Our Ref: IE2181/PMS/4733

Your Ref:

Date: 24th November 2020

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

The Planning Officer
Kildare County Council
Devoy Park
Naas
Co Kildare

Dear Sir / Madam

Re: Proposed Strategic Housing Development at Capdoo & Abbeylands, Clane, Co Kildare – Assessment of Potential Residual Pluvial Flood Risk

As illustrated on the Proposed Foul & Surface Water Drainage layout drawing prepared by BCA Consulting Engineers, the stormwater management system to serve the proposed strategic housing development at Capdoo & Abbeylands, Clane has been designed in general consideration of the Kildare County Council drainage policy and the GDSDS guidelines.

In order to access any potential residual pluvial flood risk associated with the stormwater drainage network to serve the proposed strategic housing development the network has been subject to an additional hydraulic simulation analysis utilising the Micro-Drainage software package in order to demonstrate the following:-

- Analysis to demonstrate that the proposed development storm water drainage and management system has been designed not to flood any part of the site in a 1 in 30 year return design storm and to ensure a free-board of 300mm below each manhole cover level & inclusive of climate change allowance and inclusive of allowance for urban creep (GDSDS Level of Service – Site Flooding criteria)
- Analysis to check for exceedence up to the 1 in 100 year return design storm and inclusive of climate change allowance and inclusive of allowance for urban creep (GDSDS Level of Service – Site Flooding criteria)
- Additional simulation analysis in consideration of 1 in 1 year and 1 in 2 year return design storm event (inclusive of climate change allowance).

The output of the Micro-Drainage hydraulic simulation analysis is presented in *Appendix A*.

As presented in the hydraulic simulation analysis output in *Appendix A*, under 'Summary of Critical Results by Maximum Level (Rank 1) for Storm', the simulation criteria for each simulated return period (1 in 1 year, 1 in 2 year, 1 in 30 year & 1 in 100 year) has applied a 'Margin of Flood Risk Warning' of 300m. This criteria has been set in order to ensure that in the event of an extreme rainfall event, and where surcharging of the storm water drainage pipes and manholes is predicted to occur during these events, then a freeboard of 300mm is maintained between each manhole cover level and the surcharged water level in each manhole.

As summarised in the Micro-Drainage hydraulic simulation output analysis presented in *Appendix A*, in consideration of a 1 in 30 year return period design storm, inclusive of climate change, a minimum freeboard of 300mm is maintained within the storm water drainage system (Page 32-35 of Micro-Drainage calculations).

In consideration of a 1 in 100 year return period design storm, inclusive of climate change, maximum water levels within the storm water drainage system would not exceed proposed manhole cover levels and would therefore not present a residual pluvial flood risk to the proposed development site (Page 37-40 of Micro-Drainage calculations).

In summary the storm water drainage and management system to serve the proposed strategic housing development is not predicted to present a residual pluvial flood risk to the development and is considered to comply with the GDSDS Level of Service – Site Flooding Criteria.

Yours Sincerely
Paul McShane

Senior Hydrological Engineer
For IE Consulting

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

APPENDIX A

Micro-Drainage

Hydraulic Simulation Summary
Output Calculations

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	10
Ratio R	0.200	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

Time Area Diagram for Storm at outfall S (pipe S1.008)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.001	4-8	1.464	8-12	0.974

Total Area Contributing (ha) = 2.439

Total Pipe Volume (m³) = 115.268

Time Area Diagram at outfall S (pipe S10.006)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.269	4-8	2.171	8-12	0.191

Total Area Contributing (ha) = 2.631

Total Pipe Volume (m³) = 130.840

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

Network Design Table for Storm

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)

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
S1.000	47.891	0.479	100.0	0.182	4.00	0.0	0.600	o	225	Pipe/Conduit	
S2.000	44.572	0.371	120.0	0.136	4.00	0.0	0.600	o	300	Pipe/Conduit	
S1.001	27.099	0.165	164.2	0.061	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.000	36.349	0.481	75.6	0.129	4.00	0.0	0.600	o	225	Pipe/Conduit	
S4.000	45.814	0.306	149.7	0.152	4.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	46.218	0.206	224.3	0.123	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.002	67.267	0.117	574.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.000	37.726	0.400	94.3	0.118	4.00	0.0	0.600	o	225	Pipe/Conduit	
S5.001	38.653	0.155	249.4	0.042	0.00	0.0	0.600	o	225	Pipe/Conduit	
S5.002	70.035	0.575	121.8	0.118	0.00	0.0	0.600	o	300	Pipe/Conduit	
S6.000	33.520	0.230	145.7	0.108	4.00	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	4.61	64.904	0.182	0.0	0.0	2.5	1.31	52.0	27.1
S2.000	50.00	4.52	64.425	0.136	0.0	0.0	1.8	1.43	101.4	20.2
S1.001	50.00	4.98	64.053	0.378	0.0	0.0	5.1	1.22	86.5	56.3
S3.000	50.00	4.40	64.575	0.129	0.0	0.0	1.7	1.51	59.9	19.2
S4.000	50.00	4.60	64.400	0.152	0.0	0.0	2.1	1.28	90.7	22.6
S3.001	50.00	5.23	64.019	0.404	0.0	0.0	5.5	1.21	133.2	60.2
S1.002	50.00	6.73	63.813	0.782	0.0	0.0	10.6	0.75	82.7«	116.5
S5.000	50.00	4.47	65.325	0.118	0.0	0.0	1.6	1.35	53.5	17.6
S5.001	50.00	5.25	64.925	0.160	0.0	0.0	2.2	0.82	32.7	23.9
S5.002	50.00	6.07	64.695	0.278	0.0	0.0	3.8	1.42	100.6	41.5
S6.000	50.00	4.52	64.425	0.108	0.0	0.0	1.5	1.08	43.0	16.0

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
S5.003	43.075	0.186	231.5	0.096	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.004	55.087	0.238	231.5	0.181	0.00	0.0	0.600	o	600	Pipe/Conduit	
S7.000	105.943	0.631	167.9	0.288	4.00	0.0	0.600	o	300	Pipe/Conduit	
S8.000	53.499	0.301	177.7	0.286	4.00	0.0	0.600	o	375	Pipe/Conduit	
S8.001	20.097	0.113	177.8	0.022	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.001	78.729	0.225	349.9	0.161	0.00	0.0	0.600	o	375	Pipe/Conduit	
S9.000	76.216	1.239	61.5	0.236	4.00	0.0	0.600	o	225	Pipe/Conduit	
S7.002	20.805	0.040	520.1	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.003	5.902	0.024	245.9	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.004	60.709	0.067	906.1	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S1.005	6.764	0.023	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.006	39.086	0.130	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.007	48.491	0.162	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.008	6.236	0.021	300.0	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)
S5.003	50.00	6.77	64.120	0.482	0.0	0.0	6.5	1.03	72.7	71.9
S5.004	50.00	7.34	63.934	0.664	0.0	0.0	9.0	1.60	451.4	98.9
S7.000	50.00	5.46	64.667	0.288	0.0	0.0	3.9	1.21	85.6	42.9
S8.000	50.00	4.66	64.375	0.286	0.0	0.0	3.9	1.36	149.8	42.6
S8.001	50.00	4.90	64.074	0.308	0.0	0.0	4.2	1.36	149.7	45.9
S7.001	50.00	6.82	63.961	0.757	0.0	0.0	10.2	0.96	106.3«	112.7
S9.000	50.00	4.76	65.125	0.236	0.0	0.0	3.2	1.67	66.4	35.1
S7.002	50.00	7.21	63.736	0.993	0.0	0.0	13.4	0.88	140.7«	147.9
S1.003	50.00	7.41	63.696	2.439	0.0	0.0	33.0	1.55	437.8	363.3
S1.004	50.00	8.50	63.672	2.439	0.0	0.0	33.0	0.92	407.1	363.3
S1.005	50.00	8.65	63.605	2.439	0.0	0.0	33.0	0.75	29.8«	363.3
S1.006	50.00	9.52	63.582	2.439	0.0	0.0	33.0	0.75	29.8«	363.3
S1.007	50.00	10.60	63.452	2.439	0.0	0.0	33.0	0.75	29.8«	363.3
S1.008	50.00	10.74	63.291	2.439	0.0	0.0	33.0	0.75	29.8«	363.3

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
S10.000	47.647	0.318	149.8	0.355	4.00	0.0	0.600	o	300	Pipe/Conduit	
S10.001	76.508	0.306	250.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S11.000	50.741	0.338	150.1	0.095	4.00	0.0	0.600	o	225	Pipe/Conduit	
S12.000	55.287	0.779	71.0	0.183	4.00	0.0	0.600	o	225	Pipe/Conduit	
S11.001	26.083	0.104	250.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S13.000	35.184	0.191	184.2	0.052	4.00	0.0	0.600	o	225	Pipe/Conduit	
S13.001	28.457	0.155	183.6	0.098	0.00	0.0	0.600	o	225	Pipe/Conduit	
S13.002	10.027	0.054	185.7	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S13.003	11.539	0.125	92.3	0.011	0.00	0.0	0.600	o	300	Pipe/Conduit	
S13.004	51.717	0.207	249.8	0.054	0.00	0.0	0.600	o	300	Pipe/Conduit	
S14.000	21.348	0.142	150.3	0.049	4.00	0.0	0.600	o	225	Pipe/Conduit	
S13.005	70.828	0.283	250.3	0.264	0.00	0.0	0.600	o	375	Pipe/Conduit	
S13.006	8.146	0.033	246.8	0.017	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S10.000	50.00	4.62	64.756	0.355	0.0	0.0	4.8	1.28	90.6	52.8
S10.001	50.00	5.91	64.438	0.355	0.0	0.0	4.8	0.99	70.0	52.8
S11.000	50.00	4.79	64.884	0.095	0.0	0.0	1.3	1.06	42.3	14.1
S12.000	50.00	4.59	65.325	0.183	0.0	0.0	2.5	1.55	61.8	27.2
S11.001	50.00	5.32	64.546	0.278	0.0	0.0	3.8	0.82	32.6«	41.3
S13.000	50.00	4.61	65.400	0.052	0.0	0.0	0.7	0.96	38.2	7.7
S13.001	50.00	5.10	65.209	0.150	0.0	0.0	2.0	0.96	38.2	22.3
S13.002	50.00	5.25	65.154	0.182	0.0	0.0	2.5	1.15	81.3	27.1
S13.003	50.00	5.37	65.091	0.193	0.0	0.0	2.6	1.64	115.7	28.8
S13.004	50.00	6.24	64.965	0.248	0.0	0.0	3.4	0.99	70.0	36.9
S14.000	50.00	4.33	64.900	0.049	0.0	0.0	0.7	1.06	42.3	7.3
S13.005	50.00	7.27	64.758	0.561	0.0	0.0	7.6	1.14	126.0	83.5
S13.006	50.00	7.39	64.475	0.578	0.0	0.0	7.8	1.15	126.9	86.1

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
S11.002	11.294	0.045	251.0	0.016	0.00	0.0	0.600	o	375	Pipe/Conduit	
S11.003	66.102	0.265	249.4	0.252	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.002	32.104	0.808	39.7	0.068	0.00	0.0	0.600	o	450	Pipe/Conduit	
S15.000	26.075	0.174	149.9	0.039	4.00	0.0	0.600	o	150	Pipe/Conduit	
S15.001	50.212	0.853	58.9	0.135	0.00	0.0	0.600	o	300	Pipe/Conduit	
S16.000	50.617	0.338	149.8	0.136	4.00	0.0	0.600	o	225	Pipe/Conduit	
S16.001	19.635	0.078	251.7	0.029	0.00	0.0	0.600	o	225	Pipe/Conduit	
S16.002	9.341	0.037	252.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.000	12.814	0.085	150.8	0.027	4.00	0.0	0.600	o	150	Pipe/Conduit	
S16.003	50.011	0.200	250.1	0.049	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.002	51.920	0.208	249.6	0.131	0.00	0.0	0.600	o	450	Pipe/Conduit	
S18.000	20.049	0.134	149.6	0.039	4.00	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)
S11.002	50.00	7.56	64.442	0.872	0.0	0.0	11.8	1.14	125.8«	129.9
S11.003	50.00	8.41	64.397	1.124	0.0	0.0	15.2	1.28	204.0	167.5
S10.002	50.00	8.58	64.132	1.547	0.0	0.0	21.0	3.23	514.2	230.5
S15.000	50.00	4.53	64.949	0.039	0.0	0.0	0.5	0.82	14.5	5.8
S15.001	50.00	4.94	64.775	0.174	0.0	0.0	2.4	2.05	145.1	25.9
S16.000	50.00	4.79	64.575	0.136	0.0	0.0	1.8	1.07	42.4	20.2
S16.001	50.00	5.19	64.237	0.165	0.0	0.0	2.2	0.82	32.6	24.5
S16.002	50.00	5.38	64.159	0.165	0.0	0.0	2.2	0.82	32.5	24.5
S17.000	50.00	4.34	64.207	0.027	0.0	0.0	0.4	0.62	4.9	4.0
S16.003	50.00	6.22	64.122	0.240	0.0	0.0	3.2	0.99	70.0	35.7
S15.002	50.00	6.90	63.922	0.545	0.0	0.0	7.4	1.28	203.9	81.1
S18.000	50.00	4.41	63.848	0.039	0.0	0.0	0.5	0.82	14.5	5.8

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
S15.003	1.862	0.008	232.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S15.004	65.162	0.260	250.6	0.125	0.00	0.0	0.600	o	450	Pipe/Conduit	
S19.000	26.689	0.178	149.9	0.043	4.00	0.0	0.600	o	150	Pipe/Conduit	
S20.000	41.030	0.273	150.3	0.058	4.00	0.0	0.600	o	150	Pipe/Conduit	
S19.001	83.604	0.334	250.3	0.209	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.005	30.478	0.122	249.8	0.066	0.00	0.0	0.600	o	525	Pipe/Conduit	
S10.003	20.653	0.035	590.1	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.004	16.333	0.027	604.9	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.005	49.089	0.082	598.6	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.006	21.382	0.095	225.1	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)
S15.003	50.00	6.92	63.714	0.584	0.0	0.0	7.9	1.33	211.3	86.9
S15.004	50.00	7.77	63.706	0.708	0.0	0.0	9.6	1.28	203.5	105.5
S19.000	50.00	4.54	63.958	0.043	0.0	0.0	0.6	0.82	14.5	6.5
S20.000	50.00	4.84	64.053	0.058	0.0	0.0	0.8	0.82	14.4	8.6
S19.001	50.00	6.25	63.780	0.310	0.0	0.0	4.2	0.99	69.9	46.2
S15.005	50.00	8.13	63.446	1.084	0.0	0.0	14.7	1.41	305.8	161.5
S10.003	50.00	8.88	63.324	2.631	0.0	0.0	35.6	1.14	505.7	391.9
S10.004	50.00	9.12	63.289	2.631	0.0	0.0	35.6	1.13	499.4	391.9
S10.005	50.00	9.84	63.262	2.631	0.0	0.0	35.6	1.14	502.1	391.9
S10.006	50.00	10.25	63.180	2.631	0.0	0.0	35.6	0.87	34.5«	391.9

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)
SS110	66.329	1.425	Open Manhole	1200	S1.000	64.904	225				
SS111	65.850	1.425	Open Manhole	1200	S2.000	64.425	300				
SS112	66.100	2.047	Open Manhole	1200	S1.001	64.053	300	S1.000	64.425	225	297
								S2.000	64.054	300	1
SS108	66.000	1.425	Open Manhole	1200	S3.000	64.575	225				
SS107	65.900	1.500	Open Manhole	1200	S4.000	64.400	300				
SS109	65.700	1.681	Open Manhole	1350	S3.001	64.019	375	S3.000	64.094	225	
								S4.000	64.094	300	
SS113	66.300	2.487	Open Manhole	1350	S1.002	63.813	375	S1.001	63.888	300	
								S3.001	63.813	375	
SS101	66.750	1.425	Open Manhole	1200	S5.000	65.325	225				
SS102	66.350	1.425	Open Manhole	1200	S5.001	64.925	225	S5.000	64.925	225	
SS103	66.100	1.405	Open Manhole	1200	S5.002	64.695	300	S5.001	64.770	225	
SS104	65.850	1.425	Open Manhole	1200	S6.000	64.425	225				
SS105	65.620	1.500	Open Manhole	1200	S5.003	64.120	300	S5.002	64.120	300	
								S6.000	64.195	225	
SS106	65.900	1.966	Open Manhole	1500	S5.004	63.934	600	S5.003	63.934	300	
SS116	66.600	1.933	Open Manhole	1200	S7.000	64.667	300				
SS114	66.000	1.625	Open Manhole	1350	S8.000	64.375	375				
SS115	66.600	2.526	Open Manhole	1350	S8.001	64.074	375	S8.000	64.074	375	
SS116	66.650	2.689	Open Manhole	1350	S7.001	63.961	375	S7.000	64.036	300	
								S8.001	63.961	375	
SS118	66.550	1.425	Open Manhole	1200	S9.000	65.125	225				
SS119	66.750	3.014	Open Manhole	1350	S7.002	63.736	450	S7.001	63.736	375	
								S9.000	63.886	225	
SS120	66.200	2.504	Open Manhole	1500	S1.003	63.696	600	S1.002	63.696	375	
								S5.004	63.696	600	
								S7.002	63.696	450	
SS121	66.200	2.528	Open Manhole	1800	S1.004	63.672	750	S1.003	63.672	600	
SS122	66.750	3.145	Open Manhole	1800	S1.005	63.605	225	S1.004	63.605	750	
SS123	66.800	3.218	Open Manhole	1200	S1.006	63.582	225	S1.005	63.582	225	
SS124	66.350	2.898	Open Manhole	1200	S1.007	63.452	225	S1.006	63.452	225	
SS125	66.100	2.810	Open Manhole	1200	S1.008	63.291	225	S1.007	63.290	225	
S	66.100	2.830	Open Manhole	0		OUTFALL		S1.008	63.270	225	

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)
SS214	67.100	2.344	Open Manhole	1200	S10.000	64.756	300				
SS215	67.500	3.062	Open Manhole	1200	S10.001	64.438	300	S10.000	64.438	300	
SS210	66.700	1.816	Open Manhole	1200	S11.000	64.884	225				
SS209	66.750	1.425	Open Manhole	1200	S12.000	65.325	225				
SS211	66.800	2.254	Open Manhole	1200	S11.001	64.546	225	S11.000	64.546	225	
								S12.000	64.546	225	
SS201	66.750	1.350	Open Manhole	1200	S13.000	65.400	225				
SS202	66.850	1.641	Open Manhole	1200	S13.001	65.209	225	S13.000	65.209	225	
SS203	66.900	1.846	Open Manhole	1200	S13.002	65.154	300	S13.001	65.054	225	
SS204	66.850	1.759	Open Manhole	1200	S13.003	65.091	300	S13.002	65.100	300	9
SS205	66.800	1.835	Open Manhole	1200	S13.004	64.965	300	S13.003	64.966	300	1
SS206	66.950	2.050	Open Manhole	1200	S14.000	64.900	225				
SS207	66.700	1.942	Open Manhole	1350	S13.005	64.758	375	S13.004	64.758	300	
								S14.000	64.758	225	
SS208	66.800	2.325	Open Manhole	1350	S13.006	64.475	375	S13.005	64.475	375	
SS212	66.900	2.458	Open Manhole	1350	S11.002	64.442	375	S11.001	64.442	225	
								S13.006	64.442	375	
SS213	67.000	2.603	Open Manhole	1350	S11.003	64.397	450	S11.002	64.397	375	
SS216	67.250	3.118	Open Manhole	1350	S10.002	64.132	450	S10.001	64.132	300	
								S11.003	64.132	450	
SS222	65.900	0.951	Open Manhole	1200	S15.000	64.949	150				
SS223	66.200	1.425	Open Manhole	1200	S15.001	64.775	300	S15.000	64.775	150	
SS217	66.000	1.425	Open Manhole	1200	S16.000	64.575	225				
SS218	66.200	1.963	Open Manhole	1200	S16.001	64.237	225	S16.000	64.237	225	
SS219	66.350	2.191	Open Manhole	1200	S16.002	64.159	225	S16.001	64.159	225	
SS220	66.100	1.893	Open Manhole	1200	S17.000	64.207	100				
SS221	66.150	2.028	Open Manhole	1200	S16.003	64.122	300	S16.002	64.122	225	
								S17.000	64.122	100	
SS224	66.100	2.178	Open Manhole	1350	S15.002	63.922	450	S15.001	63.922	300	
								S16.003	63.922	300	
SS225	66.000	2.152	Open Manhole	1200	S18.000	63.848	150				
SS220	65.850	2.136	Open Manhole	1350	S15.003	63.714	450	S15.002	63.714	450	
								S18.000	63.714	150	

Campus Innovation Centre
Green Road
Carlow

Date 11/25/2020 2:27 PM | Designed by LMc
File IE2181-Storm-3.mdx | Checked by PMS
Innovyze | Network 2019.1.1

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)
SS227	65.850	2.144	Open Manhole	1350	S15.004	63.706	450	S15.003	63.706	450	
SS229	67.000	3.042	Open Manhole	1200	S19.000	63.958	150				
SS228	66.500	2.447	Open Manhole	1200	S20.000	64.053	150				
SS230	66.500	2.720	Open Manhole	1200	S19.001	63.780	300	S19.000	63.780	150	
								S20.000	63.780	150	
SS231	66.450	3.004	Open Manhole	1500	S15.005	63.446	525	S15.004	63.446	450	
								S19.001	63.446	300	
SS232	66.750	3.426	Open Manhole	1800	S10.003	63.324	750	S10.002	63.324	450	
								S15.005	63.324	525	
SS233	66.000	2.711	Open Manhole	1800	S10.004	63.289	750	S10.003	63.289	750	
SS234	65.500	2.238	Open Manhole	1800	S10.005	63.262	750	S10.004	63.262	750	
SS235	65.350	2.170	Open Manhole	1800	S10.006	63.180	225	S10.005	63.180	750	
S	64.700	1.615	Open Manhole	0		OUTFALL		S10.006	63.085	225	

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)
S1.000	o	225	SS110	66.329	64.904	1.200	Open Manhole	1200
S2.000	o	300	SS111	65.850	64.425	1.125	Open Manhole	1200
S1.001	o	300	SS112	66.100	64.053	1.747	Open Manhole	1200
S3.000	o	225	SS108	66.000	64.575	1.200	Open Manhole	1200
S4.000	o	300	SS107	65.900	64.400	1.200	Open Manhole	1200
S3.001	o	375	SS109	65.700	64.019	1.306	Open Manhole	1350
S1.002	o	375	SS113	66.300	63.813	2.112	Open Manhole	1350
S5.000	o	225	SS101	66.750	65.325	1.200	Open Manhole	1200
S5.001	o	225	SS102	66.350	64.925	1.200	Open Manhole	1200
S5.002	o	300	SS103	66.100	64.695	1.105	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)
S1.000	47.891	100.0	SS112	66.100	64.425	1.450	Open Manhole	1200
S2.000	44.572	120.0	SS112	66.100	64.054	1.746	Open Manhole	1200
S1.001	27.099	164.2	SS113	66.300	63.888	2.112	Open Manhole	1350
S3.000	36.349	75.6	SS109	65.700	64.094	1.381	Open Manhole	1350
S4.000	45.814	149.7	SS109	65.700	64.094	1.306	Open Manhole	1350
S3.001	46.218	224.3	SS113	66.300	63.813	2.112	Open Manhole	1350
S1.002	67.267	574.9	SS120	66.200	63.696	2.129	Open Manhole	1500
S5.000	37.726	94.3	SS102	66.350	64.925	1.200	Open Manhole	1200
S5.001	38.653	249.4	SS103	66.100	64.770	1.105	Open Manhole	1200
S5.002	70.035	121.8	SS105	65.620	64.120	1.200	Open Manhole	1200

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)
S6.000	o	225	SS104	65.850	64.425	1.200	Open Manhole	1200
S5.003	o	300	SS105	65.620	64.120	1.200	Open Manhole	1200
S5.004	o	600	SS106	65.900	63.934	1.366	Open Manhole	1500
S7.000	o	300	SS116	66.600	64.667	1.633	Open Manhole	1200
S8.000	o	375	SS114	66.000	64.375	1.250	Open Manhole	1350
S8.001	o	375	SS115	66.600	64.074	2.151	Open Manhole	1350
S7.001	o	375	SS116	66.650	63.961	2.314	Open Manhole	1350
S9.000	o	225	SS118	66.550	65.125	1.200	Open Manhole	1200
S7.002	o	450	SS119	66.750	63.736	2.564	Open Manhole	1350
S1.003	o	600	SS120	66.200	63.696	1.904	Open Manhole	1500
S1.004	o	750	SS121	66.200	63.672	1.778	Open Manhole	1800

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)
S6.000	33.520	145.7	SS105	65.620	64.195	1.200	Open Manhole	1200
S5.003	43.075	231.5	SS106	65.900	63.934	1.666	Open Manhole	1500
S5.004	55.087	231.5	SS120	66.200	63.696	1.904	Open Manhole	1500
S7.000	105.943	167.9	SS116	66.650	64.036	2.314	Open Manhole	1350
S8.000	53.499	177.7	SS115	66.600	64.074	2.151	Open Manhole	1350
S8.001	20.097	177.8	SS116	66.650	63.961	2.314	Open Manhole	1350
S7.001	78.729	349.9	SS119	66.750	63.736	2.639	Open Manhole	1350
S9.000	76.216	61.5	SS119	66.750	63.886	2.639	Open Manhole	1350
S7.002	20.805	520.1	SS120	66.200	63.696	2.054	Open Manhole	1500
S1.003	5.902	245.9	SS121	66.200	63.672	1.928	Open Manhole	1800
S1.004	60.709	906.1	SS122	66.750	63.605	2.395	Open Manhole	1800

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)
S1.005	o	225	SS122	66.750	63.605	2.920	Open Manhole	1800
S1.006	o	225	SS123	66.800	63.582	2.993	Open Manhole	1200
S1.007	o	225	SS124	66.350	63.452	2.673	Open Manhole	1200
S1.008	o	225	SS125	66.100	63.291	2.584	Open Manhole	1200
S10.000	o	300	SS214	67.100	64.756	2.044	Open Manhole	1200
S10.001	o	300	SS215	67.500	64.438	2.762	Open Manhole	1200
S11.000	o	225	SS210	66.700	64.884	1.591	Open Manhole	1200
S12.000	o	225	SS209	66.750	65.325	1.200	Open Manhole	1200
S11.001	o	225	SS211	66.800	64.546	2.029	Open Manhole	1200
S13.000	o	225	SS201	66.750	65.400	1.125	Open Manhole	1200
S13.001	o	225	SS202	66.850	65.209	1.416	Open Manhole	1200
S13.002	o	300	SS203	66.900	65.154	1.446	Open Manhole	1200
S13.003	o	300	SS204	66.850	65.091	1.459	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)
S1.005	6.764	300.0	SS123	66.800	63.582	2.993	Open Manhole	1200
S1.006	39.086	300.0	SS124	66.350	63.452	2.673	Open Manhole	1200
S1.007	48.491	300.0	SS125	66.100	63.290	2.585	Open Manhole	1200
S1.008	6.236	300.0	S	66.100	63.270	2.605	Open Manhole	0
S10.000	47.647	149.8	SS215	67.500	64.438	2.762	Open Manhole	1200
S10.001	76.508	250.0	SS216	67.250	64.132	2.818	Open Manhole	1350
S11.000	50.741	150.1	SS211	66.800	64.546	2.029	Open Manhole	1200
S12.000	55.287	71.0	SS211	66.800	64.546	2.029	Open Manhole	1200
S11.001	26.083	250.8	SS212	66.900	64.442	2.233	Open Manhole	1350
S13.000	35.184	184.2	SS202	66.850	65.209	1.416	Open Manhole	1200
S13.001	28.457	183.6	SS203	66.900	65.054	1.621	Open Manhole	1200
S13.002	10.027	185.7	SS204	66.850	65.100	1.450	Open Manhole	1200
S13.003	11.539	92.3	SS205	66.800	64.966	1.534	Open Manhole	1200

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)
S13.004	o	300	SS205	66.800	64.965	1.535	Open Manhole	1200
S14.000	o	225	SS206	66.950	64.900	1.825	Open Manhole	1200
S13.005	o	375	SS207	66.700	64.758	1.567	Open Manhole	1350
S13.006	o	375	SS208	66.800	64.475	1.950	Open Manhole	1350
S11.002	o	375	SS212	66.900	64.442	2.083	Open Manhole	1350
S11.003	o	450	SS213	67.000	64.397	2.153	Open Manhole	1350
S10.002	o	450	SS216	67.250	64.132	2.668	Open Manhole	1350
S15.000	o	150	SS222	65.900	64.949	0.801	Open Manhole	1200
S15.001	o	300	SS223	66.200	64.775	1.125	Open Manhole	1200
S16.000	o	225	SS217	66.000	64.575	1.200	Open Manhole	1200
S16.001	o	225	SS218	66.200	64.237	1.738	Open Manhole	1200
S16.002	o	225	SS219	66.350	64.159	1.966	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)
S13.004	51.717	249.8	SS207	66.700	64.758	1.642	Open Manhole	1350
S14.000	21.348	150.3	SS207	66.700	64.758	1.717	Open Manhole	1350
S13.005	70.828	250.3	SS208	66.800	64.475	1.950	Open Manhole	1350
S13.006	8.146	246.8	SS212	66.900	64.442	2.083	Open Manhole	1350
S11.002	11.294	251.0	SS213	67.000	64.397	2.228	Open Manhole	1350
S11.003	66.102	249.4	SS216	67.250	64.132	2.668	Open Manhole	1350
S10.002	32.104	39.7	SS232	66.750	63.324	2.976	Open Manhole	1800
S15.000	26.075	149.9	SS223	66.200	64.775	1.275	Open Manhole	1200
S15.001	50.212	58.9	SS224	66.100	63.922	1.878	Open Manhole	1350
S16.000	50.617	149.8	SS218	66.200	64.237	1.738	Open Manhole	1200
S16.001	19.635	251.7	SS219	66.350	64.159	1.966	Open Manhole	1200
S16.002	9.341	252.5	SS221	66.150	64.122	1.803	Open Manhole	1200

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)
S17.000	o	100	SS220	66.100	64.207	1.793	Open Manhole	1200
S16.003	o	300	SS221	66.150	64.122	1.728	Open Manhole	1200
S15.002	o	450	SS224	66.100	63.922	1.728	Open Manhole	1350
S18.000	o	150	SS225	66.000	63.848	2.002	Open Manhole	1200
S15.003	o	450	SS220	65.850	63.714	1.686	Open Manhole	1350
S15.004	o	450	SS227	65.850	63.706	1.694	Open Manhole	1350
S19.000	o	150	SS229	67.000	63.958	2.892	Open Manhole	1200
S20.000	o	150	SS228	66.500	64.053	2.297	Open Manhole	1200
S19.001	o	300	SS230	66.500	63.780	2.420	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)
S17.000	12.814	150.8	SS221	66.150	64.122	1.928	Open Manhole	1200
S16.003	50.011	250.1	SS224	66.100	63.922	1.878	Open Manhole	1350
S15.002	51.920	249.6	SS220	65.850	63.714	1.686	Open Manhole	1350
S18.000	20.049	149.6	SS220	65.850	63.714	1.986	Open Manhole	1350
S15.003	1.862	232.8	SS227	65.850	63.706	1.694	Open Manhole	1350
S15.004	65.162	250.6	SS231	66.450	63.446	2.554	Open Manhole	1500
S19.000	26.689	149.9	SS230	66.500	63.780	2.570	Open Manhole	1200
S20.000	41.030	150.3	SS230	66.500	63.780	2.570	Open Manhole	1200
S19.001	83.604	250.3	SS231	66.450	63.446	2.704	Open Manhole	1500

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)
S15.005	o	525	SS231	66.450	63.446	2.479	Open Manhole	1500
S10.003	o	750	SS232	66.750	63.324	2.676	Open Manhole	1800
S10.004	o	750	SS233	66.000	63.289	1.961	Open Manhole	1800
S10.005	o	750	SS234	65.500	63.262	1.488	Open Manhole	1800
S10.006	o	225	SS235	65.350	63.180	1.945	Open Manhole	1800

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)
S15.005	30.478	249.8	SS232	66.750	63.324	2.901	Open Manhole	1800
S10.003	20.653	590.1	SS233	66.000	63.289	1.961	Open Manhole	1800
S10.004	16.333	604.9	SS234	65.500	63.262	1.488	Open Manhole	1800
S10.005	49.089	598.6	SS235	65.350	63.180	1.420	Open Manhole	1800
S10.006	21.382	225.1	S	64.700	63.085	1.390	Open Manhole	0

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)
S1.008	S	66.100	63.270	0.000	0	0

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)
S10.006	S	64.700	63.085	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	10.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

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

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	20.000	Storm Duration (mins)	30
Ratio R	0.200		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: SS121, DS/PN: S1.004, Volume (m³): 7.6

Unit Reference	MD-SHE-0206-2430-1700-2430
Design Head (m)	1.700
Design Flow (l/s)	24.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface Sump Available
Yes Diameter (mm)	206
Invert Level (m)	63.672
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.700	24.3	Kick-Flo®	1.100	19.7
Flush-Flo™	0.506	24.3	Mean Flow over Head Range	-	21.0

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	7.1	1.200	20.6	3.000	31.9	7.000	48.0
0.200	19.8	1.400	22.1	3.500	34.3	7.500	49.6
0.300	23.2	1.600	23.6	4.000	36.6	8.000	51.2
0.400	24.1	1.800	25.0	4.500	38.7	8.500	52.7
0.500	24.3	2.000	26.2	5.000	40.8	9.000	54.2
0.600	24.2	2.200	27.5	5.500	42.7	9.500	55.6
0.800	23.4	2.400	28.6	6.000	44.5		
1.000	21.6	2.600	29.8	6.500	46.3		

Hydro-Brake® Optimum Manhole: SS234, DS/PN: S10.005, Volume (m³): 12.1

Unit Reference	MD-SHE-0290-5100-1600-5100
Design Head (m)	1.600
Design Flow (l/s)	51.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface Sump Available
Yes Diameter (mm)	290
Invert Level (m)	63.262
Minimum Outlet Pipe Diameter (mm)	375

Hydro-Brake® Optimum Manhole: SS234, DS/PN: S10.005, Volume (m³): 12.1

Suggested Manhole Diameter (mm) 2100

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.600	51.0	Kick-Flo®	1.119	42.9
Flush-Flo™	0.520	50.9	Mean Flow over Head Range	-	43.2

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	9.0	1.200	44.4	3.000	69.1	7.000	104.3
0.200	29.8	1.400	47.8	3.500	74.5	7.500	107.9
0.300	48.4	1.600	51.0	4.000	79.5	8.000	111.4
0.400	50.3	1.800	54.0	4.500	84.1	8.500	114.7
0.500	50.9	2.000	56.8	5.000	88.6	9.000	118.0
0.600	50.8	2.200	59.5	5.500	92.8	9.500	121.1
0.800	49.5	2.400	62.0	6.000	96.8		
1.000	46.8	2.600	64.5	6.500	100.6		

Storage Structures for Storm

Cellular Storage Manhole: SS121, DS/PN: S1.004

Invert Level (m) 63.672 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.60
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	1133.0	0.0	0.400	1133.0	0.0
0.100	1133.0	0.0	0.500	1133.0	0.0
0.200	1133.0	0.0	0.700	1133.0	0.0
0.300	1133.0	0.0	0.885	1133.0	0.0

Cellular Storage Manhole: SS234, DS/PN: S10.005

Invert Level (m) 63.262 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.60
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	871.0	0.0	0.600	871.0	0.0
0.100	871.0	0.0	0.700	871.0	0.0
0.200	871.0	0.0	0.717	871.0	0.0
0.300	871.0	0.0	1.000	871.0	0.0
0.400	871.0	0.0	1.200	871.0	0.0
0.500	871.0	0.0			

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.200
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	20.000	Cv (Winter)	0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1
Climate Change (%)	10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	1	+10%					65.023
S2.000	SS111	15 Winter	1	+10%					64.518
S1.001	SS112	30 Winter	1	+10%					64.351
S3.000	SS108	15 Winter	1	+10%					64.664
S4.000	SS107	15 Winter	1	+10%					64.504
S3.001	SS109	30 Winter	1	+10%					64.324
S1.002	SS113	720 Winter	1	+10%	1/15 Summer				64.308
S5.000	SS101	15 Winter	1	+10%					65.415
S5.001	SS102	15 Winter	1	+10%					65.068
S5.002	SS103	15 Winter	1	+10%					64.819
S6.000	SS104	15 Winter	1	+10%					64.522
S5.003	SS105	15 Winter	1	+10%					64.349
S5.004	SS106	720 Winter	1	+10%					64.302
S7.000	SS116	15 Winter	1	+10%					64.820
S8.000	SS114	15 Winter	1	+10%					64.515
S8.001	SS115	30 Winter	1	+10%					64.326

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	-0.106	0.000	0.53		26.6	OK	
S2.000	SS111	-0.207	0.000	0.21		20.0	OK	
S1.001	SS112	-0.002	0.000	0.55		42.9	OK	
S3.000	SS108	-0.136	0.000	0.34		19.0	OK	
S4.000	SS107	-0.196	0.000	0.26		22.1	OK	
S3.001	SS109	-0.070	0.000	0.34		41.4	OK	
S1.002	SS113	0.120	0.000	0.23		17.8	SURCHARGED	NO
S5.000	SS101	-0.135	0.000	0.34		17.4	OK	
S5.001	SS102	-0.082	0.000	0.71		22.1	OK	
S5.002	SS103	-0.176	0.000	0.36		34.8	OK	
S6.000	SS104	-0.128	0.000	0.39		15.9	OK	
S5.003	SS105	-0.071	0.000	0.82		55.8	OK	
S5.004	SS106	-0.232	0.000	0.04		15.7	OK	
S7.000	SS116	-0.147	0.000	0.48		39.6	OK	
S8.000	SS114	-0.235	0.000	0.30		41.5	OK	
S8.001	SS115	-0.123	0.000	0.27		33.4	OK	

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)
S7.001	SS116	30 Winter	1	+10%	1/15 Winter				64.351
S9.000	SS118	15 Winter	1	+10%					65.243
S7.002	SS119	720 Winter	1	+10%	1/15 Summer				64.304
S1.003	SS120	480 Winter	1	+10%	1/480 Winter				64.309
S1.004	SS121	480 Winter	1	+10%					64.322
S1.005	SS122	480 Winter	1	+10%	1/180 Winter				63.883
S1.006	SS123	480 Winter	1	+10%					63.792
S1.007	SS124	480 Winter	1	+10%					63.650
S1.008	SS125	960 Winter	1	+10%					63.516
S10.000	SS214	15 Winter	1	+10%					64.928
S10.001	SS215	15 Winter	1	+10%					64.637
S11.000	SS210	15 Winter	1	+10%					64.981
S12.000	SS209	15 Winter	1	+10%					65.431
S11.001	SS211	15 Winter	1	+10%	1/15 Summer				64.890
S13.000	SS201	15 Winter	1	+10%					65.473
S13.001	SS202	15 Winter	1	+10%					65.373
S13.002	SS203	15 Winter	1	+10%					65.284
S13.003	SS204	15 Winter	1	+10%					65.194
S13.004	SS205	15 Winter	1	+10%					65.106
S14.000	SS206	15 Winter	1	+10%					64.976
S13.005	SS207	30 Winter	1	+10%					64.956
S13.006	SS208	30 Winter	1	+10%					64.811
S11.002	SS212	15 Winter	1	+10%					64.768
S11.003	SS213	30 Winter	1	+10%					64.643
S10.002	SS216	30 Winter	1	+10%					64.310
S15.000	SS222	15 Winter	1	+10%					65.016
S15.001	SS223	15 Winter	1	+10%					64.852
S16.000	SS217	15 Winter	1	+10%					64.687
S16.001	SS218	15 Winter	1	+10%					64.393
S16.002	SS219	15 Winter	1	+10%					64.319
S17.000	SS220	15 Winter	1	+10%	1/15 Summer				64.328
S16.003	SS221	15 Winter	1	+10%					64.273
S15.002	SS224	15 Winter	1	+10%					64.109
S18.000	SS225	30 Winter	1	+10%	1/15 Winter				64.060
S15.003	SS220	30 Winter	1	+10%					64.039
S15.004	SS227	30 Winter	1	+10%					64.052
S19.000	SS229	30 Winter	1	+10%					64.088
S20.000	SS228	15 Winter	1	+10%					64.139
S19.001	SS230	30 Winter	1	+10%					64.070
S15.005	SS231	30 Winter	1	+10%	1/15 Winter				64.000
S10.003	SS232	30 Winter	1	+10%					63.971
S10.004	SS233	30 Winter	1	+10%					63.884
S10.005	SS234	360 Winter	1	+10%					63.881
S10.006	SS235	600 Summer	1	+10%	1/60 Summer				63.517

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	0.015	0.000	0.73		73.8	SURCHARGED	NO
S9.000	SS118	-0.107	0.000	0.53		34.2	OK	
S7.002	SS119	0.118	0.000	0.22		22.4	SURCHARGED	NO
S1.003	SS120	0.013	0.000	0.30		70.1	SURCHARGED	NO
S1.004	SS121	-0.100	0.000	0.07		23.8	OK	
S1.005	SS122	0.053	0.000	1.03		23.8	SURCHARGED	NO
S1.006	SS123	-0.015	0.000	0.84		23.8	OK	
S1.007	SS124	-0.027	0.000	0.83		23.8	OK	
S1.008	SS125	0.000	0.000	1.06		24.1	OK	
S10.000	SS214	-0.128	0.000	0.60		51.5	OK	
S10.001	SS215	-0.101	0.000	0.73		49.2	OK	
S11.000	SS210	-0.128	0.000	0.34		13.8	OK	
S12.000	SS209	-0.119	0.000	0.45		26.9	OK	
S11.001	SS211	0.119	0.000	1.11		33.5	SURCHARGED	NO
S13.000	SS201	-0.152	0.000	0.21		7.5	OK	
S13.001	SS202	-0.061	0.000	0.51		18.0	OK	
S13.002	SS203	-0.170	0.000	0.35		21.5	OK	
S13.003	SS204	-0.197	0.000	0.26		22.9	OK	
S13.004	SS205	-0.159	0.000	0.42		27.9	OK	
S14.000	SS206	-0.149	0.000	0.18		7.0	OK	
S13.005	SS207	-0.177	0.000	0.48		56.7	OK	
S13.006	SS208	-0.039	0.000	0.65		58.1	OK	
S11.002	SS212	-0.049	0.000	0.91		86.4	OK	
S11.003	SS213	-0.204	0.000	0.57		108.5	OK	
S10.002	SS216	-0.272	0.000	0.34		151.9	OK	
S15.000	SS222	-0.083	0.000	0.42		5.7	OK	
S15.001	SS223	-0.223	0.000	0.16		21.4	OK	
S16.000	SS217	-0.113	0.000	0.48		19.7	OK	
S16.001	SS218	-0.069	0.000	0.77		22.6	OK	
S16.002	SS219	-0.065	0.000	0.83		22.4	OK	
S17.000	SS220	0.021	0.000	0.78		3.6	SURCHARGED	NO
S16.003	SS221	-0.149	0.000	0.47		30.9	OK	
S15.002	SS224	-0.263	0.000	0.34		63.8	OK	
S18.000	SS225	0.062	0.000	0.30		4.1	SURCHARGED	NO
S15.003	SS220	-0.125	0.000	0.47		60.1	OK	
S15.004	SS227	-0.104	0.000	0.36		68.8	OK	
S19.000	SS229	-0.020	0.000	0.38		5.2	OK	
S20.000	SS228	-0.064	0.000	0.60		8.4	OK	
S19.001	SS230	-0.010	0.000	0.49		32.7	OK	
S15.005	SS231	0.029	0.000	0.35		90.1	SURCHARGED	NO
S10.003	SS232	-0.103	0.000	0.79		238.0	OK	
S10.004	SS233	-0.155	0.000	0.96		234.8	OK	
S10.005	SS234	-0.131	0.000	0.11		46.1	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.112	0.000	1.51		47.6	SURCHARGED	NO

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.200
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	20.000	Cv (Winter)	0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2
Climate Change (%)	10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	2	+10%					65.038
S2.000	SS111	15 Winter	2	+10%					64.527
S1.001	SS112	30 Winter	2	+10%	2/15 Summer				64.470
S3.000	SS108	15 Winter	2	+10%					64.674
S4.000	SS107	15 Winter	2	+10%					64.515
S3.001	SS109	30 Winter	2	+10%	2/15 Winter				64.452
S1.002	SS113	720 Winter	2	+10%	2/15 Summer				64.448
S5.000	SS101	15 Winter	2	+10%					65.426
S5.001	SS102	15 Winter	2	+10%					65.091
S5.002	SS103	15 Winter	2	+10%					64.834
S6.000	SS104	15 Winter	2	+10%					64.535
S5.003	SS105	720 Winter	2	+10%	2/15 Winter				64.449
S5.004	SS106	720 Winter	2	+10%					64.442
S7.000	SS116	15 Winter	2	+10%					64.839
S8.000	SS114	15 Winter	2	+10%					64.530
S8.001	SS115	30 Winter	2	+10%	2/15 Winter				64.484

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	-0.091	0.000	0.64		32.1	OK	
S2.000	SS111	-0.198	0.000	0.25		24.1	OK	
S1.001	SS112	0.117	0.000	0.59		45.9	SURCHARGED	NO
S3.000	SS108	-0.126	0.000	0.40		22.9	OK	
S4.000	SS107	-0.185	0.000	0.31		26.6	OK	
S3.001	SS109	0.058	0.000	0.40		49.4	SURCHARGED	NO
S1.002	SS113	0.260	0.000	0.26		20.0	SURCHARGED	NO
S5.000	SS101	-0.124	0.000	0.41		21.0	OK	
S5.001	SS102	-0.059	0.000	0.85		26.5	OK	
S5.002	SS103	-0.161	0.000	0.43		41.8	OK	
S6.000	SS104	-0.115	0.000	0.47		19.1	OK	
S5.003	SS105	0.029	0.000	0.20		13.4	SURCHARGED	NO
S5.004	SS106	-0.092	0.000	0.04		17.7	OK	
S7.000	SS116	-0.128	0.000	0.57		47.8	OK	
S8.000	SS114	-0.220	0.000	0.36		50.0	OK	
S8.001	SS115	0.035	0.000	0.29		36.4	SURCHARGED	NO

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)
S7.001	SS116	30 Winter	2	+10%	2/15 Summer				64.475
S9.000	SS118	15 Winter	2	+10%					65.259
S7.002	SS119	720 Winter	2	+10%	2/15 Summer				64.444
S1.003	SS120	480 Winter	2	+10%	2/240 Winter				64.442
S1.004	SS121	480 Winter	2	+10%	2/480 Winter				64.448
S1.005	SS122	480 Winter	2	+10%	2/120 Summer				63.886
S1.006	SS123	480 Winter	2	+10%					63.796
S1.007	SS124	480 Winter	2	+10%					63.652
S1.008	SS125	600 Summer	2	+10%					63.516
S10.000	SS214	15 Winter	2	+10%					64.951
S10.001	SS215	15 Winter	2	+10%					64.675
S11.000	SS210	15 Winter	2	+10%					65.031
S12.000	SS209	15 Winter	2	+10%					65.445
S11.001	SS211	15 Winter	2	+10%	2/15 Summer				64.973
S13.000	SS201	15 Winter	2	+10%					65.488
S13.001	SS202	15 Winter	2	+10%					65.393
S13.002	SS203	15 Winter	2	+10%					65.295
S13.003	SS204	15 Winter	2	+10%					65.209
S13.004	SS205	15 Winter	2	+10%					65.125
S14.000	SS206	30 Winter	2	+10%					65.004
S13.005	SS207	30 Winter	2	+10%					64.997
S13.006	SS208	30 Winter	2	+10%	2/15 Winter				64.875
S11.002	SS212	30 Winter	2	+10%					64.791
S11.003	SS213	30 Winter	2	+10%					64.670
S10.002	SS216	15 Winter	2	+10%					64.331
S15.000	SS222	15 Winter	2	+10%					65.025
S15.001	SS223	15 Winter	2	+10%					64.864
S16.000	SS217	15 Winter	2	+10%					64.701
S16.001	SS218	15 Winter	2	+10%	2/15 Winter				64.463
S16.002	SS219	15 Winter	2	+10%					64.360
S17.000	SS220	15 Winter	2	+10%	2/15 Summer				64.367
S16.003	SS221	15 Winter	2	+10%					64.281
S15.002	SS224	30 Winter	2	+10%					64.198
S18.000	SS225	30 Winter	2	+10%	2/15 Summer				64.187
S15.003	SS220	30 Winter	2	+10%					64.161
S15.004	SS227	30 Winter	2	+10%					64.143
S19.000	SS229	30 Winter	2	+10%	2/15 Winter				64.185
S20.000	SS228	30 Winter	2	+10%	2/30 Winter				64.222
S19.001	SS230	30 Winter	2	+10%	2/15 Winter				64.163
S15.005	SS231	30 Winter	2	+10%	2/15 Summer				64.086
S10.003	SS232	30 Winter	2	+10%					64.043
S10.004	SS233	360 Winter	2	+10%					63.989
S10.005	SS234	360 Winter	2	+10%					64.002
S10.006	SS235	600 Winter	2	+10%	2/30 Summer				63.539

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	0.139	0.000	0.78		79.0	SURCHARGED	NO
S9.000	SS118	-0.091	0.000	0.64		41.2	OK	
S7.002	SS119	0.258	0.000	0.25		25.5	SURCHARGED	NO
S1.003	SS120	0.146	0.000	0.35		80.6	SURCHARGED	NO
S1.004	SS121	0.026	0.000	0.07		24.0	SURCHARGED	NO
S1.005	SS122	0.056	0.000	1.03		24.0	SURCHARGED	NO
S1.006	SS123	-0.011	0.000	0.85		24.0	OK	
S1.007	SS124	-0.025	0.000	0.84		24.0	OK	
S1.008	SS125	0.000	0.000	1.06		24.2	OK	
S10.000	SS214	-0.105	0.000	0.73		62.0	OK	
S10.001	SS215	-0.063	0.000	0.88		58.9	OK	
S11.000	SS210	-0.078	0.000	0.39		16.0	OK	
S12.000	SS209	-0.105	0.000	0.55		32.5	OK	
S11.001	SS211	0.202	0.000	1.32		39.8	SURCHARGED	NO
S13.000	SS201	-0.137	0.000	0.25		8.9	OK	
S13.001	SS202	-0.041	0.000	0.62		21.9	OK	
S13.002	SS203	-0.159	0.000	0.43		26.2	OK	
S13.003	SS204	-0.182	0.000	0.31		27.6	OK	
S13.004	SS205	-0.140	0.000	0.51		33.8	OK	
S14.000	SS206	-0.121	0.000	0.18		7.0	OK	
S13.005	SS207	-0.136	0.000	0.56		67.0	OK	
S13.006	SS208	0.025	0.000	0.76		67.4	SURCHARGED	NO
S11.002	SS212	-0.026	0.000	1.06		100.7	OK	
S11.003	SS213	-0.177	0.000	0.67		126.7	OK	
S10.002	SS216	-0.251	0.000	0.41		180.6	OK	
S15.000	SS222	-0.074	0.000	0.50		6.9	OK	
S15.001	SS223	-0.211	0.000	0.19		25.8	OK	
S16.000	SS217	-0.099	0.000	0.58		23.7	OK	
S16.001	SS218	0.001	0.000	0.83		24.5	SURCHARGED	NO
S16.002	SS219	-0.024	0.000	0.90		24.1	OK	
S17.000	SS220	0.060	0.000	0.91		4.2	SURCHARGED	
S16.003	SS221	-0.141	0.000	0.51		33.5	OK	
S15.002	SS224	-0.174	0.000	0.38		70.4	OK	
S18.000	SS225	0.189	0.000	0.36		4.9	SURCHARGED	NO
S15.003	SS220	-0.003	0.000	0.50		64.0	OK	
S15.004	SS227	-0.013	0.000	0.39		74.3	OK	
S19.000	SS229	0.077	0.000	0.44		6.1	SURCHARGED	NO
S20.000	SS228	0.019	0.000	0.60		8.4	SURCHARGED	NO
S19.001	SS230	0.083	0.000	0.55		37.0	SURCHARGED	NO
S15.005	SS231	0.115	0.000	0.40		102.4	SURCHARGED	NO
S10.003	SS232	-0.031	0.000	0.90		271.7	OK	
S10.004	SS233	-0.050	0.000	0.41		101.7	OK	
S10.005	SS234	-0.010	0.000	0.12		49.2	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.134	0.000	1.59		50.0	SURCHARGED	NO

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.200
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	20.000	Cv (Winter)	0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	30
Climate Change (%)	10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	30	+10%	30/15 Summer				65.505
S2.000	SS111	15 Winter	30	+10%	30/15 Summer				65.267
S1.001	SS112	15 Winter	30	+10%	30/15 Summer				65.212
S3.000	SS108	30 Summer	30	+10%	30/15 Summer				65.256
S4.000	SS107	15 Winter	30	+10%	30/15 Summer				65.192
S3.001	SS109	960 Winter	30	+10%	30/15 Summer				65.190
S1.002	SS113	960 Winter	30	+10%	30/15 Summer				65.186
S5.000	SS101	15 Winter	30	+10%	30/15 Winter				65.556
S5.001	SS102	15 Winter	30	+10%	30/15 Summer				65.421
S5.002	SS103	15 Winter	30	+10%	30/15 Summer				65.197
S6.000	SS104	960 Winter	30	+10%	30/15 Summer				65.190
S5.003	SS105	960 Winter	30	+10%	30/15 Summer				65.187
S5.004	SS106	960 Winter	30	+10%	30/15 Winter				65.181
S7.000	SS116	15 Winter	30	+10%	30/15 Summer				65.562
S8.000	SS114	15 Winter	30	+10%	30/15 Summer				65.328
S8.001	SS115	15 Winter	30	+10%	30/15 Summer				65.246

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	0.376	0.000	1.01		50.5	SURCHARGED	NO
S2.000	SS111	0.542	0.000	0.38		35.7	SURCHARGED	NO
S1.001	SS112	0.859	0.000	1.04		80.9	SURCHARGED	NO
S3.000	SS108	0.456	0.000	0.59		33.1	SURCHARGED	NO
S4.000	SS107	0.492	0.000	0.49		41.5	SURCHARGED	NO
S3.001	SS109	0.796	0.000	0.11		13.7	SURCHARGED	NO
S1.002	SS113	0.998	0.000	0.34		26.5	SURCHARGED	NO
S5.000	SS101	0.006	0.000	0.71		35.9	SURCHARGED	NO
S5.001	SS102	0.271	0.000	1.42		44.2	SURCHARGED	NO
S5.002	SS103	0.202	0.000	0.69		66.1	SURCHARGED	NO
S6.000	SS104	0.540	0.000	0.10		3.9	SURCHARGED	NO
S5.003	SS105	0.767	0.000	0.24		16.5	SURCHARGED	NO
S5.004	SS106	0.647	0.000	0.06		22.8	SURCHARGED	NO
S7.000	SS116	0.595	0.000	0.87		72.5	SURCHARGED	NO
S8.000	SS114	0.578	0.000	0.57		78.9	SURCHARGED	NO
S8.001	SS115	0.797	0.000	0.49		61.7	SURCHARGED	NO

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)
S7.001	SS116	15 Winter	30	+10%	30/15 Summer				65.202
S9.000	SS118	15 Winter	30	+10%	30/15 Summer				65.699
S7.002	SS119	960 Winter	30	+10%	30/15 Summer				65.183
S1.003	SS120	960 Winter	30	+10%	30/15 Summer				65.179
S1.004	SS121	960 Winter	30	+10%	30/60 Winter				65.177
S1.005	SS122	60 Winter	30	+10%	30/30 Summer				63.893
S1.006	SS123	60 Winter	30	+10%					63.796
S1.007	SS124	60 Winter	30	+10%					63.658
S1.008	SS125	1440 Summer	30	+10%					63.516
S10.000	SS214	15 Winter	30	+10%	30/15 Summer				65.523
S10.001	SS215	15 Winter	30	+10%	30/15 Summer				65.095
S11.000	SS210	15 Winter	30	+10%	30/15 Summer				65.741
S12.000	SS209	15 Winter	30	+10%	30/15 Summer				66.009
S11.001	SS211	15 Winter	30	+10%	30/15 Summer				65.632
S13.000	SS201	15 Winter	30	+10%	30/15 Summer				65.995
S13.001	SS202	15 Winter	30	+10%	30/15 Summer				65.944
S13.002	SS203	15 Winter	30	+10%	30/15 Summer				65.811
S13.003	SS204	15 Winter	30	+10%	30/15 Summer				65.768
S13.004	SS205	15 Winter	30	+10%	30/15 Summer				65.704
S14.000	SS206	15 Winter	30	+10%	30/15 Summer				65.588
S13.005	SS207	15 Winter	30	+10%	30/15 Summer				65.573
S13.006	SS208	15 Winter	30	+10%	30/15 Summer				65.301
S11.002	SS212	15 Winter	30	+10%	30/15 Summer				65.184
S11.003	SS213	15 Winter	30	+10%	30/15 Summer				64.972
S10.002	SS216	360 Winter	30	+10%	30/180 Winter				64.705
S15.000	SS222	15 Winter	30	+10%					65.077
S15.001	SS223	15 Winter	30	+10%					64.908
S16.000	SS217	15 Winter	30	+10%	30/15 Summer				65.120
S16.001	SS218	15 Winter	30	+10%	30/15 Summer				64.954
S16.002	SS219	15 Winter	30	+10%	30/15 Summer				64.816
S17.000	SS220	30 Winter	30	+10%	30/15 Summer				64.840
S16.003	SS221	15 Winter	30	+10%	30/15 Summer				64.727
S15.002	SS224	360 Winter	30	+10%	30/15 Summer				64.680
S18.000	SS225	360 Winter	30	+10%	30/15 Summer				64.696
S15.003	SS220	360 Winter	30	+10%	30/15 Summer				64.689
S15.004	SS227	360 Winter	30	+10%	30/15 Summer				64.696
S19.000	SS229	15 Winter	30	+10%	30/15 Summer				64.785
S20.000	SS228	15 Winter	30	+10%	30/15 Summer				64.937
S19.001	SS230	360 Winter	30	+10%	30/15 Summer				64.681
S15.005	SS231	360 Winter	30	+10%	30/15 Summer				64.692
S10.003	SS232	360 Winter	30	+10%	30/15 Summer				64.701
S10.004	SS233	360 Winter	30	+10%	30/15 Summer				64.708
S10.005	SS234	360 Winter	30	+10%	30/30 Winter				64.712
S10.006	SS235	480 Summer	30	+10%	30/15 Summer				63.551

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	0.866	0.000	1.50		151.9	SURCHARGED	NO
S9.000	SS118	0.349	0.000	0.98		63.4	SURCHARGED	NO
S7.002	SS119	0.997	0.000	0.33		33.6	SURCHARGED	NO
S1.003	SS120	0.883	0.000	0.36		82.6	SURCHARGED	NO
S1.004	SS121	0.755	0.000	0.07		24.0	SURCHARGED	NO
S1.005	SS122	0.063	0.000	1.02		23.7	SURCHARGED	NO
S1.006	SS123	-0.011	0.000	0.87		24.5	OK	
S1.007	SS124	-0.019	0.000	0.86		24.5	OK	
S1.008	SS125	0.000	0.000	1.06		24.3	OK	
S10.000	SS214	0.467	0.000	1.20		101.8	SURCHARGED	NO
S10.001	SS215	0.357	0.000	1.39		93.2	SURCHARGED	NO
S11.000	SS210	0.632	0.000	0.54		21.9	SURCHARGED	NO
S12.000	SS209	0.459	0.000	0.78		46.6	SURCHARGED	NO
S11.001	SS211	0.861	0.000	2.03		61.4	SURCHARGED	NO
S13.000	SS201	0.370	0.000	0.39		14.1	SURCHARGED	NO
S13.001	SS202	0.510	0.000	1.00		35.6	SURCHARGED	NO
S13.002	SS203	0.357	0.000	0.64		39.0	SURCHARGED	NO
S13.003	SS204	0.377	0.000	0.47		41.4	SURCHARGED	NO
S13.004	SS205	0.439	0.000	0.77		50.6	SURCHARGED	NO
S14.000	SS206	0.463	0.000	0.31		12.1	SURCHARGED	NO
S13.005	SS207	0.440	0.000	0.94		112.6	SURCHARGED	NO
S13.006	SS208	0.451	0.000	1.31		116.3	SURCHARGED	NO
S11.002	SS212	0.367	0.000	1.90		180.7	SURCHARGED	NO
S11.003	SS213	0.125	0.000	1.19		226.0	SURCHARGED	NO
S10.002	SS216	0.123	0.000	0.23		102.2	SURCHARGED	NO
S15.000	SS222	-0.022	0.000	0.91		12.5	OK	
S15.001	SS223	-0.167	0.000	0.41		56.1	OK	
S16.000	SS217	0.320	0.000	0.92		37.4	SURCHARGED	NO
S16.001	SS218	0.492	0.000	1.27		37.4	SURCHARGED	NO
S16.002	SS219	0.432	0.000	1.35		36.1	SURCHARGED	NO
S17.000	SS220	0.533	0.000	1.20		5.6	SURCHARGED	NO
S16.003	SS221	0.305	0.000	0.76		49.8	SURCHARGED	NO
S15.002	SS224	0.308	0.000	0.19		34.7	SURCHARGED	NO
S18.000	SS225	0.698	0.000	0.18		2.4	SURCHARGED	NO
S15.003	SS220	0.525	0.000	0.26		33.8	SURCHARGED	NO
S15.004	SS227	0.540	0.000	0.22		41.9	SURCHARGED	NO
S19.000	SS229	0.677	0.000	0.78		10.8	SURCHARGED	NO
S20.000	SS228	0.734	0.000	0.98		13.8	SURCHARGED	NO
S19.001	SS230	0.601	0.000	0.30		20.5	SURCHARGED	NO
S15.005	SS231	0.721	0.000	0.25		65.0	SURCHARGED	NO
S10.003	SS232	0.627	0.000	0.54		164.2	SURCHARGED	NO
S10.004	SS233	0.669	0.000	0.66		163.2	SURCHARGED	NO
S10.005	SS234	0.700	0.000	0.12		50.7	SURCHARGED	NO

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.146	0.000	1.61		50.7	SURCHARGED	NO

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.200
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	20.000	Cv (Winter)	0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	100
Climate Change (%)	10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	SS110	15 Winter	100	+10%	100/15 Summer			
S2.000	SS111	15 Winter	100	+10%	100/15 Summer			
S1.001	SS112	15 Winter	100	+10%	100/15 Summer			
S3.000	SS108	15 Winter	100	+10%	100/15 Summer			
S4.000	SS107	15 Winter	100	+10%	100/15 Summer			
S3.001	SS109	960 Winter	100	+10%	100/15 Summer			
S1.002	SS113	960 Winter	100	+10%	100/15 Summer			
S5.000	SS101	15 Winter	100	+10%	100/15 Summer			
S5.001	SS102	15 Winter	100	+10%	100/15 Summer			
S5.002	SS103	15 Winter	100	+10%	100/15 Summer			
S6.000	SS104	960 Winter	100	+10%	100/15 Summer			
S5.003	SS105	960 Winter	100	+10%	100/15 Summer	100/960 Winter		
S5.004	SS106	960 Winter	100	+10%	100/15 Summer			
S7.000	SS116	15 Winter	100	+10%	100/15 Summer			
S8.000	SS114	15 Winter	100	+10%	100/15 Summer			
S8.001	SS115	15 Winter	100	+10%	100/15 Summer			

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	66.200	1.071	0.000	1.08		53.9	SURCHARGED	NO
S2.000	SS111	65.815	1.090	0.000	0.42		39.6	SURCHARGED	NO
S1.001	SS112	65.773	1.420	0.000	1.28		99.5	SURCHARGED	NO
S3.000	SS108	65.820	1.020	0.000	0.68		38.6	SURCHARGED	NO
S4.000	SS107	65.723	1.023	0.000	0.50		42.3	SURCHARGED	NO
S3.001	SS109	65.638	1.244	0.000	0.14		16.9	SURCHARGED	NO
S1.002	SS113	65.634	1.446	0.000	0.42		32.7	SURCHARGED	NO
S5.000	SS101	66.200	0.650	0.000	0.78		39.6	SURCHARGED	NO
S5.001	SS102	66.034	0.884	0.000	1.47		45.5	SURCHARGED	NO
S5.002	SS103	65.717	0.722	0.000	0.77		74.6	SURCHARGED	NO
S6.000	SS104	65.635	0.985	0.000	0.11		4.5	SURCHARGED	NO
S5.003	SS105	65.632	1.102	12.118	0.29		20.0	SURCHARGED	NO
S5.004	SS106	65.626	1.092	0.000	0.07		27.5	SURCHARGED	NO
S7.000	SS116	66.385	1.418	0.000	1.00		83.0	SURCHARGED	NO
S8.000	SS114	65.993	1.243	0.000	0.65		90.1	SURCHARGED	NO
S8.001	SS115	65.895	1.446	0.000	0.66		82.9	SURCHARGED	NO

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)
S7.001	SS116	15 Winter	100	+10%	100/15 Summer				65.825
S9.000	SS118	15 Winter	100	+10%	100/15 Summer				66.376
S7.002	SS119	960 Winter	100	+10%	100/15 Summer				65.630
S1.003	SS120	960 Winter	100	+10%	100/15 Summer				65.625
S1.004	SS121	960 Winter	100	+10%	100/30 Winter				65.623
S1.005	SS122	480 Winter	100	+10%	100/15 Winter				63.887
S1.006	SS123	60 Summer	100	+10%					63.796
S1.007	SS124	480 Winter	100	+10%					63.652
S1.008	SS125	4320 Summer	100	+10%					63.516
S10.000	SS214	15 Winter	100	+10%	100/15 Summer				66.197
S10.001	SS215	15 Winter	100	+10%	100/15 Summer				65.688
S11.000	SS210	30 Winter	100	+10%	100/15 Summer				66.388
S12.000	SS209	15 Winter	100	+10%	100/15 Summer				66.728
S11.001	SS211	30 Summer	100	+10%	100/15 Summer				66.234
S13.000	SS201	30 Winter	100	+10%	100/15 Summer				66.684
S13.001	SS202	30 Winter	100	+10%	100/15 Summer				66.634
S13.002	SS203	30 Winter	100	+10%	100/15 Summer				66.479
S13.003	SS204	30 Winter	100	+10%	100/15 Summer				66.430
S13.004	SS205	30 Winter	100	+10%	100/15 Summer				66.367
S14.000	SS206	30 Winter	100	+10%	100/15 Summer				66.254
S13.005	SS207	30 Winter	100	+10%	100/15 Summer				66.222
S13.006	SS208	30 Winter	100	+10%	100/15 Summer				65.885
S11.002	SS212	30 Winter	100	+10%	100/15 Summer				65.736
S11.003	SS213	30 Winter	100	+10%	100/15 Summer				65.457
S10.002	SS216	480 Winter	100	+10%	100/15 Summer				65.194
S15.000	SS222	15 Winter	100	+10%	100/15 Summer				65.180
S15.001	SS223	480 Winter	100	+10%	100/240 Winter				65.174
S16.000	SS217	30 Winter	100	+10%	100/15 Summer				65.687
S16.001	SS218	30 Winter	100	+10%	100/15 Summer				65.436
S16.002	SS219	30 Winter	100	+10%	100/15 Summer				65.251
S17.000	SS220	30 Winter	100	+10%	100/15 Summer				65.283
S16.003	SS221	600 Winter	100	+10%	100/15 Summer				65.174
S15.002	SS224	480 Winter	100	+10%	100/15 Summer				65.173
S18.000	SS225	480 Winter	100	+10%	100/15 Summer				65.183
S15.003	SS220	480 Winter	100	+10%	100/15 Summer				65.176
S15.004	SS227	480 Winter	100	+10%	100/15 Summer				65.184
S19.000	SS229	15 Winter	100	+10%	100/15 Summer				65.298
S20.000	SS228	15 Winter	100	+10%	100/15 Summer				65.539
S19.001	SS230	480 Winter	100	+10%	100/15 Summer				65.176
S15.005	SS231	480 Winter	100	+10%	100/15 Summer				65.180
S10.003	SS232	480 Winter	100	+10%	100/15 Summer				65.190
S10.004	SS233	480 Winter	100	+10%	100/15 Summer				65.191
S10.005	SS234	480 Winter	100	+10%	100/30 Summer				65.189
S10.006	SS235	180 Summer	100	+10%	100/15 Summer				63.550

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	1.489	0.000	1.97		198.8	SURCHARGED	NO
S9.000	SS118	1.026	0.000	1.13		72.9	SURCHARGED	NO
S7.002	SS119	1.444	0.000	0.41		41.6	SURCHARGED	NO
S1.003	SS120	1.329	0.000	0.44		101.6	SURCHARGED	NO
S1.004	SS121	1.201	0.000	0.07		24.3	SURCHARGED	NO
S1.005	SS122	0.057	0.000	1.04		24.0	SURCHARGED	NO
S1.006	SS123	-0.011	0.000	0.84		23.7	OK	
S1.007	SS124	-0.025	0.000	0.84		24.0	OK	
S1.008	SS125	0.000	0.000	1.06		24.3	OK	
S10.000	SS214	1.141	0.000	1.45		123.5	SURCHARGED	NO
S10.001	SS215	0.950	0.000	1.72		115.3	SURCHARGED	NO
S11.000	SS210	1.279	0.000	0.61		24.8	SURCHARGED	NO
S12.000	SS209	1.178	0.000	0.84		50.2	SURCHARGED	NO
S11.001	SS211	1.463	0.000	2.36		71.2	SURCHARGED	NO
S13.000	SS201	1.059	0.000	0.37		13.4	SURCHARGED	NO
S13.001	SS202	1.200	0.000	0.98		34.9	SURCHARGED	NO
S13.002	SS203	1.025	0.000	0.70		42.9	SURCHARGED	NO
S13.003	SS204	1.039	0.000	0.53		46.9	SURCHARGED	NO
S13.004	SS205	1.102	0.000	0.89		59.1	SURCHARGED	NO
S14.000	SS206	1.129	0.000	0.32		12.5	SURCHARGED	NO
S13.005	SS207	1.089	0.000	1.13		134.4	SURCHARGED	NO
S13.006	SS208	1.035	0.000	1.51		134.1	SURCHARGED	NO
S11.002	SS212	0.919	0.000	2.17		206.9	SURCHARGED	NO
S11.003	SS213	0.610	0.000	1.41		266.4	SURCHARGED	NO
S10.002	SS216	0.612	0.000	0.23		102.7	SURCHARGED	NO
S15.000	SS222	0.081	0.000	1.11		15.3	SURCHARGED	NO
S15.001	SS223	0.099	0.000	0.09		12.1	SURCHARGED	NO
S16.000	SS217	0.887	0.000	0.89		36.3	SURCHARGED	NO
S16.001	SS218	0.974	0.000	1.46		42.9	SURCHARGED	NO
S16.002	SS219	0.867	0.000	1.62		43.4	SURCHARGED	NO
S17.000	SS220	0.976	0.000	1.41		6.6	SURCHARGED	NO
S16.003	SS221	0.752	0.000	0.20		13.2	SURCHARGED	NO
S15.002	SS224	0.801	0.000	0.18		33.6	SURCHARGED	NO
S18.000	SS225	1.185	0.000	0.18		2.4	SURCHARGED	NO
S15.003	SS220	1.012	0.000	0.28		35.7	SURCHARGED	NO
S15.004	SS227	1.028	0.000	0.23		43.5	SURCHARGED	NO
S19.000	SS229	1.190	0.000	1.03		14.2	SURCHARGED	NO
S20.000	SS228	1.336	0.000	1.28		17.9	SURCHARGED	NO
S19.001	SS230	1.096	0.000	0.30		20.3	SURCHARGED	NO
S15.005	SS231	1.209	0.000	0.26		66.8	SURCHARGED	NO
S10.003	SS232	1.116	0.000	0.56		170.2	SURCHARGED	NO
S10.004	SS233	1.152	0.000	0.67		165.2	SURCHARGED	NO
S10.005	SS234	1.177	0.000	0.12		50.7	SURCHARGED	NO

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.145	0.000	1.61		50.7	SURCHARGED	NO

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.200
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	20.000	Cv (Winter)	0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 2, 30, 100
Climate Change (%)	10, 10, 10, 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	100	+10%	30/15 Summer				66.200
S2.000	SS111	15 Winter	100	+10%	30/15 Summer				65.815
S1.001	SS112	15 Winter	100	+10%	2/15 Summer				65.773
S3.000	SS108	15 Winter	100	+10%	30/15 Summer				65.820
S4.000	SS107	15 Winter	100	+10%	30/15 Summer				65.723
S3.001	SS109	960 Winter	100	+10%	2/15 Winter				65.638
S1.002	SS113	960 Winter	100	+10%	1/15 Summer				65.634
S5.000	SS101	15 Winter	100	+10%	30/15 Winter				66.200
S5.001	SS102	15 Winter	100	+10%	30/15 Summer				66.034
S5.002	SS103	15 Winter	100	+10%	30/15 Summer				65.717
S6.000	SS104	960 Winter	100	+10%	30/15 Summer				65.635
S5.003	SS105	960 Winter	100	+10%	2/15 Winter	100/960 Winter			65.632
S5.004	SS106	960 Winter	100	+10%	30/15 Winter				65.626
S7.000	SS116	15 Winter	100	+10%	30/15 Summer				66.385
S8.000	SS114	15 Winter	100	+10%	30/15 Summer				65.993
S8.001	SS115	15 Winter	100	+10%	2/15 Winter				65.895

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	1.071	0.000	1.08		53.9	SURCHARGED	NO
S2.000	SS111	1.090	0.000	0.42		39.6	SURCHARGED	NO
S1.001	SS112	1.420	0.000	1.28		99.5	SURCHARGED	NO
S3.000	SS108	1.020	0.000	0.68		38.6	SURCHARGED	NO
S4.000	SS107	1.023	0.000	0.50		42.3	SURCHARGED	NO
S3.001	SS109	1.244	0.000	0.14		16.9	SURCHARGED	NO
S1.002	SS113	1.446	0.000	0.42		32.7	SURCHARGED	NO
S5.000	SS101	0.650	0.000	0.78		39.6	SURCHARGED	NO
S5.001	SS102	0.884	0.000	1.47		45.5	SURCHARGED	NO
S5.002	SS103	0.722	0.000	0.77		74.6	SURCHARGED	NO
S6.000	SS104	0.985	0.000	0.11		4.5	SURCHARGED	NO
S5.003	SS105	1.102	12.118	0.29		20.0	SURCHARGED	NO
S5.004	SS106	1.092	0.000	0.07		27.5	SURCHARGED	NO
S7.000	SS116	1.418	0.000	1.00		83.0	SURCHARGED	NO
S8.000	SS114	1.243	0.000	0.65		90.1	SURCHARGED	NO
S8.001	SS115	1.446	0.000	0.66		82.9	SURCHARGED	NO

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)
S7.001	SS116	15 Winter	100	+10%	1/15 Winter				65.825
S9.000	SS118	15 Winter	100	+10%	30/15 Summer				66.376
S7.002	SS119	960 Winter	100	+10%	1/15 Summer				65.630
S1.003	SS120	960 Winter	100	+10%	1/480 Winter				65.625
S1.004	SS121	960 Winter	100	+10%	2/480 Winter				65.623
S1.005	SS122	60 Winter	30	+10%	1/180 Winter				63.893
S1.006	SS123	60 Summer	100	+10%					63.796
S1.007	SS124	60 Winter	30	+10%					63.658
S1.008	SS125	4320 Summer	100	+10%					63.516
S10.000	SS214	15 Winter	100	+10%	30/15 Summer				66.197
S10.001	SS215	15 Winter	100	+10%	30/15 Summer				65.688
S11.000	SS210	30 Winter	100	+10%	30/15 Summer				66.388
S12.000	SS209	15 Winter	100	+10%	30/15 Summer				66.728
S11.001	SS211	30 Summer	100	+10%	1/15 Summer				66.234
S13.000	SS201	30 Winter	100	+10%	30/15 Summer				66.684
S13.001	SS202	30 Winter	100	+10%	30/15 Summer				66.634
S13.002	SS203	30 Winter	100	+10%	30/15 Summer				66.479
S13.003	SS204	30 Winter	100	+10%	30/15 Summer				66.430
S13.004	SS205	30 Winter	100	+10%	30/15 Summer				66.367
S14.000	SS206	30 Winter	100	+10%	30/15 Summer				66.254
S13.005	SS207	30 Winter	100	+10%	30/15 Summer				66.222
S13.006	SS208	30 Winter	100	+10%	2/15 Winter				65.885
S11.002	SS212	30 Winter	100	+10%	30/15 Summer				65.736
S11.003	SS213	30 Winter	100	+10%	30/15 Summer				65.457
S10.002	SS216	480 Winter	100	+10%	30/180 Winter				65.194
S15.000	SS222	15 Winter	100	+10%	100/15 Summer				65.180
S15.001	SS223	480 Winter	100	+10%	100/240 Winter				65.174
S16.000	SS217	30 Winter	100	+10%	30/15 Summer				65.687
S16.001	SS218	30 Winter	100	+10%	2/15 Winter				65.436
S16.002	SS219	30 Winter	100	+10%	30/15 Summer				65.251
S17.000	SS220	30 Winter	100	+10%	1/15 Summer				65.283
S16.003	SS221	600 Winter	100	+10%	30/15 Summer				65.174
S15.002	SS224	480 Winter	100	+10%	30/15 Summer				65.173
S18.000	SS225	480 Winter	100	+10%	1/15 Winter				65.183
S15.003	SS220	480 Winter	100	+10%	30/15 Summer				65.176
S15.004	SS227	480 Winter	100	+10%	30/15 Summer				65.184
S19.000	SS229	15 Winter	100	+10%	2/15 Winter				65.298
S20.000	SS228	15 Winter	100	+10%	2/30 Winter				65.539
S19.001	SS230	480 Winter	100	+10%	2/15 Winter				65.176
S15.005	SS231	480 Winter	100	+10%	1/15 Winter				65.180
S10.003	SS232	480 Winter	100	+10%	30/15 Summer				65.190
S10.004	SS233	480 Winter	100	+10%	30/15 Summer				65.191
S10.005	SS234	480 Winter	100	+10%	30/30 Winter				65.189
S10.006	SS235	480 Summer	30	+10%	1/60 Summer				63.551

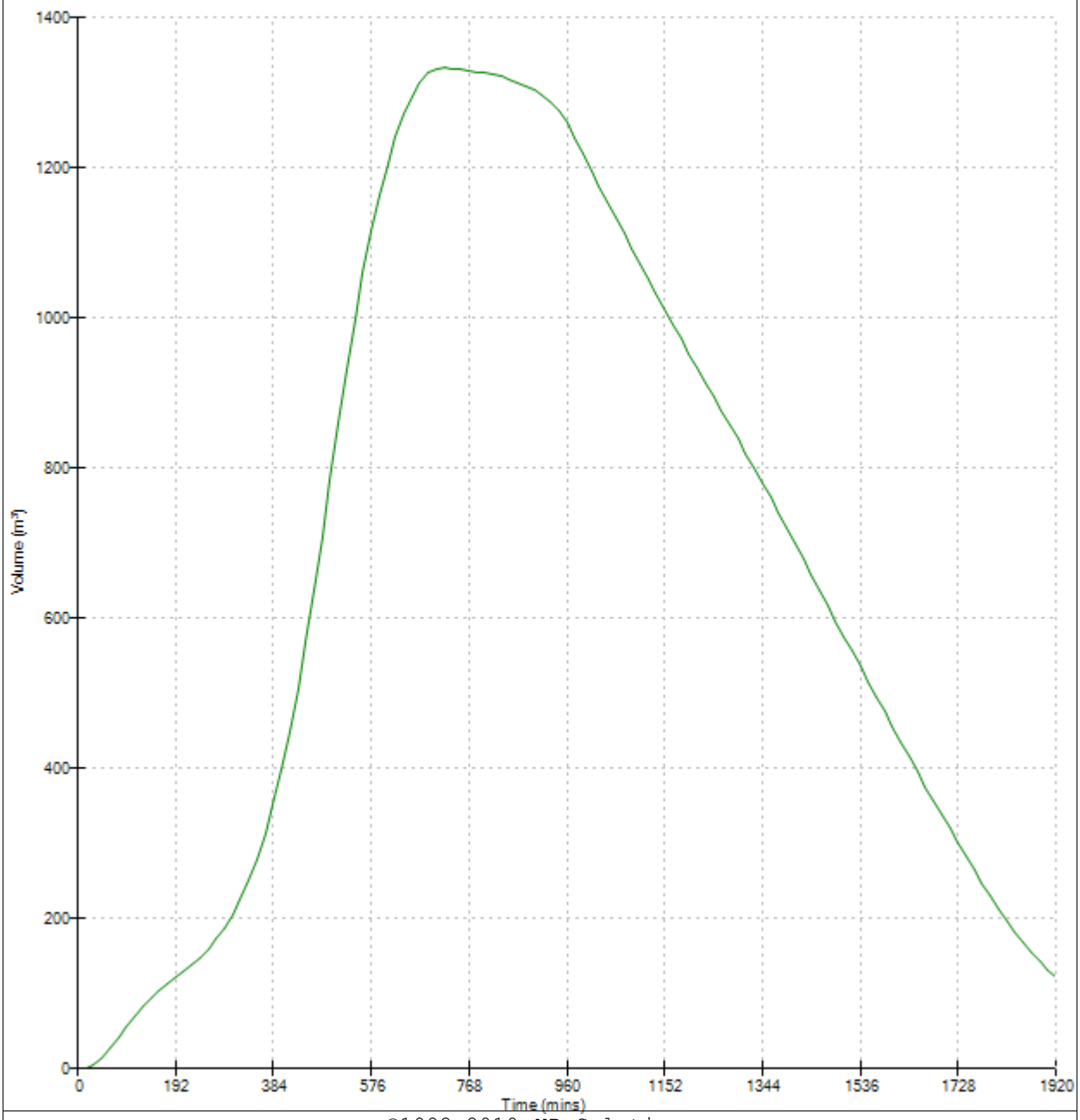
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	1.489	0.000	1.97		198.8	SURCHARGED	NO
S9.000	SS118	1.026	0.000	1.13		72.9	SURCHARGED	NO
S7.002	SS119	1.444	0.000	0.41		41.6	SURCHARGED	NO
S1.003	SS120	1.329	0.000	0.44		101.6	SURCHARGED	NO
S1.004	SS121	1.201	0.000	0.07		24.3	SURCHARGED	NO
S1.005	SS122	0.063	0.000	1.02		23.7	SURCHARGED	NO
S1.006	SS123	-0.011	0.000	0.84		23.7	OK	
S1.007	SS124	-0.019	0.000	0.86		24.5	OK	
S1.008	SS125	0.000	0.000	1.06		24.3	OK	
S10.000	SS214	1.141	0.000	1.45		123.5	SURCHARGED	NO
S10.001	SS215	0.950	0.000	1.72		115.3	SURCHARGED	NO
S11.000	SS210	1.279	0.000	0.61		24.8	SURCHARGED	NO
S12.000	SS209	1.178	0.000	0.84		50.2	SURCHARGED	NO
S11.001	SS211	1.463	0.000	2.36		71.2	SURCHARGED	NO
S13.000	SS201	1.059	0.000	0.37		13.4	SURCHARGED	NO
S13.001	SS202	1.200	0.000	0.98		34.9	SURCHARGED	NO
S13.002	SS203	1.025	0.000	0.70		42.9	SURCHARGED	NO
S13.003	SS204	1.039	0.000	0.53		46.9	SURCHARGED	NO
S13.004	SS205	1.102	0.000	0.89		59.1	SURCHARGED	NO
S14.000	SS206	1.129	0.000	0.32		12.5	SURCHARGED	NO
S13.005	SS207	1.089	0.000	1.13		134.4	SURCHARGED	NO
S13.006	SS208	1.035	0.000	1.51		134.1	SURCHARGED	NO
S11.002	SS212	0.919	0.000	2.17		206.9	SURCHARGED	NO
S11.003	SS213	0.610	0.000	1.41		266.4	SURCHARGED	NO
S10.002	SS216	0.612	0.000	0.23		102.7	SURCHARGED	NO
S15.000	SS222	0.081	0.000	1.11		15.3	SURCHARGED	NO
S15.001	SS223	0.099	0.000	0.09		12.1	SURCHARGED	NO
S16.000	SS217	0.887	0.000	0.89		36.3	SURCHARGED	NO
S16.001	SS218	0.974	0.000	1.46		42.9	SURCHARGED	NO
S16.002	SS219	0.867	0.000	1.62		43.4	SURCHARGED	NO
S17.000	SS220	0.976	0.000	1.41		6.6	SURCHARGED	NO
S16.003	SS221	0.752	0.000	0.20		13.2	SURCHARGED	NO
S15.002	SS224	0.801	0.000	0.18		33.6	SURCHARGED	NO
S18.000	SS225	1.185	0.000	0.18		2.4	SURCHARGED	NO
S15.003	SS220	1.012	0.000	0.28		35.7	SURCHARGED	NO
S15.004	SS227	1.028	0.000	0.23		43.5	SURCHARGED	NO
S19.000	SS229	1.190	0.000	1.03		14.2	SURCHARGED	NO
S20.000	SS228	1.336	0.000	1.28		17.9	SURCHARGED	NO
S19.001	SS230	1.096	0.000	0.30		20.3	SURCHARGED	NO
S15.005	SS231	1.209	0.000	0.26		66.8	SURCHARGED	NO
S10.003	SS232	1.116	0.000	0.56		170.2	SURCHARGED	NO
S10.004	SS233	1.152	0.000	0.67		165.2	SURCHARGED	NO
S10.005	SS234	1.177	0.000	0.12		50.7	SURCHARGED	NO

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.146	0.000	1.61		50.7	SURCHARGED	NO

Graphs for Pipe S1.004 US/MH SS121 (Storm)
960 minute 100 year Winter I+0%
Status: SURCHARGED



Graphs for Pipe S10.005 US/MH SS234 (Storm)
480 minute 100 year Winter I+0%
Status: SURCHARGED