

RPS Group Plc		Page 0
Noble House, Capital Drive Linford Wood Milton Keynes, MK14 6QP	AAC5657 - Drakelow	
	Phase 1 SW Network 2	
Date 23/01/2024 14:52	Rev B	
File Storm Network 2.mdx	Designed by RM	
	Checked by CW	
Innovyze	Network 2020.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Network 1

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.300	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Surface Network 1

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	33.519	0.450	74.5	0.111	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	21.519	0.175	123.0	0.086	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	36.177	0.825	43.9	0.079	5.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	11.603	0.150	77.4	0.021	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	20.812	0.200	104.1	0.013	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	35.096	0.425	82.6	0.087	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.005	27.099	0.100	271.0	0.028	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.006	40.917	1.100	37.2	0.038	0.00	0.0	0.600	o	375	Pipe/Conduit	
1.007	16.788	0.225	74.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.000	37.417	0.275	136.1	0.073	5.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	I.Area (ha)	Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.37	53.050	0.111	0.0	0.0	0.0	1.52	60.3	15.0
1.001	50.00	5.67	52.600	0.197	0.0	0.0	0.0	1.18	46.8	26.7
2.000	50.00	5.30	53.250	0.079	0.0	0.0	0.0	1.98	78.8	10.7
1.002	50.00	5.78	52.350	0.297	0.0	0.0	0.0	1.79	126.5	40.2
1.003	50.00	6.01	52.200	0.310	0.0	0.0	0.0	1.54	108.9	42.0
1.004	50.00	6.34	52.000	0.397	0.0	0.0	0.0	1.73	122.4	53.8
1.005	50.00	6.76	51.500	0.425	0.0	0.0	0.0	1.10	121.0	57.6
1.006	50.00	6.98	51.400	0.463	0.0	0.0	0.0	2.98	329.0	62.7
1.007	50.00	7.10	50.225	0.463	0.0	0.0	0.0	2.36	374.7	62.7
3.000	50.00	5.56	50.750	0.073	0.0	0.0	0.0	1.12	44.5	9.9

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Network Design Table for Surface Network 1

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
4.000	27.901	0.325	85.8	0.105	5.00	0.0	0.600	o	225	Pipe/Conduit	
3.001	55.841	0.250	223.4	0.099	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.008	28.625	0.100	286.3	0.082	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.009	61.228	0.175	349.9	0.058	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.010	33.955	0.100	339.6	0.116	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.011	30.157	0.100	301.6	0.110	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.012	34.667	0.115	301.5	0.065	0.00	0.0	0.600	o	600	Pipe/Conduit	
5.000	24.010	0.250	96.0	0.084	5.00	0.0	0.600	o	225	Pipe/Conduit	
5.001	18.605	0.515	36.1	0.103	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.013	20.772	0.070	296.7	0.104	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.014	28.029	0.750	37.4	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.015	27.011	0.150	180.1	0.006	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.016	11.890	0.030	396.3	0.057	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.017	12.066	0.030	402.2	0.007	0.00	0.0	0.600	o	600	Pipe/Conduit	
6.000	32.541	0.300	108.5	0.057	5.00	0.0	0.600	o	225	Pipe/Conduit	
6.001	35.486	0.375	94.6	0.047	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.002	14.780	0.200	73.9	0.064	0.00	0.0	0.600	o	300	Pipe/Conduit	
6.003	59.405	1.900	31.3	0.184	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
4.000	50.00	5.33	50.800	0.105	0.0	0.0	0.0	1.41	56.1	14.2
3.001	50.00	6.45	50.400	0.277	0.0	0.0	0.0	1.05	74.1	37.5
1.008	50.00	7.44	49.850	0.822	0.0	0.0	0.0	1.43	405.5	111.3
1.009	50.00	8.22	49.750	0.880	0.0	0.0	0.0	1.30	366.5	119.2
1.010	50.00	8.65	49.575	0.996	0.0	0.0	0.0	1.32	372.1	134.9
1.011	50.00	9.01	49.475	1.106	0.0	0.0	0.0	1.40	395.0	149.8
1.012	50.00	9.43	49.375	1.171	0.0	0.0	0.0	1.40	395.1	158.6
5.000	50.00	5.30	50.400	0.084	0.0	0.0	0.0	1.33	53.1	11.4
5.001	50.00	5.44	50.150	0.187	0.0	0.0	0.0	2.18	86.8	25.3
1.013	50.00	9.67	49.260	1.462	0.0	0.0	0.0	1.41	398.2	198.0
1.014	50.00	9.79	49.190	1.462	0.0	0.0	0.0	3.99	1128.7	198.0
1.015	50.00	10.04	48.440	1.468	0.0	0.0	0.0	1.81	512.2	198.8
1.016	50.00	10.20	48.290	1.525	0.0	0.0	0.0	1.22	344.1	206.5
1.017	50.00	10.37	48.260	1.532	0.0	0.0	0.0	1.21	341.6	207.5
6.000	50.00	5.43	54.450	0.057	0.0	0.0	0.0	1.25	49.9	7.7
6.001	50.00	5.87	54.150	0.104	0.0	0.0	0.0	1.34	53.5	14.1
6.002	50.00	6.01	53.700	0.168	0.0	0.0	0.0	1.83	129.4	22.7
6.003	50.00	6.36	53.500	0.352	0.0	0.0	0.0	2.82	199.5	47.7

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Network Design Table for Surface Network 1

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
6.004	28.578	0.850	33.6	0.164	0.00	0.0	0.600	o	300	Pipe/Conduit	
6.005	41.213	1.500	27.5	0.099	0.00	0.0	0.057	o	300	Pipe/Conduit	
7.000	15.055	0.125	120.4	0.097	5.00	0.0	0.600	o	225	Pipe/Conduit	
6.006	59.973	0.720	83.3	0.100	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.018	10.909	0.030	363.6	0.107	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.019	19.126	0.050	382.5	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.020	4.726	0.250	18.9	0.000	0.00	0.0	0.600	o	1200	Pipe/Conduit	
8.000	16.739	0.100	167.4	0.400	5.00	0.0	0.600	o	300	Pipe/Conduit	
8.001	21.582	0.200	107.9	0.028	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.002	15.123	0.200	75.6	0.096	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.003	37.739	0.500	75.5	0.107	0.00	0.0	0.600	o	300	Pipe/Conduit	
8.004	48.177	1.700	28.3	0.017	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.005	31.787	2.700	11.8	0.063	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.006	5.446	0.050	108.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.007	58.202	0.200	291.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.021	9.731	0.050	194.6	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
1.022	4.997	0.050	99.9	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	E I.Area (ha)	E Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
6.004	50.00	6.53	51.600	0.516	0.0	0.0	0.0	2.72	192.3	69.9
6.005	50.00	6.71	50.750	0.615	0.0	0.0	0.0	3.85	272.1	83.3
7.000	50.00	5.21	49.450	0.097	0.0	0.0	0.0	1.19	47.3	13.1
6.006	50.00	7.16	49.100	0.812	0.0	0.0	0.0	2.23	354.5	110.0
1.018	50.00	10.51	48.230	2.451	0.0	0.0	0.0	1.27	359.4	331.9
1.019	50.00	10.77	48.200	2.451	0.0	0.0	0.0	1.24	350.3	331.9
1.020	50.00	10.78	48.150	2.451	0.0	0.0	0.0	8.62	9752.1	331.9
8.000	50.00	5.23	53.700	0.400	0.0	0.0	0.0	1.21	85.7	54.2
8.001	50.00	5.47	53.600	0.428	0.0	0.0	0.0	1.51	107.0	58.0
8.002	50.00	5.61	53.400	0.524	0.0	0.0	0.0	1.81	127.9	71.0
8.003	50.00	5.95	53.200	0.631	0.0	0.0	0.0	1.81	128.1	85.4
8.004	50.00	6.16	52.550	0.648	0.0	0.0	0.0	3.83	609.2	87.7
8.005	50.00	6.25	50.850	0.711	0.0	0.0	0.0	5.95	946.4	96.3
8.006	50.00	6.30	48.150	0.711	0.0	0.0	0.0	1.95	309.7	96.3
8.007	50.00	7.12	48.100	0.711	0.0	0.0	0.0	1.19	188.7	96.3
1.021	50.00	10.87	47.900	3.162	0.0	0.0	0.0	1.74	492.6	428.2
1.022	50.00	10.90	47.850	3.162	0.0	0.0	0.0	2.44	688.8	428.2

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Manhole Schedules for Surface Network 1

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S500	55.039	1.989	Open Manhole	1350	1.000	53.050	225				
S502	54.665	2.065	Open Manhole	1350	1.001	52.600	225	1.000	52.600	225	
S548	55.068	1.818	Open Manhole	1350	2.000	53.250	225				
S504	54.463	2.113	Open Manhole	1350	1.002	52.350	300	1.001	52.425	225	
								2.000	52.425	225	
S506	54.342	2.142	Open Manhole	1350	1.003	52.200	300	1.002	52.200	300	
S508	54.130	2.130	Open Manhole	1350	1.004	52.000	300	1.003	52.000	300	
S510	53.724	2.224	Open Manhole	1350	1.005	51.500	375	1.004	51.575	300	
S512	53.667	2.267	Open Manhole	1350	1.006	51.400	375	1.005	51.400	375	
S514	51.925	1.700	Open Manhole	1350	1.007	50.225	450	1.006	50.300	375	
S550	52.729	1.979	Open Manhole	1350	3.000	50.750	225				
S554	52.576	1.776	Open Manhole	1350	4.000	50.800	225				
S552	52.345	1.945	Open Manhole	1350	3.001	50.400	300	3.000	50.475	225	
								4.000	50.475	225	
S516	51.797	1.947	Open Manhole	1500	1.008	49.850	600	1.007	50.000	450	
								3.001	50.150	300	
S518	51.955	2.205	Open Manhole	1500	1.009	49.750	600	1.008	49.750	600	
S520	52.201	2.626	Open Manhole	1500	1.010	49.575	600	1.009	49.575	600	
S522	52.401	2.926	Open Manhole	1500	1.011	49.475	600	1.010	49.475	600	
S524	52.328	2.953	Open Manhole	1500	1.012	49.375	600	1.011	49.375	600	
S556	52.353	1.953	Open Manhole	1350	5.000	50.400	225				
S558	52.119	1.969	Open Manhole	1350	5.001	50.150	225	5.000	50.150	225	
S526	51.985	2.725	Open Manhole	1500	1.013	49.260	600	1.012	49.260	600	
								5.001	49.635	225	
S528	51.920	2.730	Open Manhole	1500	1.014	49.190	600	1.013	49.190	600	
S530	50.244	1.804	Open Manhole	1500	1.015	48.440	600	1.014	48.440	600	
S532	50.457	2.167	Open Manhole	1500	1.016	48.290	600	1.015	48.290	600	
S534	50.402	2.142	Open Manhole	1500	1.017	48.260	600	1.016	48.260	600	
S560	56.008	1.558	Open Manhole	1350	6.000	54.450	225				
S562	56.098	1.948	Open Manhole	1350	6.001	54.150	225	6.000	54.150	225	
S564	55.749	2.049	Open Manhole	1350	6.002	53.700	300	6.001	53.775	225	
S566	55.596	2.096	Open Manhole	1350	6.003	53.500	300	6.002	53.500	300	
S568	54.028	2.428	Open Manhole	1350	6.004	51.600	300	6.003	51.600	300	
S570	53.075	2.325	Open Manhole	1200	6.005	50.750	300	6.004	50.750	300	
S574	51.360	1.910	Open Manhole	1350	7.000	49.450	225				
S572	51.710	2.610	Open Manhole	1350	6.006	49.100	450	6.005	49.250	300	
								7.000	49.325	225	
S536	50.587	2.357	Open Manhole	1500	1.018	48.230	600	1.017	48.230	600	
								6.006	48.380	450	
S538	50.067	1.867	Open Manhole	2100	1.019	48.200	600	1.018	48.200	600	

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Manhole Schedules for Surface Network 1

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S540	49.550	1.400	Open Manhole	2400	1.020	48.150	1200	1.019	48.150	600	
S576	55.897	2.197	Open Manhole	1350	8.000	53.700	300				
S578	55.834	2.234	Open Manhole	1350	8.001	53.600	300	8.000	53.600	300	
S580	55.559	2.159	Open Manhole	1350	8.002	53.400	300	8.001	53.400	300	
S582	55.350	2.150	Open Manhole	1350	8.003	53.200	300	8.002	53.200	300	
S584	54.858	2.308	Open Manhole	1350	8.004	52.550	450	8.003	52.700	300	
S586	53.000	2.150	Open Manhole	1350	8.005	50.850	450	8.004	50.850	450	
S588	49.650	1.500	Open Manhole	1350	8.006	48.150	450	8.005	48.150	450	
S590	49.550	1.450	Open Manhole	1500	8.007	48.100	450	8.006	48.100	450	
S542	49.550	1.650	Open Manhole	2400	1.021	47.900	600	1.020	47.900	1200	
								8.007	47.900	450	
S544	49.850	2.000	Open Manhole	2400	1.022	47.850	600	1.021	47.850	600	
S546	48.800	1.000	Open Manhole	0		OUTFALL		1.022	47.800	600	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S500	424215.166	320035.155	424215.166	320035.155	Required	
S502	424243.500	320017.247	424243.500	320017.247	Required	
S548	424232.234	319976.377	424232.234	319976.377	Required	
S504	424258.218	320001.548	424258.218	320001.548	Required	
S506	424265.503	319992.517	424265.503	319992.517	Required	
S508	424276.516	319974.858	424276.516	319974.858	Required	
S510	424290.629	319942.725	424290.629	319942.725	Required	
S512	424315.510	319953.463	424315.510	319953.463	Required	
S514	424341.644	319984.947	424341.644	319984.947	Required	

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Manhole Schedules for Surface Network 1

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S550	424274.661	320071.049	424274.661	320071.049	Required	
S554	424324.424	320063.625	424324.424	320063.625	Required	
S552	424302.634	320046.199	424302.634	320046.199	Required	
S516	424333.039	319999.362	424333.039	319999.362	Required	
S518	424356.898	320015.178	424356.898	320015.178	Required	
S520	424414.606	320035.639	424414.606	320035.639	Required	
S522	424445.509	320049.708	424445.509	320049.708	Required	
S524	424433.651	320077.436	424433.651	320077.436	Required	
S556	424383.265	320087.470	424383.265	320087.470	Required	
S558	424403.536	320100.338	424403.536	320100.338	Required	
S526	424419.870	320109.246	424419.870	320109.246	Required	
S528	424410.152	320127.605	424410.152	320127.605	Required	
S530	424396.338	320151.993	424396.338	320151.993	Required	
S532	424369.430	320149.639	424369.430	320149.639	Required	
S534	424358.910	320144.099	424358.910	320144.099	Required	
S560	424098.579	320048.351	424098.579	320048.351	Required	
S562	424131.037	320050.679	424131.037	320050.679	Required	

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Manhole Schedules for Surface Network 1

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S564	424166.457	320048.513	424166.457	320048.513	Required	
S566	424180.786	320052.138	424180.786	320052.138	Required	
S568	424230.063	320085.315	424230.063	320085.315	Required	
S570	424255.378	320098.575	424255.378	320098.575	Required	
S574	424284.910	320131.061	424284.910	320131.061	Required	
S572	424291.877	320117.715	424291.877	320117.715	Required	
S536	424347.701	320139.633	424347.701	320139.633	Required	
S538	424343.843	320149.837	424343.843	320149.837	Required	
S540	424324.740	320148.908	424324.740	320148.908	Required	
S576	424128.021	320129.355	424128.021	320129.355	Required	
S578	424128.472	320112.622	424128.472	320112.622	Required	
S580	424149.613	320108.281	424149.613	320108.281	Required	
S582	424163.868	320113.331	424163.868	320113.331	Required	
S584	424195.173	320134.407	424195.173	320134.407	Required	
S586	424237.503	320157.412	424237.503	320157.412	Required	
S588	424264.728	320173.819	424264.728	320173.819	Required	
S590	424269.393	320176.630	424269.393	320176.630	Required	

Manhole Schedules for Surface Network 1

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S542	424322.646	320153.145	424322.646	320153.145	Required	
S544	424330.096	320159.405	424330.096	320159.405	Required	
S546	424332.115	320163.976			No Entry	

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PIPELINE SCHEDULES for Surface Network 1

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	225	S500	55.039	53.050	1.764	Open Manhole	1350
1.001	o	225	S502	54.665	52.600	1.840	Open Manhole	1350
2.000	o	225	S548	55.068	53.250	1.593	Open Manhole	1350
1.002	o	300	S504	54.463	52.350	1.813	Open Manhole	1350
1.003	o	300	S506	54.342	52.200	1.842	Open Manhole	1350
1.004	o	300	S508	54.130	52.000	1.830	Open Manhole	1350
1.005	o	375	S510	53.724	51.500	1.849	Open Manhole	1350
1.006	o	375	S512	53.667	51.400	1.892	Open Manhole	1350
1.007	o	450	S514	51.925	50.225	1.250	Open Manhole	1350
3.000	o	225	S550	52.729	50.750	1.754	Open Manhole	1350
4.000	o	225	S554	52.576	50.800	1.551	Open Manhole	1350
3.001	o	300	S552	52.345	50.400	1.645	Open Manhole	1350
1.008	o	600	S516	51.797	49.850	1.347	Open Manhole	1500
1.009	o	600	S518	51.955	49.750	1.605	Open Manhole	1500
1.010	o	600	S520	52.201	49.575	2.026	Open Manhole	1500
1.011	o	600	S522	52.401	49.475	2.326	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)
1.000	33.519	74.5	S502	54.665	52.600	1.840	Open Manhole	1350
1.001	21.519	123.0	S504	54.463	52.425	1.813	Open Manhole	1350
2.000	36.177	43.9	S504	54.463	52.425	1.813	Open Manhole	1350
1.002	11.603	77.4	S506	54.342	52.200	1.842	Open Manhole	1350
1.003	20.812	104.1	S508	54.130	52.000	1.830	Open Manhole	1350
1.004	35.096	82.6	S510	53.724	51.575	1.849	Open Manhole	1350
1.005	27.099	271.0	S512	53.667	51.400	1.892	Open Manhole	1350
1.006	40.917	37.2	S514	51.925	50.300	1.250	Open Manhole	1350
1.007	16.788	74.6	S516	51.797	50.000	1.347	Open Manhole	1500
3.000	37.417	136.1	S552	52.345	50.475	1.645	Open Manhole	1350
4.000	27.901	85.8	S552	52.345	50.475	1.645	Open Manhole	1350
3.001	55.841	223.4	S516	51.797	50.150	1.347	Open Manhole	1500
1.008	28.625	286.3	S518	51.955	49.750	1.605	Open Manhole	1500
1.009	61.228	349.9	S520	52.201	49.575	2.026	Open Manhole	1500
1.010	33.955	339.6	S522	52.401	49.475	2.326	Open Manhole	1500
1.011	30.157	301.6	S524	52.328	49.375	2.353	Open Manhole	1500

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PIPELINE SCHEDULES for Surface Network 1

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)
1.012	o	600	S524	52.328	49.375	2.353	Open Manhole	1500
5.000	o	225	S556	52.353	50.400	1.728	Open Manhole	1350
5.001	o	225	S558	52.119	50.150	1.744	Open Manhole	1350
1.013	o	600	S526	51.985	49.260	2.125	Open Manhole	1500
1.014	o	600	S528	51.920	49.190	2.130	Open Manhole	1500
1.015	o	600	S530	50.244	48.440	1.204	Open Manhole	1500
1.016	o	600	S532	50.457	48.290	1.567	Open Manhole	1500
1.017	o	600	S534	50.402	48.260	1.542	Open Manhole	1500
6.000	o	225	S560	56.008	54.450	1.333	Open Manhole	1350
6.001	o	225	S562	56.098	54.150	1.723	Open Manhole	1350
6.002	o	300	S564	55.749	53.700	1.749	Open Manhole	1350
6.003	o	300	S566	55.596	53.500	1.796	Open Manhole	1350
6.004	o	300	S568	54.028	51.600	2.128	Open Manhole	1350
6.005	o	300	S570	53.075	50.750	2.025	Open Manhole	1200
7.000	o	225	S574	51.360	49.450	1.685	Open Manhole	1350
6.006	o	450	S572	51.710	49.100	2.160	Open Manhole	1350

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)
1.012	34.667	301.5	S526	51.985	49.260	2.125	Open Manhole	1500
5.000	24.010	96.0	S558	52.119	50.150	1.744	Open Manhole	1350
5.001	18.605	36.1	S526	51.985	49.635	2.125	Open Manhole	1500
1.013	20.772	296.7	S528	51.920	49.190	2.130	Open Manhole	1500
1.014	28.029	37.4	S530	50.244	48.440	1.204	Open Manhole	1500
1.015	27.011	180.1	S532	50.457	48.290	1.567	Open Manhole	1500
1.016	11.890	396.3	S534	50.402	48.260	1.542	Open Manhole	1500
1.017	12.066	402.2	S536	50.587	48.230	1.757	Open Manhole	1500
6.000	32.541	108.5	S562	56.098	54.150	1.723	Open Manhole	1350
6.001	35.486	94.6	S564	55.749	53.775	1.749	Open Manhole	1350
6.002	14.780	73.9	S566	55.596	53.500	1.796	Open Manhole	1350
6.003	59.405	31.3	S568	54.028	51.600	2.128	Open Manhole	1350
6.004	28.578	33.6	S570	53.075	50.750	2.025	Open Manhole	1200
6.005	41.213	27.5	S572	51.710	49.250	2.160	Open Manhole	1350
7.000	15.055	120.4	S572	51.710	49.325	2.160	Open Manhole	1350
6.006	59.973	83.3	S536	50.587	48.380	1.757	Open Manhole	1500

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PIPELINE SCHEDULES for Surface Network 1

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)
1.018	o	600	S536	50.587	48.230	1.757	Open Manhole	1500
1.019	o	600	S538	50.067	48.200	1.267	Open Manhole	2100
1.020	o	1200	S540	49.550	48.150	0.200	Open Manhole	2400
8.000	o	300	S576	55.897	53.700	1.897	Open Manhole	1350
8.001	o	300	S578	55.834	53.600	1.934	Open Manhole	1350
8.002	o	300	S580	55.559	53.400	1.859	Open Manhole	1350
8.003	o	300	S582	55.350	53.200	1.850	Open Manhole	1350
8.004	o	450	S584	54.858	52.550	1.858	Open Manhole	1350
8.005	o	450	S586	53.000	50.850	1.700	Open Manhole	1350
8.006	o	450	S588	49.650	48.150	1.050	Open Manhole	1350
8.007	o	450	S590	49.550	48.100	1.000	Open Manhole	1500
1.021	o	600	S542	49.550	47.900	1.050	Open Manhole	2400
1.022	o	600	S544	49.850	47.850	1.400	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)
1.018	10.909	363.6	S538	50.067	48.200	1.267	Open Manhole	2100
1.019	19.126	382.5	S540	49.550	48.150	0.800	Open Manhole	2400
1.020	4.726	18.9	S542	49.550	47.900	0.450	Open Manhole	2400
8.000	16.739	167.4	S578	55.834	53.600	1.934	Open Manhole	1350
8.001	21.582	107.9	S580	55.559	53.400	1.859	Open Manhole	1350
8.002	15.123	75.6	S582	55.350	53.200	1.850	Open Manhole	1350
8.003	37.739	75.5	S584	54.858	52.700	1.858	Open Manhole	1350
8.004	48.177	28.3	S586	53.000	50.850	1.700	Open Manhole	1350
8.005	31.787	11.8	S588	49.650	48.150	1.050	Open Manhole	1350
8.006	5.446	108.9	S590	49.550	48.100	1.000	Open Manhole	1500
8.007	58.202	291.0	S542	49.550	47.900	1.200	Open Manhole	2400
1.021	9.731	194.6	S544	49.850	47.850	1.400	Open Manhole	2400
1.022	4.997	99.9	S546	48.800	47.800	0.400	Open Manhole	0

Free Flowing Outfall Details for Surface Network 1

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.022	S546	48.800	47.800	0.000	0	0

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Simulation Criteria for Surface Network 1

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	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 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.300	Storm Duration (mins)	30
Ratio R	0.400		

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Online Controls for Surface Network 1

Hydro-Brake® Optimum Manhole: S544, DS/PN: 1.022, Volume (m³): 11.1

Unit Reference	MD-SHE-0464-1500-1250-1500
Design Head (m)	1.250
Design Flow (l/s)	150.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	464
Invert Level (m)	47.850
Minimum Outlet Pipe Diameter (mm)	500
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.250	150.0	Kick-Flo®	1.040	137.1
Flush-Flo™	0.656	150.0	Mean Flow over Head Range	-	115.8

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	12.0	0.800	148.2	2.000	188.6	4.000	264.8	7.000	348.6
0.200	44.0	1.000	139.9	2.200	197.6	4.500	280.6	7.500	360.6
0.300	88.0	1.200	147.0	2.400	206.2	5.000	295.5	8.000	372.3
0.400	133.1	1.400	158.5	2.600	214.4	5.500	309.6	8.500	383.5
0.500	147.3	1.600	169.1	3.000	230.0	6.000	323.2	9.000	394.5
0.600	149.7	1.800	179.2	3.500	248.0	6.500	336.1	9.500	405.1

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Storage Structures for Surface Network 1

Tank or Pond Manhole: S542, DS/PN: 1.021

Invert Level (m) 47.900

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	623.0	1.650	1395.0

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

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 Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.300 Cv (Summer) 0.740
 Region England and Wales Ratio R 0.400 Cv (Winter) 0.850

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
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH		Return Period	Climate Change	First (X)		First (Y)	First (Z)	Overflow Act.	Water Level	Surcharged Depth	Flooded Volume
	Name	Storm			Surcharge	Flood				(m)	(m)	(m³)
1.000	S500	15 Winter	2	+0%	100/15	Summer				53.141	-0.134	0.000
1.001	S502	15 Winter	2	+0%	30/15	Summer				52.747	-0.078	0.000
2.000	S548	15 Winter	2	+0%	100/15	Summer				53.316	-0.159	0.000
1.002	S504	15 Winter	2	+0%	30/15	Winter				52.501	-0.149	0.000
1.003	S506	15 Winter	2	+0%	30/15	Winter				52.355	-0.145	0.000
1.004	S508	15 Winter	2	+0%	30/15	Summer				52.161	-0.139	0.000
1.005	S510	15 Winter	2	+0%	30/15	Summer				51.717	-0.158	0.000
1.006	S512	15 Winter	2	+0%	100/15	Winter				51.523	-0.252	0.000
1.007	S514	15 Winter	2	+0%	100/15	Summer				50.382	-0.293	0.000
3.000	S550	15 Winter	2	+0%	100/15	Summer				50.835	-0.140	0.000
4.000	S554	15 Winter	2	+0%	100/15	Summer				50.893	-0.132	0.000
3.001	S552	15 Winter	2	+0%	30/15	Summer				50.577	-0.123	0.000
1.008	S516	15 Winter	2	+0%	100/15	Summer				50.109	-0.341	0.000
1.009	S518	15 Winter	2	+0%	100/15	Summer				50.015	-0.335	0.000
1.010	S520	15 Winter	2	+0%	100/15	Summer				49.865	-0.310	0.000
1.011	S522	15 Winter	2	+0%	100/15	Summer				49.766	-0.309	0.000
1.012	S524	15 Winter	2	+0%	100/15	Summer				49.676	-0.299	0.000
5.000	S556	15 Winter	2	+0%	100/15	Summer				50.485	-0.140	0.000
5.001	S558	15 Winter	2	+0%	100/15	Summer				50.247	-0.128	0.000
1.013	S526	15 Winter	2	+0%	100/15	Summer				49.581	-0.279	0.000
1.014	S528	15 Winter	2	+0%	100/15	Summer				49.369	-0.421	0.000
1.015	S530	15 Winter	2	+0%	30/15	Summer 100/15 Winter				48.970	-0.070	0.000
1.016	S532	15 Winter	2	+0%	30/15	Summer				48.890	0.000	0.000
1.017	S534	30 Winter	2	+0%	30/15	Summer				48.860	0.000	0.000

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

PN	US/MH Name	Flow / Overflow Cap. (l/s)	Half Drain Pipe		Status	Level Exceeded
			Time (mins)	Flow (l/s)		
1.000	S500	0.34		19.1	OK	
1.001	S502	0.75		32.0	OK	
2.000	S548	0.18		13.7	OK	
1.002	S504	0.50		48.8	OK	
1.003	S506	0.53		50.6	OK	
1.004	S508	0.55		62.3	OK	
1.005	S510	0.63		66.2	OK	
1.006	S512	0.24		70.9	OK	
1.007	S514	0.26		70.4	OK	
3.000	S550	0.30		12.6	OK	
4.000	S554	0.35		18.1	OK	
3.001	S552	0.64		45.2	OK	
1.008	S516	0.38		124.9	OK	
1.009	S518	0.39		128.2	OK	
1.010	S520	0.44		136.0	OK	
1.011	S522	0.45		144.9	OK	
1.012	S524	0.45		148.1	OK	
5.000	S556	0.30		14.5	OK	
5.001	S558	0.38		29.8	OK	
1.013	S526	0.56		168.1	OK	
1.014	S528	0.19		168.7	OK	
1.015	S530	0.44		168.9	OK	2
1.016	S532	0.87		171.8	OK	
1.017	S534	0.86		168.0	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
6.000	S560	15 Winter	2	+0%	100/15 Summer				54.521	-0.154	0.000
6.001	S562	15 Winter	2	+0%	100/15 Summer				54.240	-0.135	0.000
6.002	S564	15 Winter	2	+0%	100/15 Summer				53.800	-0.200	0.000
6.003	S566	15 Winter	2	+0%	100/15 Summer				53.608	-0.192	0.000
6.004	S568	15 Winter	2	+0%	100/15 Summer				51.741	-0.159	0.000
6.005	S570	15 Winter	2	+0%	100/15 Summer				50.878	-0.172	0.000
7.000	S574	15 Winter	2	+0%	30/15 Winter				49.551	-0.124	0.000
6.006	S572	15 Winter	2	+0%	30/15 Winter				49.291	-0.259	0.000
1.018	S536	15 Winter	2	+0%	2/15 Winter				48.830	0.000	0.000
1.019	S538	15 Winter	2	+0%	30/15 Summer				48.666	-0.134	0.000
1.020	S540	15 Winter	2	+0%					48.430	-0.920	0.000
8.000	S576	15 Winter	2	+0%	30/15 Summer	100/15 Summer			53.936	-0.064	0.000
8.001	S578	15 Winter	2	+0%	30/15 Summer				53.804	-0.096	0.000
8.002	S580	15 Winter	2	+0%	30/15 Summer				53.608	-0.092	0.000
8.003	S582	15 Winter	2	+0%	30/15 Summer				53.418	-0.082	0.000
8.004	S584	15 Winter	2	+0%					52.684	-0.316	0.000
8.005	S586	15 Winter	2	+0%					50.962	-0.338	0.000
8.006	S588	15 Winter	2	+0%	30/15 Summer				48.423	-0.177	0.000
8.007	S590	15 Winter	2	+0%	30/15 Winter				48.366	-0.184	0.000
1.021	S542	60 Winter	2	+0%	30/60 Winter				48.238	-0.262	0.000
1.022	S544	60 Winter	2	+0%	30/60 Winter				48.223	-0.227	0.000

PN	US/MH Name	Flow / Cap.	Half Drain Overflow (l/s)	Pipe Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	S560	0.21			9.8	OK	
6.001	S562	0.33			16.8	OK	
6.002	S564	0.24			26.2	OK	
6.003	S566	0.28			53.2	OK	
6.004	S568	0.44			77.2	OK	
6.005	S570	0.38			91.7	OK	
7.000	S574	0.41			17.0	OK	
6.006	S572	0.37			121.9	OK	
1.018	S536	1.19			250.0	SURCHARGED	
1.019	S538	0.95			247.7	OK	
1.020	S540	0.12			248.2	OK	
8.000	S576	0.95			69.6	OK	4
8.001	S578	0.79			74.0	OK	
8.002	S580	0.82			88.1	OK	
8.003	S582	0.86			102.3	OK	
8.004	S584	0.19			105.3	OK	
8.005	S586	0.14			114.2	OK	
8.006	S588	0.68			114.5	OK	
8.007	S590	0.64			111.5	OK	
1.021	S542	0.38			116.1	OK	
1.022	S544	0.34			116.1	OK	

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

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 Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.300 Cv (Summer) 0.740
 Region England and Wales Ratio R 0.400 Cv (Winter) 0.850

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
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH		Return Period	Climate Change	First (X)		First (Y)	First (Z)	Overflow Act.	Water Level	Surcharged Depth	Flooded Volume
	Name	Storm			Surcharge	Flood				(m)	(m)	(m³)
1.000	S500	15 Winter	30	+0%	100/15 Summer					53.205	-0.070	0.000
1.001	S502	15 Winter	30	+0%	30/15 Summer					53.029	0.204	0.000
2.000	S548	15 Winter	30	+0%	100/15 Summer					53.343	-0.132	0.000
1.002	S504	15 Winter	30	+0%	30/15 Winter					52.659	0.009	0.000
1.003	S506	15 Winter	30	+0%	30/15 Winter					52.528	0.028	0.000
1.004	S508	15 Winter	30	+0%	30/15 Summer					52.337	0.037	0.000
1.005	S510	15 Winter	30	+0%	30/15 Summer					51.890	0.015	0.000
1.006	S512	15 Winter	30	+0%	100/15 Winter					51.574	-0.201	0.000
1.007	S514	15 Winter	30	+0%	100/15 Summer					50.447	-0.228	0.000
3.000	S550	15 Winter	30	+0%	100/15 Summer					50.892	-0.083	0.000
4.000	S554	15 Winter	30	+0%	100/15 Summer					50.940	-0.085	0.000
3.001	S552	15 Winter	30	+0%	30/15 Summer					50.810	0.110	0.000
1.008	S516	15 Winter	30	+0%	100/15 Summer					50.230	-0.220	0.000
1.009	S518	15 Winter	30	+0%	100/15 Summer					50.141	-0.209	0.000
1.010	S520	15 Winter	30	+0%	100/15 Summer					50.015	-0.160	0.000
1.011	S522	15 Winter	30	+0%	100/15 Summer					49.921	-0.154	0.000
1.012	S524	15 Winter	30	+0%	100/15 Summer					49.841	-0.134	0.000
5.000	S556	15 Winter	30	+0%	100/15 Summer					50.523	-0.102	0.000
5.001	S558	15 Winter	30	+0%	100/15 Summer					50.307	-0.068	0.000
1.013	S526	15 Winter	30	+0%	100/15 Summer					49.758	-0.102	0.000
1.014	S528	15 Winter	30	+0%	100/15 Summer					49.559	-0.231	0.000
1.015	S530	15 Winter	30	+0%	30/15 Summer 100/15 Winter					49.472	0.432	0.000
1.016	S532	15 Winter	30	+0%	30/15 Summer					49.340	0.450	0.000
1.017	S534	15 Winter	30	+0%	30/15 Summer					49.284	0.424	0.000

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

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status	Level Exceeded
				Time (mins)	Flow (l/s)		
1.000	S500	0.63			35.8	OK	
1.001	S502	1.47			62.8	SURCHARGED	
2.000	S548	0.35			26.0	OK	
1.002	S504	0.92			89.4	SURCHARGED	
1.003	S506	0.98			93.5	SURCHARGED	
1.004	S508	1.02			114.6	SURCHARGED	
1.005	S510	1.15			121.1	SURCHARGED	
1.006	S512	0.43			130.0	OK	
1.007	S514	0.49			130.2	OK	
3.000	S550	0.55			23.3	OK	
4.000	S554	0.66			34.3	OK	
3.001	S552	1.19			83.5	SURCHARGED	
1.008	S516	0.71			232.1	OK	
1.009	S518	0.73			238.1	OK	
1.010	S520	0.80			248.9	OK	
1.011	S522	0.81			261.3	OK	
1.012	S524	0.81			267.6	OK	
5.000	S556	0.57			27.6	OK	
5.001	S558	0.82			63.8	OK	
1.013	S526	1.00			302.6	OK	
1.014	S528	0.37			317.0	OK	
1.015	S530	0.84			325.5	SURCHARGED	2
1.016	S532	1.66			329.8	SURCHARGED	
1.017	S534	1.69			331.8	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) SurchARGE	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
6.000	S560	15 Winter	30	+0%	100/15 Summer				54.550	-0.125	0.000
6.001	S562	15 Winter	30	+0%	100/15 Summer				54.290	-0.085	0.000
6.002	S564	15 Winter	30	+0%	100/15 Summer				53.856	-0.144	0.000
6.003	S566	15 Winter	30	+0%	100/15 Summer				53.676	-0.124	0.000
6.004	S568	15 Winter	30	+0%	100/15 Summer				51.890	-0.010	0.000
6.005	S570	15 Winter	30	+0%	100/15 Summer				50.965	-0.085	0.000
7.000	S574	15 Winter	30	+0%	30/15 Winter				49.712	0.037	0.000
6.006	S572	15 Winter	30	+0%	30/15 Winter				49.635	0.085	0.000
1.018	S536	15 Winter	30	+0%	2/15 Winter				49.234	0.404	0.000
1.019	S538	15 Winter	30	+0%	30/15 Summer				48.977	0.177	0.000
1.020	S540	15 Winter	30	+0%					48.556	-0.794	0.000
8.000	S576	15 Winter	30	+0%	30/15 Summer	100/15 Summer			54.889	0.889	0.000
8.001	S578	15 Winter	30	+0%	30/15 Summer				54.647	0.747	0.000
8.002	S580	15 Winter	30	+0%	30/15 Summer				54.335	0.635	0.000
8.003	S582	15 Winter	30	+0%	30/15 Summer				53.988	0.488	0.000
8.004	S584	15 Winter	30	+0%					52.721	-0.279	0.000
8.005	S586	15 Winter	30	+0%					50.996	-0.304	0.000
8.006	S588	60 Winter	30	+0%	30/15 Summer				48.719	0.119	0.000
8.007	S590	60 Winter	30	+0%	30/15 Winter				48.620	0.070	0.000
1.021	S542	60 Winter	30	+0%	30/60 Winter				48.529	0.029	0.000
1.022	S544	60 Winter	30	+0%	30/60 Winter				48.518	0.068	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	S560	0.40			18.6	OK	
6.001	S562	0.68			34.3	OK	
6.002	S564	0.52			55.8	OK	
6.003	S566	0.63			119.3	OK	
6.004	S568	1.00			173.3	OK	
6.005	S570	0.86			207.9	OK	
7.000	S574	0.77			32.1	SURCHARGED	
6.006	S572	0.79			258.2	SURCHARGED	
1.018	S536	2.40			505.1	SURCHARGED	
1.019	S538	1.93			505.3	SURCHARGED	
1.020	S540	0.25			504.5	OK	
8.000	S576	1.53			111.4	SURCHARGED	4
8.001	S578	1.26			118.1	SURCHARGED	
8.002	S580	1.31			140.8	SURCHARGED	
8.003	S582	1.40			166.3	SURCHARGED	
8.004	S584	0.31			170.1	OK	
8.005	S586	0.23			184.7	OK	
8.006	S588	0.72			121.8	SURCHARGED	
8.007	S590	0.70			121.0	SURCHARGED	
1.021	S542	0.51			158.0	SURCHARGED	
1.022	S544	0.44			149.6	SURCHARGED	

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

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 Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.300 Cv (Summer) 0.740
 Region England and Wales Ratio R 0.400 Cv (Winter) 0.850

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
 Return Period(s) (years) 2, 30, 100
 Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
1.000	S500	15 Winter	100	+40%	100/15 Summer				54.837	1.562	0.000
1.001	S502	15 Winter	100	+40%	30/15 Summer				54.451	1.626	0.000
2.000	S548	15 Winter	100	+40%	100/15 Summer				53.947	0.472	0.000
1.002	S504	15 Winter	100	+40%	30/15 Winter				53.736	1.086	0.000
1.003	S506	15 Winter	100	+40%	30/15 Winter				53.465	0.965	0.000
1.004	S508	15 Winter	100	+40%	30/15 Summer				53.071	0.771	0.000
1.005	S510	15 Winter	100	+40%	30/15 Summer				52.202	0.327	0.000
1.006	S512	15 Winter	100	+40%	100/15 Winter				51.967	0.192	0.000
1.007	S514	15 Summer	100	+40%	100/15 Summer				51.742	1.067	0.000
3.000	S550	15 Winter	100	+40%	100/15 Summer				52.146	1.171	0.000
4.000	S554	15 Winter	100	+40%	100/15 Summer				52.240	1.215	0.000
3.001	S552	15 Winter	100	+40%	30/15 Summer				52.001	1.301	0.000
1.008	S516	15 Winter	100	+40%	100/15 Summer				51.410	0.960	0.000
1.009	S518	15 Winter	100	+40%	100/15 Summer				51.328	0.978	0.000
1.010	S520	30 Winter	100	+40%	100/15 Summer				51.175	1.000	0.000
1.011	S522	30 Winter	100	+40%	100/15 Summer				51.060	0.985	0.000
1.012	S524	30 Winter	100	+40%	100/15 Summer				50.930	0.955	0.000
5.000	S556	15 Winter	100	+40%	100/15 Summer				51.399	0.774	0.000
5.001	S558	15 Winter	100	+40%	100/15 Summer				51.252	0.877	0.000
1.013	S526	30 Winter	100	+40%	100/15 Summer				50.778	0.918	0.000
1.014	S528	30 Winter	100	+40%	100/15 Summer				50.572	0.782	0.000
1.015	S530	30 Winter	100	+40%	30/15 Summer 100/15 Winter				50.258	1.218	14.453
1.016	S532	15 Winter	100	+40%	30/15 Summer				50.143	1.253	0.000
1.017	S534	15 Winter	100	+40%	30/15 Summer				50.019	1.159	0.000

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

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status	Level Exceeded
				Time (mins)	Flow (l/s)		
1.000	S500	0.91			51.5	FLOOD RISK	
1.001	S502	2.01			85.9	FLOOD RISK	
2.000	S548	0.57			42.1	SURCHARGED	
1.002	S504	1.35			130.8	SURCHARGED	
1.003	S506	1.42			134.9	SURCHARGED	
1.004	S508	1.51			170.5	SURCHARGED	
1.005	S510	1.68			177.3	SURCHARGED	
1.006	S512	0.59			177.3	SURCHARGED	
1.007	S514	0.72			192.8	FLOOD RISK	
3.000	S550	0.76			31.9	SURCHARGED	
4.000	S554	0.92			48.2	SURCHARGED	
3.001	S552	1.71			120.1	SURCHARGED	
1.008	S516	0.93			304.8	SURCHARGED	
1.009	S518	0.96			314.1	SURCHARGED	
1.010	S520	1.05			325.1	SURCHARGED	
1.011	S522	1.11			357.2	SURCHARGED	
1.012	S524	1.14			374.5	SURCHARGED	
5.000	S556	0.83			40.6	SURCHARGED	
5.001	S558	1.23			96.2	SURCHARGED	
1.013	S526	1.54			464.6	SURCHARGED	
1.014	S528	0.54			465.4	SURCHARGED	
1.015	S530	1.26			489.4	FLOOD	2
1.016	S532	2.48			492.3	SURCHARGED	
1.017	S534	2.48			487.1	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
6.000	S560	15 Winter	100	+40%	100/15 Summer				55.337	0.662	0.000
6.001	S562	15 Winter	100	+40%	100/15 Summer				55.235	0.860	0.000
6.002	S564	15 Winter	100	+40%	100/15 Summer				54.994	0.994	0.000
6.003	S566	15 Winter	100	+40%	100/15 Summer				54.876	1.076	0.000
6.004	S568	15 Winter	100	+40%	100/15 Summer				53.753	1.853	0.000
6.005	S570	15 Winter	100	+40%	100/15 Summer				52.376	1.326	0.000
7.000	S574	15 Winter	100	+40%	30/15 Winter				50.800	1.125	0.000
6.006	S572	15 Winter	100	+40%	30/15 Winter				50.668	1.118	0.000
1.018	S536	15 Winter	100	+40%	2/15 Winter				49.886	1.056	0.000
1.019	S538	15 Winter	100	+40%	30/15 Summer				49.302	0.502	0.000
1.020	S540	60 Winter	100	+40%					49.078	-0.272	0.000
8.000	S576	15 Winter	100	+40%	30/15 Summer	100/15 Summer			55.920	1.920	23.106
8.001	S578	15 Winter	100	+40%	30/15 Summer				55.787	1.887	0.000
8.002	S580	15 Winter	100	+40%	30/15 Summer				55.536	1.836	0.000
8.003	S582	15 Winter	100	+40%	30/15 Summer				55.028	1.528	0.000
8.004	S584	15 Winter	100	+40%					52.760	-0.240	0.000
8.005	S586	15 Winter	100	+40%					51.032	-0.268	0.000
8.006	S588	60 Winter	100	+40%	30/15 Summer				49.269	0.669	0.000
8.007	S590	60 Winter	100	+40%	30/15 Winter				49.171	0.621	0.000
1.021	S542	60 Winter	100	+40%	30/60 Winter				49.069	0.569	0.000
1.022	S544	60 Winter	100	+40%	30/60 Winter				49.059	0.609	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	S560	0.63			29.7	SURCHARGED	
6.001	S562	1.03			51.8	SURCHARGED	
6.002	S564	0.82			89.1	SURCHARGED	
6.003	S566	0.83			156.7	SURCHARGED	
6.004	S568	1.26			219.4	FLOOD RISK	
6.005	S570	1.09			263.4	SURCHARGED	
7.000	S574	1.14			47.3	SURCHARGED	
6.006	S572	1.06			347.9	SURCHARGED	
1.018	S536	3.54			747.4	SURCHARGED	
1.019	S538	2.88			752.8	SURCHARGED	
1.020	S540	0.31			618.6	OK	
8.000	S576	2.06			150.5	FLOOD	4
8.001	S578	1.67			157.4	FLOOD RISK	
8.002	S580	1.64			176.2	FLOOD RISK	
8.003	S582	1.99			235.6	SURCHARGED	
8.004	S584	0.44			244.6	OK	
8.005	S586	0.34			279.2	OK	
8.006	S588	1.20			202.5	SURCHARGED	
8.007	S590	1.15			200.5	SURCHARGED	
1.021	S542	0.55			167.6	SURCHARGED	
1.022	S544	0.44			149.7	SURCHARGED	