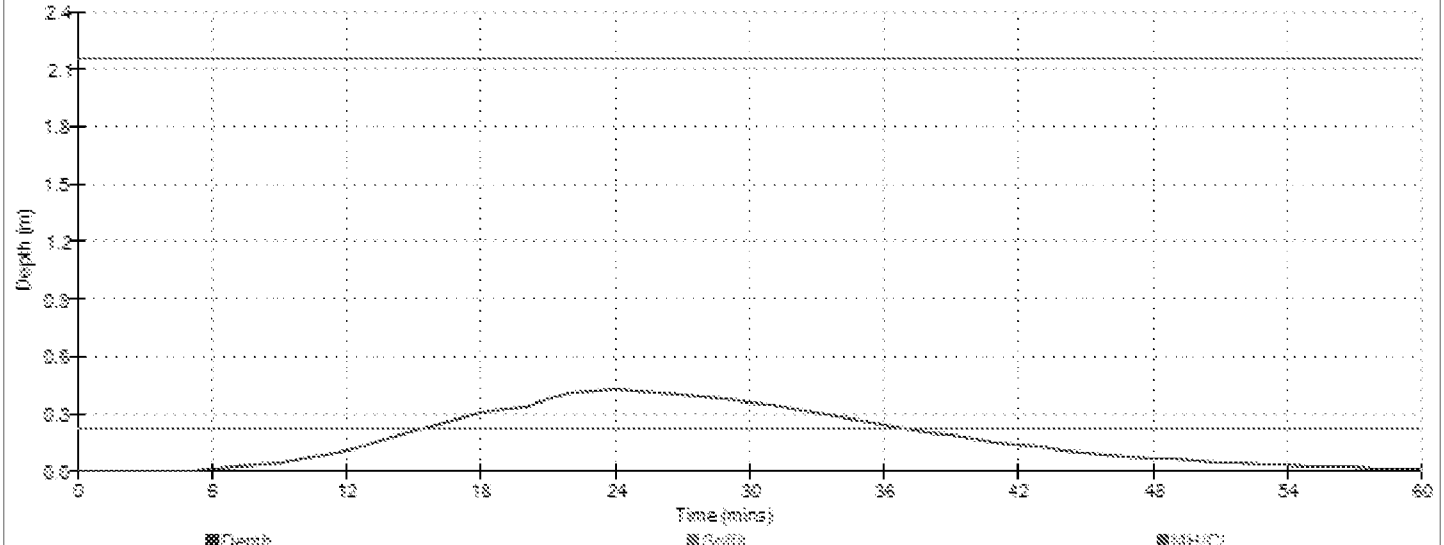
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Graphs for Pipe S1.008 US/MH SCS1 (SW1 - Main West)
30 minute 10 year Winter I+0%
Status: SURCHARGED

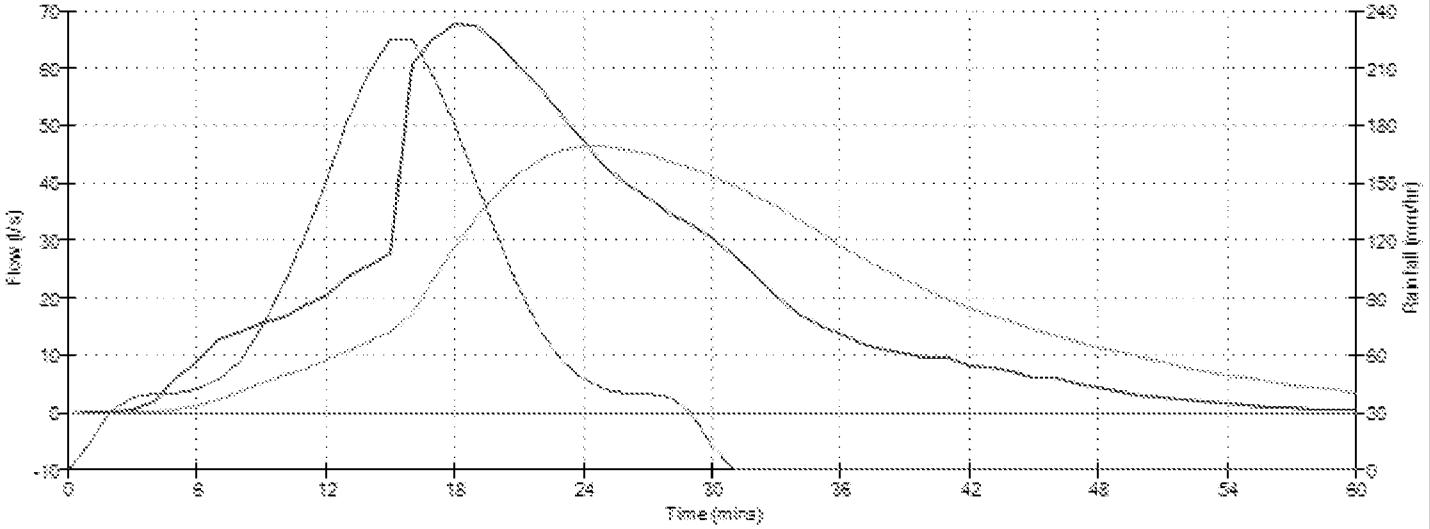


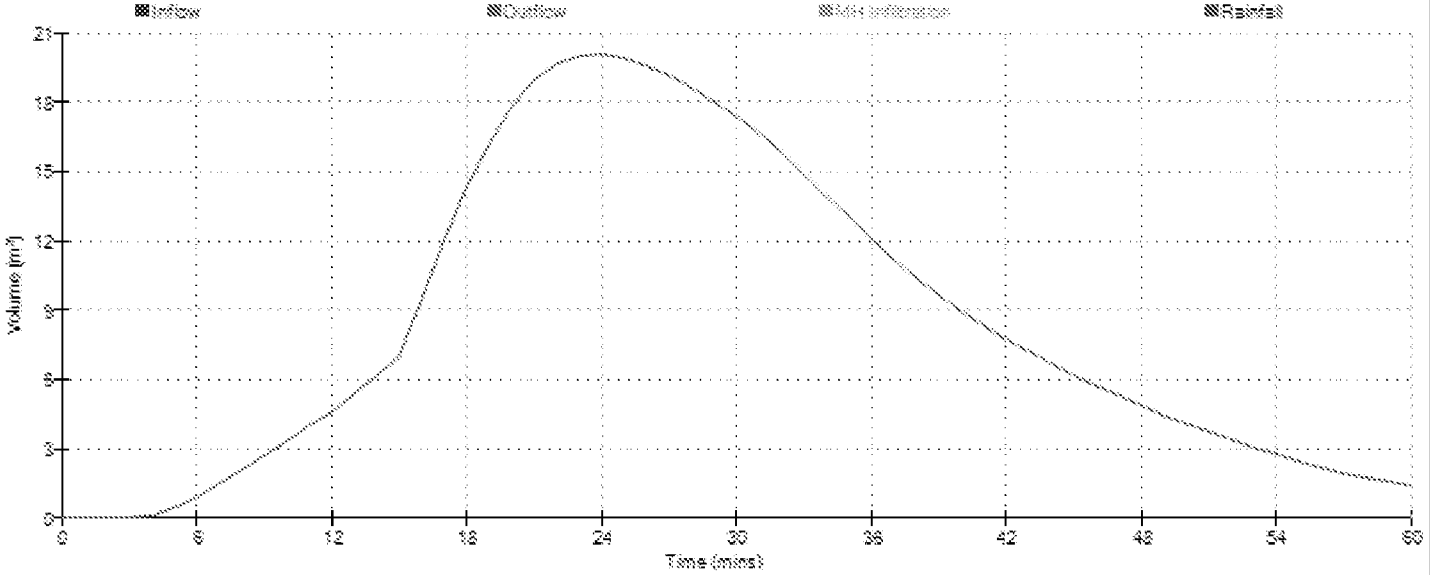


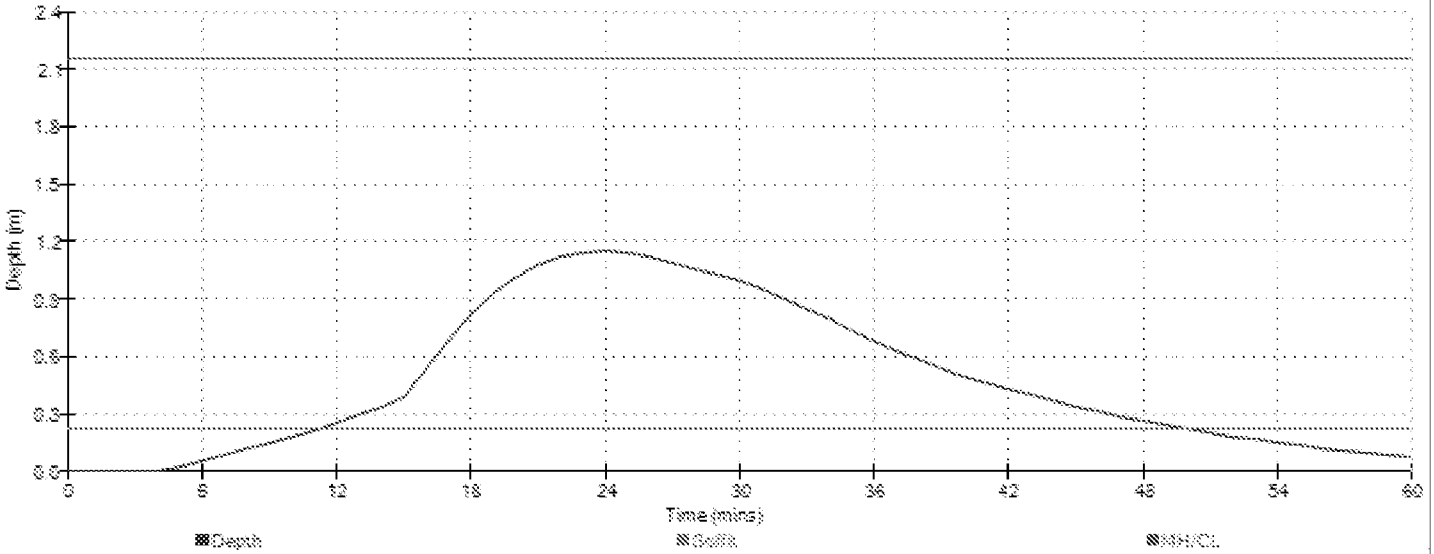


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Graphs for Pipe S1.008 US/MH SCS1 (SW1 - Main West)
30 minute 100 year Winter I+40%
Status: SURCHARGED







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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for SW2 - Main East N

« - 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
S1.000	1.874	0.370	5.1	0.009	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	17.986	0.120	149.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S2.000	2.772	0.550	5.0	0.013	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	9.266	0.100	92.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S3.000	1.999	0.100	20.0	0.006	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	6.928	0.060	115.5	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.004	6.753	0.200	33.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S4.000	5.594	0.350	16.0	0.003	5.00	0.0	0.600	o	150	Pipe/Conduit	
S5.000	6.274	0.300	20.9	0.004	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.005	12.493	0.100	124.9	0.003	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.006	0.509	-2.100	-0.2	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)
S1.000	50.00	5.01	13.970	0.009	0.0	0.0	0.0	4.51	79.7	1.3
S1.001	50.00	5.37	13.500	0.009	0.0	0.0	0.0	0.82	14.5	1.3
S2.000	50.00	5.01	13.930	0.013	0.0	0.0	0.0	4.52	79.9	1.8
S1.002	50.00	5.52	13.380	0.022	0.0	0.0	0.0	1.04	18.5	3.0
S3.000	50.00	5.01	13.930	0.006	0.0	0.0	0.0	2.26	40.0	0.9
S1.003	50.00	5.64	13.280	0.029	0.0	0.0	0.0	0.93	16.5	3.9
S1.004	50.00	5.71	13.220	0.029	0.0	0.0	0.0	1.74	30.7	3.9
S4.000	50.00	5.04	14.050	0.003	0.0	0.0	0.0	2.53	44.8	0.4
S5.000	50.00	5.05	14.000	0.004	0.0	0.0	0.0	2.21	39.1	0.5
S1.005	50.00	5.94	13.020	0.038	0.0	0.0	0.0	0.90	15.9	5.1
S1.006	50.00	6.01	12.200	0.038	0.0	0.0	0.0	0.12	4.9«	5.1

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Manhole Schedules for SW2 - Main East N

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S2.01	14.750	0.780	Open Manhole	450	S1.000	13.970	150				
S2.02	14.650	1.150	Open Manhole	450	S1.001	13.500	150	S1.000	13.600	150	100
S2.07	14.750	0.820	Open Manhole	450	S2.000	13.930	150				
SNODE	14.650	1.270	Junction		S1.002	13.380	150	S1.001	13.380	150	
								S2.000	13.380	150	
S2.08	14.750	0.820	Open Manhole	450	S3.000	13.930	150				
S2.04	14.650	1.370	Open Manhole	450 x 600	S1.003	13.280	150	S1.002	13.280	150	
								S3.000	13.830	150	550
S2.05	14.650	1.430	Open Manhole	450	S1.004	13.220	150	S1.003	13.220	150	
SRE2.1	14.750	0.700	Junction		S4.000	14.050	150				
S2.09	14.750	0.750	Open Manhole	450	S5.000	14.000	150				
S2.06	14.650	1.630	Open Manhole	1200	S1.005	13.020	150	S1.004	13.020	150	
								S4.000	13.700	150	680
								S5.000	13.700	150	680
SCS2	14.640	2.440	Open Manhole	300	S1.006	12.200	225	S1.005	12.920	150	645
S	15.200	0.900	Open Manhole	0		OUTFALL		S1.006	14.300	225	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW2 - Main East N

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 0 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Total Infil. Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
S1.000	S2.01	15	14.750	13.988	-0.132	0.000		0.603	1.3	OK
S1.001	S2.02	15	14.650	13.531	-0.119	0.000		0.603	1.3	OK
S2.000	S2.07	15	14.750	13.949	-0.131	0.000		0.845	1.8	OK
S1.002	SNODE	15	14.650	13.421	-0.109	0.000		1.447	3.1	OK*
S3.000	S2.08	15	14.750	13.951	-0.129	0.000		0.419	0.9	OK
S1.003	S2.04	15	14.650	13.334	-0.096	0.000		1.864	4.0	OK
S1.004	S2.05	15	14.650	13.259	-0.111	0.000		1.863	4.0	OK
S4.000	SRE2.1	15	14.750	14.057	-0.143	0.000		0.173	0.4	OK*
S5.000	S2.09	15	14.750	14.011	-0.139	0.000		0.228	0.5	OK
S1.005	S2.06	15	14.650	13.082	-0.088	0.000		2.456	5.2	OK
S1.006	SCS2	60	14.640	12.807	0.382	0.000	877.713	0.000	0.0	SURCHARGED

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10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW2 - Main East N

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 0 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Total Infil. Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
S1.000	S2.01	15	14.750	13.995	-0.125	0.000		1.167	2.5	OK
S1.001	S2.02	15	14.650	13.544	-0.106	0.000		1.167	2.5	OK
S2.000	S2.07	15	14.750	13.957	-0.123	0.000		1.636	3.5	OK
S1.002	SNODE	15	14.650	13.439	-0.091	0.000		2.804	5.9	OK*
S3.000	S2.08	15	14.750	13.960	-0.120	0.000		0.812	1.7	OK
S1.003	S2.04	15	14.650	13.360	-0.070	0.000		3.615	7.7	OK
S1.004	S2.05	15	14.650	13.276	-0.094	0.000		3.614	7.7	OK
S4.000	SRE2.1	15	14.750	14.064	-0.136	0.000		0.335	0.7	OK*
S5.000	S2.09	15	14.750	14.017	-0.133	0.000		0.441	0.9	OK
S1.005	S2.06	60	14.650	13.243	0.073	0.000		7.630	5.2	SURCHARGED
S1.006	SCS2	60	14.640	13.236	0.811	0.000	877.713	0.000	0.0	SURCHARGED

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW2 - Main East N

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 0 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 0, 0, 40

PN	US/MH Name	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Total Infil. Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
S1.000	S2.01	15	14.750	13.999	-0.121	0.000		1.482	3.2	OK
S1.001	S2.02	15	14.650	13.549	-0.101	0.000		1.482	3.1	OK
S2.000	S2.07	15	14.750	13.961	-0.119	0.000		2.076	4.5	OK
S1.002	SNODE	60	14.650	13.457	-0.073	0.000		5.762	3.9	OK*
S3.000	S2.08	15	14.750	13.963	-0.117	0.000		1.030	2.2	OK
S1.003	S2.04	60	14.650	13.453	0.023	0.000		7.429	5.1	SURCHARGED
S1.004	S2.05	60	14.650	13.448	0.078	0.000		7.428	5.1	SURCHARGED
S4.000	SRE2.1	15	14.750	14.066	-0.134	0.000		0.425	0.9	OK*
S5.000	S2.09	15	14.750	14.019	-0.131	0.000		0.560	1.2	OK
S1.005	S2.06	60	14.650	13.444	0.274	0.000		9.795	6.5	SURCHARGED
S1.006	SCS2	60	14.640	13.436	1.011	0.000	877.713	0.000	0.0	SURCHARGED

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW2 - Main East N

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 0 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

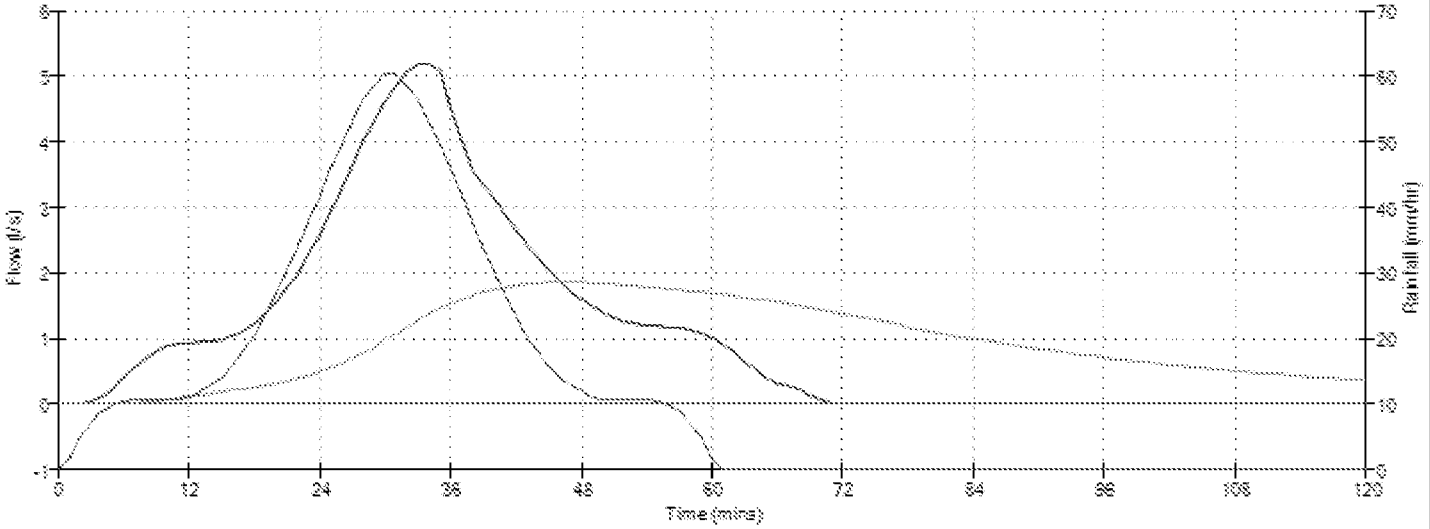
Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 0, 0, 40

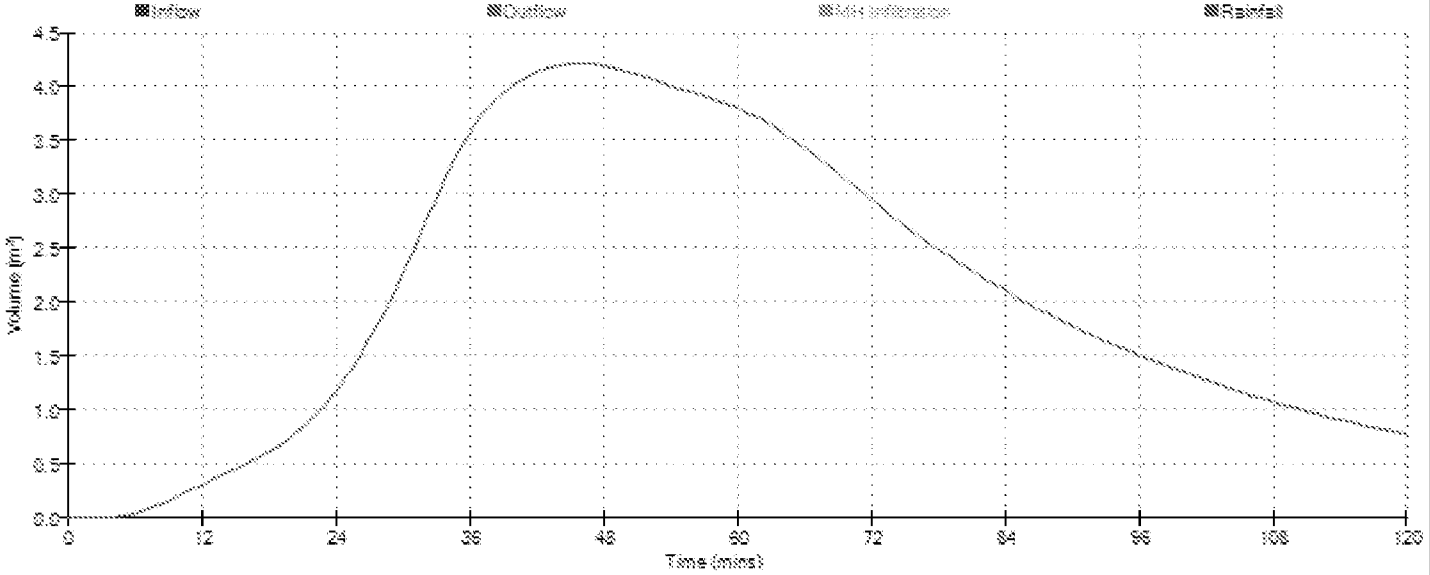
PN	US/MH Name	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Total Infil. Vol (m³)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
S1.000	S2.01	60	14.750	14.405	0.285	0.000		4.419	3.0	SURCHARGED
S1.001	S2.02	60	14.650	14.404	0.754	0.000		4.421	2.9	FLOOD RISK
S2.000	S2.07	60	14.750	14.401	0.321	0.000		6.193	4.2	SURCHARGED
S1.002	SNODE	240	14.650	13.530	0.000	0.000		15.021	2.5	SURCHARGED*
S3.000	S2.08	60	14.750	14.393	0.313	0.000		3.073	2.1	SURCHARGED
S1.003	S2.04	60	14.650	14.393	0.963	0.000		13.684	7.7	FLOOD RISK
S1.004	S2.05	60	14.650	14.385	1.015	0.000		13.683	7.2	FLOOD RISK
S4.000	SRE2.1	30	14.750	14.200	0.000	0.000		1.014	1.3	SURCHARGED*
S5.000	S2.09	60	14.750	14.378	0.228	0.000		1.669	1.1	SURCHARGED
S1.005	S2.06	60	14.650	14.378	1.208	0.000		18.045	8.0	FLOOD RISK
S1.006	SCS2	60	14.640	14.391	1.966	0.000	877.713	0.552	0.9	FLOOD RISK

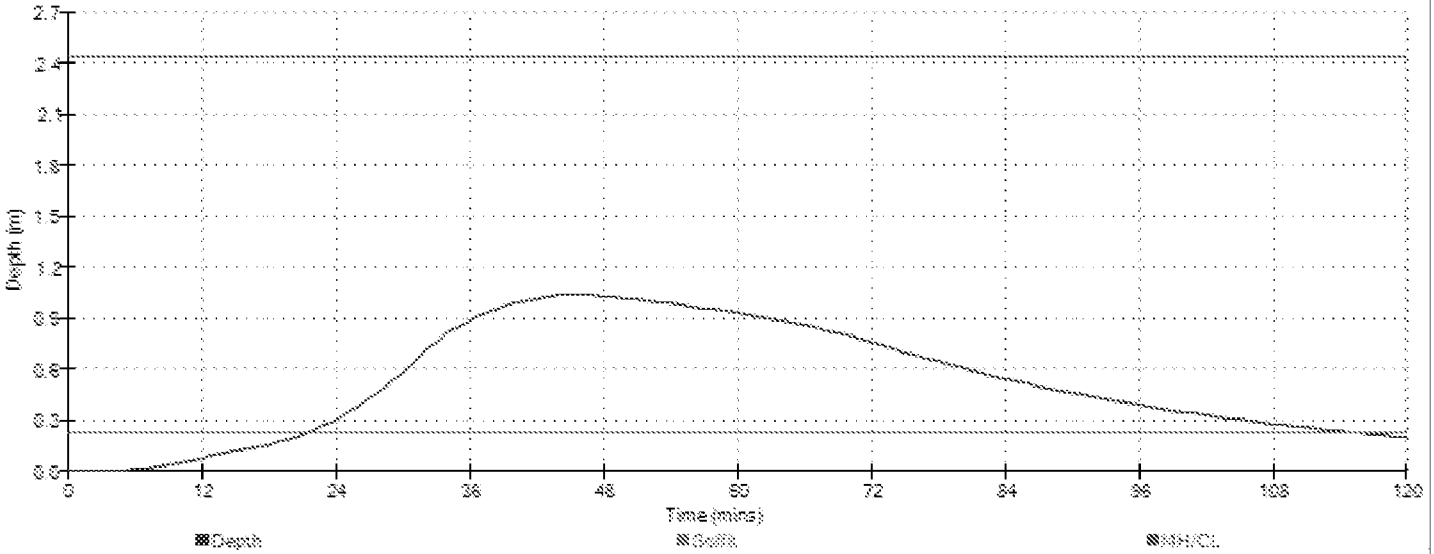
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Graphs for Pipe S1.006 US/MH SCS2 (SW2 - Main East N)
60 minute 10 year Winter I+0%
Status: SURCHARGED

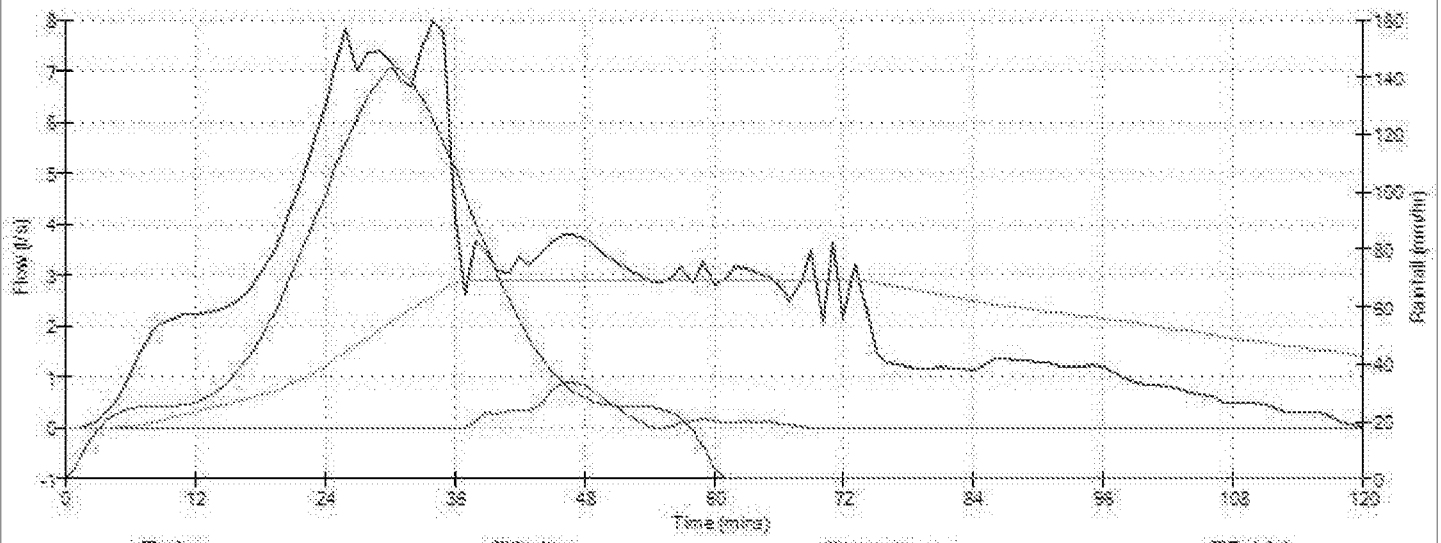


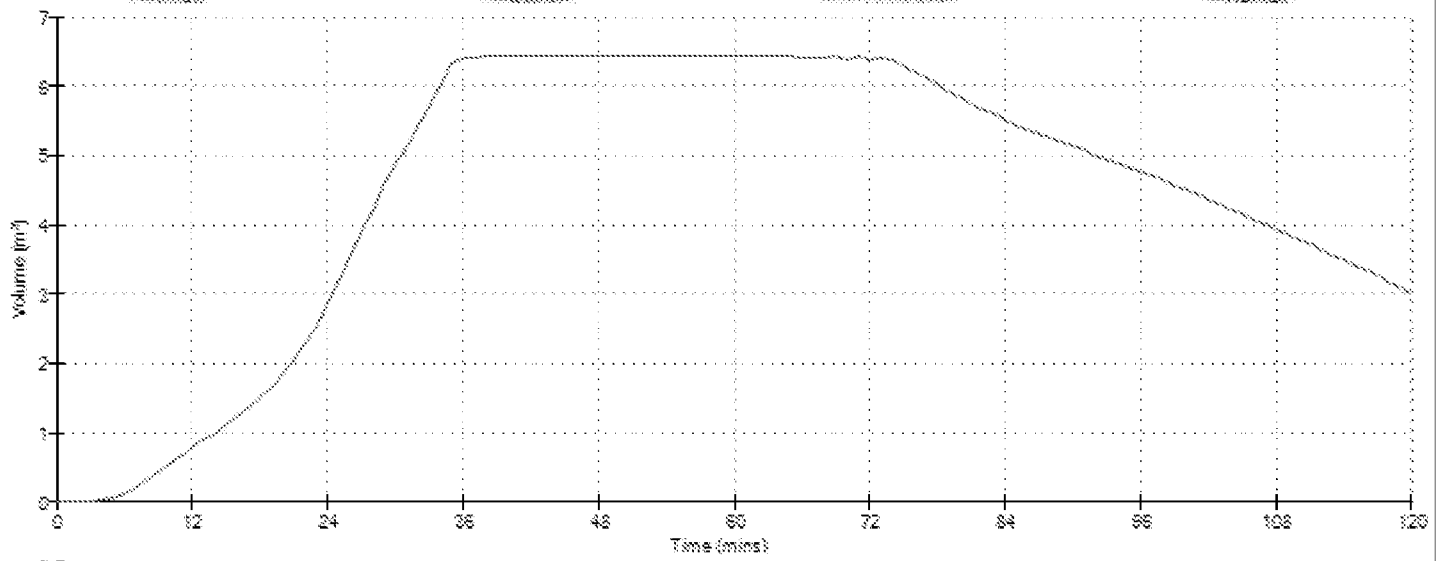


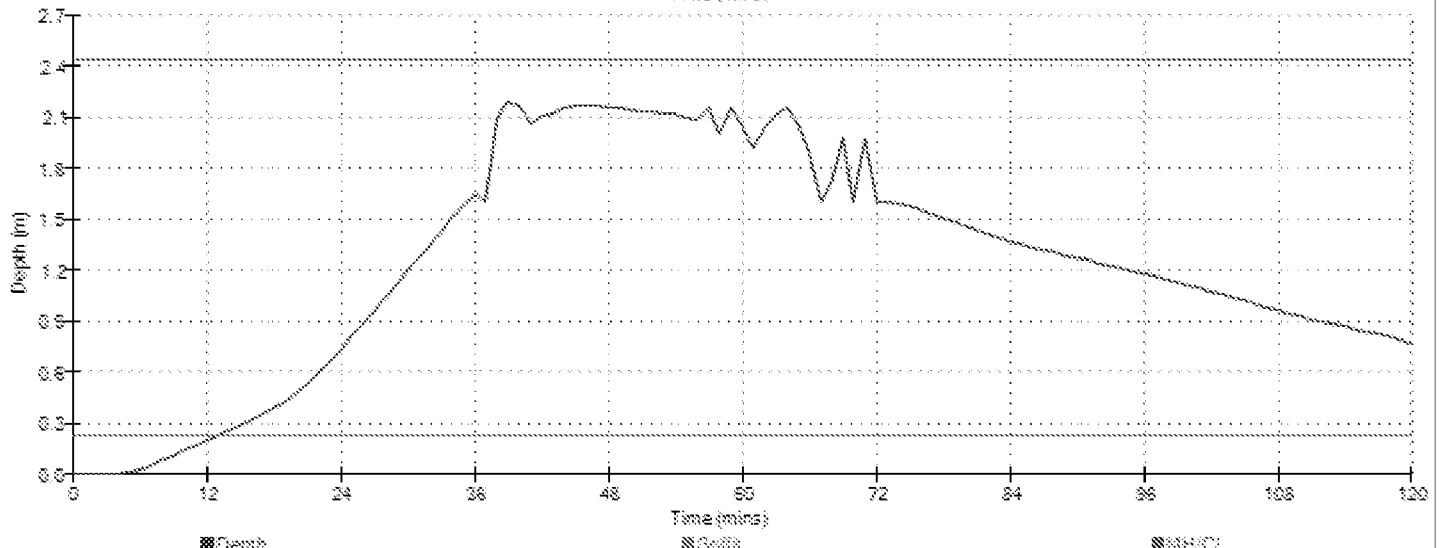


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Graphs for Pipe S1.006 US/MH SCS2 (SW2 - Main East N)
60 minute 100 year Winter I+40%
Status: FLOOD RISK







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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for SW3 - Main East S

« - 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
S1.000	10.715	0.150	71.4	0.005	5.00	0.0	0.600	o	150	Pipe/Conduit	
S2.000	11.130	0.100	111.3	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit	
S2.001	3.895	0.100	39.0	0.003	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	8.583	0.090	95.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S3.000	4.921	0.100	49.2	0.013	5.00	0.0	0.600	o	150	Pipe/Conduit	
S4.000	3.872	0.470	8.2	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
S3.001	7.120	0.050	142.4	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S5.000	6.522	0.420	15.5	0.003	5.00	0.0	0.600	o	150	Pipe/Conduit	
S3.002	3.696	0.320	11.6	0.003	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	15.184	0.160	94.9	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	5.511	0.100	55.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S6.000	5.966	0.280	21.3	0.003	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.004	10.721	0.195	55.0	0.000	0.00	0.0	0.600	o	150	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)
S1.000	50.00	5.15	13.800	0.005	0.0	0.0	0.0	1.19	21.0	0.6
S2.000	50.00	5.19	13.850	0.020	0.0	0.0	0.0	0.95	16.8	2.7
S2.001	50.00	5.24	13.750	0.023	0.0	0.0	0.0	1.62	28.6	3.1
S1.001	50.00	5.37	13.150	0.027	0.0	0.0	0.0	1.03	18.2	3.7
S3.000	50.00	5.06	13.600	0.013	0.0	0.0	0.0	1.44	25.4	1.7
S4.000	50.00	5.02	13.300	0.000	0.0	0.0	0.0	3.53	62.4	0.0
S3.001	50.00	5.20	13.430	0.013	0.0	0.0	0.0	0.84	14.8	1.7
S5.000	50.00	5.04	13.800	0.003	0.0	0.0	0.0	2.57	45.4	0.5
S3.002	50.00	5.22	13.380	0.019	0.0	0.0	0.0	2.98	52.7	2.6
S1.002	50.00	5.62	13.060	0.046	0.0	0.0	0.0	1.03	18.2	6.3
S1.003	50.00	5.69	12.900	0.046	0.0	0.0	0.0	1.36	24.0	6.3
S6.000	50.00	5.05	14.000	0.003	0.0	0.0	0.0	2.19	38.7	0.4
S1.004	50.00	5.82	12.800	0.049	0.0	0.0	0.0	1.36	24.0	6.6

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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for SW3 - Main East S

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
S7.000	3.907	0.300	13.0	0.003	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.005	16.357	0.300	54.5	0.012	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.006	0.510	-2.400	-0.2	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)
S7.000	50.00	5.02	14.000	0.003	0.0	0.0	0.0	2.81	49.6	0.4
S1.005	50.00	5.97	12.530	0.064	0.0	0.0	0.0	1.78	70.6	8.7
S1.006	50.00	6.04	12.230	0.064	0.0	0.0	0.0	0.12	4.9*	8.7

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Manhole Schedules for SW3 - Main East S

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S3.01	14.740	0.940	Open Manhole	450	S1.000	13.800	150				
S3.08	14.740	0.890	Open Manhole	450	S2.000	13.850	150				
S3.09	14.740	0.990	Open Manhole	450	S2.001	13.750	150	S2.000	13.750	150	
S3.02	14.700	1.550	Open Manhole	450 x 600	S1.001	13.150	150	S1.000	13.650	150	500
								S2.001	13.650	150	500
S3.10	14.740	1.140	Open Manhole	450	S3.000	13.600	150				
S3.13	14.750	0.850	Open Manhole	450	S4.000	13.900	150				
S3.11	14.740	1.310	Open Manhole	450	S3.001	13.430	150	S3.000	13.500	150	70
								S4.000	13.430	150	
SRE3.1	14.740	0.940	Junction		S5.000	13.800	150				
S3.12	14.740	1.360	Open Manhole	450	S3.002	13.380	150	S3.001	13.380	150	
								S5.000	13.380	150	
SNODE	14.670	1.610	Junction		S1.002	13.060	150	S1.001	13.060	150	
								S3.002	13.060	150	
S3.03	14.670	1.770	Open Manhole	450	S1.003	12.900	150	S1.002	12.900	150	
SRE3.2	14.750	0.750	Open Manhole	1200	S6.000	14.000	150				
S3.04	14.670	1.870	Open Manhole	1200	S1.004	12.800	150	S1.003	12.800	150	
								S6.000	13.720	150	920
S3.14	14.740	0.740	Open Manhole	450	S7.000	14.000	150				
S3.05	14.740	2.210	Open Manhole	1200	S1.005	12.530	225	S1.004	12.605	150	
								S7.000	13.700	150	1095
SCS3	14.740	2.510	Open Manhole	300	S1.006	12.230	225	S1.005	12.230	225	
S	15.200	0.570	Open Manhole	0		OUTFALL		S1.006	14.630	225	

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Storage Structures for SW3 - Main East S

Cellular Storage Manhole: SCS3, DS/PN: S1.006

Invert Level (m) 12.230 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 1.29600

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	8.0	8.0	1.600	8.0	27.2	1.601	0.0	27.2

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW3 - Main East S

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 0 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 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)
S1.000	S3.01	15 Winter	1	+0%	100/30 Winter				13.818	-0.132
S2.000	S3.08	15 Winter	1	+0%	100/30 Winter				13.893	-0.107
S2.001	S3.09	15 Winter	1	+0%	100/30 Winter				13.790	-0.110
S1.001	S3.02	15 Winter	1	+0%	30/60 Winter				13.200	-0.100
S3.000	S3.10	15 Winter	1	+0%	100/15 Winter				13.630	-0.120
S4.000	S3.13	60 Winter	1	+0%	100/30 Winter				13.900	-0.150
S3.001	S3.11	15 Winter	1	+0%	100/15 Summer				13.467	-0.113
S5.000	SRE3.1	15 Winter	1	+0%					13.809	-0.141
S3.002	S3.12	15 Winter	1	+0%	100/15 Summer				13.407	-0.123
S1.002	SNODE	15 Winter	1	+0%					13.121	-0.089
S1.003	S3.03	15 Winter	1	+0%	10/30 Winter				12.958	-0.092
S6.000	SRE3.2	15 Winter	1	+0%	100/60 Winter				14.008	-0.142
S1.004	S3.04	15 Winter	1	+0%	10/15 Winter				12.857	-0.093
S7.000	S3.14	15 Winter	1	+0%	100/60 Winter				14.008	-0.142
S1.005	S3.05	120 Winter	1	+0%	10/15 Summer				12.750	-0.005
S1.006	SCS3	120 Winter	1	+0%	1/15 Summer	100/60 Winter			12.748	0.293

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S3.01	0.000	0.03		0.6	OK	
S2.000	S3.08	0.000	0.18		2.7	OK	
S2.001	S3.09	0.000	0.15		3.1	OK	
S1.001	S3.02	0.000	0.23		3.7	OK	
S3.000	S3.10	0.000	0.09		1.8	OK	
S4.000	S3.13	0.000	0.00		0.0	OK	
S3.001	S3.11	0.000	0.14		1.8	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW3 - Main East S

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S5.000	SRE3.1	0.000	0.01		0.5	OK*	
S3.002	S3.12	0.000	0.07		2.6	OK	
S1.002	SNODE	0.000	0.35		6.3	OK*	
S1.003	S3.03	0.000	0.32		6.3	OK	
S6.000	SRE3.2	0.000	0.01		0.4	OK	
S1.004	S3.04	0.000	0.31		6.6	OK	
S7.000	S3.14	0.000	0.01		0.4	OK	
S1.005	S3.05	0.000	0.04		2.8	OK	
S1.006	SCS3	0.000	0.00		0.0	SURCHARGED	2

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10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW3 - Main East S

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 0 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 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)
S1.000	S3.01	15 Winter	10	+0%	100/30 Winter				13.825	-0.125
S2.000	S3.08	15 Winter	10	+0%	100/30 Winter				13.912	-0.088
S2.001	S3.09	15 Winter	10	+0%	100/30 Winter				13.808	-0.092
S1.001	S3.02	15 Winter	10	+0%	30/60 Winter				13.223	-0.077
S3.000	S3.10	15 Winter	10	+0%	100/15 Winter				13.642	-0.108
S4.000	S3.13	60 Winter	10	+0%	100/30 Winter				13.900	-0.150
S3.001	S3.11	15 Winter	10	+0%	100/15 Summer				13.483	-0.097
S5.000	SRE3.1	15 Winter	10	+0%					13.816	-0.134
S3.002	S3.12	15 Winter	10	+0%	100/15 Summer				13.418	-0.112
S1.002	SNODE	15 Winter	10	+0%					13.153	-0.057
S1.003	S3.03	60 Winter	10	+0%	10/30 Winter				13.142	0.092
S6.000	SRE3.2	15 Winter	10	+0%	100/60 Winter				14.015	-0.135
S1.004	S3.04	60 Winter	10	+0%	10/15 Winter				13.139	0.189
S7.000	S3.14	15 Winter	10	+0%	100/60 Winter				14.015	-0.135
S1.005	S3.05	60 Winter	10	+0%	10/15 Summer				13.133	0.378
S1.006	SCS3	60 Winter	10	+0%	1/15 Summer	100/60 Winter			13.130	0.675

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S3.01	0.000	0.07		1.2	OK	
S2.000	S3.08	0.000	0.35		5.3	OK	
S2.001	S3.09	0.000	0.31		6.1	OK	
S1.001	S3.02	0.000	0.46		7.3	OK	
S3.000	S3.10	0.000	0.17		3.4	OK	
S4.000	S3.13	0.000	0.00		0.0	OK	
S3.001	S3.11	0.000	0.27		3.4	OK	

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10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW3 - Main East S

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S5.000	SRE3.1	0.000	0.02		0.9	OK*	
S3.002	S3.12	0.000	0.14		5.1	OK	
S1.002	SNODE	0.000	0.69		12.5	OK*	
S1.003	S3.03	0.000	0.32		6.3	SURCHARGED	
S6.000	SRE3.2	0.000	0.02		0.7	OK	
S1.004	S3.04	0.000	0.31		6.7	SURCHARGED	
S7.000	S3.14	0.000	0.02		0.8	OK	
S1.005	S3.05	0.000	0.11		7.1	SURCHARGED	
S1.006	SCS3	0.000	0.00		0.0	SURCHARGED	2

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW3 - Main East S

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 0 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 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)
S1.000	S3.01	15 Winter	30	+0%	100/30 Winter				13.829	-0.121
S2.000	S3.08	15 Winter	30	+0%	100/30 Winter				13.920	-0.080
S2.001	S3.09	15 Winter	30	+0%	100/30 Winter				13.816	-0.084
S1.001	S3.02	120 Winter	30	+0%	30/60 Winter				13.377	0.077
S3.000	S3.10	15 Winter	30	+0%	100/15 Winter				13.648	-0.102
S4.000	S3.13	60 Winter	30	+0%	100/30 Winter				13.900	-0.150
S3.001	S3.11	15 Winter	30	+0%	100/15 Summer				13.491	-0.089
S5.000	SRE3.1	15 Winter	30	+0%					13.817	-0.133
S3.002	S3.12	15 Winter	30	+0%	100/15 Summer				13.424	-0.106
S1.002	SNODE	240 Winter	30	+0%					13.210	0.000
S1.003	S3.03	120 Winter	30	+0%	10/30 Winter				13.366	0.316
S6.000	SRE3.2	15 Winter	30	+0%	100/60 Winter				14.017	-0.133
S1.004	S3.04	120 Winter	30	+0%	10/15 Winter				13.362	0.412
S7.000	S3.14	15 Winter	30	+0%	100/60 Winter				14.017	-0.133
S1.005	S3.05	120 Winter	30	+0%	10/15 Summer				13.355	0.600
S1.006	SCS3	120 Winter	30	+0%	1/15 Summer	100/60 Winter			13.351	0.896

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S3.01	0.000	0.08		1.6	OK	
S2.000	S3.08	0.000	0.45		6.7	OK	
S2.001	S3.09	0.000	0.39		7.8	OK	
S1.001	S3.02	0.000	0.19		3.0	SURCHARGED	
S3.000	S3.10	0.000	0.22		4.4	OK	
S4.000	S3.13	0.000	0.00		0.0	OK	
S3.001	S3.11	0.000	0.34		4.3	OK	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW3 - Main East S

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S5.000	SRE3.1	0.000	0.03		1.2	OK*	
S3.002	S3.12	0.000	0.18		6.4	OK	
S1.002	SNODE	0.000	0.16		3.0	SURCHARGED*	
S1.003	S3.03	0.000	0.24		4.7	SURCHARGED	
S6.000	SRE3.2	0.000	0.03		0.9	OK	
S1.004	S3.04	0.000	0.21		4.5	SURCHARGED	
S7.000	S3.14	0.000	0.03		1.0	OK	
S1.005	S3.05	0.000	0.08		5.1	SURCHARGED	
S1.006	SCS3	0.000	0.00		0.0	SURCHARGED	2

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW3 - Main East S

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 0 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 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)
S1.000	S3.01	60 Winter	100	+40%	100/30 Winter				14.332	0.382
S2.000	S3.08	60 Winter	100	+40%	100/30 Winter				14.336	0.336
S2.001	S3.09	60 Winter	100	+40%	100/30 Winter				14.334	0.434
S1.001	S3.02	60 Winter	100	+40%	30/60 Winter				14.331	1.031
S3.000	S3.10	60 Winter	100	+40%	100/15 Winter				14.330	0.580
S4.000	S3.13	60 Winter	100	+40%	100/30 Winter				14.328	0.278
S3.001	S3.11	60 Winter	100	+40%	100/15 Summer				14.328	0.748
S5.000	SRE3.1	240 Winter	100	+40%					13.950	0.000
S3.002	S3.12	60 Winter	100	+40%	100/15 Summer				14.327	0.797
S1.002	SNODE	30 Winter	100	+40%					13.210	0.000
S1.003	S3.03	60 Winter	100	+40%	10/30 Winter				14.329	1.279
S6.000	SRE3.2	60 Winter	100	+40%	100/60 Winter				14.303	0.153
S1.004	S3.04	60 Winter	100	+40%	10/15 Winter				14.322	1.372
S7.000	S3.14	60 Winter	100	+40%	100/60 Winter				14.371	0.221
S1.005	S3.05	60 Winter	100	+40%	10/15 Summer				14.410	1.655
S1.006	SCS3	60 Winter	100	+40%	1/15 Summer	100/60 Winter			14.740	2.285

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S3.01	0.000	0.08		1.5	SURCHARGED	
S2.000	S3.08	0.000	0.42		6.4	SURCHARGED	
S2.001	S3.09	0.000	0.37		7.4	SURCHARGED	
S1.001	S3.02	0.000	0.53		8.5	SURCHARGED	
S3.000	S3.10	0.000	0.21		4.1	SURCHARGED	
S4.000	S3.13	0.000	0.00		0.2	SURCHARGED	
S3.001	S3.11	0.000	0.31		4.0	SURCHARGED	

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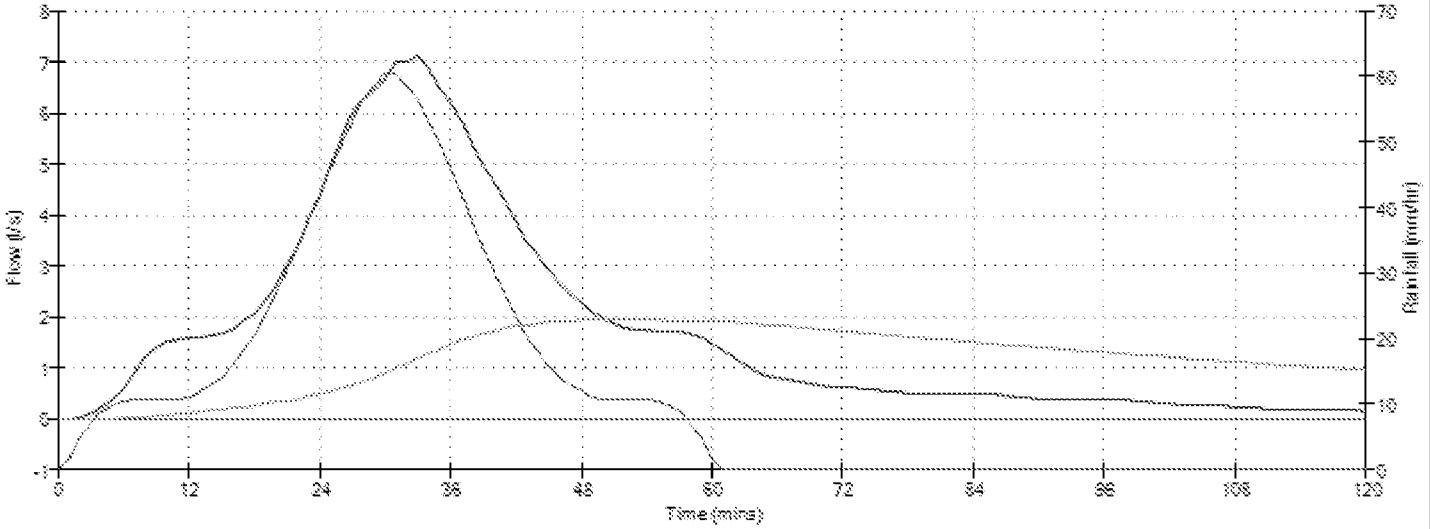
100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW3 - Main East S

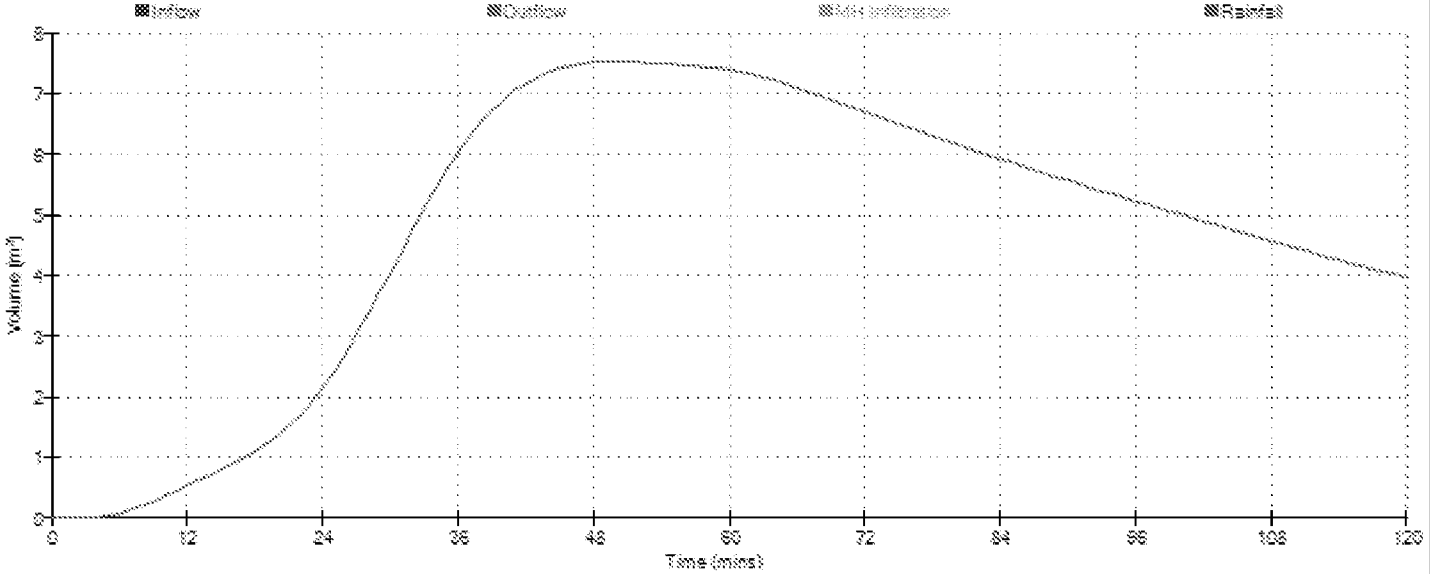
PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S5.000	SRE3.1	0.000	0.02		0.9	SURCHARGED*	
S3.002	S3.12	0.000	0.16		5.7	SURCHARGED	
S1.002	SNODE	0.000	0.93		16.9	SURCHARGED*	
S1.003	S3.03	0.000	0.57		11.3	SURCHARGED	
S6.000	SRE3.2	0.000	0.03		0.9	SURCHARGED	
S1.004	S3.04	0.000	0.49		10.5	SURCHARGED	
S7.000	S3.14	0.000	0.03		0.9	SURCHARGED	
S1.005	S3.05	0.000	0.22		13.6	SURCHARGED	
S1.006	SCS3	0.027	0.03		0.8	FLOOD	2

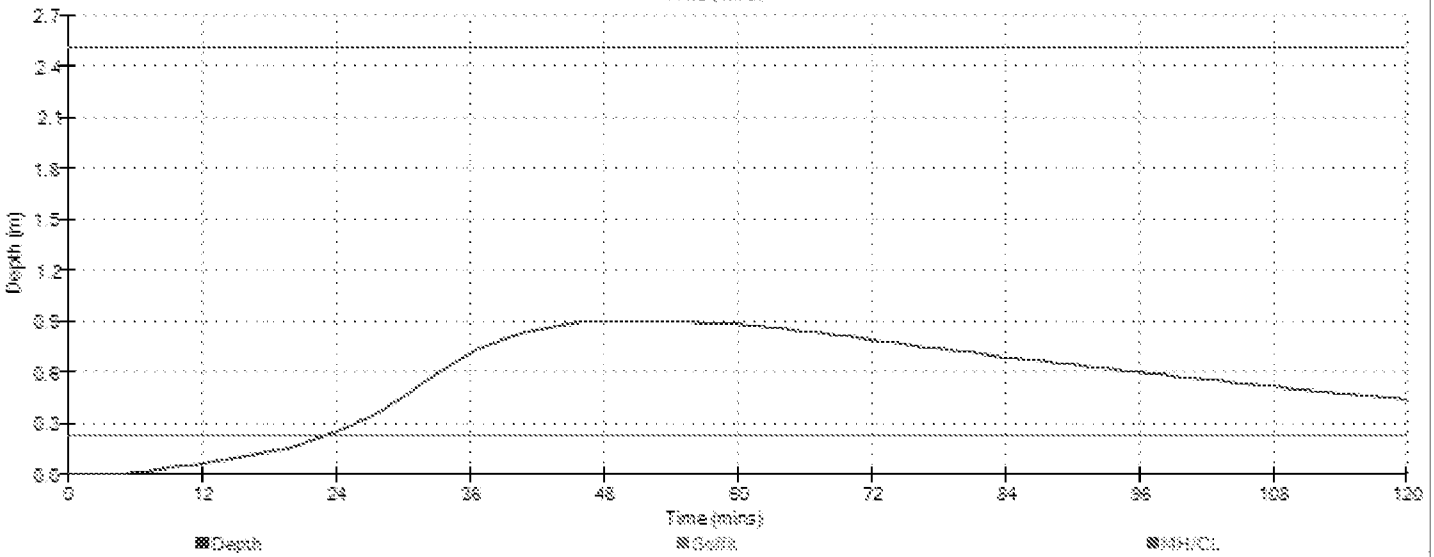
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Graphs for Pipe S1.006 US/MH SCS3 (SW3 - Main East S)
60 minute 10 year Winter I+0%
Status: SURCHARGED





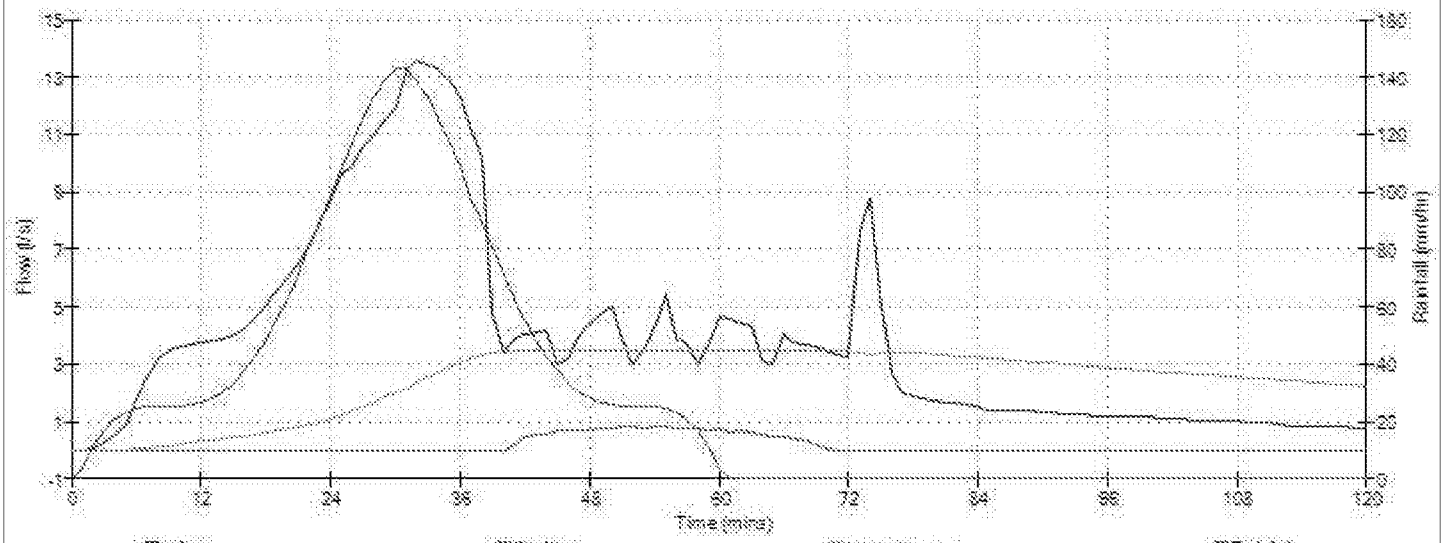


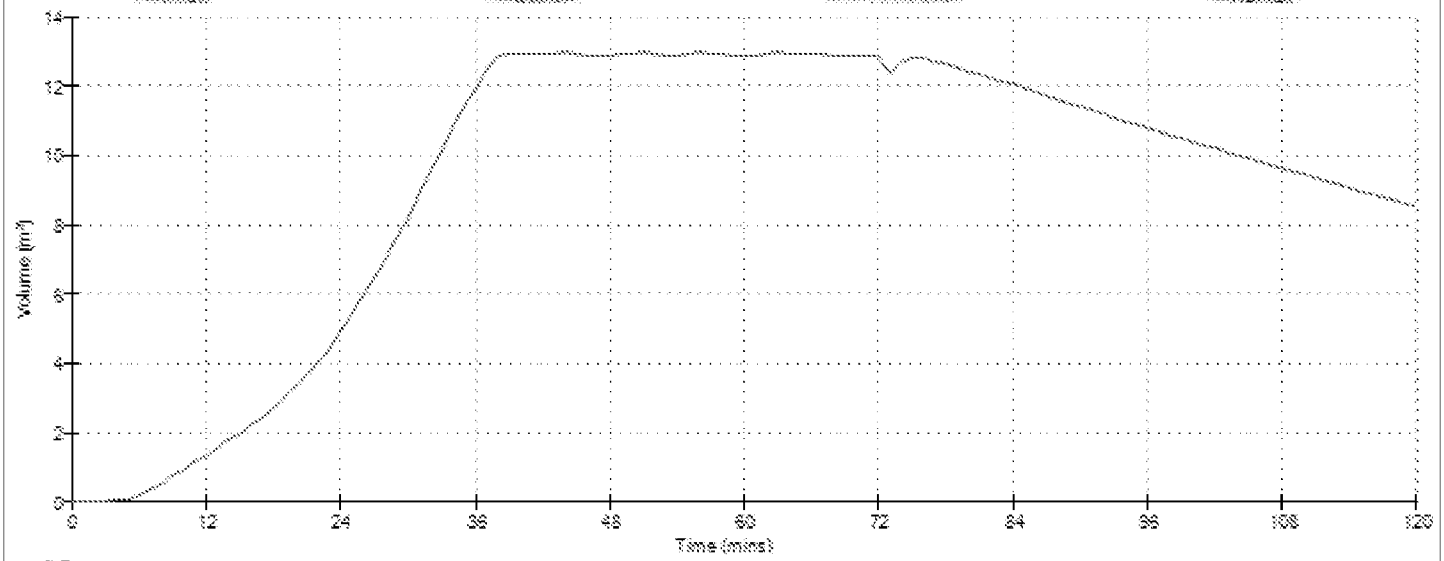
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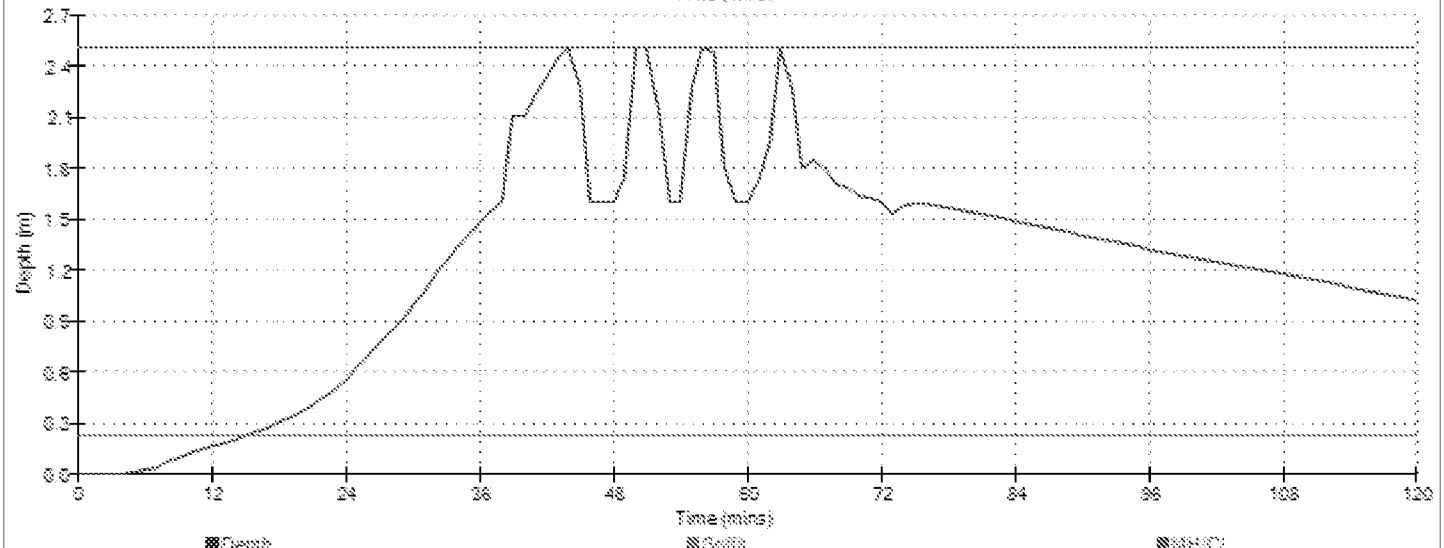
Graphs for Pipe S1.006 US/MH SCS3 (SW3 - Main East S)

60 minute 100 year Winter I+40%

Status: FLOOD







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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for SW4 - Entrance

« - 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
S1.000	13.308	0.180	73.9	0.008	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	17.414	0.150	116.1	0.009	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.002	5.087	0.100	50.9	0.027	0.00	0.0	0.600	o	150	Pipe/Conduit	
S1.003	0.720	-3.000	-0.2	0.000	0.00	0.0	0.600	o	150	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)
S1.000	50.00	5.19	12.300	0.008	0.0	0.0	0.0	1.17	20.7	1.0
S1.001	50.00	5.50	12.120	0.017	0.0	0.0	0.0	0.93	16.5	2.3
S1.002	50.00	5.56	11.970	0.044	0.0	0.0	0.0	1.41	25.0	6.0
S1.003	50.00	5.69	11.879	0.044	0.0	0.0	0.0	0.09	1.6«	6.0

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Manhole Schedules for SW4 - Entrance

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S4.01	13.390	1.090	Open Manhole	1200	S1.000	12.300	150				
S4.02	14.000	1.880	Open Manhole	1200	S1.001	12.120	150	S1.000	12.120	150	
S4.03	14.700	2.730	Open Manhole	1200	S1.002	11.970	150	S1.001	11.970	150	
SCS3	14.700	2.830	Open Manhole	300	S1.003	11.870	150	S1.002	11.870	150	
S	15.200	0.330	Open Manhole	0		OUTFALL		S1.003	14.870	150	

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Storage Structures for SW4 - Entrance

Porous Car Park Manhole: S4.03, DS/PN: S1.002

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	14.4
Max Percolation (l/s)	19.2	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	14.150	Cap Volume Depth (m)	0.300

Cellular Storage Manhole: SCS3, DS/PN: S1.003

Invert Level (m)	11.870	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	16.16000		

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	2.0	2.0	0.800	2.0	6.8	0.801	0.0	6.8

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW4 - Entrance

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 0 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 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)	Flooded Volume (m³)
S1.000	S4.01	15 Winter	1	+0%	30/15 Summer				12.323	-0.127	0.000
S1.001	S4.02	15 Winter	1	+0%	10/15 Summer				12.158	-0.112	0.000
S1.002	S4.03	15 Winter	1	+0%	1/15 Winter				12.134	0.014	0.000
S1.003	SCS3	15 Winter	1	+0%	1/15 Summer				12.127	0.107	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S4.01	0.06		1.1	OK	
S1.001	S4.02	0.14		2.2	OK	
S1.002	S4.03	0.23		4.6	SURCHARGED	
S1.003	SCS3	0.00		0.0	SURCHARGED	

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10 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW4 - Entrance

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 0 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 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)	Flooded Volume (m³)
S1.000	S4.01	15 Winter	10	+0%	30/15 Summer				12.393	-0.057	0.000
S1.001	S4.02	15 Winter	10	+0%	10/15 Summer				12.388	0.118	0.000
S1.002	S4.03	15 Winter	10	+0%	1/15 Winter				12.376	0.256	0.000
S1.003	SCS3	15 Winter	10	+0%	1/15 Summer				12.362	0.342	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S4.01	0.11		2.0	OK	
S1.001	S4.02	0.21		3.2	SURCHARGED	
S1.002	S4.03	0.38		7.6	SURCHARGED	
S1.003	SCS3	0.00		0.0	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW4 - Entrance

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 0 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 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)	Flooded Volume (m³)
S1.000	S4.01	15 Winter	30	+0%	30/15 Summer				12.525	0.075	0.000
S1.001	S4.02	15 Winter	30	+0%	10/15 Summer				12.518	0.248	0.000
S1.002	S4.03	15 Winter	30	+0%	1/15 Winter				12.503	0.383	0.000
S1.003	SCS3	15 Winter	30	+0%	1/15 Summer				12.484	0.464	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S4.01	0.12		2.3	SURCHARGED	
S1.001	S4.02	0.22		3.4	SURCHARGED	
S1.002	S4.03	0.47		9.3	SURCHARGED	
S1.003	SCS3	0.00		0.0	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for SW4 - Entrance

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 0 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.400	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

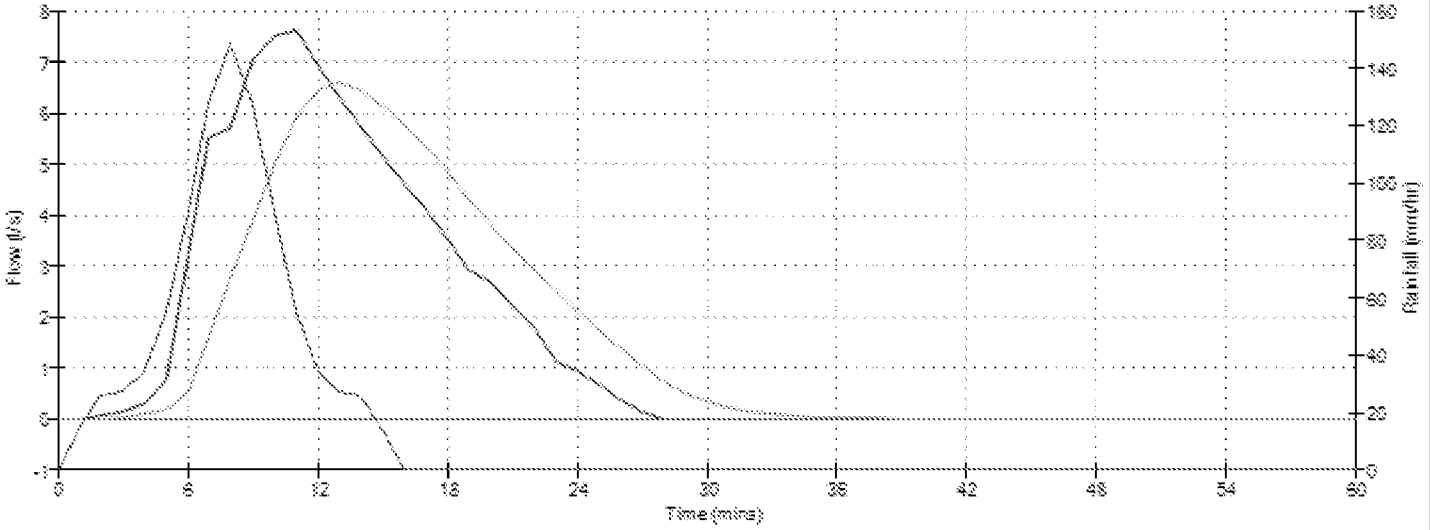
Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years)	1, 10, 30, 100
Climate Change (%)	0, 0, 0, 40

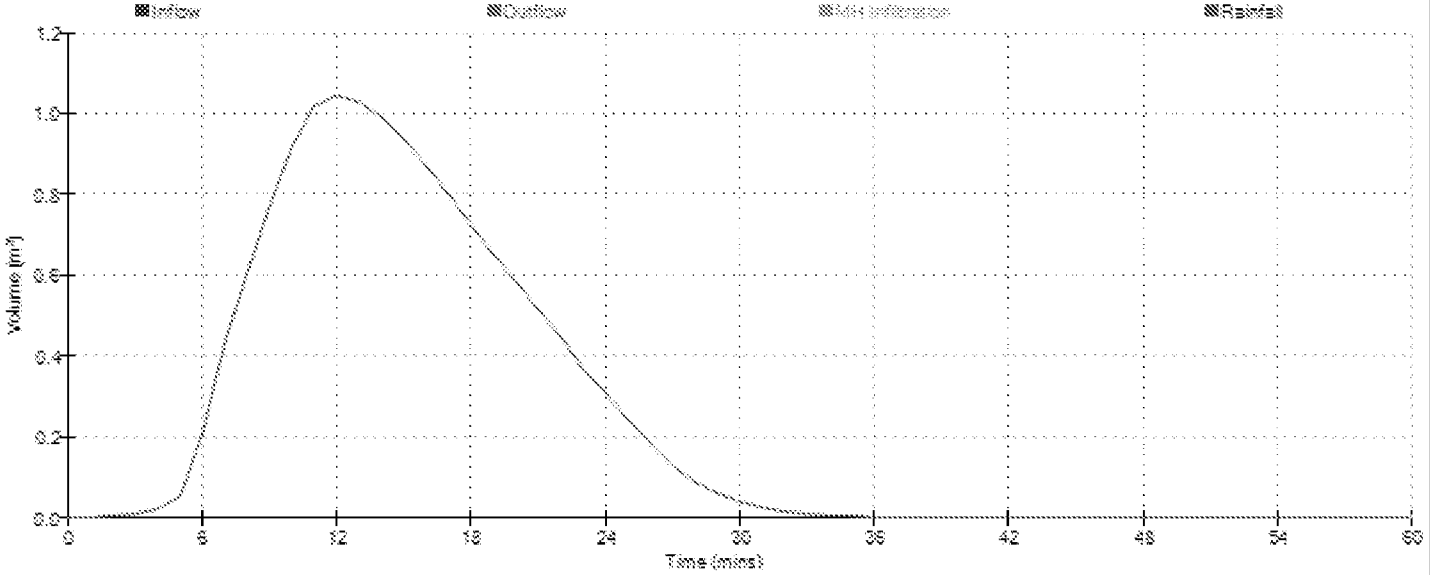
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S1.000	S4.01	30 Winter	100	+40%	30/15 Summer				13.316	0.866	0.000
S1.001	S4.02	30 Winter	100	+40%	10/15 Summer				13.302	1.032	0.000
S1.002	S4.03	30 Winter	100	+40%	1/15 Winter				13.324	1.204	0.000
S1.003	SCS3	30 Winter	100	+40%	1/15 Summer				13.705	1.685	0.000

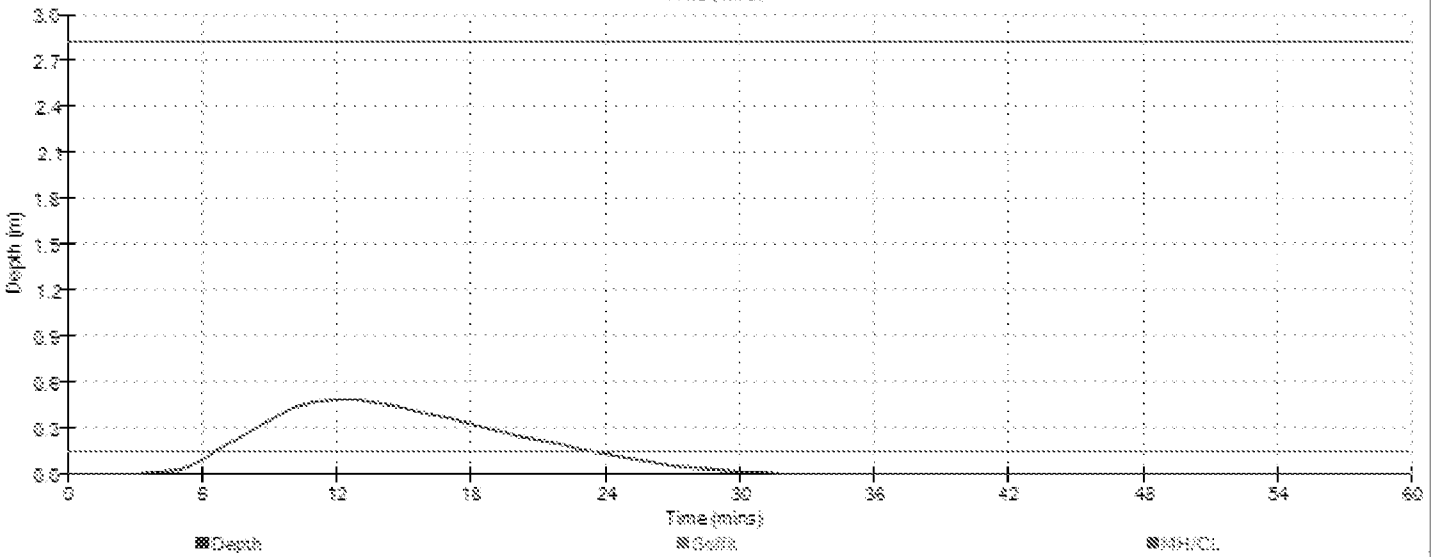
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S4.01	0.16		3.0	FLOOD RISK	
S1.001	S4.02	0.39		6.0	SURCHARGED	
S1.002	S4.03	0.65		12.9	SURCHARGED	
S1.003	SCS3	0.00		0.0	SURCHARGED	

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Graphs for Pipe S1.003 US/MH SCS3 (SW4 - Entrance)
15 minute 10 year Winter I+0%
Status: SURCHARGED

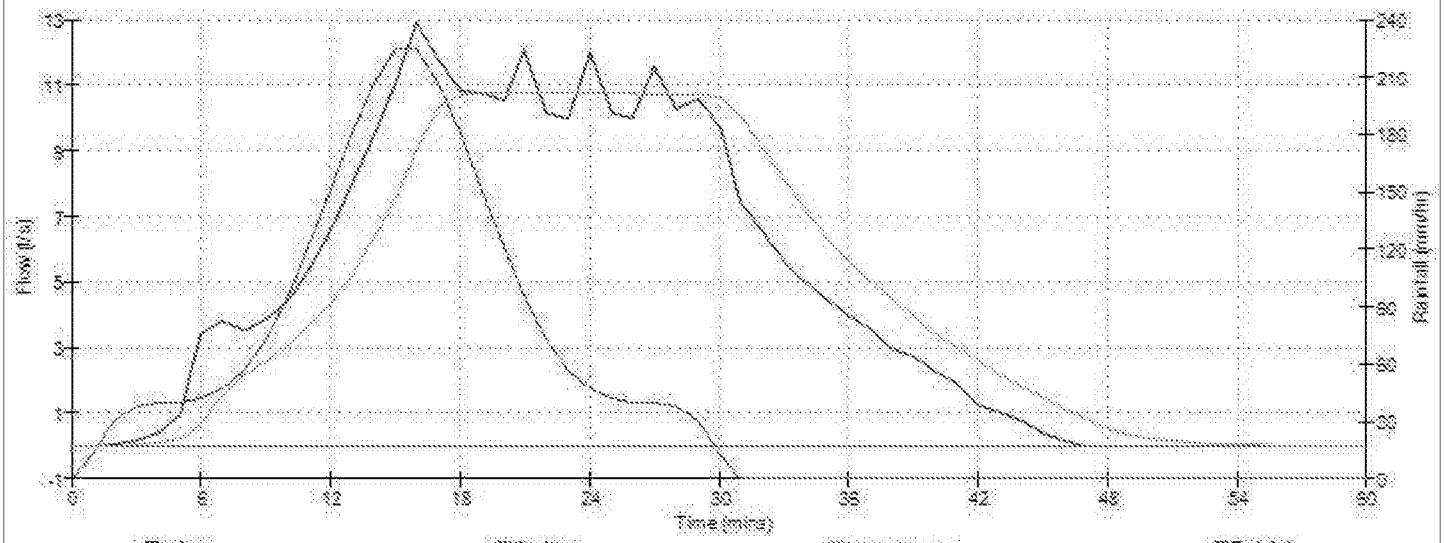


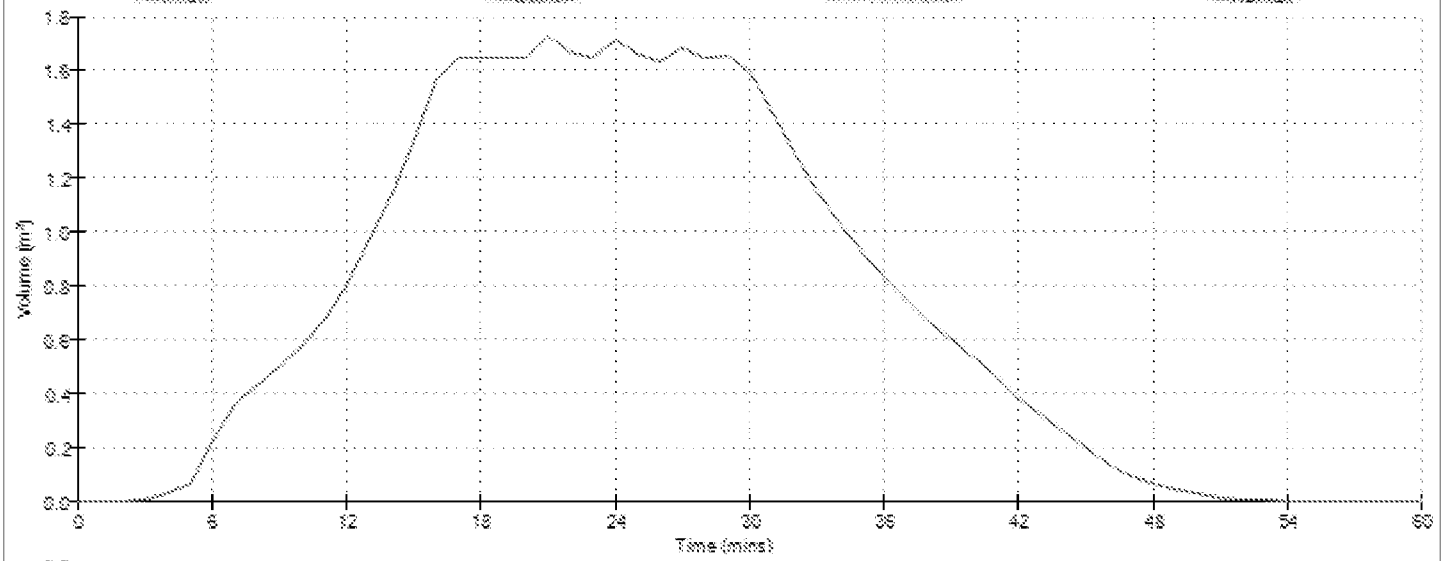


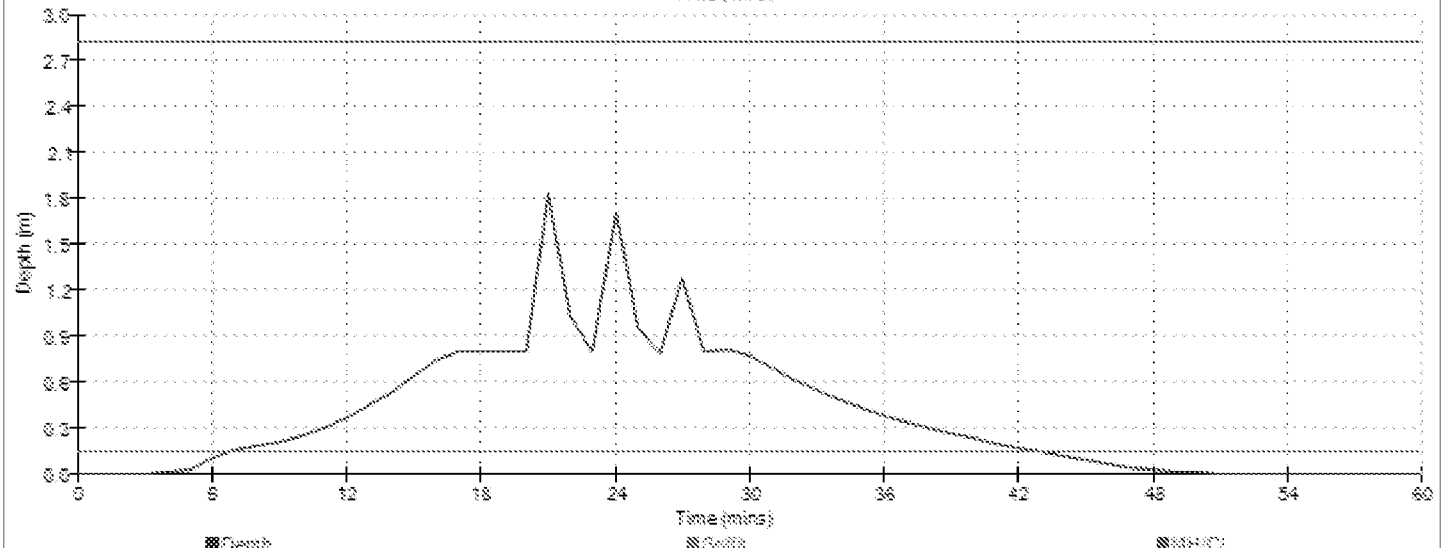


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Graphs for Pipe S1.003 US/MH SCS3 (SW4 - Entrance)
30 minute 100 year Winter I+40%
Status: SURCHARGED







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Sewers range in depth to a max. 3m depth with dia. 150mm except for a couple runs being 225mm

Break down range into:

Group A: 0 - 0.9m
Group B: 0.9 - 1.2m
Group C: 1.2 - 2m
Group D: 2 - 3m

Using the Simplified Tables of External Loads on Buried Pipelines produced by the Tranpsort Research Laboratory,

Design for loads in Roads with wide trenches (worse case) for clay pipes (Extra Strength type)

Max. load applied to sewers for each Group using Table M

1 = 26.3kN/m 2 = 20.8kN/m 3 = 21.0kN/m 4 = 22.8kN/m

Compare against traffic loads where the top 220mm is not applied, Tyre pressure is 700kN/m2, Table C

1 = 41.0kN/m 2 = 35.5kN/m 3 = 21.5kN/m 4 = 5.6kN/m

Bedding type / Max. load for permament trafficing

1 = Z / 45.8kN/m 2 = S / 38.7kN/m 3 = F / 26.4kN/m 4 = F / 26.4kN/m

Design for loads in Fields with wide trenches (worse case) for clay pipes (Extra Strength type)

Max. load applied to sewers for each Group using Table F

1 = 16.7kN/m 2 = 13.2kN/m 3 = 12.3kN/m 4 = 18.8kN/m

Compare against traffic loads where the top 220mm is not applied, Tyre pressure is 700kN/m2, Table C

1 = 41.0kN/m 2 = 35.5kN/m 3 = 21.5kN/m 4 = 5.6kN/m

Bedding type / Max. load for permament trafficing

1 = Z / 45.8kN/m 2 = S / 38.7kN/m 3 = F / 26.4kN/m 4 = F / 26.4kN/m