STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.700	Add Flow / Climate Change (%)	0
Ratio R	0.322	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
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)	500

Designed with Level Soffits

Network Design Table for Storm

« - 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	13.942	0.089	156.7	0.000	2.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	11.348	0.112	101.3	0.037	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	7.783	0.071	109.6	0.009	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	23.814	0.279	85.4	0.020	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.004	18.357	0.181	101.4	0.039	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	13.519	0.135	100.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.006	34.638	0.211	164.0	0.016	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.007	14.605	0.088	166.0	0.054	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.008	45.276	0.271	167.1	0.028	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.009	7.893	0.047	167.9	0.046	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)
1.000	50.00	2.38	68.312	0.000	0.0	0.0	0.0	0.61	4.8	0.0
1.001	50.00	2.57	68.173	0.037	0.0	0.0	0.0	1.00	17.6	4.9
1.002	50.00	2.70	68.061	0.045	0.0	0.0	0.0	0.96	17.0	6.1
1.003	50.00	3.07	67.990	0.066	0.0	0.0	0.0	1.09	19.2	8.9
1.004	50.00	3.38	67.711	0.105	0.0	0.0	0.0	1.00	17.6	14.2
1.005	50.00	3.60	67.530	0.105	0.0	0.0	0.0	1.00	17.8	14.2
1.006	50.00	4.17	67.320	0.121	0.0	0.0	0.0	1.02	40.5	16.3
1.007	50.00	4.41	67.109	0.175	0.0	0.0	0.0	1.01	40.2	23.7
1.008	50.00	5.16	67.021	0.203	0.0	0.0	0.0	1.01	40.1	27.5
1.009	50.00	5.29	66.750	0.249	0.0	0.0	0.0	1.01	40.0	33.7

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
2.000	9.046	0.140	64.6	0.048	2.00	0.0	0.600	o	150	Pipe/Conduit	
3.000	10.895	0.123	88.6	0.053	2.00	0.0	0.600	o	150	Pipe/Conduit	
3.001	15.777	0.162	97.4	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.001	8.140	0.081	100.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
2.002	14.359	0.139	103.3	0.022	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.003	20.716	3.853	5.4	0.100	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.010	28.644	0.120	238.0	0.026	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.011	22.979	0.073	313.0	0.024	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.012	15.234	0.049	310.9	0.030	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.013	24.709	0.079	312.8	0.093	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.014	15.053	0.048	313.6	0.012	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.015	46.587	0.198	235.3	0.042	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.016	10.327	0.175	59.0	0.093	0.00	0.0	0.600	o	375	Pipe/Conduit	
4.000	13.467	0.267	50.4	0.028	2.00	0.0	0.600	o	100	Pipe/Conduit	
4.001	11.509	0.340	33.9	0.046	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.002	15.160	0.271	55.9	0.030	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.003	12.244	0.300	40.8	0.015	0.00	0.0	0.600	o	150	Pipe/Conduit	
4.004	34.562	0.814	42.5	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)
2.000	50.00	2.12	70.991	0.048	0.0	0.0	0.0	1.25	22.1	6.4
3.000	50.00	2.17	71.136	0.053	0.0	0.0	0.0	1.07	18.9	7.2
3.001	50.00	2.43	71.013	0.066	0.0	0.0	0.0	1.02	18.0	8.9
2.001	50.00	2.56	70.851	0.113	0.0	0.0	0.0	1.00	17.8	15.4
2.002	50.00	2.75	70.695	0.136	0.0	0.0	0.0	1.29	51.1	18.4
2.003	50.00	2.81	70.556	0.236	0.0	0.0	0.0	5.68	225.9	31.9
1.010	50.00	5.76	66.628	0.511	0.0	0.0	0.0	1.01	71.7	69.1
1.011	50.00	6.13	66.432	0.535	0.0	0.0	0.0	1.02	112.5	72.4
1.012	50.00	6.38	66.359	0.565	0.0	0.0	0.0	1.02	112.9	76.5
1.013	50.00	6.79	66.310	0.658	0.0	0.0	0.0	1.02	112.6	89.1
1.014	50.00	7.03	66.231	0.670	0.0	0.0	0.0	1.02	112.4	90.7
1.015	50.00	7.69	66.183	0.712	0.0	0.0	0.0	1.18	130.0	96.4
1.016	50.00	7.76	65.985	0.805	0.0	0.0	0.0	2.36	260.9	109.0
4.000	50.00	2.21	69.296	0.028	0.0	0.0	0.0	1.09	8.5	3.8
4.001	50.00	2.32	68.979	0.075	0.0	0.0	0.0	1.74	30.7	10.1
4.002	50.00	2.50	68.639	0.105	0.0	0.0	0.0	1.35	23.8	14.2
4.003	50.00	2.63	68.368	0.120	0.0	0.0	0.0	1.58	27.9	16.2
4.004	50.00	3.01	68.068	0.120	0.0	0.0	0.0	1.55	27.4	16.2

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
4.005	22.425	0.754	29.7	0.078	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.006	21.933	0.329	66.7	0.058	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.007	22.778	0.136	167.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.017	14.959	0.794	18.8	0.015	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.018	46.500	1.231	37.8	0.075	0.00	0.0	0.600	o	450	Pipe/Conduit	
5.000	24.132	0.389	62.0	0.042	2.00	0.0	0.600	o	150	Pipe/Conduit	
5.001	14.729	0.249	59.2	0.016	0.00	0.0	0.600	o	150	Pipe/Conduit	
5.002	32.703	0.883	37.0	0.038	0.00	0.0	0.600	o	150	Pipe/Conduit	
5.003	16.166	0.450	35.9	0.043	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.019	13.159	0.460	28.6	0.125	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.020	9.567	0.328	29.2	0.023	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.021	23.258	0.563	41.3	0.021	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.022	11.040	0.747	14.8	0.019	0.00	0.0	0.600	o	450	Pipe/Conduit	
6.000	18.593	0.380	48.9	0.056	2.00	0.0	0.600	o	150	Pipe/Conduit	
6.001	20.288	0.978	20.7	0.042	0.00	0.0	0.600	o	150	Pipe/Conduit	
6.002	9.427	0.056	168.3	0.089	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.003	15.818	0.095	166.0	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)
4.005	50.00	3.16	67.179	0.198	0.0	0.0	0.0	2.41	95.7	26.8
4.006	50.00	3.39	66.425	0.256	0.0	0.0	0.0	1.60	63.8	34.7
4.007	50.00	3.77	66.096	0.256	0.0	0.0	0.0	1.01	40.1	34.7
1.017	50.00	7.82	65.735	1.075	0.0	0.0	0.0	4.70	747.6	145.6
1.018	50.00	8.05	64.941	1.150	0.0	0.0	0.0	3.32	527.4	155.7
5.000	50.00	2.31	65.981	0.042	0.0	0.0	0.0	1.28	22.6	5.6
5.001	50.00	2.50	65.592	0.058	0.0	0.0	0.0	1.31	23.2	7.9
5.002	50.00	2.83	65.343	0.096	0.0	0.0	0.0	1.66	29.3	13.0
5.003	50.00	2.99	64.460	0.139	0.0	0.0	0.0	1.68	29.8	18.8
1.019	50.00	8.11	63.710	1.414	0.0	0.0	0.0	3.81	606.6	191.5
1.020	50.00	8.15	63.250	1.437	0.0	0.0	0.0	3.78	600.5	194.6
1.021	50.00	8.27	62.922	1.458	0.0	0.0	0.0	3.17	504.2	197.5
1.022	50.00	8.31	62.359	1.478	0.0	0.0	0.0	5.31	844.4	200.1
6.000	50.00	2.21	63.421	0.056	0.0	0.0	0.0	1.44	25.5	7.5
6.001	50.00	2.37	63.041	0.098	0.0	0.0	0.0	2.22	39.3	13.2
6.002	50.00	2.52	61.988	0.187	0.0	0.0	0.0	1.00	40.0	25.3
6.003	50.00	2.78	61.932	0.187	0.0	0.0	0.0	1.01	40.2	25.3

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.023	19.088	0.180	106.0	0.026	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.024	25.963	1.352	19.2	0.021	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.025	16.619	0.923	18.0	0.069	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.026	25.472	1.300	19.6	0.036	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.027	10.675	0.402	26.6	0.021	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.028	10.345	0.224	46.2	0.038	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.029	19.001	0.095	200.0	0.015	0.00	0.0	0.600	o	675	Pipe/Conduit	
1.030	8.832	0.044	200.0	0.011	0.00	0.0	0.600	o	675	Pipe/Conduit	
1.031	9.724	0.049	200.0	0.012	0.00	0.0	0.600	o	675	Pipe/Conduit	
1.032	15.766	0.079	200.0	0.048	0.00	0.0	0.600	o	675	Pipe/Conduit	
1.033	15.261	0.076	200.8	0.018	0.00	0.0	0.600	o	675	Pipe/Conduit	
7.000	19.354	0.307	63.0	0.035	2.00	0.0	0.600	o	150	Pipe/Conduit	
8.000	28.329	0.283	100.1	0.057	2.00	0.0	0.600	o	150	Pipe/Conduit	
7.001	29.492	0.725	40.7	0.061	0.00	0.0	0.600	o	225	Pipe/Conduit	
7.002	15.210	0.257	59.2	0.024	0.00	0.0	0.600	o	225	Pipe/Conduit	
7.003	33.023	1.662	19.9	0.062	0.00	0.0	0.600	o	225	Pipe/Conduit	
9.000	10.224	0.125	81.8	0.069	2.00	0.0	0.600	o	150	Pipe/Conduit	
9.001	6.964	0.188	37.0	0.031	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)
1.023	50.00	8.47	61.612	1.691	0.0	0.0	0.0	1.97	313.9	228.9
1.024	50.00	8.56	61.432	1.712	0.0	0.0	0.0	4.66	740.5	231.8
1.025	50.00	8.62	60.080	1.781	0.0	0.0	0.0	4.81	764.8	241.2
1.026	50.00	8.71	59.157	1.817	0.0	0.0	0.0	4.61	733.1	246.1
1.027	50.00	8.75	57.707	1.838	0.0	0.0	0.0	4.74	1339.7	248.9
1.028	50.00	8.80	57.305	1.875	0.0	0.0	0.0	3.59	1015.0	254.0
1.029	50.00	8.97	57.006	1.891	0.0	0.0	0.0	1.85	661.9	256.0
1.030	50.00	9.05	56.911	1.902	0.0	0.0	0.0	1.85	661.9	257.6
1.031	50.00	9.14	56.867	1.914	0.0	0.0	0.0	1.85	661.9	259.2
1.032	50.00	9.28	56.818	1.962	0.0	0.0	0.0	1.85	661.9	265.7
1.033	50.00	9.42	56.739	1.980	0.0	0.0	0.0	1.85	660.6	268.1
7.000	50.00	2.25	60.139	0.035	0.0	0.0	0.0	1.27	22.4	4.7
8.000	50.00	2.47	60.115	0.057	0.0	0.0	0.0	1.00	17.7	7.7
7.001	50.00	2.71	59.757	0.152	0.0	0.0	0.0	2.06	81.8	20.6
7.002	50.00	2.86	59.032	0.176	0.0	0.0	0.0	1.70	67.7	23.8
7.003	50.00	3.04	58.775	0.238	0.0	0.0	0.0	2.95	117.3	32.2
9.000	50.00	2.15	59.135	0.069	0.0	0.0	0.0	1.11	19.7	9.4
9.001	50.00	2.22	59.010	0.100	0.0	0.0	0.0	1.66	29.3	13.5

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
9.002	9.634	0.337	28.6	0.006	0.00	0.0	0.600	o	150	Pipe/Conduit	
9.003	8.055	1.297	6.2	0.011	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.034	22.204	0.111	200.0	0.029	0.00	0.0	0.600	o	675	Pipe/Conduit	
1.035	15.175	0.076	200.0	0.078	0.00	0.0	0.600	o	675	Pipe/Conduit	
1.036	10.375	0.051	203.4	0.020	0.00	0.0	0.600	o	675	Pipe/Conduit	
1.037	15.772	0.079	200.0	0.018	0.00	0.0	0.600	o	675	Pipe/Conduit	
1.038	15.747	0.079	198.7	0.018	0.00	0.0	0.600	o	675	Pipe/Conduit	
10.000	14.901	0.605	24.6	0.012	2.00	0.0	0.600	o	150	Pipe/Conduit	
1.039	6.103	0.031	200.0	0.038	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.040	9.383	0.024	385.0	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)
9.002	50.00	2.31	58.822	0.106	0.0	0.0	0.0	1.89	33.4	14.3
9.003	50.00	2.34	58.485	0.117	0.0	0.0	0.0	4.07	71.9	15.8
1.034	50.00	9.62	56.663	2.363	0.0	0.0	0.0	1.85	661.9	320.0
1.035	50.00	9.75	56.552	2.442	0.0	0.0	0.0	1.85	661.9	330.6
1.036	50.00	9.85	56.476	2.462	0.0	0.0	0.0	1.83	656.3	333.4
1.037	50.00	9.99	56.425	2.480	0.0	0.0	0.0	1.85	661.9	335.8
1.038	50.00	10.13	56.346	2.498	0.0	0.0	0.0	1.86	664.1	338.3
10.000	50.00	2.12	57.397	0.012	0.0	0.0	0.0	2.04	36.0	1.6
1.039	50.00	10.18	56.192	2.548	0.0	0.0	0.0	1.98	872.6	345.1
1.040	50.00	10.33	55.900	2.548	0.0	0.0	0.0	1.03	163.8«	345.1

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Manhole Schedules for Storm

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)
0.1	70.000	1.688	Open Manhole	1200	1.000	68.312	100				
1	69.506	1.333	Open Manhole	1200	1.001	68.173	150	1.000	68.223	100	
2	69.652	1.591	Open Manhole	1200	1.002	68.061	150	1.001	68.061	150	
3	69.610	1.620	Open Manhole	1200	1.003	67.990	150	1.002	67.990	150	
4	70.313	2.602	Open Manhole	1200	1.004	67.711	150	1.003	67.711	150	
5	70.881	3.351	Open Manhole	1200	1.005	67.530	150	1.004	67.530	150	
6	70.966	3.647	Open Manhole	1200	1.006	67.320	225	1.005	67.395	150	
8	72.073	4.964	Open Manhole	1200	1.007	67.109	225	1.006	67.109	225	
9	72.249	5.228	Open Manhole	1200	1.008	67.021	225	1.007	67.021	225	
10	71.805	5.055	Open Manhole	1200	1.009	66.750	225	1.008	66.750	225	
11	72.341	1.350	Open Manhole	1200	2.000	70.991	150				
12	72.487	1.351	Open Manhole	1200	3.000	71.136	150				
13	72.363	1.350	Open Manhole	1200	3.001	71.013	150	3.000	71.013	150	
14	72.254	1.403	Open Manhole	1200	2.001	70.851	150	2.000	70.851	150	
								3.001	70.851	150	
15	72.161	1.466	Open Manhole	1200	2.002	70.695	225	2.001	70.770	150	
16	71.983	1.428	Open Manhole	1200	2.003	70.556	225	2.002	70.556	225	
17	71.680	5.052	Open Manhole	1200	1.010	66.628	300	1.009	66.703	225	
								2.003	66.703	225	
18	71.160	4.728	Open Manhole	1350	1.011	66.432	375	1.010	66.507	300	
19	70.581	4.222	Open Manhole	1350	1.012	66.359	375	1.011	66.359	375	
20	70.201	3.891	Open Manhole	1350	1.013	66.310	375	1.012	66.310	375	
21	69.573	3.342	Open Manhole	1350	1.014	66.231	375	1.013	66.231	375	
22	69.218	3.035	Open Manhole	1350	1.015	66.183	375	1.014	66.183	375	
23	68.097	2.112	Open Manhole	1350	1.016	65.985	375	1.015	65.985	375	
24	70.606	1.310	Open Manhole	1200	4.000	69.296	100				
25	70.343	1.364	Open Manhole	1200	4.001	68.979	150	4.000	69.029	100	
26	69.989	1.350	Open Manhole	1200	4.002	68.639	150	4.001	68.639	150	
27	69.721	1.353	Open Manhole	1200	4.003	68.368	150	4.002	68.368	150	
28	69.418	1.350	Open Manhole	1200	4.004	68.068	150	4.003	68.068	150	
29	68.604	1.425	Open Manhole	1200	4.005	67.179	225	4.004	67.254	150	
30	67.850	1.425	Open Manhole	1200	4.006	66.425	225	4.005	66.425	225	
31	67.466	1.370	Open Manhole	1200	4.007	66.096	225	4.006	66.096	225	
32	67.812	2.077	Open Manhole	1350	1.017	65.735	450	1.016	65.810	375	
								4.007	65.960	225	
33	67.218	2.277	Open Manhole	1350	1.018	64.941	450	1.017	64.941	450	
34	67.545	1.564	Open Manhole	1200	5.000	65.981	150				
35	66.995	1.403	Open Manhole	1200	5.001	65.592	150	5.000	65.592	150	

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Manhole Schedules for Storm

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)
36	66.732	1.389	Open Manhole	1200	5.002	65.343	150	5.001	65.343	150	
37	65.829	1.369	Open Manhole	1200	5.003	64.460	150	5.002	64.460	150	
38	65.452	1.742	Open Manhole	1350	1.019	63.710	450	1.018	63.710	450	
								5.003	64.010	150	
39	64.953	1.703	Open Manhole	1350	1.020	63.250	450	1.019	63.250	450	
40	64.572	1.650	Open Manhole	1350	1.021	62.922	450	1.020	62.922	450	
41	64.009	1.650	Open Manhole	1350	1.022	62.359	450	1.021	62.359	450	
42	64.771	1.350	Open Manhole	1200	6.000	63.421	150				
43	64.391	1.350	Open Manhole	1200	6.001	63.041	150	6.000	63.041	150	
44	63.838	1.850	Open Manhole	1200	6.002	61.988	225	6.001	62.063	150	
45	63.812	1.880	Open Manhole	1200	6.003	61.932	225	6.002	61.932	225	
46	63.715	2.103	Open Manhole	1350	1.023	61.612	450	1.022	61.612	450	
								6.003	61.837	225	
47	63.082	1.650	Open Manhole	1350	1.024	61.432	450	1.023	61.432	450	
48	61.730	1.650	Open Manhole	1350	1.025	60.080	450	1.024	60.080	450	
49	60.846	1.690	Open Manhole	1350	1.026	59.157	450	1.025	59.157	450	
50	59.527	1.820	Open Manhole	1500	1.027	57.707	600	1.026	57.857	450	
51	59.105	1.800	Open Manhole	1500	1.028	57.305	600	1.027	57.305	600	
52	58.880	1.875	Open Manhole	1500	1.029	57.006	675	1.028	57.081	600	
53	59.192	2.281	Open Manhole	1500	1.030	56.911	675	1.029	56.911	675	
54	59.339	2.473	Open Manhole	1500	1.031	56.867	675	1.030	56.867	675	
55	59.617	2.799	Open Manhole	1500	1.032	56.818	675	1.031	56.818	675	
56	59.856	3.117	Open Manhole	1500	1.033	56.739	675	1.032	56.739	675	
57	61.489	1.350	Open Manhole	1200	7.000	60.139	150				
58	61.694	1.579	Open Manhole	1200	8.000	60.115	150				
59	61.600	1.843	Open Manhole	1200	7.001	59.757	225	7.000	59.832	150	
								8.000	59.832	150	
60	60.457	1.425	Open Manhole	1200	7.002	59.032	225	7.001	59.032	225	
61	60.200	1.425	Open Manhole	1200	7.003	58.775	225	7.002	58.775	225	
62	60.615	1.480	Open Manhole	1200	9.000	59.135	150				
63	60.360	1.350	Open Manhole	1200	9.001	59.010	150	9.000	59.010	150	
64	60.172	1.350	Open Manhole	1200	9.002	58.822	150	9.001	58.822	150	
65	59.932	1.447	Open Manhole	1200	9.003	58.485	150	9.002	58.485	150	
66	59.831	3.168	Open Manhole	1500	1.034	56.663	675	1.033	56.663	675	
								7.003	57.113	225	
								9.003	57.188	150	
67	59.400	2.848	Open Manhole	1500	1.035	56.552	675	1.034	56.552	675	
68	58.974	2.498	Open Manhole	1500	1.036	56.476	675	1.035	56.476	675	

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Manhole Schedules for Storm

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)
69	58.669	2.244	Open Manhole	1500	1.037	56.425	675	1.036	56.425	675	
70	58.863	2.516	Open Manhole	1500	1.038	56.346	675	1.037	56.346	675	
71	58.747	1.350	Open Manhole	1200	10.000	57.397	150				
72	59.140	2.948	Open Manhole	1800	1.039	56.192	750	1.038	56.267	675	
								10.000	56.792	150	
73	58.350	2.450	Open Manhole	2400	1.040	55.900	450	1.039	56.161	750	561
74	58.700	2.824	Open Manhole	0		OUTFALL		1.040	55.876	450	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	100	0.1	70.000	68.312	1.588	Open Manhole	1200
1.001	o	150	1	69.506	68.173	1.183	Open Manhole	1200
1.002	o	150	2	69.652	68.061	1.441	Open Manhole	1200
1.003	o	150	3	69.610	67.990	1.470	Open Manhole	1200
1.004	o	150	4	70.313	67.711	2.452	Open Manhole	1200
1.005	o	150	5	70.881	67.530	3.201	Open Manhole	1200
1.006	o	225	6	70.966	67.320	3.422	Open Manhole	1200
1.007	o	225	8	72.073	67.109	4.739	Open Manhole	1200
1.008	o	225	9	72.249	67.021	5.003	Open Manhole	1200
1.009	o	225	10	71.805	66.750	4.830	Open Manhole	1200
2.000	o	150	11	72.341	70.991	1.200	Open Manhole	1200
3.000	o	150	12	72.487	71.136	1.201	Open Manhole	1200
3.001	o	150	13	72.363	71.013	1.200	Open Manhole	1200
2.001	o	150	14	72.254	70.851	1.253	Open Manhole	1200
2.002	o	225	15	72.161	70.695	1.241	Open Manhole	1200
2.003	o	225	16	71.983	70.556	1.203	Open Manhole	1200
1.010	o	300	17	71.680	66.628	4.752	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	13.942	156.7	1	69.506	68.223	1.183	Open Manhole	1200
1.001	11.348	101.3	2	69.652	68.061	1.441	Open Manhole	1200
1.002	7.783	109.6	3	69.610	67.990	1.470	Open Manhole	1200
1.003	23.814	85.4	4	70.313	67.711	2.452	Open Manhole	1200
1.004	18.357	101.4	5	70.881	67.530	3.201	Open Manhole	1200
1.005	13.519	100.0	6	70.966	67.395	3.422	Open Manhole	1200
1.006	34.638	164.0	8	72.073	67.109	4.739	Open Manhole	1200
1.007	14.605	166.0	9	72.249	67.021	5.003	Open Manhole	1200
1.008	45.276	167.1	10	71.805	66.750	4.830	Open Manhole	1200
1.009	7.893	167.9	17	71.680	66.703	4.752	Open Manhole	1200
2.000	9.046	64.6	14	72.254	70.851	1.253	Open Manhole	1200
3.000	10.895	88.6	13	72.363	71.013	1.200	Open Manhole	1200
3.001	15.777	97.4	14	72.254	70.851	1.253	Open Manhole	1200
2.001	8.140	100.0	15	72.161	70.770	1.241	Open Manhole	1200
2.002	14.359	103.3	16	71.983	70.556	1.203	Open Manhole	1200
2.003	20.716	5.4	17	71.680	66.703	4.752	Open Manhole	1200
1.010	28.644	238.0	18	71.160	66.507	4.353	Open Manhole	1350

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.011	o	375	18	71.160	66.432	4.353	Open Manhole	1350
1.012	o	375	19	70.581	66.359	3.847	Open Manhole	1350
1.013	o	375	20	70.201	66.310	3.516	Open Manhole	1350
1.014	o	375	21	69.573	66.231	2.967	Open Manhole	1350
1.015	o	375	22	69.218	66.183	2.660	Open Manhole	1350
1.016	o	375	23	68.097	65.985	1.737	Open Manhole	1350
4.000	o	100	24	70.606	69.296	1.210	Open Manhole	1200
4.001	o	150	25	70.343	68.979	1.214	Open Manhole	1200
4.002	o	150	26	69.989	68.639	1.200	Open Manhole	1200
4.003	o	150	27	69.721	68.368	1.203	Open Manhole	1200
4.004	o	150	28	69.418	68.068	1.200	Open Manhole	1200
4.005	o	225	29	68.604	67.179	1.200	Open Manhole	1200
4.006	o	225	30	67.850	66.425	1.200	Open Manhole	1200
4.007	o	225	31	67.466	66.096	1.145	Open Manhole	1200
1.017	o	450	32	67.812	65.735	1.627	Open Manhole	1350
1.018	o	450	33	67.218	64.941	1.827	Open Manhole	1350
5.000	o	150	34	67.545	65.981	1.414	Open Manhole	1200
5.001	o	150	35	66.995	65.592	1.253	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.011	22.979	313.0	19	70.581	66.359	3.847	Open Manhole	1350
1.012	15.234	310.9	20	70.201	66.310	3.516	Open Manhole	1350
1.013	24.709	312.8	21	69.573	66.231	2.967	Open Manhole	1350
1.014	15.053	313.6	22	69.218	66.183	2.660	Open Manhole	1350
1.015	46.587	235.3	23	68.097	65.985	1.737	Open Manhole	1350
1.016	10.327	59.0	32	67.812	65.810	1.627	Open Manhole	1350
4.000	13.467	50.4	25	70.343	69.029	1.214	Open Manhole	1200
4.001	11.509	33.9	26	69.989	68.639	1.200	Open Manhole	1200
4.002	15.160	55.9	27	69.721	68.368	1.203	Open Manhole	1200
4.003	12.244	40.8	28	69.418	68.068	1.200	Open Manhole	1200
4.004	34.562	42.5	29	68.604	67.254	1.200	Open Manhole	1200
4.005	22.425	29.7	30	67.850	66.425	1.200	Open Manhole	1200
4.006	21.933	66.7	31	67.466	66.096	1.145	Open Manhole	1200
4.007	22.778	167.5	32	67.812	65.960	1.627	Open Manhole	1350
1.017	14.959	18.8	33	67.218	64.941	1.827	Open Manhole	1350
1.018	46.500	37.8	38	65.452	63.710	1.292	Open Manhole	1350
5.000	24.132	62.0	35	66.995	65.592	1.253	Open Manhole	1200
5.001	14.729	59.2	36	66.732	65.343	1.239	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.002	o	150	36	66.732	65.343	1.239	Open Manhole	1200
5.003	o	150	37	65.829	64.460	1.219	Open Manhole	1200
1.019	o	450	38	65.452	63.710	1.292	Open Manhole	1350
1.020	o	450	39	64.953	63.250	1.253	Open Manhole	1350
1.021	o	450	40	64.572	62.922	1.200	Open Manhole	1350
1.022	o	450	41	64.009	62.359	1.200	Open Manhole	1350
6.000	o	150	42	64.771	63.421	1.200	Open Manhole	1200
6.001	o	150	43	64.391	63.041	1.200	Open Manhole	1200
6.002	o	225	44	63.838	61.988	1.625	Open Manhole	1200
6.003	o	225	45	63.812	61.932	1.655	Open Manhole	1200
1.023	o	450	46	63.715	61.612	1.653	Open Manhole	1350
1.024	o	450	47	63.082	61.432	1.200	Open Manhole	1350
1.025	o	450	48	61.730	60.080	1.200	Open Manhole	1350
1.026	o	450	49	60.846	59.157	1.240	Open Manhole	1350
1.027	o	600	50	59.527	57.707	1.220	Open Manhole	1500
1.028	o	600	51	59.105	57.305	1.200	Open Manhole	1500
1.029	o	675	52	58.880	57.006	1.200	Open Manhole	1500
1.030	o	675	53	59.192	56.911	1.606	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.002	32.703	37.0	37	65.829	64.460	1.219	Open Manhole	1200
5.003	16.166	35.9	38	65.452	64.010	1.292	Open Manhole	1350
1.019	13.159	28.6	39	64.953	63.250	1.253	Open Manhole	1350
1.020	9.567	29.2	40	64.572	62.922	1.200	Open Manhole	1350
1.021	23.258	41.3	41	64.009	62.359	1.200	Open Manhole	1350
1.022	11.040	14.8	46	63.715	61.612	1.653	Open Manhole	1350
6.000	18.593	48.9	43	64.391	63.041	1.200	Open Manhole	1200
6.001	20.288	20.7	44	63.838	62.063	1.625	Open Manhole	1200
6.002	9.427	168.3	45	63.812	61.932	1.655	Open Manhole	1200
6.003	15.818	166.0	46	63.715	61.837	1.653	Open Manhole	1350
1.023	19.088	106.0	47	63.082	61.432	1.200	Open Manhole	1350
1.024	25.963	19.2	48	61.730	60.080	1.200	Open Manhole	1350
1.025	16.619	18.0	49	60.846	59.157	1.240	Open Manhole	1350
1.026	25.472	19.6	50	59.527	57.857	1.220	Open Manhole	1500
1.027	10.675	26.6	51	59.105	57.305	1.200	Open Manhole	1500
1.028	10.345	46.2	52	58.880	57.081	1.200	Open Manhole	1500
1.029	19.001	200.0	53	59.192	56.911	1.606	Open Manhole	1500
1.030	8.832	200.0	54	59.339	56.867	1.798	Open Manhole	1500

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.031	o	675	54	59.339	56.867	1.798	Open Manhole	1500
1.032	o	675	55	59.617	56.818	2.124	Open Manhole	1500
1.033	o	675	56	59.856	56.739	2.442	Open Manhole	1500
7.000	o	150	57	61.489	60.139	1.200	Open Manhole	1200
8.000	o	150	58	61.694	60.115	1.429	Open Manhole	1200
7.001	o	225	59	61.600	59.757	1.618	Open Manhole	1200
7.002	o	225	60	60.457	59.032	1.200	Open Manhole	1200
7.003	o	225	61	60.200	58.775	1.200	Open Manhole	1200
9.000	o	150	62	60.615	59.135	1.330	Open Manhole	1200
9.001	o	150	63	60.360	59.010	1.200	Open Manhole	1200
9.002	o	150	64	60.172	58.822	1.200	Open Manhole	1200
9.003	o	150	65	59.932	58.485	1.297	Open Manhole	1200
1.034	o	675	66	59.831	56.663	2.493	Open Manhole	1500
1.035	o	675	67	59.400	56.552	2.173	Open Manhole	1500
1.036	o	675	68	58.974	56.476	1.823	Open Manhole	1500
1.037	o	675	69	58.669	56.425	1.569	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.031	9.724	200.0	55	59.617	56.818	2.124	Open Manhole	1500
1.032	15.766	200.0	56	59.856	56.739	2.442	Open Manhole	1500
1.033	15.261	200.8	66	59.831	56.663	2.493	Open Manhole	1500
7.000	19.354	63.0	59	61.600	59.832	1.618	Open Manhole	1200
8.000	28.329	100.1	59	61.600	59.832	1.618	Open Manhole	1200
7.001	29.492	40.7	60	60.457	59.032	1.200	Open Manhole	1200
7.002	15.210	59.2	61	60.200	58.775	1.200	Open Manhole	1200
7.003	33.023	19.9	66	59.831	57.113	2.493	Open Manhole	1500
9.000	10.224	81.8	63	60.360	59.010	1.200	Open Manhole	1200
9.001	6.964	37.0	64	60.172	58.822	1.200	Open Manhole	1200
9.002	9.634	28.6	65	59.932	58.485	1.297	Open Manhole	1200
9.003	8.055	6.2	66	59.831	57.188	2.493	Open Manhole	1500
1.034	22.204	200.0	67	59.400	56.552	2.173	Open Manhole	1500
1.035	15.175	200.0	68	58.974	56.476	1.823	Open Manhole	1500
1.036	10.375	203.4	69	58.669	56.425	1.569	Open Manhole	1500
1.037	15.772	200.0	70	58.863	56.346	1.841	Open Manhole	1500

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.038	o	675	70	58.863	56.346	1.841	Open Manhole	1500
10.000	o	150	71	58.747	57.397	1.200	Open Manhole	1200
1.039	o	750	72	59.140	56.192	2.198	Open Manhole	1800
1.040	o	450	73	58.350	55.900	2.000	Open Manhole	2400

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.038	15.747	198.7	72	59.140	56.267	2.198	Open Manhole	1800
10.000	14.901	24.6	72	59.140	56.792	2.198	Open Manhole	1800
1.039	6.103	200.0	73	58.350	56.161	1.439	Open Manhole	2400
1.040	9.383	385.0	74	58.700	55.876	2.374	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.000	0.000	0.000
1.001	User	-	100	0.008	0.008	0.008
	User	-	100	0.004	0.004	0.012
	User	-	100	0.016	0.016	0.028
	User	-	100	0.009	0.009	0.037
1.002	User	-	100	0.009	0.009	0.009
1.003	User	-	100	0.012	0.012	0.012
	User	-	100	0.008	0.008	0.020
1.004	User	-	100	0.008	0.008	0.008
	User	-	100	0.008	0.008	0.017
	User	-	100	0.022	0.022	0.039
1.005	-	-	100	0.000	0.000	0.000
1.006	User	-	100	0.008	0.008	0.008
	User	-	100	0.008	0.008	0.016
1.007	User	-	100	0.010	0.010	0.010
	User	-	100	0.004	0.004	0.014
	User	-	100	0.003	0.003	0.017
	User	-	100	0.005	0.005	0.022
	User	-	100	0.007	0.007	0.029
	User	-	100	0.025	0.025	0.054
1.008	User	-	100	0.019	0.019	0.019
	User	-	100	0.009	0.009	0.028
1.009	User	-	100	0.010	0.010	0.010
	User	-	100	0.006	0.006	0.016
	User	-	100	0.028	0.028	0.044
	User	-	100	0.002	0.002	0.046
2.000	User	-	100	0.008	0.008	0.008
	User	-	100	0.002	0.002	0.010
	User	-	100	0.003	0.003	0.013
	User	-	100	0.008	0.008	0.021
	User	-	100	0.013	0.013	0.034
	User	-	100	0.005	0.005	0.040
	User	-	100	0.003	0.003	0.043
	User	-	100	0.005	0.005	0.048
3.000	User	-	100	0.016	0.016	0.016
	User	-	100	0.032	0.032	0.048
	User	-	100	0.003	0.003	0.051
	User	-	100	0.002	0.002	0.053
3.001	User	-	100	0.012	0.012	0.012
2.001	-	-	100	0.000	0.000	0.000
2.002	User	-	100	0.012	0.012	0.012
	User	-	100	0.010	0.010	0.022
2.003	User	-	100	0.055	0.055	0.055
	User	-	100	0.002	0.002	0.057
	User	-	100	0.003	0.003	0.059
	User	-	100	0.018	0.018	0.077
	User	-	100	0.012	0.012	0.089
	User	-	100	0.011	0.011	0.100
1.010	User	-	100	0.007	0.007	0.007
	User	-	100	0.019	0.019	0.026
1.011	User	-	100	0.024	0.024	0.024

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.012	User	-	100	0.006	0.006	0.006
	User	-	100	0.013	0.013	0.019
	User	-	100	0.006	0.006	0.025
	User	-	100	0.005	0.005	0.030
1.013	User	-	100	0.003	0.003	0.003
	User	-	100	0.003	0.003	0.006
	User	-	100	0.016	0.016	0.023
	User	-	100	0.015	0.015	0.038
	User	-	100	0.010	0.010	0.048
	User	-	100	0.010	0.010	0.058
	User	-	100	0.021	0.021	0.079
	User	-	100	0.014	0.014	0.093
1.014	User	-	100	0.012	0.012	0.012
1.015	User	-	100	0.010	0.010	0.010
	User	-	100	0.003	0.003	0.013
	User	-	100	0.003	0.003	0.015
	User	-	100	0.003	0.003	0.018
	User	-	100	0.008	0.008	0.026
	User	-	100	0.016	0.016	0.042
1.016	User	-	100	0.046	0.046	0.046
	User	-	100	0.003	0.003	0.049
	User	-	100	0.003	0.003	0.052
	User	-	100	0.008	0.008	0.060
	User	-	100	0.011	0.011	0.071
	User	-	100	0.011	0.011	0.082
	User	-	100	0.011	0.011	0.093
4.000	User	-	100	0.012	0.012	0.012
	User	-	100	0.005	0.005	0.018
	User	-	100	0.005	0.005	0.023
	User	-	100	0.005	0.005	0.028
4.001	User	-	100	0.033	0.033	0.033
	User	-	100	0.013	0.013	0.046
4.002	User	-	100	0.016	0.016	0.016
	User	-	100	0.005	0.005	0.022
	User	-	100	0.003	0.003	0.024
	User	-	100	0.006	0.006	0.030
4.003	User	-	100	0.010	0.010	0.010
	User	-	100	0.005	0.005	0.015
4.004	-	-	100	0.000	0.000	0.000
4.005	User	-	100	0.048	0.048	0.048
	User	-	100	0.025	0.025	0.073
	User	-	100	0.005	0.005	0.078
4.006	User	-	100	0.017	0.017	0.017
	User	-	100	0.019	0.019	0.036
	User	-	100	0.015	0.015	0.050
	User	-	100	0.008	0.008	0.058
4.007	-	-	100	0.000	0.000	0.000
1.017	User	-	100	0.012	0.012	0.012
	User	-	100	0.003	0.003	0.015
1.018	User	-	100	0.014	0.014	0.014
	User	-	100	0.019	0.019	0.033

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
	User	-	100	0.030	0.030	0.063
	User	-	100	0.012	0.012	0.075
5.000	User	-	100	0.016	0.016	0.016
	User	-	100	0.025	0.025	0.042
5.001	User	-	100	0.016	0.016	0.016
5.002	User	-	100	0.014	0.014	0.014
	User	-	100	0.007	0.007	0.021
	User	-	100	0.013	0.013	0.034
	User	-	100	0.004	0.004	0.038
5.003	User	-	100	0.043	0.043	0.043
1.019	User	-	100	0.041	0.041	0.041
	User	-	100	0.008	0.008	0.049
	User	-	100	0.024	0.024	0.073
	User	-	100	0.041	0.041	0.114
	User	-	100	0.011	0.011	0.125
1.020	User	-	100	0.023	0.023	0.023
1.021	User	-	100	0.021	0.021	0.021
1.022	User	-	100	0.012	0.012	0.012
	User	-	100	0.008	0.008	0.019
6.000	User	-	100	0.026	0.026	0.026
	User	-	100	0.014	0.014	0.041
	User	-	100	0.015	0.015	0.056
6.001	User	-	100	0.013	0.013	0.013
	User	-	100	0.027	0.027	0.039
	User	-	100	0.003	0.003	0.042
6.002	User	-	100	0.002	0.002	0.002
	User	-	100	0.024	0.024	0.027
	User	-	100	0.030	0.030	0.056
	User	-	100	0.009	0.009	0.065
	User	-	100	0.015	0.015	0.080
	User	-	100	0.009	0.009	0.089
6.003	-	-	100	0.000	0.000	0.000
1.023	User	-	100	0.007	0.007	0.007
	User	-	100	0.019	0.019	0.026
1.024	User	-	100	0.013	0.013	0.013
	User	-	100	0.008	0.008	0.021
1.025	User	-	100	0.027	0.027	0.027
	User	-	100	0.043	0.043	0.069
1.026	User	-	100	0.028	0.028	0.028
	User	-	100	0.008	0.008	0.036
1.027	User	-	100	0.009	0.009	0.009
	User	-	100	0.012	0.012	0.021
1.028	User	-	100	0.010	0.010	0.010
	User	-	100	0.019	0.019	0.029
	User	-	100	0.009	0.009	0.038
1.029	User	-	100	0.015	0.015	0.015
1.030	User	-	100	0.011	0.011	0.011
1.031	User	-	100	0.012	0.012	0.012
1.032	User	-	100	0.009	0.009	0.009
	User	-	100	0.008	0.008	0.018
	User	-	100	0.014	0.014	0.032

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
	User	-	100	0.015	0.015	0.048
1.033	User	-	100	0.008	0.008	0.008
	User	-	100	0.009	0.009	0.018
7.000	User	-	100	0.014	0.014	0.014
	User	-	100	0.005	0.005	0.019
	User	-	100	0.016	0.016	0.035
8.000	User	-	100	0.034	0.034	0.034
	User	-	100	0.023	0.023	0.057
7.001	User	-	100	0.019	0.019	0.019
	User	-	100	0.028	0.028	0.047
	User	-	100	0.014	0.014	0.061
7.002	User	-	100	0.005	0.005	0.005
	User	-	100	0.018	0.018	0.024
7.003	User	-	100	0.062	0.062	0.062
9.000	User	-	100	0.007	0.007	0.007
	User	-	100	0.007	0.007	0.014
	User	-	100	0.037	0.037	0.052
	User	-	100	0.012	0.012	0.063
	User	-	100	0.006	0.006	0.069
9.001	User	-	100	0.017	0.017	0.017
	User	-	100	0.007	0.007	0.024
	User	-	100	0.007	0.007	0.031
9.002	User	-	100	0.006	0.006	0.006
9.003	User	-	100	0.011	0.011	0.011
1.034	User	-	100	0.010	0.010	0.010
	User	-	100	0.019	0.019	0.029
1.035	User	-	100	0.048	0.048	0.048
	User	-	100	0.009	0.009	0.057
	User	-	100	0.005	0.005	0.062
	User	-	100	0.014	0.014	0.076
	User	-	100	0.001	0.001	0.077
	User	-	100	0.001	0.001	0.078
1.036	User	-	100	0.009	0.009	0.009
	User	-	100	0.002	0.002	0.011
	User	-	100	0.009	0.009	0.020
1.037	User	-	100	0.018	0.018	0.018
1.038	User	-	100	0.008	0.008	0.008
	User	-	100	0.004	0.004	0.012
	User	-	100	0.006	0.006	0.018
10.000	User	-	100	0.012	0.012	0.012
1.039	User	-	100	0.015	0.015	0.015
	User	-	100	0.023	0.023	0.038
1.040	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				2.548	2.548	2.548

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Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.040	74	58.700	55.876	0.000	0	0

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: 73, DS/PN: 1.040, Volume (m³): 12.9

Unit Reference	MD-SHE-0388-1050-2150-1050
Design Head (m)	2.150
Design Flow (l/s)	105.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	388
Invert Level (m)	55.900
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.150	104.8
Flush-Flo™	0.708	104.6
Kick-Flo®	1.506	88.2
Mean Flow over Head Range	-	88.9

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.8	1.200	99.8	3.000	123.3	7.000	186.4
0.200	38.5	1.400	94.0	3.500	132.9	7.500	192.8
0.300	73.7	1.600	90.8	4.000	141.8	8.000	199.0
0.400	99.1	1.800	96.2	4.500	150.2	8.500	205.0
0.500	102.4	2.000	101.2	5.000	158.1	9.000	210.8
0.600	104.1	2.200	106.0	5.500	165.7	9.500	216.5
0.800	104.3	2.400	110.6	6.000	172.9		
1.000	102.7	2.600	115.0	6.500	179.8		

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Storage Structures for Storm

Tank or Pond Manhole: 73, DS/PN: 1.040

Invert Level (m) 55.900

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	125.3	2.450	679.0

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

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.320
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.700 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 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, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	0.1	360 Winter	2	+0%	30/15 Summer			
1.001	1	15 Winter	2	+0%	30/15 Summer	100/15 Winter		
1.002	2	15 Winter	2	+0%	30/15 Summer			
1.003	3	15 Winter	2	+0%	30/15 Summer	100/15 Winter		
1.004	4	15 Winter	2	+0%	30/15 Summer			
1.005	5	15 Winter	2	+0%	30/15 Summer			
1.006	6	15 Winter	2	+0%	30/15 Summer			
1.007	8	15 Winter	2	+0%	30/15 Summer			
1.008	9	15 Winter	2	+0%	30/15 Summer			
1.009	10	15 Winter	2	+0%	30/15 Summer			
2.000	11	15 Summer	2	+0%	30/15 Summer			
3.000	12	15 Summer	2	+0%	30/15 Summer			
3.001	13	15 Summer	2	+0%	30/15 Summer			
2.001	14	15 Summer	2	+0%	2/15 Summer			
2.002	15	15 Summer	2	+0%	100/15 Summer			
2.003	16	15 Summer	2	+0%				
1.010	17	15 Winter	2	+0%	30/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	0.1	68.312	-0.100	0.000	0.00		0.0	OK	
1.001	1	68.232	-0.091	0.000	0.32		5.1	OK	3
1.002	2	68.130	-0.081	0.000	0.43		6.3	OK	
1.003	3	68.065	-0.075	0.000	0.50		9.1	OK	1
1.004	4	67.820	-0.041	0.000	0.87		14.3	OK	
1.005	5	67.640	-0.040	0.000	0.88		14.4	OK	
1.006	6	67.423	-0.122	0.000	0.43		16.3	OK	
1.007	8	67.241	-0.092	0.000	0.65		22.9	OK	
1.008	9	67.158	-0.087	0.000	0.68		25.9	OK	
1.009	10	66.957	-0.017	0.000	1.00		30.5	OK	
2.000	11	71.107	-0.034	0.000	0.49		9.5	OK	
3.000	12	71.229	-0.057	0.000	0.70		11.9	OK	
3.001	13	71.158	-0.005	0.000	0.73		12.2	OK	
2.001	14	71.067	0.066	0.000	1.36		21.0	SURCHARGED	
2.002	15	70.811	-0.108	0.000	0.54		23.9	OK	
2.003	16	70.620	-0.160	0.000	0.18		37.0	OK	
1.010	17	66.901	-0.026	0.000	1.00		64.8	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.011	18	15 Winter	2	+0%	30/15 Summer			
1.012	19	15 Winter	2	+0%	30/15 Summer			
1.013	20	15 Winter	2	+0%	30/15 Summer			
1.014	21	15 Winter	2	+0%	30/15 Summer			
1.015	22	15 Winter	2	+0%	30/15 Summer			
1.016	23	15 Winter	2	+0%	100/15 Summer			
4.000	24	15 Summer	2	+0%	30/15 Summer			
4.001	25	15 Summer	2	+0%	30/15 Summer			
4.002	26	15 Summer	2	+0%	30/15 Summer	100/15 Summer		
4.003	27	15 Summer	2	+0%	30/15 Summer			
4.004	28	15 Winter	2	+0%	30/15 Summer			
4.005	29	15 Winter	2	+0%	100/15 Summer			
4.006	30	15 Winter	2	+0%	30/15 Summer			
4.007	31	15 Winter	2	+0%	30/15 Summer			
1.017	32	15 Winter	2	+0%				
1.018	33	15 Winter	2	+0%	100/15 Winter			
5.000	34	15 Summer	2	+0%	100/15 Summer			
5.001	35	15 Summer	2	+0%	30/15 Summer			
5.002	36	15 Summer	2	+0%	30/15 Summer			
5.003	37	15 Summer	2	+0%	30/15 Summer			
1.019	38	15 Winter	2	+0%	100/15 Summer			
1.020	39	15 Winter	2	+0%	100/15 Summer			
1.021	40	15 Winter	2	+0%	100/15 Summer			
1.022	41	15 Winter	2	+0%	100/15 Summer			
6.000	42	15 Summer	2	+0%	100/15 Summer			
6.001	43	15 Summer	2	+0%	30/15 Summer			
6.002	44	15 Summer	2	+0%	30/15 Summer			
6.003	45	15 Summer	2	+0%	30/15 Summer			
1.023	46	15 Winter	2	+0%	30/15 Summer			
1.024	47	15 Winter	2	+0%				
1.025	48	15 Winter	2	+0%	100/15 Summer			
1.026	49	15 Winter	2	+0%	100/15 Summer			
1.027	50	15 Winter	2	+0%	100/15 Summer			
1.028	51	15 Winter	2	+0%	30/30 Winter	100/15 Winter		
1.029	52	15 Winter	2	+0%	30/15 Summer	100/15 Winter		
1.030	53	15 Winter	2	+0%	30/15 Summer			
1.031	54	15 Winter	2	+0%	30/15 Summer			
1.032	55	15 Winter	2	+0%	30/15 Summer			
1.033	56	15 Winter	2	+0%	30/15 Winter			
7.000	57	15 Summer	2	+0%	100/15 Summer			
8.000	58	15 Summer	2	+0%	30/15 Summer			
7.001	59	15 Summer	2	+0%	100/15 Summer			
7.002	60	15 Summer	2	+0%	30/15 Summer			
7.003	61	15 Summer	2	+0%	100/15 Summer			
9.000	62	15 Summer	2	+0%	30/15 Summer			
9.001	63	15 Summer	2	+0%	30/15 Summer			
9.002	64	15 Summer	2	+0%	30/15 Summer			
9.003	65	15 Summer	2	+0%	100/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.011	18	66.680	-0.127	0.000	0.69		66.6	OK	
1.012	19	66.621	-0.113	0.000	0.77		69.2	OK	
1.013	20	66.578	-0.107	0.000	0.80		78.0	OK	
1.014	21	66.508	-0.098	0.000	0.90		79.2	OK	
1.015	22	66.414	-0.144	0.000	0.69		82.2	OK	
1.016	23	66.184	-0.176	0.000	0.55		89.7	OK	
4.000	24	69.363	-0.033	0.000	0.77		6.3	OK	
4.001	25	69.049	-0.080	0.000	0.43		12.0	OK	
4.002	26	68.735	-0.054	0.000	0.73		16.0	OK	2
4.003	27	68.463	-0.055	0.000	0.72		18.2	OK	
4.004	28	68.160	-0.058	0.000	0.68		17.9	OK	
4.005	29	67.268	-0.136	0.000	0.33		28.8	OK	
4.006	30	66.556	-0.094	0.000	0.64		37.0	OK	
4.007	31	66.283	-0.038	0.000	1.00		36.5	OK	
1.017	32	65.882	-0.303	0.000	0.23		117.9	OK	
1.018	33	65.098	-0.293	0.000	0.26		125.1	OK	
5.000	34	66.050	-0.081	0.000	0.43		9.2	OK	
5.001	35	65.670	-0.072	0.000	0.52		11.1	OK	
5.002	36	65.425	-0.068	0.000	0.57		16.0	OK	
5.003	37	64.561	-0.049	0.000	0.79		21.8	OK	
1.019	38	63.908	-0.252	0.000	0.40		152.1	OK	
1.020	39	63.469	-0.231	0.000	0.48		154.5	OK	
1.021	40	63.112	-0.260	0.000	0.37		156.4	OK	
1.022	41	62.535	-0.274	0.000	0.32		158.0	OK	
6.000	42	63.498	-0.073	0.000	0.52		12.3	OK	
6.001	43	63.114	-0.077	0.000	0.48		17.7	OK	
6.002	44	62.153	-0.060	0.000	0.87		28.9	OK	
6.003	45	62.088	-0.069	0.000	0.82		29.2	OK	
1.023	46	61.906	-0.156	0.000	0.76		181.0	OK	
1.024	47	61.598	-0.284	0.000	0.29		183.1	OK	
1.025	48	60.264	-0.266	0.000	0.35		190.5	OK	
1.026	49	59.330	-0.277	0.000	0.32		194.1	OK	
1.027	50	57.935	-0.372	0.000	0.31		195.9	OK	
1.028	51	57.576	-0.328	0.000	0.42		199.9	OK	3
1.029	52	57.321	-0.360	0.000	0.43		201.7	OK	3
1.030	53	57.261	-0.325	0.000	0.53		202.8	OK	
1.031	54	57.211	-0.331	0.000	0.52		203.5	OK	
1.032	55	57.139	-0.354	0.000	0.46		207.4	OK	
1.033	56	57.063	-0.351	0.000	0.47		209.5	OK	
7.000	57	60.201	-0.088	0.000	0.36		7.7	OK	
8.000	58	60.212	-0.053	0.000	0.74		12.5	OK	
7.001	59	59.851	-0.131	0.000	0.36		27.7	OK	
7.002	60	59.147	-0.110	0.000	0.51		30.4	OK	
7.003	61	58.868	-0.132	0.000	0.36		39.2	OK	
9.000	62	59.245	-0.040	0.000	0.88		15.4	OK	
9.001	63	59.109	-0.051	0.000	0.77		19.3	OK	
9.002	64	58.913	-0.059	0.000	0.66		19.6	OK	

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
9.003	65	58.546	-0.089	0.000	0.34		21.2	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.034	66	30 Winter	2	+0%	30/15 Winter				57.005
1.035	67	30 Winter	2	+0%	30/15 Winter				56.910
1.036	68	30 Winter	2	+0%	30/30 Winter				56.861
1.037	69	30 Winter	2	+0%	30/15 Winter				56.781
1.038	70	30 Winter	2	+0%	30/15 Winter				56.702
10.000	71	15 Summer	2	+0%	100/30 Summer				57.425
1.039	72	30 Winter	2	+0%	30/30 Summer				56.615
1.040	73	30 Winter	2	+0%	2/15 Summer				56.609

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.034	66	-0.333	0.000	0.51		237.9	OK	
1.035	67	-0.317	0.000	0.54		244.1	OK	
1.036	68	-0.291	0.000	0.62		246.1	OK	
1.037	69	-0.319	0.000	0.54		247.8	OK	
1.038	70	-0.319	0.000	0.55		249.1	OK	
10.000	71	-0.122	0.000	0.08		2.6	OK	
1.039	72	-0.327	0.000	0.60		252.0	OK	
1.040	73	0.259	0.000	1.05		104.5	SURCHARGED	

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

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.320
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.700 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 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, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	0.1	15 Winter	30	+0%	30/15 Summer			
1.001	1	15 Winter	30	+0%	30/15 Summer	100/15 Winter		
1.002	2	15 Winter	30	+0%	30/15 Summer			
1.003	3	15 Winter	30	+0%	30/15 Summer	100/15 Winter		
1.004	4	15 Winter	30	+0%	30/15 Summer			
1.005	5	15 Winter	30	+0%	30/15 Summer			
1.006	6	15 Winter	30	+0%	30/15 Summer			
1.007	8	15 Winter	30	+0%	30/15 Summer			
1.008	9	15 Winter	30	+0%	30/15 Summer			
1.009	10	15 Winter	30	+0%	30/15 Summer			
2.000	11	15 Summer	30	+0%	30/15 Summer			
3.000	12	15 Summer	30	+0%	30/15 Summer			
3.001	13	15 Winter	30	+0%	30/15 Summer			
2.001	14	15 Summer	30	+0%	2/15 Summer			
2.002	15	15 Summer	30	+0%	100/15 Summer			
2.003	16	15 Summer	30	+0%				
1.010	17	15 Winter	30	+0%	30/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	0.1	68.490	0.078	0.000	0.32		1.5	SURCHARGED	
1.001	1	68.505	0.182	0.000	0.68		10.8	SURCHARGED	3
1.002	2	68.481	0.270	0.000	0.73		10.7	SURCHARGED	
1.003	3	68.459	0.319	0.000	0.76		14.0	SURCHARGED	1
1.004	4	68.368	0.507	0.000	1.39		22.9	SURCHARGED	
1.005	5	68.142	0.462	0.000	1.32		21.5	SURCHARGED	
1.006	6	67.965	0.420	0.000	0.67		25.6	SURCHARGED	
1.007	8	67.898	0.564	0.000	0.93		33.0	SURCHARGED	
1.008	9	67.813	0.567	0.000	0.99		37.9	SURCHARGED	
1.009	10	67.570	0.596	0.000	1.56		47.6	SURCHARGED	
2.000	11	71.386	0.245	0.000	0.81		15.8	SURCHARGED	
3.000	12	71.601	0.315	0.000	0.94		15.9	SURCHARGED	
3.001	13	71.487	0.324	0.000	1.13		18.9	SURCHARGED	
2.001	14	71.279	0.278	0.000	2.13		32.8	SURCHARGED	
2.002	15	70.862	-0.058	0.000	0.89		39.8	OK	
2.003	16	70.649	-0.132	0.000	0.35		72.5	OK	
1.010	17	67.475	0.547	0.000	1.78		115.3	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.011	18	15 Winter	30	+0%	30/15 Summer			
1.012	19	15 Winter	30	+0%	30/15 Summer			
1.013	20	15 Winter	30	+0%	30/15 Summer			
1.014	21	15 Winter	30	+0%	30/15 Summer			
1.015	22	15 Winter	30	+0%	30/15 Summer			
1.016	23	15 Winter	30	+0%	100/15 Summer			
4.000	24	15 Summer	30	+0%	30/15 Summer			
4.001	25	15 Winter	30	+0%	30/15 Summer			
4.002	26	15 Winter	30	+0%	30/15 Summer	100/15 Summer		
4.003	27	15 Winter	30	+0%	30/15 Summer			
4.004	28	15 Winter	30	+0%	30/15 Summer			
4.005	29	15 Winter	30	+0%	100/15 Summer			
4.006	30	15 Winter	30	+0%	30/15 Summer			
4.007	31	15 Winter	30	+0%	30/15 Summer			
1.017	32	15 Winter	30	+0%				
1.018	33	15 Winter	30	+0%	100/15 Winter			
5.000	34	15 Summer	30	+0%	100/15 Summer			
5.001	35	15 Summer	30	+0%	30/15 Summer			
5.002	36	15 Summer	30	+0%	30/15 Summer			
5.003	37	15 Winter	30	+0%	30/15 Summer			
1.019	38	15 Winter	30	+0%	100/15 Summer			
1.020	39	15 Winter	30	+0%	100/15 Summer			
1.021	40	15 Winter	30	+0%	100/15 Summer			
1.022	41	15 Winter	30	+0%	100/15 Summer			
6.000	42	15 Summer	30	+0%	100/15 Summer			
6.001	43	15 Summer	30	+0%	30/15 Summer			
6.002	44	15 Winter	30	+0%	30/15 Summer			
6.003	45	15 Winter	30	+0%	30/15 Summer			
1.023	46	15 Winter	30	+0%	30/15 Summer			
1.024	47	15 Winter	30	+0%				
1.025	48	15 Winter	30	+0%	100/15 Summer			
1.026	49	15 Winter	30	+0%	100/15 Summer			
1.027	50	30 Winter	30	+0%	100/15 Summer			
1.028	51	120 Winter	30	+0%	30/30 Winter	100/15 Winter		
1.029	52	120 Winter	30	+0%	30/15 Summer	100/15 Winter		
1.030	53	120 Winter	30	+0%	30/15 Summer			
1.031	54	120 Winter	30	+0%	30/15 Summer			
1.032	55	120 Winter	30	+0%	30/15 Summer			
1.033	56	120 Winter	30	+0%	30/15 Winter			
7.000	57	15 Summer	30	+0%	100/15 Summer			
8.000	58	15 Summer	30	+0%	30/15 Summer			
7.001	59	15 Summer	30	+0%	100/15 Summer			
7.002	60	15 Summer	30	+0%	30/15 Summer			
7.003	61	15 Summer	30	+0%	100/15 Summer			
9.000	62	15 Summer	30	+0%	30/15 Summer			
9.001	63	15 Summer	30	+0%	30/15 Summer			
9.002	64	15 Summer	30	+0%	30/15 Summer			
9.003	65	15 Summer	30	+0%	100/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.011	18	67.147	0.340	0.000	1.22		117.3	SURCHARGED	
1.012	19	67.046	0.312	0.000	1.36		122.2	SURCHARGED	
1.013	20	66.950	0.265	0.000	1.44		139.6	SURCHARGED	
1.014	21	66.784	0.178	0.000	1.60		141.1	SURCHARGED	
1.015	22	66.651	0.093	0.000	1.21		144.4	SURCHARGED	
1.016	23	66.278	-0.082	0.000	0.95		156.3	OK	
4.000	24	69.568	0.172	0.000	1.18		9.5	SURCHARGED	
4.001	25	69.324	0.195	0.000	0.73		20.3	SURCHARGED	
4.002	26	69.167	0.378	0.000	1.24		27.2	SURCHARGED	2
4.003	27	68.766	0.248	0.000	1.17		29.7	SURCHARGED	
4.004	28	68.375	0.157	0.000	1.09		28.9	SURCHARGED	
4.005	29	67.308	-0.096	0.000	0.60		52.5	OK	
4.006	30	67.056	0.406	0.000	1.15		67.0	SURCHARGED	
4.007	31	66.625	0.304	0.000	1.82		66.6	SURCHARGED	
1.017	32	65.943	-0.242	0.000	0.44		219.8	OK	
1.018	33	65.163	-0.228	0.000	0.48		230.0	OK	
5.000	34	66.084	-0.047	0.000	0.81		17.4	OK	
5.001	35	65.847	0.105	0.000	0.92		19.7	SURCHARGED	
5.002	36	65.738	0.245	0.000	0.92		25.9	SURCHARGED	
5.003	37	64.998	0.388	0.000	1.36		37.6	SURCHARGED	
1.019	38	64.008	-0.152	0.000	0.75		287.6	OK	
1.020	39	63.588	-0.112	0.000	0.91		293.1	OK	
1.021	40	63.204	-0.167	0.000	0.71		298.1	OK	
1.022	41	62.616	-0.193	0.000	0.62		302.5	OK	
6.000	42	63.570	-0.001	0.000	0.96		23.0	OK	
6.001	43	63.265	0.074	0.000	0.89		32.8	SURCHARGED	
6.002	44	62.638	0.425	0.000	1.69		55.7	SURCHARGED	
6.003	45	62.494	0.337	0.000	1.54		54.7	SURCHARGED	
1.023	46	62.280	0.218	0.000	1.51		361.6	SURCHARGED	
1.024	47	61.680	-0.201	0.000	0.59		365.9	OK	
1.025	48	60.360	-0.169	0.000	0.70		380.2	OK	
1.026	49	59.417	-0.190	0.000	0.63		387.2	OK	
1.027	50	58.056	-0.251	0.000	0.57		364.2	OK	
1.028	51	57.933	0.028	0.000	0.43		203.4	SURCHARGED	3
1.029	52	57.769	0.088	0.000	0.44		205.0	SURCHARGED	3
1.030	53	57.726	0.140	0.000	0.54		206.1	SURCHARGED	
1.031	54	57.709	0.167	0.000	0.53		207.5	SURCHARGED	
1.032	55	57.691	0.198	0.000	0.47		212.5	SURCHARGED	
1.033	56	57.554	0.140	0.000	0.49		219.7	SURCHARGED	
7.000	57	60.231	-0.058	0.000	0.69		14.5	OK	
8.000	58	60.456	0.191	0.000	1.23		20.8	SURCHARGED	
7.001	59	59.901	-0.081	0.000	0.70		53.7	OK	
7.002	60	59.258	0.001	0.000	1.03		61.5	SURCHARGED	
7.003	61	58.922	-0.078	0.000	0.74		81.6	OK	
9.000	62	59.581	0.296	0.000	1.39		24.3	SURCHARGED	
9.001	63	59.345	0.185	0.000	1.28		32.0	SURCHARGED	
9.002	64	59.063	0.091	0.000	1.12		33.1	SURCHARGED	

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
9.003	65	58.568	-0.067	0.000	0.58		36.3	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.034	66	120 Winter	30	+0%	30/15 Winter				57.462
1.035	67	60 Winter	30	+0%	30/15 Winter				57.350
1.036	68	60 Winter	30	+0%	30/30 Winter				57.294
1.037	69	60 Winter	30	+0%	30/15 Winter				57.255
1.038	70	60 Winter	30	+0%	30/15 Winter				57.222
10.000	71	15 Summer	30	+0%	100/30 Summer				57.435
1.039	72	60 Winter	30	+0%	30/30 Summer				57.208
1.040	73	60 Winter	30	+0%	2/15 Summer				57.202

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.034	66	0.124	0.000	0.55		254.7	SURCHARGED	
1.035	67	0.123	0.000	0.83		375.3	SURCHARGED	
1.036	68	0.143	0.000	0.94		376.8	SURCHARGED	
1.037	69	0.155	0.000	0.83		375.4	SURCHARGED	
1.038	70	0.201	0.000	0.82		372.4	SURCHARGED	
10.000	71	-0.112	0.000	0.15		4.9	OK	
1.039	72	0.266	0.000	0.89		375.9	SURCHARGED	
1.040	73	0.852	0.000	1.06		104.6	SURCHARGED	

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

Simulation Criteria

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

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

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.320
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.700 Cv (Winter) 0.840

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 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, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	0.1	30 Winter	100	+30%	30/15 Summer			
1.001	1	15 Winter	100	+30%	30/15 Summer	100/15 Winter		
1.002	2	15 Winter	100	+30%	30/15 Summer			
1.003	3	15 Winter	100	+30%	30/15 Summer	100/15 Winter		
1.004	4	15 Winter	100	+30%	30/15 Summer			
1.005	5	15 Winter	100	+30%	30/15 Summer			
1.006	6	15 Winter	100	+30%	30/15 Summer			
1.007	8	15 Winter	100	+30%	30/15 Summer			
1.008	9	15 Winter	100	+30%	30/15 Summer			
1.009	10	15 Winter	100	+30%	30/15 Summer			
2.000	11	15 Winter	100	+30%	30/15 Summer			
3.000	12	15 Winter	100	+30%	30/15 Summer			
3.001	13	15 Winter	100	+30%	30/15 Summer			
2.001	14	15 Winter	100	+30%	2/15 Summer			
2.002	15	15 Summer	100	+30%	100/15 Summer			
2.003	16	15 Summer	100	+30%				
1.010	17	15 Winter	100	+30%	30/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	0.1	69.507	1.095	0.000	0.77		3.5	SURCHARGED	
1.001	1	69.508	1.185	1.984	1.01		16.1	FLOOD	3
1.002	2	69.580	1.369	0.000	1.22		17.9	FLOOD RISK	
1.003	3	69.610	1.470	0.053	1.17		21.3	FLOOD	1
1.004	4	69.618	1.757	0.000	1.59		26.2	SURCHARGED	
1.005	5	69.488	1.808	0.000	1.82		29.6	SURCHARGED	
1.006	6	69.402	1.857	0.000	0.90		34.4	SURCHARGED	
1.007	8	69.358	2.025	0.000	1.17		41.2	SURCHARGED	
1.008	9	69.274	2.028	0.000	1.26		48.2	SURCHARGED	
1.009	10	69.013	2.038	0.000	1.90		58.1	SURCHARGED	
2.000	11	71.925	0.784	0.000	1.17		22.8	SURCHARGED	
3.000	12	72.392	1.106	0.000	1.32		22.5	FLOOD RISK	
3.001	13	72.186	1.023	0.000	1.62		27.0	FLOOD RISK	
2.001	14	71.760	0.759	0.000	3.04		46.9	SURCHARGED	
2.002	15	71.014	0.094	0.000	1.29		57.6	SURCHARGED	
2.003	16	70.676	-0.104	0.000	0.54		110.9	OK	
1.010	17	68.899	1.971	0.000	2.46		159.8	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.011	18	15 Winter	100	+30%	30/15 Summer			
1.012	19	15 Winter	100	+30%	30/15 Summer			
1.013	20	15 Winter	100	+30%	30/15 Summer			
1.014	21	15 Winter	100	+30%	30/15 Summer			
1.015	22	15 Winter	100	+30%	30/15 Summer			
1.016	23	15 Winter	100	+30%	100/15 Summer			
4.000	24	15 Winter	100	+30%	30/15 Summer			
4.001	25	15 Winter	100	+30%	30/15 Summer			
4.002	26	15 Winter	100	+30%	30/15 Summer	100/15 Summer		
4.003	27	15 Winter	100	+30%	30/15 Summer			
4.004	28	15 Winter	100	+30%	30/15 Summer			
4.005	29	15 Winter	100	+30%	100/15 Summer			
4.006	30	15 Winter	100	+30%	30/15 Summer			
4.007	31	15 Winter	100	+30%	30/15 Summer			
1.017	32	15 Winter	100	+30%				
1.018	33	15 Winter	100	+30%	100/15 Winter			
5.000	34	15 Winter	100	+30%	100/15 Summer			
5.001	35	15 Winter	100	+30%	30/15 Summer			
5.002	36	15 Winter	100	+30%	30/15 Summer			
5.003	37	15 Winter	100	+30%	30/15 Summer			
1.019	38	15 Winter	100	+30%	100/15 Summer			
1.020	39	15 Winter	100	+30%	100/15 Summer			
1.021	40	15 Winter	100	+30%	100/15 Summer			
1.022	41	15 Winter	100	+30%	100/15 Summer			
6.000	42	15 Winter	100	+30%	100/15 Summer			
6.001	43	15 Winter	100	+30%	30/15 Summer			
6.002	44	15 Winter	100	+30%	30/15 Summer			
6.003	45	15 Winter	100	+30%	30/15 Summer			
1.023	46	15 Winter	100	+30%	30/15 Summer			
1.024	47	30 Winter	100	+30%				
1.025	48	30 Winter	100	+30%	100/15 Summer			
1.026	49	30 Winter	100	+30%	100/15 Summer			
1.027	50	30 Winter	100	+30%	100/15 Summer			
1.028	51	30 Winter	100	+30%	30/30 Winter	100/15 Winter		
1.029	52	30 Winter	100	+30%	30/15 Summer	100/15 Winter		
1.030	53	30 Winter	100	+30%	30/15 Summer			
1.031	54	30 Winter	100	+30%	30/15 Summer			
1.032	55	30 Winter	100	+30%	30/15 Summer			
1.033	56	60 Winter	100	+30%	30/15 Winter			
7.000	57	15 Summer	100	+30%	100/15 Summer			
8.000	58	15 Summer	100	+30%	30/15 Summer			
7.001	59	15 Summer	100	+30%	100/15 Summer			
7.002	60	15 Winter	100	+30%	30/15 Summer			
7.003	61	15 Winter	100	+30%	100/15 Summer			
9.000	62	15 Winter	100	+30%	30/15 Summer			
9.001	63	15 Winter	100	+30%	30/15 Summer			
9.002	64	15 Winter	100	+30%	30/15 Summer			
9.003	65	15 Winter	100	+30%	100/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.011	18	68.222	1.415	0.000	1.71		164.4	SURCHARGED	
1.012	19	68.019	1.285	0.000	1.92		172.1	SURCHARGED	
1.013	20	67.825	1.140	0.000	2.07		201.2	SURCHARGED	
1.014	21	67.479	0.873	0.000	2.32		205.0	SURCHARGED	
1.015	22	67.204	0.646	0.000	1.79		213.9	SURCHARGED	
1.016	23	66.556	0.196	0.000	1.45		237.5	SURCHARGED	
4.000	24	70.456	1.060	0.000	1.22		9.9	FLOOD RISK	
4.001	25	70.302	1.173	0.000	0.91		25.2	FLOOD RISK	
4.002	26	69.989	1.200	0.962	1.45		31.8	FLOOD	2
4.003	27	69.601	1.083	0.000	1.32		33.5	FLOOD RISK	
4.004	28	69.134	0.916	0.000	1.34		35.2	FLOOD RISK	
4.005	29	68.040	0.636	0.000	0.71		61.8	SURCHARGED	
4.006	30	67.663	1.013	0.000	1.47		85.8	FLOOD RISK	
4.007	31	66.923	0.602	0.000	2.34		85.9	SURCHARGED	
1.017	32	66.001	-0.184	0.000	0.65		326.5	OK	
1.018	33	65.394	0.003	0.000	0.72		343.5	SURCHARGED	
5.000	34	66.930	0.799	0.000	0.91		19.5	SURCHARGED	
5.001	35	66.839	1.097	0.000	0.88		18.9	FLOOD RISK	
5.002	36	66.707	1.214	0.000	1.06		29.9	FLOOD RISK	
5.003	37	65.757	1.147	0.000	1.65		45.5	FLOOD RISK	
1.019	38	64.769	0.609	0.000	1.06		405.1	SURCHARGED	
1.020	39	64.250	0.550	0.000	1.27		410.2	SURCHARGED	
1.021	40	63.719	0.347	0.000	0.99		414.6	SURCHARGED	
1.022	41	63.162	0.353	0.000	0.86		419.5	SURCHARGED	
6.000	42	64.477	0.906	0.000	1.02		24.4	FLOOD RISK	
6.001	43	64.283	1.092	0.000	1.00		36.8	FLOOD RISK	
6.002	44	63.311	1.098	0.000	2.37		78.1	SURCHARGED	
6.003	45	63.004	0.847	0.000	2.15		76.4	SURCHARGED	
1.023	46	62.607	0.545	0.000	2.03		485.1	SURCHARGED	
1.024	47	61.818	-0.063	0.000	0.78		483.6	OK	
1.025	48	61.005	0.475	0.000	0.92		495.9	SURCHARGED	
1.026	49	60.231	0.624	0.000	0.82		502.0	SURCHARGED	
1.027	50	59.365	1.058	0.000	0.80		505.5	FLOOD RISK	
1.028	51	59.115	1.210	9.816	1.01		478.5	FLOOD	3
1.029	52	58.888	1.208	8.333	1.00		465.0	FLOOD	3
1.030	53	58.802	1.216	0.000	1.22		466.0	SURCHARGED	
1.031	54	58.740	1.198	0.000	1.19		468.2	SURCHARGED	
1.032	55	58.668	1.175	0.000	1.05		477.1	SURCHARGED	
1.033	56	58.579	1.164	0.000	1.03		464.4	SURCHARGED	
7.000	57	60.440	0.151	0.000	1.04		21.8	SURCHARGED	
8.000	58	61.104	0.839	0.000	1.73		29.4	SURCHARGED	
7.001	59	60.291	0.309	0.000	0.97		74.1	SURCHARGED	
7.002	60	59.695	0.438	0.000	1.36		81.1	SURCHARGED	
7.003	61	59.341	0.341	0.000	0.99		108.8	SURCHARGED	
9.000	62	60.398	1.113	0.000	1.78		31.2	FLOOD RISK	
9.001	63	60.041	0.881	0.000	1.76		43.9	SURCHARGED	
9.002	64	59.474	0.502	0.000	1.56		46.1	SURCHARGED	

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
9.003	65	58.826	0.191	0.000	0.78		48.7	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.034	66	60 Winter	100	+30%	30/15 Winter				58.504
1.035	67	60 Winter	100	+30%	30/15 Winter				58.348
1.036	68	60 Winter	100	+30%	30/30 Winter				58.197
1.037	69	120 Winter	100	+30%	30/15 Winter				58.077
1.038	70	120 Winter	100	+30%	30/15 Winter				58.061
10.000	71	120 Winter	100	+30%	100/30 Summer				58.048
1.039	72	120 Winter	100	+30%	30/30 Summer				58.047
1.040	73	120 Winter	100	+30%	2/15 Summer				58.040

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.034	66	1.166	0.000	1.18		547.8	SURCHARGED	
1.035	67	1.121	0.000	1.25		562.5	SURCHARGED	
1.036	68	1.046	0.000	1.42		565.1	SURCHARGED	
1.037	69	0.977	0.000	0.99		450.6	SURCHARGED	
1.038	70	1.040	0.000	0.99		451.5	SURCHARGED	
10.000	71	0.501	0.000	0.07		2.2	SURCHARGED	
1.039	72	1.105	0.000	1.09		456.8	SURCHARGED	
1.040	73	1.690	0.000	1.06		105.2	SURCHARGED	

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