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Unit 16 St Asaph Business Park St Asaph Denbighshire LL17...	Ysgol Babanod Coed Mawr Bangor Surface Water Drainage Model	
Date 27/02/2024 14:12 File 5318-CAU-XX-XX-CA-C-060...	Designed by NWO Checked by	
XP Solutions	Network 2017.1.2	

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	12.355	0.025	494.2	0.011	5.00	0.600	o	100	Pipe/Conduit
1.001	4.804	0.032	150.1	0.000	0.00	0.600	o	100	Pipe/Conduit
1.002	5.797	0.843	6.9	0.000	0.00	0.600	o	100	Pipe/Conduit
1.003	2.114	0.139	15.2	0.009	0.00	0.600	o	150	Pipe/Conduit
2.000	5.674	0.011	515.8	0.012	5.00	0.600	o	100	Pipe/Conduit
2.001	5.968	0.779	7.7	0.000	0.00	0.600	o	100	Pipe/Conduit
1.004	2.459	0.162	15.2	0.000	0.00	0.600	o	150	Pipe/Conduit
3.000	13.019	0.026	500.7	0.011	5.00	0.600	o	100	Pipe/Conduit
3.001	3.533	0.826	4.3	0.000	0.00	0.600	o	100	Pipe/Conduit
1.005	5.299	0.349	15.2	0.012	0.00	0.600	o	150	Pipe/Conduit
4.000	7.033	0.014	502.4	0.012	5.00	0.600	o	100	Pipe/Conduit
4.001	5.960	0.765	7.8	0.000	0.00	0.600	o	100	Pipe/Conduit
1.006	2.076	0.137	15.2	0.000	0.00	0.600	o	150	Pipe/Conduit
5.000	17.590	0.035	502.6	0.015	5.00	0.600	o	100	Pipe/Conduit

PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
1.000	S10/1	53.850	53.150	0.600	54.045	53.125	0.820		315
1.001	S10/2	54.045	53.125	0.820	53.925	53.093	0.732		315
1.002	S10/3	53.925	53.093	0.732	53.550	52.250	1.200	Orifice	315
1.003	S101	53.550	52.200	1.200	53.430	52.061	1.219		1200
2.000	S1/2	54.000	52.901	0.999	53.590	52.890	0.600		315
2.001	S1/2	53.590	52.890	0.600	53.430	52.111	1.219	Orifice	315
1.004	SJ1	53.430	52.061	1.219	53.270	51.899	1.221		0
3.000	S9/1	53.775	52.801	0.874	53.475	52.775	0.600		315
3.001	S9/2	53.475	52.775	0.600	53.270	51.949	1.221	Orifice	315
1.005	SJ2	53.270	51.899	1.221	52.920	51.550	1.220		0
4.000	S2/1	53.540	52.379	1.061	53.065	52.365	0.600		315
4.001	S2/2	53.065	52.365	0.600	52.920	51.600	1.220	Orifice	315
1.006	SJ3	52.920	51.550	1.220	52.780	51.413	1.217		0
5.000	S8/1	52.925	52.225	0.600	53.225	52.190	0.935		315

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PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
5.001	4.503	0.030	150.1	0.000	0.00	0.600	o	100	Pipe/Conduit
5.002	3.533	0.697	5.1	0.000	0.00	0.600	o	100	Pipe/Conduit
1.007	7.103	0.468	15.2	0.000	0.00	0.600	o	150	Pipe/Conduit
6.000	17.428	0.035	497.9	0.016	5.00	0.600	o	100	Pipe/Conduit
6.001	4.554	0.030	151.8	0.000	0.00	0.600	o	100	Pipe/Conduit
6.002	5.960	0.640	9.3	0.000	0.00	0.600	o	100	Pipe/Conduit
1.008	1.200	0.079	15.2	0.000	0.00	0.600	o	150	Pipe/Conduit
7.000	5.300	0.011	481.8	0.014	5.00	0.600	o	100	Pipe/Conduit
7.001	3.585	0.694	5.2	0.000	0.00	0.600	o	100	Pipe/Conduit
1.009	7.640	0.504	15.2	0.000	0.00	0.600	o	150	Pipe/Conduit
8.000	17.333	0.035	495.2	0.015	5.00	0.600	o	100	Pipe/Conduit
8.001	3.798	1.028	3.7	0.000	0.00	0.600	o	100	Pipe/Conduit
1.010	1.500	0.099	15.2	0.000	0.00	0.600	o	150	Pipe/Conduit

PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
5.001	S8/2	53.225	52.190	0.935	52.925	52.160	0.665		315
5.002	S8/3	52.925	52.160	0.665	52.780	51.463	1.217	Orifice	315
1.007	SJ4	52.780	51.413	1.217	52.195	50.945	1.100		0
6.000	S3/1	52.400	51.700	0.600	52.740	51.665	0.975		315
6.001	S3/2	52.740	51.665	0.975	52.340	51.635	0.605		315
6.002	S3/3	52.340	51.635	0.605	52.195	50.995	1.100	Orifice	315
1.008	SJ5	52.195	50.945	1.100	52.145	50.866	1.129		0
7.000	S7/1	52.745	51.621	1.024	52.310	51.610	0.600		315
7.001	S7/2	52.310	51.610	0.600	52.145	50.916	1.129	Orifice	315
1.009	SJ6	52.145	50.866	1.129	51.720	50.362	1.208		0
8.000	S6/1	52.175	51.475	0.600	52.865	51.440	1.325		315
8.001	S6/2	52.865	51.440	1.325	51.720	50.412	1.208	Orifice	315
1.010	SJ7	51.720	50.362	1.208	51.620	50.263	1.207		0

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
9.000	6.256	0.013	481.2	0.014	5.00	0.600	o	100	Pipe/Conduit
9.001	6.326	0.852	7.4	0.000	0.00	0.600	o	100	Pipe/Conduit
1.011	7.218	0.475	15.2	0.000	0.00	0.600	o	150	Pipe/Conduit
10.000	17.290	0.035	494.0	0.015	5.00	0.600	o	100	Pipe/Conduit
10.001	6.104	0.742	8.2	0.000	0.00	0.600	o	100	Pipe/Conduit
1.012	9.118	0.600	15.2	0.000	0.00	0.600	o	150	Pipe/Conduit
11.000	5.507	0.037	148.8	0.000	5.00	0.600	o	150	Pipe/Conduit
1.013	10.463	0.021	498.2	0.038	0.00	0.600	o	150	Pipe/Conduit
1.014	9.695	0.917	10.6	0.003	0.00	0.600	o	150	Pipe/Conduit
1.015	7.507	0.015	500.5	0.002	0.00	0.600	o	150	Pipe/Conduit
12.000	1.264	0.003	421.3	0.000	5.00	0.600	o	150	Pipe/Conduit
1.016	6.239	0.012	519.9	0.000	0.00	0.600	o	150	Pipe/Conduit
1.017	3.826	0.026	147.2	0.000	0.00	0.600	o	150	Pipe/Conduit

PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
9.000	S4/1	52.235	51.178	0.957	51.865	51.165	0.600		315
9.001	S4/2	51.865	51.165	0.600	51.620	50.313	1.207	Orifice	315
1.011	SJ8	51.620	50.263	1.207	51.140	49.788	1.202		0
10.000	S5/1	51.580	50.615	0.865	51.300	50.580	0.620		315
10.001	S5/2	51.300	50.580	0.620	51.140	49.838	1.202	Orifice	315
1.012	SJ9	51.140	49.788	1.202	50.350	49.188	1.012		0
11.000	S201	50.350	49.227	0.973	50.350	49.190	1.010		1200
1.013	S102	50.350	49.190	1.010	50.350	49.169	1.031		315
1.014	S103	50.350	49.170	1.030	50.500	48.253	2.097		315
1.015	S104	50.500	48.253	2.097	50.500	48.238	2.112		315
12.000	S301	50.500	48.241	2.109	50.500	48.238	2.112		315
1.016	SJ10	50.500	48.238	2.112	50.500	48.226	2.124		150
1.017	S104 (FC)	50.500	48.226	2.124	49.500	48.200	1.150	Hydro-Brake®	1200




Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out			Pipes In			Backdrop (mm)
					PN	Invert Level (m)	Diameter (mm)	PN	Invert Level (m)	Diameter (mm)	
S10/1	53.850	0.700	Open Manhole	315	1.000	53.150	100				
S10/2	54.045	0.920	Open Manhole	315	1.001	53.125	100	1.000	53.125	100	
S10/3	53.925	0.832	Open Manhole	315	1.002	53.093	100	1.001	53.093	100	
S101	53.550	1.350	Open Manhole		1.003	52.200	150	1.002	52.250	100	
S1/2	54.000	1.099	Open Manhole	315	2.000	52.901	100				
S1/2	53.590	0.700	Open Manhole		2.001	52.890	100	2.000	52.890	100	
SJ1	53.430	1.369	Junction		1.004	52.061	150	1.003	52.061	150	
								2.001	52.111	100	
S9/1	53.775	0.974	Open Manhole	315	3.000	52.801	100				
S9/2	53.475	0.700	Open Manhole		3.001	52.775	100	3.000	52.775	100	
SJ2	53.270	1.371	Junction		1.005	51.899	150	1.004	51.899	150	
								3.001	51.949	100	
S2/1	53.540	1.161	Open Manhole	315	4.000	52.379	100				
S2/2	53.065	0.700	Open Manhole		4.001	52.365	100	4.000	52.365	100	
SJ3	52.920	1.370	Junction		1.006	51.550	150	1.005	51.550	150	
								4.001	51.600	100	
S8/1	52.925	0.700	Open Manhole	315	5.000	52.225	100				
S8/2	53.225	1.035	Open Manhole	315	5.001	52.190	100	5.000	52.190	100	
S8/3	52.925	0.765	Open Manhole		5.002	52.160	100	5.001	52.160	100	
SJ4	52.780	1.367	Junction		1.007	51.413	150	1.006	51.413	150	
								5.002	51.463	100	
S3/1	52.400	0.700	Open Manhole	315	6.000	51.700	100				
S3/2	52.740	1.075	Open Manhole	315	6.001	51.665	100	6.000	51.665	100	
S3/3	52.340	0.705	Open Manhole		6.002	51.635	100	6.001	51.635	100	
SJ5	52.195	1.250	Junction		1.008	50.945	150	1.007	50.945	150	
								6.002	50.995	100	
S7/1	52.745	1.124	Open Manhole	315	7.000	51.621	100				
S7/2	52.310	0.700	Open Manhole		7.001	51.610	100	7.000	51.610	100	
SJ6	52.145	1.279	Junction		1.009	50.866	150	1.008	50.866	150	
								7.001	50.916	100	
S6/1	52.175	0.700	Open Manhole	315	8.000	51.475	100				
S6/2	52.865	1.425	Open Manhole		8.001	51.440	100	8.000	51.440	100	
SJ7	51.720	1.358	Junction		1.010	50.362	150	1.009	50.362	150	
								8.001	50.412	100	
S4/1	52.235	1.057	Open Manhole	315	9.000	51.178	100				
S4/2	51.865	0.700	Open Manhole		9.001	51.165	100	9.000	51.165	100	
SJ8	51.620	1.357	Junction		1.011	50.263	150	1.010	50.263	150	
								9.001	50.313	100	

Manhole Schedules for Storm

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)	Backdr (mm)
S5/1	51.580	0.965	Open Manhole	315	10.000	50.615	100				
S5/2	51.300	0.720	Open Manhole		10.001	50.580	100	10.000	50.580	100	
SJ9	51.140	1.352	Junction	0	1.012	49.788	150	1.011	49.788	150	
								10.001	49.838	100	
S201	50.350	1.123	Open Manhole	1200	11.000	49.227	150				
S102	50.350	1.162	Open Manhole	315	1.013	49.190	150	1.012	49.188	150	
								11.000	49.190	150	
S103	50.350	1.181	Open Manhole	315	1.014	49.170	150	1.013	49.169	150	
S104	50.500	2.247	Open Manhole	315	1.015	48.253	150	1.014	48.253	150	
S301	50.500	2.259	Open Manhole	315	12.000	48.241	150				
SJ10	50.500	2.262	Open Manhole	150	1.016	48.238	150	1.015	48.238	150	
								12.000	48.238	150	
S104(FC)	50.500	2.274	Open Manhole	1200	1.017	48.226	150	1.016	48.226	150	
S105	49.500	1.300	Open Manhole	1200		OUTFALL		1.017	48.200	150	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	100	S10/1	53.850	53.150	0.600	Open Manhole	315
1.001	o	100	S10/2	54.045	53.125	0.820	Open Manhole	315
1.002	o	100	S10/3	53.925	53.093	0.732	Open Manhole	315
1.003	o	150	S101	53.550	52.200	1.200	Open Manhole	1200
2.000	o	100	S1/2	54.000	52.901	0.999	Open Manhole	315
2.001	o	100	S1/2	53.590	52.890	0.600	Open Manhole	315
1.004	o	150	SJ1	53.430	52.061	1.219	Junction	
3.000	o	100	S9/1	53.775	52.801	0.874	Open Manhole	315
3.001	o	100	S9/2	53.475	52.775	0.600	Open Manhole	315
1.005	o	150	SJ2	53.270	51.899	1.221	Junction	
4.000	o	100	S2/1	53.540	52.379	1.061	Open Manhole	315
4.001	o	100	S2/2	53.065	52.365	0.600	Open Manhole	315
1.006	o	150	SJ3	52.920	51.550	1.220	Junction	
5.000	o	100	S8/1	52.925	52.225	0.600	Open Manhole	315

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	12.355	494.2	S10/2	54.045	53.125	0.820	Open Manhole	315
1.001	4.804	150.1	S10/3	53.925	53.093	0.732	Open Manhole	315
1.002	5.797	6.9	S101	53.550	52.250	1.200	Open Manhole	1200
1.003	2.114	15.2	SJ1	53.430	52.061	1.219	Junction	
2.000	5.674	515.8	S1/2	53.590	52.890	0.600	Open Manhole	315
2.001	5.968	7.7	SJ1	53.430	52.111	1.219	Junction	
1.004	2.459	15.2	SJ2	53.270	51.899	1.221	Junction	
3.000	13.019	500.7	S9/2	53.475	52.775	0.600	Open Manhole	315
3.001	3.533	4.3	SJ2	53.270	51.949	1.221	Junction	
1.005	5.299	15.2	SJ3	52.920	51.550	1.220	Junction	
4.000	7.033	502.4	S2/2	53.065	52.365	0.600	Open Manhole	315
4.001	5.960	7.8	SJ3	52.920	51.600	1.220	Junction	
1.006	2.076	15.2	SJ4	52.780	51.413	1.217	Junction	
5.000	17.590	502.6	S8/2	53.225	52.190	0.935	Open Manhole	315

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.001	o	100	S8/2	53.225	52.190	0.935	Open Manhole	315
5.002	o	100	S8/3	52.925	52.160	0.665	Open Manhole	315
1.007	o	150	SJ4	52.780	51.413	1.217	Junction	
6.000	o	100	S3/1	52.400	51.700	0.600	Open Manhole	315
6.001	o	100	S3/2	52.740	51.665	0.975	Open Manhole	315
6.002	o	100	S3/3	52.340	51.635	0.605	Open Manhole	315
1.008	o	150	SJ5	52.195	50.945	1.100	Junction	
7.000	o	100	S7/1	52.745	51.621	1.024	Open Manhole	315
7.001	o	100	S7/2	52.310	51.610	0.600	Open Manhole	315
1.009	o	150	SJ6	52.145	50.866	1.129	Junction	
8.000	o	100	S6/1	52.175	51.475	0.600	Open Manhole	315
8.001	o	100	S6/2	52.865	51.440	1.325	Open Manhole	315
1.010	o	150	SJ7	51.720	50.362	1.208	Junction	

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
5.001	4.503	150.1	S8/3	52.925	52.160	0.665	Open Manhole	315
5.002	3.533	5.1	SJ4	52.780	51.463	1.217	Junction	
1.007	7.103	15.2	SJ5	52.195	50.945	1.100	Junction	
6.000	17.428	497.9	S3/2	52.740	51.665	0.975	Open Manhole	315
6.001	4.554	151.8	S3/3	52.340	51.635	0.605	Open Manhole	315
6.002	5.960	9.3	SJ5	52.195	50.995	1.100	Junction	
1.008	1.200	15.2	SJ6	52.145	50.866	1.129	Junction	
7.000	5.300	481.8	S7/2	52.310	51.610	0.600	Open Manhole	315
7.001	3.585	5.2	SJ6	52.145	50.916	1.129	Junction	
1.009	7.640	15.2	SJ7	51.720	50.362	1.208	Junction	
8.000	17.333	495.2	S6/2	52.865	51.440	1.325	Open Manhole	315
8.001	3.798	3.7	SJ7	51.720	50.412	1.208	Junction	
1.010	1.500	15.2	SJ8	51.620	50.263	1.207	Junction	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., I*W (mm)
9.000	o	100	S4/1	52.235	51.178	0.957	Open Manhole	315
9.001	o	100	S4/2	51.865	51.165	0.600	Open Manhole	315
1.011	o	150	SJ8	51.620	50.263	1.207	Junction	
10.000	o	100	S5/1	51.580	50.615	0.865	Open Manhole	315
10.001	o	100	S5/2	51.300	50.580	0.620	Open Manhole	315
1.012	o	150	SJ9	51.140	49.788	1.202	Junction	
11.000	o	150	S201	50.350	49.227	0.973	Open Manhole	1200
1.013	o	150	S102	50.350	49.190	1.010	Open Manhole	315
1.014	o	150	S103	50.350	49.170	1.030	Open Manhole	315
1.015	o	150	S104	50.500	48.253	2.097	Open Manhole	315
12.000	o	150	S301	50.500	48.241	2.109	Open Manhole	315
1.016	o	150	SJ10	50.500	48.238	2.112	Open Manhole	150
1.017	o	150	S104(FC)	50.500	48.226	2.124	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., I*W (mm)
9.000	6.256	481.2	S4/2	51.865	51.165	0.600	Open Manhole	315
9.001	6.326	7.4	SJ8	51.620	50.313	1.207	Junction	
1.011	7.218	15.2	SJ9	51.140	49.788	1.202	Junction	
10.000	17.290	494.0	S5/2	51.300	50.580	0.620	Open Manhole	315
10.001	6.104	8.2	SJ9	51.140	49.838	1.202	Junction	
1.012	9.118	15.2	S102	50.350	49.188	1.012	Open Manhole	315
11.000	5.507	148.8	S102	50.350	49.190	1.010	Open Manhole	315
1.013	10.463	498.2	S103	50.350	49.169	1.031	Open Manhole	315
1.014	9.695	10.6	S104	50.500	48.253	2.097	Open Manhole	315
1.015	7.507	500.5	SJ10	50.500	48.238	2.112	Open Manhole	150
12.000	1.264	421.3	SJ10	50.500	48.238	2.112	Open Manhole	150
1.016	6.239	519.9	S104(FC)	50.500	48.226	2.124	Open Manhole	1200
1.017	3.826	147.2	S105	49.500	48.200	1.150	Open Manhole	1200

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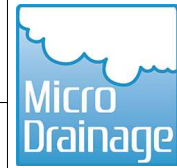
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Setting Out Information - True Coordinates (Storm)

PN	USMH Name	Dia/Len (mm)	Width (mm)	US Easting (m)	US Northing (m)	Layout (North)
1.000	S10/1	315		256621.619	370765.271	
1.001	S10/2	315		256628.275	370775.679	
1.002	S10/3	315		256632.422	370773.254	
1.003	S101	1200		256638.218	370773.337	
2.000	S1/2	315		256637.799	370781.192	
2.001	S1/2	315		256642.494	370778.006	
1.004	SJ1			256640.164	370772.511	
3.000	S9/1	315		256634.015	370757.344	
3.001	S9/2	315		256641.049	370768.299	
1.005	SJ2			256642.429	370771.551	
4.000	S2/1	315		256643.161	370777.717	
4.001	S2/2	315		256649.635	370774.970	
1.006	SJ3			256647.308	370769.482	
5.000	S8/1	315		256636.820	370750.979	
5.001	S8/2	315		256643.692	370767.172	
5.002	S8/3	315		256647.844	370765.428	

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Setting Out Information - True Coordinates (Storm)

PN	USMH Name	Dia/Len (mm)	Width (mm)	US Easting (m)	US Northing (m)	Layout (North)
1.007	SJ4			256649.223	370768.681	
6.000	S3/1	315		256660.701	370789.206	
6.001	S3/2	315		256653.892	370773.163	
6.002	S3/3	315		256658.085	370771.384	
1.008	SJ5			256655.758	370765.896	
7.000	S7/1	315		256650.095	370764.454	
7.001	S7/2	315		256654.974	370762.384	
1.009	SJ6			256656.863	370765.430	
8.000	S6/1	315		256655.643	370742.995	
8.001	S6/2	315		256662.414	370758.951	
1.010	SJ7			256663.897	370762.448	
9.000	S4/1	315		256660.381	370770.572	
9.001	S4/2	315		256666.140	370768.128	
1.011	SJ8			256665.278	370761.862	
10.000	S5/1	315		256681.060	370780.580	
10.001	S5/2	315		256674.306	370764.664	


Setting Out Information - True Coordinates (Storm)

PN	USMH Name	Dia/Len (mm)	Width (mm)	US Easting (m)	US Northing (m)	Layout (North)
1.012	SJ9			256671.923	370759.044	
11.000	S201	1200		256678.167	370750.414	
1.013	S102	315		256680.317	370755.484	
1.014	S103	315		256684.414	370765.144	
1.015	S104	315		256683.422	370774.780	
12.000	S301	315		256685.177	370782.188	
1.016	SJ10	150		256686.345	370781.705	
1.017	S104(FC)	1200		256692.095	370779.281	

PN	DSMH Name	Dia/Len (mm)	Width (mm)	DS Easting (m)	DS Northing (m)	Layout (North)
1.017	S105	1200		256695.097	370776.910	

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.017	S105	49.500	48.200	0.000	1200	0

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Online Controls for Storm

Orifice Manhole: S10/3, DS/PN: 1.002, Volume (m³): 0.1

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 53.093

Orifice Manhole: S1/2, DS/PN: 2.001, Volume (m³): 0.1

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 52.890

Orifice Manhole: S9/2, DS/PN: 3.001, Volume (m³): 0.2

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 52.775

Orifice Manhole: S2/2, DS/PN: 4.001, Volume (m³): 0.1

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 52.365

Orifice Manhole: S8/3, DS/PN: 5.002, Volume (m³): 0.1

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 52.160

Orifice Manhole: S3/3, DS/PN: 6.002, Volume (m³): 0.1

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 51.635

Orifice Manhole: S7/2, DS/PN: 7.001, Volume (m³): 0.1

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 51.610

Orifice Manhole: S6/2, DS/PN: 8.001, Volume (m³): 0.2

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 51.440

Orifice Manhole: S4/2, DS/PN: 9.001, Volume (m³): 0.1


Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 51.165

Orifice Manhole: S5/2, DS/PN: 10.001, Volume (m³): 0.2

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 50.580

Hydro-Brake® Optimum Manhole: S104(FC), DS/PN: 1.017, Volume (m³): 2.7

Unit Reference	MD-SHE-0093-5000-1900-5000
Design Head (m)	1.900
Design Flow (l/s)	5.0
Flush-Flo™	Calculated

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Hydro-Brake® Optimum Manhole: S104(FC), DS/PN: 1.017, Volume (m³): 2.7

Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	93
Invert Level (m)	48.226
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.900	5.0
Flush-Flo™	0.406	4.3
Kick-Flo®	0.830	3.4
Mean Flow over Head Range	-	4.0

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	2.9	1.200	4.0	3.000	6.2	7.000	9.2
0.200	3.9	1.400	4.3	3.500	6.7	7.500	9.5
0.300	4.2	1.600	4.6	4.000	7.1	8.000	9.8
0.400	4.3	1.800	4.9	4.500	7.5	8.500	10.1
0.500	4.2	2.000	5.1	5.000	7.9	9.000	10.4
0.600	4.1	2.200	5.4	5.500	8.2	9.500	10.7
0.800	3.6	2.400	5.6	6.000	8.6		
1.000	3.7	2.600	5.8	6.500	8.9		

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Storage Structures for Storm

Porous Car Park Manhole: S10/2, DS/PN: 1.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.0
Membrane Percolation (mm/hr)	1000	Length (m)	14.0
Max Percolation (l/s)	11.7	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	53.280	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S1/2, DS/PN: 2.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.8
Membrane Percolation (mm/hr)	1000	Length (m)	6.2
Max Percolation (l/s)	10.0	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	53.020	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S9/2, DS/PN: 3.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.0
Membrane Percolation (mm/hr)	1000	Length (m)	13.0
Max Percolation (l/s)	10.8	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	52.905	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S2/2, DS/PN: 4.001


Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.8
Membrane Percolation (mm/hr)	1000	Length (m)	5.6
Max Percolation (l/s)	9.0	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	52.495	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S8/2, DS/PN: 5.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.6
Membrane Percolation (mm/hr)	1000	Length (m)	5.8
Max Percolation (l/s)	9.0	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	52.355	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S3/2, DS/PN: 6.001

Infiltration Coefficient Base (m/hr)	0.00000	Max Percolation (l/s)	13.3
Membrane Percolation (mm/hr)	1000	Safety Factor	2.0

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Porous Car Park Manhole: S3/2, DS/PN: 6.001

Porosity	0.30	Slope (1:X)	500.0
Invert Level (m)	51.830	Depression Storage (mm)	5
Width (m)	3.0	Evaporation (mm/day)	3
Length (m)	16.0	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S7/2, DS/PN: 7.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	6.0
Max Percolation (l/s)	8.3	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	51.740	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S6/2, DS/PN: 8.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.0
Membrane Percolation (mm/hr)	1000	Length (m)	16.0
Max Percolation (l/s)	13.3	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	51.605	Cap Volume Depth (m)	0.450

Porous Car Park Manhole: S4/2, DS/PN: 9.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	6.0
Max Percolation (l/s)	8.3	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	51.295	Cap Volume Depth (m)	0.450


Porous Car Park Manhole: S5/2, DS/PN: 10.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.0
Membrane Percolation (mm/hr)	1000	Length (m)	9.5
Max Percolation (l/s)	7.9	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	50.960	Cap Volume Depth (m)	0.450

Cellular Storage Manhole: S201, DS/PN: 11.000

Invert Level (m)	49.527	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	8.0	8.0	0.400	8.0	12.8

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Cellular Storage Manhole: S102, DS/PN: 1.013

Invert Level (m) 49.190 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	18.0	18.0	0.400	18.0	26.8

Tank or Pond Manhole: S104, DS/PN: 1.015


Invert Level (m) 50.000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	10.8	0.200	14.7	0.400	19.1
0.100	12.7	0.300	16.9	0.500	21.5

Cellular Storage Manhole: SJ10, DS/PN: 1.016

Invert Level (m) 48.538 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	21.5	21.5	0.800	21.5	40.7
0.400	21.5	31.5			

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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /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 Storage Structures	14
Number of Online Controls	11	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.270
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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


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, 30, 100
Climate Change (%)	0, 0, 30

US/MH PN	Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S10/1	30 Winter	1	+0%	1/15 Summer				53.300
1.001	S10/2	30 Winter	1	+0%	1/15 Summer				53.294
1.002	S10/3	30 Winter	1	+0%	1/15 Summer				53.319
1.003	S101	15 Winter	1	+0%					52.223
2.000	S1/2	30 Winter	1	+0%	1/15 Summer				53.050
2.001	S1/2	30 Winter	1	+0%	1/15 Summer				53.046
1.004	SJ1	15 Winter	1	+0%					52.087
3.000	S9/1	15 Winter	1	+0%	1/15 Summer				52.936
3.001	S9/2	30 Winter	1	+0%	1/15 Summer				52.930
1.005	SJ2	15 Winter	1	+0%					51.929
4.000	S2/1	30 Winter	1	+0%	1/15 Summer				52.526
4.001	S2/2	30 Winter	1	+0%	1/15 Summer				52.522
1.006	SJ3	15 Winter	1	+0%					51.591
5.000	S8/1	30 Winter	1	+0%	1/15 Summer				52.386
5.001	S8/2	30 Winter	1	+0%	1/15 Summer				52.379
5.002	S8/3	30 Winter	1	+0%	1/15 Summer				52.471
1.007	SJ4	15 Winter	1	+0%					51.445

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


PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m ³)			Flow (l/s)		
1.000	S10/1	0.050	0.000	0.33		0.8	SURCHARGED	
1.001	S10/2	0.069	0.000	0.15		0.6	SURCHARGED	
1.002	S10/3	0.126	0.000	0.03		0.6	SURCHARGED	
1.003	S101	-0.127	0.000	0.06		1.3	OK	
2.000	S1/2	0.049	0.000	0.34		1.1	SURCHARGED	
2.001	S1/2	0.056	0.000	0.03		0.5	SURCHARGED	
1.004	SJ1	-0.124	0.000	0.07		1.8	OK*	
3.000	S9/1	0.035	0.000	0.45		1.1	SURCHARGED	
3.001	S9/2	0.055	0.000	0.02		0.5	SURCHARGED	
1.005	SJ2	-0.120	0.000	0.09		3.3	OK*	
4.000	S2/1	0.047	0.000	0.37		1.1	SURCHARGED	
4.001	S2/2	0.057	0.000	0.03		0.5	SURCHARGED	
1.006	SJ3	-0.109	0.000	0.16		3.8	OK*	
5.000	S8/1	0.061	0.000	0.50		1.3	SURCHARGED	
5.001	S8/2	0.089	0.000	0.19		0.8	SURCHARGED	
5.002	S8/3	0.211	0.000	0.03		0.6	SURCHARGED	
1.007	SJ4	-0.118	0.000	0.10		4.4	OK*	

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


PN	US/MH Name	Storm	Return Period	Climate Change	First (X) SurchARGE	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
6.000	S3/1	30 Winter	1	+0%	1/15 Summer				51.869
6.001	S3/2	30 Winter	1	+0%	1/15 Summer				51.861
6.002	S3/3	15 Winter	1	+0%	1/15 Summer				51.961
1.008	SJ5	15 Winter	1	+0%					50.999
7.000	S7/1	30 Winter	1	+0%	1/15 Summer				51.783
7.001	S7/2	30 Winter	1	+0%	1/15 Summer				51.779
1.009	SJ6	15 Winter	1	+0%					50.901
8.000	S6/1	30 Winter	1	+0%	1/15 Summer				51.645
8.001	S6/2	30 Winter	1	+0%	1/15 Summer				51.637
1.010	SJ7	15 Winter	1	+0%					50.419
9.000	S4/1	30 Winter	1	+0%	1/15 Summer				51.338
9.001	S4/2	30 Winter	1	+0%	1/15 Summer				51.334
1.011	SJ8	15 Winter	1	+0%					50.302
10.000	S5/1	30 Winter	1	+0%	1/15 Summer				50.985
10.001	S5/2	30 Winter	1	+0%	1/15 Summer				50.975
1.012	SJ9	15 Winter	1	+0%					49.828
11.000	S201	30 Winter	1	+0%	30/15 Summer				49.347
1.013	S102	30 Winter	1	+0%	1/15 Winter				49.347
1.014	S103	30 Winter	1	+0%	30/60 Summer				49.214
1.015	S104	60 Winter	1	+0%	1/15 Summer				48.778
12.000	S301	60 Winter	1	+0%	1/15 Summer				48.766
1.016	SJ10	60 Winter	1	+0%	1/15 Summer				48.766
1.017	S104(FC)	60 Winter	1	+0%	1/15 Summer				48.756

PN	US/MH Name	Surcharged		Flooded	Pipe		Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Flow / Overflow (l/s)	Flow (l/s)		
6.000	S3/1	0.069	0.000	0.52		1.3	SURCHARGED	
6.001	S3/2	0.096	0.000	0.20		0.9	SURCHARGED	
6.002	S3/3	0.226	0.000	0.03		0.6	SURCHARGED	
1.008	SJ5	-0.096	0.000	0.28		5.0	OK*	
7.000	S7/1	0.062	0.000	0.38		1.2	SURCHARGED	
7.001	S7/2	0.069	0.000	0.02		0.5	SURCHARGED	
1.009	SJ6	-0.115	0.000	0.12		5.5	OK*	
8.000	S6/1	0.070	0.000	0.50		1.3	SURCHARGED	
8.001	S6/2	0.097	0.000	0.02		0.6	SURCHARGED	
1.010	SJ7	-0.093	0.000	0.31		6.0	OK*	
9.000	S4/1	0.060	0.000	0.41		1.2	SURCHARGED	
9.001	S4/2	0.069	0.000	0.03		0.5	SURCHARGED	
1.011	SJ8	-0.111	0.000	0.15		6.5	OK*	
10.000	S5/1	0.270	0.000	0.45		1.1	SURCHARGED	
10.001	S5/2	0.295	0.000	0.04		0.8	SURCHARGED	
1.012	SJ9	-0.110	0.000	0.16		7.3	OK*	
11.000	S201	-0.030	0.000	0.01		0.1	OK	
1.013	S102	0.007	0.000	1.56		9.1	SURCHARGED	
1.014	S103	-0.106	0.000	0.19		9.2	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Surcharged Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow Flow (l/s)		
1.015	S104	0.375	0.000	1.28	8.9	SURCHARGED	
12.000	S301	0.375	0.000	0.01	0.1	SURCHARGED	
1.016	SJ10	0.378	0.000	0.65	5.3	SURCHARGED	
1.017	S104 (FC)	0.380	0.000	0.39	4.3	SURCHARGED	

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

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /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 Storage Structures	14
Number of Online Controls	11	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0


Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.270
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	18.000	Cv (Winter)	0.840

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


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, 30, 100
Climate Change (%)	0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S10/1	30 Winter	30	+0%	1/15 Summer				53.367
1.001	S10/2	60 Winter	30	+0%	1/15 Summer				53.360
1.002	S10/3	60 Winter	30	+0%	1/15 Summer				53.469
1.003	S101	15 Winter	30	+0%					52.237
2.000	S1/2	60 Winter	30	+0%	1/15 Summer				53.139
2.001	S1/2	60 Winter	30	+0%	1/15 Summer				53.134
1.004	SJ1	15 Winter	30	+0%					52.099
3.000	S9/1	60 Winter	30	+0%	1/15 Summer				53.009
3.001	S9/2	60 Winter	30	+0%	1/15 Summer				53.002
1.005	SJ2	15 Winter	30	+0%					51.945
4.000	S2/1	60 Winter	30	+0%	1/15 Summer				52.624
4.001	S2/2	60 Winter	30	+0%	1/15 Summer				52.619
1.006	SJ3	15 Winter	30	+0%					51.611
5.000	S8/1	60 Winter	30	+0%	1/15 Summer				52.512
5.001	S8/2	60 Winter	30	+0%	1/15 Summer				52.504
5.002	S8/3	60 Winter	30	+0%	1/15 Summer				52.632
1.007	SJ4	15 Winter	30	+0%					51.459

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m ³)			Flow (l/s)		
1.000	S10/1	0.117	0.000	0.94		2.4	SURCHARGED	
1.001	S10/2	0.135	0.000	0.21		0.9	SURCHARGED	
1.002	S10/3	0.276	0.000	0.03		0.7	SURCHARGED	
1.003	S101	-0.113	0.000	0.14		3.2	OK	
2.000	S1/2	0.138	0.000	0.59		1.9	SURCHARGED	
2.001	S1/2	0.144	0.000	0.03		0.6	SURCHARGED	
1.004	SJ1	-0.112	0.000	0.15		3.7	OK*	
3.000	S9/1	0.108	0.000	0.68		1.7	SURCHARGED	
3.001	S9/2	0.127	0.000	0.02		0.6	SURCHARGED	
1.005	SJ2	-0.104	0.000	0.21		7.6	OK*	
4.000	S2/1	0.145	0.000	0.65		1.9	SURCHARGED	
4.001	S2/2	0.154	0.000	0.03		0.6	SURCHARGED	
1.006	SJ3	-0.089	0.000	0.35		8.1	OK*	
5.000	S8/1	0.187	0.000	0.89		2.3	SURCHARGED	
5.001	S8/2	0.214	0.000	0.24		1.0	SURCHARGED	
5.002	S8/3	0.372	0.000	0.03		0.7	FLOOD RISK	
1.007	SJ4	-0.104	0.000	0.20		8.7	OK*	

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


PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
6.000	S3/1	15 Winter	30	+0%	1/15 Summer			
6.001	S3/2	60 Winter	30	+0%	1/15 Summer			
6.002	S3/3	30 Winter	30	+0%	1/15 Summer			
1.008	SJ5	15 Winter	30	+0%				
7.000	S7/1	60 Winter	30	+0%	1/15 Summer			
7.001	S7/2	60 Winter	30	+0%	1/15 Summer			
1.009	SJ6	15 Winter	30	+0%				
8.000	S6/1	15 Winter	30	+0%	1/15 Summer			
8.001	S6/2	60 Winter	30	+0%	1/15 Summer			
1.010	SJ7	15 Winter	30	+0%				
9.000	S4/1	60 Winter	30	+0%	1/15 Summer			
9.001	S4/2	60 Winter	30	+0%	1/15 Summer			
1.011	SJ8	15 Winter	30	+0%				
10.000	S5/1	30 Winter	30	+0%	1/15 Summer			
10.001	S5/2	60 Winter	30	+0%	1/15 Summer			
1.012	SJ9	15 Winter	30	+0%				
11.000	S201	180 Winter	30	+0%	30/15 Summer			
1.013	S102	180 Winter	30	+0%	1/15 Winter			
1.014	S103	180 Winter	30	+0%	30/60 Summer			
1.015	S104	180 Winter	30	+0%	1/15 Summer			
12.000	S301	180 Winter	30	+0%	1/15 Summer			
1.016	SJ10	180 Winter	30	+0%	1/15 Summer			
1.017	S104 (FC)	180 Winter	30	+0%	1/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	S3/1	51.977	0.177	0.000	1.59		4.1	SURCHARGED	
6.001	S3/2	51.957	0.192	0.000	0.25		1.0	SURCHARGED	
6.002	S3/3	52.074	0.339	0.000	0.04		0.7	FLOOD RISK	
1.008	SJ5	51.023	-0.072	0.000	0.53		9.4	OK*	
7.000	S7/1	51.911	0.190	0.000	0.66		2.1	SURCHARGED	
7.001	S7/2	51.907	0.197	0.000	0.03		0.7	SURCHARGED	
1.009	SJ6	50.914	-0.102	0.000	0.22		10.0	OK*	
8.000	S6/1	51.742	0.167	0.000	1.49		3.8	SURCHARGED	
8.001	S6/2	51.727	0.187	0.000	0.03		0.7	SURCHARGED	
1.010	SJ7	50.440	-0.072	0.000	0.53		10.5	OK*	
9.000	S4/1	51.466	0.188	0.000	0.71		2.1	SURCHARGED	
9.001	S4/2	51.461	0.196	0.000	0.03		0.7	SURCHARGED	
1.011	SJ8	50.315	-0.098	0.000	0.26		11.1	OK*	
10.000	S5/1	51.108	0.393	0.000	1.25		3.2	SURCHARGED	
10.001	S5/2	51.097	0.417	0.000	0.05		0.9	FLOOD RISK	
1.012	SJ9	49.840	-0.098	0.000	0.26		11.9	OK*	
11.000	S201	49.593	0.216	0.000	0.06		0.7	SURCHARGED	
1.013	S102	49.594	0.254	0.000	1.84		10.7	SURCHARGED	
1.014	S103	49.578	0.258	0.000	0.22		11.0	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
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PN	US/MH Name	Water		Surcharged		Flooded		Pipe	
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	Level Exceeded
1.015	S104	49.563	1.160	0.000	1.58	11.0		SURCHARGED	
12.000	S301	49.551	1.160	0.000	0.01	0.2		SURCHARGED	
1.016	SJ10	49.551	1.163	0.000	0.57	4.7		SURCHARGED	
1.017	S104 (FC)	49.541	1.165	0.000	0.39	4.3		SURCHARGED	

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet 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 Storage Structures 14
Number of Online Controls 11 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.270
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840
Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status OFF
DVD Status ON
Inertia Status OFF


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, 30, 100
Climate Change (%) 0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S10/1	60 Winter	100	+30%	1/15 Summer				53.470
1.001	S10/2	60 Winter	100	+30%	1/15 Summer				53.462
1.002	S10/3	120 Winter	100	+30%	1/15 Summer				53.575
1.003	S101	15 Winter	100	+30%					52.247
2.000	S1/2	60 Winter	100	+30%	1/15 Summer				53.272
2.001	S1/2	60 Winter	100	+30%	1/15 Summer				53.266
1.004	SJ1	15 Winter	100	+30%					52.108
3.000	S9/1	60 Winter	100	+30%	1/15 Summer				53.121
3.001	S9/2	60 Winter	100	+30%	1/15 Summer				53.113
1.005	SJ2	15 Winter	100	+30%					51.957
4.000	S2/1	60 Winter	100	+30%	1/15 Summer				52.769
4.001	S2/2	60 Winter	100	+30%	1/15 Summer				52.763
1.006	SJ3	15 Winter	100	+30%					51.628
5.000	S8/1	120 Winter	100	+30%	1/15 Summer				52.695
5.001	S8/2	120 Winter	100	+30%	1/15 Summer				52.685
5.002	S8/3	120 Winter	100	+30%	1/15 Summer				52.810
1.007	SJ4	15 Winter	100	+30%					51.470

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


PN	US/MH Name	Surcharged Flooded		Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)			Flow (l/s)		
1.000	S10/1	0.220	0.000	1.15		2.9	SURCHARGED	
1.001	S10/2	0.237	0.000	0.25		1.1	SURCHARGED	
1.002	S10/3	0.382	0.000	0.04		0.8	SURCHARGED	
1.003	S101	-0.103	0.000	0.21		4.9	OK	
2.000	S1/2	0.271	0.000	1.00		3.2	SURCHARGED	
2.001	S1/2	0.276	0.000	0.04		0.8	SURCHARGED	
1.004	SJ1	-0.103	0.000	0.22		5.5	OK*	
3.000	S9/1	0.220	0.000	1.16		2.9	SURCHARGED	
3.001	S9/2	0.238	0.000	0.03		0.7	SURCHARGED	
1.005	SJ2	-0.092	0.000	0.32		11.8	OK*	
4.000	S2/1	0.290	0.000	1.10		3.2	SURCHARGED	
4.001	S2/2	0.298	0.000	0.04		0.8	SURCHARGED	
1.006	SJ3	-0.072	0.000	0.53		12.3	OK*	
5.000	S8/1	0.370	0.000	1.01		2.6	FLOOD RISK	
5.001	S8/2	0.395	0.000	0.29		1.2	SURCHARGED	
5.002	S8/3	0.550	0.000	0.04		0.9	FLOOD RISK	
1.007	SJ4	-0.093	0.000	0.30		12.9	OK*	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
6.000	S3/1	15 Winter	100	+30%	1/15 Summer			
6.001	S3/2	120 Winter	100	+30%	1/15 Summer			
6.002	S3/3	120 Winter	100	+30%	1/15 Summer			
1.008	SJ5	15 Winter	100	+30%				
7.000	S7/1	60 Winter	100	+30%	1/15 Summer			
7.001	S7/2	60 Winter	100	+30%	1/15 Summer			
1.009	SJ6	15 Winter	100	+30%				
8.000	S6/1	15 Winter	100	+30%	1/15 Summer			
8.001	S6/2	120 Winter	100	+30%	1/15 Summer			
1.010	SJ7	15 Winter	100	+30%				
9.000	S4/1	60 Winter	100	+30%	1/15 Summer			
9.001	S4/2	60 Winter	100	+30%	1/15 Summer			
1.011	SJ8	15 Winter	100	+30%				
10.000	S5/1	15 Winter	100	+30%	1/15 Summer			
10.001	S5/2	60 Winter	100	+30%	1/15 Summer			
1.012	SJ9	720 Summer	100	+30%				
11.000	S201	240 Winter	100	+30%	30/15 Summer			
1.013	S102	240 Winter	100	+30%	1/15 Winter			
1.014	S103	240 Winter	100	+30%	30/60 Summer			
1.015	S104	240 Winter	100	+30%	1/15 Summer			
12.000	S301	240 Winter	100	+30%	1/15 Summer			
1.016	SJ10	240 Winter	100	+30%	1/15 Summer			
1.017	S104 (FC)	240 Winter	100	+30%	1/15 Summer			

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
6.000	S3/1	52.177	0.377	0.000	2.63	6.7	FLOOD RISK	
6.001	S3/2	52.103	0.338	0.000	0.28	1.2	SURCHARGED	
6.002	S3/3	52.207	0.472	0.000	0.05	0.9	FLOOD RISK	
1.008	SJ5	51.045	-0.050	0.000	0.78	13.7	OK*	
7.000	S7/1	52.096	0.375	0.000	1.13	3.7	SURCHARGED	
7.001	S7/2	52.091	0.381	0.000	0.04	0.9	FLOOD RISK	
1.009	SJ6	50.925	-0.091	0.000	0.32	14.4	OK*	
8.000	S6/1	51.921	0.346	0.000	2.47	6.3	FLOOD RISK	
8.001	S6/2	51.862	0.322	0.000	0.03	0.8	SURCHARGED	
1.010	SJ7	50.460	-0.052	0.000	0.76	15.0	OK*	
9.000	S4/1	51.651	0.373	0.000	1.21	3.6	SURCHARGED	
9.001	S4/2	51.645	0.380	0.000	0.04	0.9	FLOOD RISK	
1.011	SJ8	50.325	-0.088	0.000	0.36	15.6	OK*	
10.000	S5/1	51.310	0.595	0.000	2.47	6.3	FLOOD RISK	
10.001	S5/2	51.294	0.614	0.000	0.06	1.1	FLOOD RISK	
1.012	SJ9	49.938	0.000	0.000	0.17	7.8	SURCHARGED*	
11.000	S201	50.195	0.818	0.000	0.07	0.8	FLOOD RISK	
1.013	S102	50.195	0.855	0.000	2.13	12.4	FLOOD RISK	
1.014	S103	50.176	0.856	0.000	0.25	12.3	FLOOD RISK	

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XP Solutions	Network 2017.1.2	

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.015	S104	50.159	1.756	0.000	1.78	12.5	SURCHARGED	
12.000	S301	50.144	1.753	0.000	0.00	0.0	SURCHARGED	
1.016	SJ10	50.144	1.756	0.000	0.61	5.0	SURCHARGED	
1.017	S104(FC)	50.132	1.756	0.000	0.46	5.0	SURCHARGED	