

Ardent Consulting Engineers		Page 1
4th Floor, Diamond House 36-38 Hatton Garden London EC1N 8EB	Land East of Tye Lane Walberton West Sussex	
Date 14/03/2019 10:40 File SW NETWORK MJR FEB 2019.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Micro Drainage	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.900	Add Flow / Climate Change (%)	0
Ratio R	0.327	Minimum Backdrop Height (m)	1.000
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	32.373	0.424	76.4	0.070	5.00	0.0	0.600		o	225	Pipe/Conduit	
2.000	9.361	0.468	20.0	0.121	8.00	0.0	0.600		o	225	Pipe/Conduit	
1.001	16.552	0.110	150.5	0.048	0.00	0.0	0.600		o	300	Pipe/Conduit	
1.002	44.527	0.297	149.9	0.066	0.00	0.0	0.600		o	300	Pipe/Conduit	
3.000	14.869	0.186	79.9	0.209	8.00	0.0	0.600		o	225	Pipe/Conduit	
1.003	33.286	0.222	149.9	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
1.004	20.381	0.043	474.0	0.120	0.00	0.0	0.600		o	450	Pipe/Conduit	
4.000	23.281	0.233	99.9	0.080	5.00	0.0	0.600		o	225	Pipe/Conduit	
4.001	22.476	0.375	59.9	0.041	0.00	0.0	0.600		o	225	Pipe/Conduit	
5.000	11.613	0.733	15.8	0.180	8.00	0.0	0.600		o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.36	16.850	0.070	0.0	0.0	0.0	1.50	59.6	9.5
2.000	50.00	8.05	17.275	0.121	0.0	0.0	0.0	2.94	116.9	16.4
1.001	50.00	8.27	16.351	0.239	0.0	0.0	0.0	1.28	90.4	32.4
1.002	50.00	8.85	16.241	0.305	0.0	0.0	0.0	1.28	90.6	41.3
3.000	50.00	8.17	17.400	0.209	0.0	0.0	0.0	1.46	58.2	28.3
1.003	50.00	9.28	15.944	0.514	0.0	0.0	0.0	1.28	90.6	69.6
1.004	50.00	9.65	15.572	0.634	0.0	0.0	0.0	0.93	147.5	85.9
4.000	50.00	5.30	17.700	0.080	0.0	0.0	0.0	1.31	52.0	10.8
4.001	50.00	5.52	17.467	0.121	0.0	0.0	0.0	1.69	67.3	16.4
5.000	50.00	8.08	17.900	0.180	0.0	0.0	0.0	2.54	44.9	24.4

Land East of Tye Lane
Walberton
West Sussex



Micro
Drainage

Designed by James Massingham

Checked by Gareth Hardwick

Network 2017.1.2

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow	k (1/s)	n	HYD SECT	DIA (mm)	Section Type	Auto Design	
4.002	37.492	0.250	150.0	0.203	0.00		0.0	0.600		o	300	Pipe/Conduit	🟢
1.005	63.124	0.421	149.9	0.212	0.00		0.0	0.600		o	525	Pipe/Conduit	🟢
6.000	49.722	1.100	45.2	0.088	5.00		0.0	0.045	3 \=/	300	1:3 Swale	🔒	
6.001	14.156	0.200	70.8	0.000	0.00		0.0	0.045	3 \=/	300	1:3 Swale	🟢	
6.002	51.749	0.200	258.7	0.000	0.00		0.0	0.045	3 \=/	300	1:3 Swale	🟢	
6.003	82.150	2.842	28.9	0.000	0.00		0.0	0.600		o	300	Pipe/Conduit	🟢
1.006	36.323	0.242	150.1	0.125	0.00		0.0	0.600		o	525	Pipe/Conduit	🔒
1.007	13.386	0.350	38.2	0.000	0.00		0.0	0.600		o	525	Pipe/Conduit	🔒
7.000	56.144	0.146	384.5	0.158	5.00		0.0	0.045	3 \=/	300	1:3 Swale	🔒	
7.001	26.603	0.183	145.4	0.174	0.00		0.0	0.045	3 \=/	300	1:3 Swale	🔒	
7.002	59.778	0.153	390.7	0.085	0.00		0.0	0.045	3 \=/	300	1:3 Swale	🔒	
8.000	52.367	0.175	299.2	0.096	5.00		0.0	0.045	3 \=/	300	1:3 Swale	🔒	
8.001	64.910	0.216	300.5	0.106	0.00		0.0	0.045	3 \=/	300	1:3 Swale	🟢	
8.002	11.976	0.040	299.4	0.027	0.00		0.0	0.045	o	300	Pipe/Conduit	🔒	
8.003	14.660	0.049	299.2	0.013	0.00		0.0	0.045	o	300	Pipe/Conduit	🔒	
8.004	61.950	0.207	299.3	0.000	0.00		0.0	0.045	o	300	Pipe/Conduit	🔒	
8.005	11.035	0.037	298.2	0.035	0.00		0.0	0.045	o	300	Pipe/Conduit	🔒	
8.006	43.608	0.533	81.8	0.057	0.00		0.0	0.045	3 \=/	300	1:3 Swale	🔒	
7.003	18.457	0.113	163.3	0.000	0.00		0.0	0.045	3 \=/	300	1:3 Swale	🔒	
7.004	44.142	0.294	150.1	0.000	0.00		0.0	0.045	3 \=/	300	1:3 Swale	🔒	
1.008	29.531	0.006	4921.8	0.285	0.00		0.0	0.045	o	100	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)
4.002	50.00	8.56	17.017	0.504	0.0	0.0	0.0	1.28	90.6	68.2
1.005	50.00	10.22	15.454	1.350	0.0	0.0	0.0	1.83	395.5	182.0
6.000	50.00	6.25	19.700	0.088	0.0	0.0	0.0	0.66	74.7	11.9
6.001	50.00	6.69	18.600	0.088	0.0	0.0	0.0	0.53	59.7	11.9
6.002	50.00	9.80	18.400	0.088	0.0	0.0	0.0	0.28	31.2	11.9
6.003	50.00	10.26	18.050	0.088	0.0	0.0	0.0	2.94	207.5	11.9
1.006	50.00	10.60	14.983	1.563	0.0	0.0	0.0	1.83	395.3	211.6
1.007	50.00	10.66	14.741	1.563	0.0	0.0	0.0	3.63	785.8	211.6
7.000	50.00	9.11	17.300	0.158	0.0	0.0	0.0	0.23	25.6	21.4
7.001	50.00	10.31	17.154	0.332	0.0	0.0	0.0	0.37	41.7«	45.0
7.002	50.00	14.72	16.971	0.417	0.0	0.0	0.0	0.23	25.4«	56.5
8.000	50.00	8.38	17.875	0.096	0.0	0.0	0.0	0.26	29.0	13.0
8.001	50.00	12.58	17.700	0.202	0.0	0.0	0.0	0.26	29.0	27.4
8.002	50.00	13.45	17.484	0.229	0.0	0.0	0.0	0.23	16.1«	31.0
8.003	50.00	14.52	17.444	0.242	0.0	0.0	0.0	0.23	16.2«	32.8
8.004	50.00	19.04	17.395	0.242	0.0	0.0	0.0	0.23	16.1«	32.8
8.005	50.00	19.85	17.188	0.277	0.0	0.0	0.0	0.23	16.2«	37.5
8.006	50.00	21.32	17.151	0.334	0.0	0.0	0.0	0.49	55.5	45.2
7.003	50.00	22.20	16.618	0.751	0.0	0.0	0.0	0.35	39.3«	101.7
7.004	50.00	24.22	16.505	0.751	0.0	0.0	0.0	0.36	41.0«	101.7
1.008	50.00	30.00	14.241	2.599	0.0	0.0	0.0	0.03	0.2«	351.9

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)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
9.000	5.813	0.058	100.2	0.078	8.00	0.0		0.045	o	225	Pipe/Conduit	
9.001	32.904	0.411	80.1	0.106	0.00	0.0	0.600		o	225	Pipe/Conduit	
9.002	26.513	0.265	100.0	0.145	0.00	0.0	0.600		o	300	Pipe/Conduit	
9.003	25.515	0.255	100.1	0.106	0.00	0.0	0.600		o	300	Pipe/Conduit	
9.004	47.658	0.651	73.2	0.173	0.00	0.0	0.600		o	300	Pipe/Conduit	
10.000	7.979	0.399	20.0	0.267	8.00	0.0	0.600		o	225	Pipe/Conduit	
9.005	21.581	0.370	58.3	0.068	0.00	0.0	0.600		o	375	Pipe/Conduit	
11.000	37.881	0.379	99.9	0.136	5.00	0.0	0.600		o	225	Pipe/Conduit	
9.006	52.598	0.526	100.0	0.000	0.00	0.0	0.600		o	375	Pipe/Conduit	
9.007	14.345	0.143	100.3	0.052	0.00	0.0	0.600		o	375	Pipe/Conduit	
9.008	54.403	0.907	60.0	0.017	0.00	0.0	0.600		o	450	Pipe/Conduit	
12.000	13.929	0.139	100.2	0.081	8.00	0.0	0.600		o	225	Pipe/Conduit	
12.001	43.716	0.437	100.0	0.059	0.00	0.0	0.600		o	225	Pipe/Conduit	
12.002	14.860	0.224	66.3	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
13.000	10.049	0.502	20.0	0.169	8.00	0.0	0.600		o	225	Pipe/Conduit	
12.003	10.887	0.109	99.9	0.043	0.00	0.0	0.600		o	300	Pipe/Conduit	
12.004	27.947	0.279	100.2	0.056	0.00	0.0	0.600		o	300	Pipe/Conduit	
12.005	13.507	0.136	99.3	0.082	0.00	0.0	0.600		o	300	Pipe/Conduit	
12.006	39.151	1.119	35.0	0.071	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)
9.000	50.00	8.30	16.500	0.078	0.0	0.0	0.0	0.33	13.0	10.6
9.001	50.00	8.67	16.442	0.184	0.0	0.0	0.0	1.46	58.2	24.9
9.002	50.00	8.95	15.956	0.329	0.0	0.0	0.0	1.57	111.1	44.6
9.003	50.00	9.22	15.691	0.435	0.0	0.0	0.0	1.57	111.1	58.9
9.004	50.00	9.66	15.436	0.608	0.0	0.0	0.0	1.84	130.0	82.3
10.000	50.00	8.05	15.259	0.267	0.0	0.0	0.0	2.94	116.9	36.2
9.005	50.00	9.81	14.710	0.943	0.0	0.0	0.0	2.38	262.5	127.7
11.000	50.00	5.48	15.300	0.136	0.0	0.0	0.0	1.31	52.0	18.4
9.006	50.00	10.29	14.340	1.079	0.0	0.0	0.0	1.81	200.1	146.1
9.007	50.00	10.42	13.814	1.131	0.0	0.0	0.0	1.81	199.8	153.2
9.008	50.00	10.77	13.596	1.148	0.0	0.0	0.0	2.63	418.1	155.5
12.000	50.00	8.18	15.800	0.081	0.0	0.0	0.0	1.31	51.9	11.0
12.001	50.00	8.74	15.661	0.140	0.0	0.0	0.0	1.31	52.0	19.0
12.002	50.00	8.86	15.149	0.140	0.0	0.0	0.0	1.93	136.7	19.0
13.000	50.00	8.06	15.502	0.169	0.0	0.0	0.0	2.94	116.8	22.9
12.003	50.00	8.98	14.925	0.352	0.0	0.0	0.0	1.57	111.2	47.7
12.004	50.00	9.28	14.816	0.408	0.0	0.0	0.0	1.57	111.0	55.2
12.005	50.00	9.42	14.537	0.490	0.0	0.0	0.0	1.58	111.5	66.4
12.006	50.00	9.66	14.401	0.561	0.0	0.0	0.0	2.67	188.5	76.0

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)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
9.009	34.779	0.529	65.7	0.147	0.00	0.0	0.600		o	450	Pipe/Conduit	
14.000	77.115	0.228	338.2	0.135	5.00	0.0		0.045	3 \=/	600	1:3 Swale	
14.001	11.944	0.272	43.9	0.000	0.00	0.0		0.045	3 \=/	600	1:3 Swale	
14.002	55.856	0.700	79.8	0.068	0.00	0.0		0.045	3 \=/	600	1:3 Swale	
14.003	60.038	0.600	100.1	0.064	0.00	0.0		0.045	3 \=/	600	1:3 Swale	
14.004	28.071	0.400	70.2	0.000	0.00	0.0		0.045	3 \=/	600	1:3 Swale	
14.005	9.141	0.226	40.4	0.000	0.00	0.0		0.045	3 \=/	600	1:3 Swale	
15.000	40.405	0.500	80.8	0.076	5.00	0.0		0.045	3 \=/	300	1:3 Swale	
15.001	16.752	0.034	492.7	0.000	0.00	0.0		0.045	3 \=/	300	1:3 Swale	
9.010	18.167	0.003	6055.8	0.150	0.00	0.0		0.045	o	100	Pipe/Conduit	
16.000	28.529	0.475	60.1	0.036	5.00	0.0		0.045	o	225	Pipe/Conduit	
16.001	19.798	0.925	21.4	0.039	0.00	0.0		0.045	o	225	Pipe/Conduit	
16.002	6.933	0.166	41.8	0.000	0.00	0.0		0.045	o	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
9.009	50.00	11.00	12.689	1.856	0.0	0.0	0.0	2.51	399.3	251.3
14.000	50.00	9.88	16.600	0.135	0.0	0.0	0.0	0.26	41.5	18.3
14.001	50.00	10.15	16.372	0.135	0.0	0.0	0.0	0.73	115.1	18.3
14.002	50.00	11.87	16.100	0.203	0.0	0.0	0.0	0.54	85.4	27.5
14.003	50.00	13.94	15.400	0.267	0.0	0.0	0.0	0.48	76.2	36.2
14.004	50.00	14.75	14.800	0.267	0.0	0.0	0.0	0.58	91.0	36.2
14.005	50.00	14.95	14.400	0.267	0.0	0.0	0.0	0.76	119.9	36.2
15.000	50.00	6.36	14.600	0.076	0.0	0.0	0.0	0.50	55.9	10.3
15.001	50.00	7.74	14.100	0.076	0.0	0.0	0.0	0.20	22.6	10.3
9.010	50.00	27.35	12.010	2.349	0.0	0.0	0.0	0.02	0.2«	318.1
16.000	50.00	6.13	18.400	0.036	0.0	0.0	0.0	0.42	16.7	4.9
16.001	50.00	6.60	17.925	0.075	0.0	0.0	0.0	0.71	28.0	10.2
16.002	50.00	6.99	17.000	0.075	0.0	0.0	0.0	0.29	2.3«	10.2

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)	Backdrop (mm)
1.0	18.200	1.350	Open Manhole	1200	1.000	16.850	225				
2.0	18.600	1.325	Open Manhole	1200	2.000	17.275	225				
1.1	18.500	2.149	Open Manhole	1200	1.001	16.351	300	1.000	16.426	225	
								2.000	16.807	225	381
1.2	18.400	2.159	Open Manhole	1200	1.002	16.241	300	1.001	16.241	300	
3.0	18.700	1.300	Open Manhole	1200	3.000	17.400	225				
1.3	18.700	2.756	Open Manhole	1200	1.003	15.944	300	1.002	15.944	300	
								3.000	17.214	225	1195
1.4	18.600	3.028	Open Manhole	1350	1.004	15.572	450	1.003	15.722	300	
4.0	19.000	1.300	Open Manhole	1200	4.000	17.700	225				
4.1	19.100	1.633	Open Manhole	1200	4.001	17.467	225	4.000	17.467	225	
5.0	19.200	1.300	Open Manhole	1200	5.000	17.900	150				
4.2	19.200	2.183	Open Manhole	1200	4.002	17.017	300	4.001	17.092	225	
								5.000	17.167	150	
1.5	18.800	3.346	Open Manhole	1500	1.005	15.454	525	1.004	15.529	450	
								4.002	16.767	300	1088
W6.0	20.100	0.400	Junction		6.000	19.700	300				
W6.1	19.000	0.400	Junction		6.001	18.600	300	6.000	18.600	300	
W6.2	18.800	0.400	Junction		6.002	18.400	300	6.001	18.400	300	
W6.3	18.600	0.550	Junction	0	6.003	18.050	300	6.002	18.200	300	
1.6	18.000	3.017	Open Manhole	1500	1.006	14.983	525	1.005	15.033	525	50
								6.003	15.208	300	
1.7	17.500	2.759	Open Manhole	1500	1.007	14.741	525	1.006	14.741	525	
W7.0	17.600	0.300	Junction		7.000	17.300	300				
W7.1	17.650	0.496	Junction		7.001	17.154	300	7.000	17.154	300	
W7.2	17.700	0.729	Junction		7.002	16.971	300	7.001	16.971	300	
W8.0	18.200	0.325	Junction		8.000	17.875	300				
W8.1	18.450	0.750	Junction	0	8.001	17.700	300	8.000	17.700	300	
W8.2	18.400	0.916	Open Manhole	1200	8.002	17.484	300	8.001	17.484	300	
W8.3	18.500	1.056	Open Manhole	1200	8.003	17.444	300	8.002	17.444	300	
W8.4	18.750	1.355	Open Manhole	1200	8.004	17.395	300	8.003	17.395	300	
W8.5	18.100	0.912	Open Manhole		8.005	17.188	300	8.004	17.188	300	
W8.6	17.700	0.549	Junction		8.006	17.151	300	8.005	17.151	300	
W7.3	17.500	0.882	Junction		7.003	16.618	300	7.002	16.818	300	200
								8.006	16.618	300	
W7.4	17.300	0.795	Junction	0	7.004	16.505	300	7.003	16.505	300	
POND EAST	16.700	2.459	Open Manhole	10000	1.008	14.241	100	1.007	14.391	525	575
								7.004	16.211	300	2020
	16.700	2.465	Open Manhole	0		OUTFALL		1.008	14.235	100	
9.0	18.000	1.500	Open Manhole	1200	9.000	16.500	225				
9.1	17.800	1.358	Open Manhole	1200	9.001	16.442	225	9.000	16.442	225	
9.2	17.550	1.594	Open Manhole	1200	9.002	15.956	300	9.001	16.031	225	
9.3	17.240	1.549	Open Manhole	1200	9.003	15.691	300	9.002	15.691	300	
9.4	16.800	1.364	Open Manhole	1200	9.004	15.436	300	9.003	15.436	300	
10.0	17.400	2.141	Open Manhole	1200	10.000	15.259	225				
9.5	17.100	2.390	Open Manhole	1500	9.005	14.710	375	9.004	14.785	300	
								10.000	14.860	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)
11.0	16.750	1.450	Open Manhole	1200	11.000	15.300	225				
9.6	16.800	2.460	Open Manhole	1500	9.006	14.340	375	9.005	14.340	375	431
								11.000	14.921	225	
9.7	16.300	2.486	Open Manhole	1500	9.007	13.814	375	9.006	13.814	375	
9.8	16.100	2.504	Open Manhole	1500	9.008	13.596	450	9.007	13.671	375	
12.0	17.100	1.300	Open Manhole	1200	12.000	15.800	225				
12.1	16.900	1.239	Open Manhole	1200	12.001	15.661	225	12.000	15.661	225	
12.2	17.250	2.101	Open Manhole	1200	12.002	15.149	300	12.001	15.224	225	
13.0	17.400	1.898	Open Manhole	1200	13.000	15.502	225				
12.3	17.100	2.175	Open Manhole	1200	12.003	14.925	300	12.002	14.925	300	
								13.000	15.000	225	
12.4	17.000	2.184	Open Manhole	1200	12.004	14.816	300	12.003	14.816	300	
12.5	16.300	1.763	Open Manhole	1200	12.005	14.537	300	12.004	14.537	300	
12.6	16.000	1.599	Open Manhole	1200	12.006	14.401	300	12.005	14.401	300	
9.9	15.600	2.911	Open Manhole	1500	9.009	12.689	450	9.008	12.689	450	443
								12.006	13.282	300	
W14.0	17.100	0.500	Junction		14.000	16.600	600				
W14.1	16.900	0.528	Junction		14.001	16.372	600	14.000	16.372	600	
W14.2	16.700	0.600	Junction		14.002	16.100	600	14.001	16.100	600	
W14.3	16.000	0.600	Junction		14.003	15.400	600	14.002	15.400	600	
W14.4	15.400	0.600	Junction		14.004	14.800	600	14.003	14.800	600	
W14.5	15.000	0.600	Junction	0	14.005	14.400	600	14.004	14.400	600	
W15.0	15.200	0.600	Junction		15.000	14.600	300				
W15.1	14.700	0.600	Junction	0	15.001	14.100	300	15.000	14.100	300	
POND WEST	14.500	2.490	Open Manhole	1800	9.010	12.010	100	9.009	12.160	450	500
								14.005	14.174	600	2214
								15.001	14.066	300	2106
	19.300	7.293	Open Manhole	0		OUTFALL		9.010	12.007	100	
63	19.780	1.380	Open Manhole	1200	16.000	18.400	225				
64	19.300	1.375	Open Manhole	1200	16.001	17.925	225	16.000	17.925	225	
65	19.800	2.800	Open Manhole	1200	16.002	17.000	100	16.001	17.000	225	
	19.500	2.666	Open Manhole	0		OUTFALL		16.002	16.834	100	

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)
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1.008		16.700	14.235	0.000	0	0
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Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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9.010		19.300	12.007	0.000	0	0
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Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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16.002 19.500 16.834 0.000 0 0

Simulation Criteria for Storm

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 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 3 Number of Storage Structures 18 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)	19.900	Storm Duration (mins)	30
Ratio R	0.327		

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Micro Drainage		Network 2017.1.2

Online Controls for Storm

Orifice Manhole: POND EAST, DS/PN: 1.008, Volume (m³): 278.3

Diameter (m) 0.001 Discharge Coefficient 0.600 Invert Level (m) 14.391

Orifice Manhole: POND WEST, DS/PN: 9.010, Volume (m³): 43.4

Diameter (m) 0.001 Discharge Coefficient 0.600 Invert Level (m) 12.010

Orifice Manhole: 65, DS/PN: 16.002, Volume (m³): 3.9

Diameter (m) 0.001 Discharge Coefficient 0.600 Invert Level (m) 17.000

Land East of Tye Lane
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Designed by James Massingham

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Infiltration Coefficient Base (m/hr)	0.00000	Trench Length (m)	12.0
Infiltration Coefficient Side (m/hr)	0.00000	Trench Infiltration Side (m/hr)	0.00000
Safety Factor	2.0	Trench Porosity	0.30
Porosity	1.00	Side Slope (1:X)	3.0
Invert Level (m)	17.186	Slope (1:X)	300.9
Trench Height (m)	0.700	Cap Volume Depth (m)	0.000
Trench Width (m)	0.3	Cap Infiltration Depth (m)	0.000

Dry Swale Manhole: W8.3, DS/PN: 8.003

Include Swale Volume Yes

Dry Swale Manhole: W8.4, DS/PN: 8.004

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Trench Infiltration Side (m/hr)	0.00000
Infiltration Coefficient Side (m/hr)	0.00000	Trench Porosity	0.30
Safety Factor	2.0	Side Slope (1:X)	3.0
Porosity	1.00	Slope (1:X)	299.9
Invert Level (m)	17.328	Cap Volume Depth (m)	0.000
Trench Height (m)	0.800	Cap Infiltration Depth (m)	0.000
Trench Width (m)	0.3	Include Swale Volume	Yes
Trench Length (m)	12.0		

Dry Swale Manhole: W8.5, DS/PN: 8.005

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Trench Infiltration Side (m/hr)	0.00000
Infiltration Coefficient Side (m/hr)	0.00000	Trench Porosity	0.30
Safety Factor	2.0	Side Slope (1:X)	3.0
Porosity	1.00	Slope (1:X)	298.3
Invert Level (m)	17.146	Cap Volume Depth (m)	0.000
Trench Height (m)	0.400	Cap Infiltration Depth (m)	0.000
Trench Width (m)	0.3	Include Swale Volume	Yes
Trench Length (m)	60.0		

Infiltration Basin Manhole: POND EAST, DS/PN: 1.008

Invert Level (m)	13.700	Safety Factor	13.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	1.00
Infiltration Coefficient Side (m/hr)	1.13400		

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	1167.0	3.000	2350.0

Porous Car Park Manhole: 9.0, DS/PN: 9.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.5
Membrane Percolation (mm/hr)	1000	Length (m)	80.0
Max Percolation (l/s)	100.0	Slope (1:X)	80.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	17.440	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 9.4, DS/PN: 9.004

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	14.0
Membrane Percolation (mm/hr)	1000	Length (m)	35.0
Max Percolation (l/s)	136.1	Slope (1:X)	50.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.95	Evaporation (mm/day)	3
Invert Level (m)	16.240	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 10.0, DS/PN: 10.000

Infiltration Coefficient Base (m/hr)	0.00000	Safety Factor	2.0
Membrane Percolation (mm/hr)	1000	Porosity	0.30
Max Percolation (l/s)	125.0	Invert Level (m)	16.840

Porous Car Park Manhole: 10.0, DS/PN: 10.000

Width (m) 9.0 Depression Storage (mm) 5
Length (m) 50.0 Evaporation (mm/day) 3
Slope (1:X) 40.0 Cap Volume Depth (m) 0.350

Porous Car Park Manhole: 12.0, DS/PN: 12.000

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 10.0
Membrane Percolation (mm/hr) 1000 Length (m) 22.0
Max Percolation (l/s) 61.1 Slope (1:X) 80.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 16.540 Cap Volume Depth (m) 0.350

Porous Car Park Manhole: 13.0, DS/PN: 13.000

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 7.5
Membrane Percolation (mm/hr) 1000 Length (m) 50.0
Max Percolation (l/s) 104.2 Slope (1:X) 40.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 16.840 Cap Volume Depth (m) 0.350

Porous Car Park Manhole: 12.6, DS/PN: 12.006

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 13.0
Membrane Percolation (mm/hr) 1000 Length (m) 45.0
Max Percolation (l/s) 162.5 Slope (1:X) 80.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 15.440 Cap Volume Depth (m) 0.350

Porous Car Park Manhole: 9.9, DS/PN: 9.009

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 10.0
Membrane Percolation (mm/hr) 1000 Length (m) 20.0
Max Percolation (l/s) 55.6 Slope (1:X) 80.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 15.040 Cap Volume Depth (m) 0.350

Infiltration Basin Manhole: POND WEST, DS/PN: 9.010

Invert Level (m) 12.010 Safety Factor 13.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.74500

Depth (m) Area (m²)		Depth (m) Area (m²)	
0.000	516.0	2.459	1497.0

Cellular Storage Manhole: 65, DS/PN: 16.002

Invert Level (m) 17.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.40000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	100.0	0.0	0.800	100.0	0.0	0.801	0.0	0.0

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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 * 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 3 Number of Storage Structures 18 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.700 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.319 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 450.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
									Level (m)	Depth (m)
1.000	1.0	15 Winter	1	+0%	100/15 Summer	100/15 Winter			16.910	-0.165
2.000	2.0	15 Winter	1	+0%	100/15 Summer				17.328	-0.172
1.001	1.1	15 Winter	1	+0%	30/15 Summer				16.471	-0.180
1.002	1.2	15 Winter	1	+0%	30/15 Summer				16.370	-0.171
3.000	3.0	15 Winter	1	+0%	100/15 Summer				17.500	-0.125
1.003	1.3	15 Winter	1	+0%	30/15 Summer				16.118	-0.126
1.004	1.4	15 Winter	1	+0%	30/15 Winter				15.817	-0.205
4.000	4.0	15 Winter	1	+0%	100/15 Summer				17.771	-0.154
4.001	4.1	15 Winter	1	+0%	30/15 Summer				17.541	-0.151
5.000	5.0	15 Winter	1	+0%	30/15 Summer				17.970	-0.080
4.002	4.2	15 Winter	1	+0%	30/15 Summer				17.193	-0.124
1.005	1.5	15 Winter	1	+0%	100/15 Summer				15.675	-0.304
6.000	W6.0	15 Winter	1	+0%					19.757	-0.343
6.001	W6.1	15 Winter	1	+0%					18.663	-0.337
6.002	W6.2	15 Winter	1	+0%					18.489	-0.311
6.003	W6.3	15 Winter	1	+0%					18.094	-0.256
1.006	1.6	15 Winter	1	+0%	30/15 Winter				15.229	-0.279
1.007	1.7	15 Winter	1	+0%	100/15 Summer				14.951	-0.315
7.000	W7.0	15 Winter	1	+0%					17.431	-0.169
7.001	W7.1	15 Winter	1	+0%					17.286	-0.364
7.002	W7.2	15 Winter	1	+0%					17.149	-0.551
8.000	W8.0	15 Winter	1	+0%					17.974	-0.226
8.001	W8.1	15 Winter	1	+0%					17.822	-0.628
8.002	W8.2	30 Winter	1	+0%	30/15 Summer				17.696	-0.088
8.003	W8.3	30 Winter	1	+0%	30/15 Summer				17.658	-0.086
8.004	W8.4	30 Winter	1	+0%	30/15 Summer				17.606	-0.089
8.005	W8.5	30 Winter	1	+0%	30/30 Summer				17.397	-0.091
8.006	W8.6	60 Winter	1	+0%					17.227	-0.473
7.003	W7.3	30 Winter	1	+0%					16.779	-0.721
7.004	W7.4	30 Winter	1	+0%					16.666	-0.634
1.008	POND EAST	1440 Winter	1	+0%	30/240 Winter				14.184	-0.157
9.000	9.0	15 Winter	1	+0%	30/15 Summer				16.629	-0.096
9.001	9.1	15 Winter	1	+0%	30/15 Summer	100/15 Winter			16.530	-0.137
9.002	9.2	15 Winter	1	+0%	30/15 Summer	100/15 Winter			16.070	-0.186
9.003	9.3	30 Winter	1	+0%	30/15 Summer				15.824	-0.167

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

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1.0	0.000	0.16		8.8	OK	1
2.000	2.0	0.000	0.13		12.2	OK	
1.001	1.1	0.000	0.34		25.9	OK	
1.002	1.2	0.000	0.38		32.1	OK	
3.000	3.0	0.000	0.41		21.0	OK	
1.003	1.3	0.000	0.63		52.4	OK	
1.004	1.4	0.000	0.57		63.0	OK	
4.000	4.0	0.000	0.21		10.0	OK	
4.001	4.1	0.000	0.23		14.5	OK	
5.000	5.0	0.000	0.45		18.1	OK	
4.002	4.2	0.000	0.64		53.9	OK	
1.005	1.5	0.000	0.37		131.6	OK	
6.000	W6.0	0.000	0.02		10.9	FLOOD RISK*	
6.001	W6.1	0.000	0.02		10.9	FLOOD RISK*	
6.002	W6.2	0.000	0.04		10.8	FLOOD RISK*	
6.003	W6.3	0.000	0.05		10.9	OK*	
1.006	1.6	0.000	0.45		152.0	OK	
1.007	1.7	0.000	0.34		152.1	OK	
7.000	W7.0	0.000	0.15		18.0	FLOOD RISK*	
7.001	W7.1	0.000	0.05		32.0	FLOOD RISK*	
7.002	W7.2	0.000	0.04		38.6	OK	
8.000	W8.0	0.000	0.07		11.2	FLOOD RISK*	
8.001	W8.1	0.000	0.01		19.1	OK	
8.002	W8.2	0.000	0.83		13.2	OK	
8.003	W8.3	0.000	0.85		13.6	OK	
8.004	W8.4	0.000	0.83		13.3	OK	
8.005	W8.5	0.000	0.83		13.1	OK	
8.006	W8.6	0.000	0.01		14.6	OK	
7.003	W7.3	0.000	0.02		48.0	OK	
7.004	W7.4	0.000	0.02		47.9	OK	
1.008	POND EAST	0.000	0.00		0.0	OK	
9.000	9.0	0.000	0.61		7.7	OK	
9.001	9.1	0.000	0.31		17.2	OK	1
9.002	9.2	0.000	0.30		30.0	OK	1
9.003	9.3	0.000	0.40		40.0	OK	

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)	Surcharged Depth (m)	Flooded Volume (m³)
9.004	9.4	15 Winter	1	+0%	30/15 Summer				15.579	-0.157	0.000
10.000	10.0	15 Winter	1	+0%	30/15 Summer				15.343	-0.141	0.000
9.005	9.5	15 Winter	1	+0%	30/15 Summer				14.876	-0.209	0.000
11.000	11.0	15 Winter	1	+0%	100/15 Summer				15.392	-0.133	0.000
9.006	9.6	15 Winter	1	+0%	30/15 Summer				14.544	-0.171	0.000
9.007	9.7	15 Winter	1	+0%	30/15 Summer				14.056	-0.133	0.000
9.008	9.8	15 Winter	1	+0%	100/15 Summer				13.762	-0.284	0.000
12.000	12.0	15 Winter	1	+0%	100/15 Summer				15.864	-0.161	0.000
12.001	12.1	15 Winter	1	+0%	100/15 Summer				15.743	-0.143	0.000
12.002	12.2	15 Winter	1	+0%	100/15 Summer				15.219	-0.230	0.000
13.000	13.0	15 Winter	1	+0%	100/15 Summer				15.565	-0.162	0.000
12.003	12.3	15 Winter	1	+0%	30/15 Summer				15.063	-0.162	0.000
12.004	12.4	15 Winter	1	+0%	30/15 Summer				14.951	-0.165	0.000
12.005	12.5	15 Winter	1	+0%	30/15 Summer				14.693	-0.144	0.000
12.006	12.6	30 Summer	1	+0%	100/15 Summer				14.514	-0.187	0.000
9.009	9.9	15 Winter	1	+0%	30/15 Summer				12.915	-0.224	0.000
14.000	W14.0	15 Winter	1	+0%					16.694	-0.406	0.000
14.001	W14.1	15 Winter	1	+0%					16.424	-0.476	0.000
14.002	W14.2	15 Winter	1	+0%					16.173	-0.527	0.000
14.003	W14.3	15 Winter	1	+0%					15.486	-0.514	0.000
14.004	W14.4	15 Winter	1	+0%					14.877	-0.523	0.000
14.005	W14.5	15 Winter	1	+0%					14.466	-0.534	0.000
15.000	W15.0	15 Winter	1	+0%					14.663	-0.537	0.000
15.001	W15.1	15 Winter	1	+0%					14.195	-0.505	0.000
9.010	POND WEST	1440 Winter	1	+0%	1/15 Summer				12.843	0.733	0.000
16.000	63	15 Winter	1	+0%	100/15 Summer				18.480	-0.145	0.000
16.001	64	15 Winter	1	+0%	100/15 Summer				18.011	-0.139	0.000
16.002	65	1440 Winter	1	+0%	1/120 Winter				17.251	0.151	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
9.004	9.4	0.46		55.7	OK	
10.000	10.0	0.30		26.8	OK	
9.005	9.5	0.40		89.4	OK	
11.000	11.0	0.35		17.1	OK	
9.006	9.6	0.57		105.5	OK	
9.007	9.7	0.74		109.9	OK	
9.008	9.8	0.29		111.3	OK	
12.000	12.0	0.18		8.1	OK	
12.001	12.1	0.29		14.2	OK	
12.002	12.2	0.12		14.2	OK	
13.000	13.0	0.17		17.0	OK	
12.003	12.3	0.43		35.5	OK	
12.004	12.4	0.41		41.1	OK	
12.005	12.5	0.53		48.9	OK	
12.006	12.6	0.29		51.3	OK	
9.009	9.9	0.50		174.8	OK	
14.000	W14.0	0.03		16.4	FLOOD RISK*	
14.001	W14.1	0.01		16.3	OK	
14.002	W14.2	0.01		22.1	OK	
14.003	W14.3	0.02		26.8	OK	
14.004	W14.4	0.01		26.7	OK	
14.005	W14.5	0.01		26.6	OK	
15.000	W15.0	0.01		9.5	OK	
15.001	W15.1	0.02		9.4	OK	
9.010	POND WEST	0.00		0.0	SURCHARGED	
16.000	63	0.27		4.5	OK	

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

PN	US/MH Name	Pipe		Status	Level Exceeded
		Flow / Overflow Cap. (l/s)	Flow (l/s)		
16.001	64	0.31	8.6	OK	
16.002	65	0.00	0.0	SURCHARGED	

Ardent Consulting Engineers		Page 16
4th Floor, Diamond House 36-38 Hatton Garden London EC1N 8EB	Land East of Tye Lane Walberton West Sussex	
Date 14/03/2019 10:40 File SW NETWORK MJR FEB 2019.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Micro Drainage	Network 2017.1.2	

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet 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 3 Number of Storage Structures 18 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.700 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.319 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 450.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
									Level (m)	Depth (m)
1.000	1.0	15 Winter	30	+0%	100/15 Summer	100/15 Winter			16.948	-0.127
2.000	2.0	15 Winter	30	+0%	100/15 Summer				17.360	-0.140
1.001	1.1	15 Winter	30	+0%	30/15 Summer				16.789	0.138
1.002	1.2	15 Winter	30	+0%	30/15 Summer				16.727	0.186
3.000	3.0	15 Winter	30	+0%	100/15 Summer				17.588	-0.037
1.003	1.3	15 Winter	30	+0%	30/15 Summer				16.513	0.269
1.004	1.4	15 Winter	30	+0%	30/15 Winter				16.024	0.002
4.000	4.0	15 Winter	30	+0%	100/15 Summer				17.826	-0.099
4.001	4.1	15 Winter	30	+0%	30/15 Summer				17.769	0.077
5.000	5.0	15 Winter	30	+0%	30/15 Summer				18.349	0.299
4.002	4.2	15 Winter	30	+0%	30/15 Summer				17.657	0.340
1.005	1.5	15 Winter	30	+0%	100/15 Summer				15.849	-0.130
6.000	W6.0	15 Winter	30	+0%					19.792	-0.308
6.001	W6.1	15 Winter	30	+0%					18.701	-0.299
6.002	W6.2	15 Winter	30	+0%					18.538	-0.262
6.003	W6.3	15 Winter	30	+0%					18.121	-0.229
1.006	1.6	15 Winter	30	+0%	30/15 Winter				15.513	0.005
1.007	1.7	15 Winter	30	+0%	100/15 Summer				15.094	-0.172
7.000	W7.0	15 Winter	30	+0%					17.502	-0.098
7.001	W7.1	15 Winter	30	+0%					17.367	-0.283
7.002	W7.2	15 Winter	30	+0%					17.254	-0.446
8.000	W8.0	15 Winter	30	+0%					18.027	-0.173
8.001	W8.1	15 Winter	30	+0%					17.900	-0.550
8.002	W8.2	30 Winter	30	+0%	30/15 Summer				17.854	0.070
8.003	W8.3	30 Winter	30	+0%	30/15 Summer				17.807	0.063
8.004	W8.4	30 Winter	30	+0%	30/15 Summer				17.746	0.051
8.005	W8.5	60 Winter	30	+0%	30/30 Summer				17.497	0.009
8.006	W8.6	30 Summer	30	+0%					17.261	-0.439
7.003	W7.3	15 Winter	30	+0%					16.870	-0.630
7.004	W7.4	15 Winter	30	+0%					16.752	-0.548
1.008	POND EAST	1440 Winter	30	+0%	30/240 Winter				14.612	0.271
9.000	9.0	15 Winter	30	+0%	30/15 Summer				16.923	0.198
9.001	9.1	15 Winter	30	+0%	30/15 Summer	100/15 Winter			16.799	0.132
9.002	9.2	15 Winter	30	+0%	30/15 Summer	100/15 Winter			16.593	0.337
9.003	9.3	15 Winter	30	+0%	30/15 Summer				16.458	0.467

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

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1.0	0.000	0.38		21.4	OK	1
2.000	2.0	0.000	0.31		29.8	OK	
1.001	1.1	0.000	0.76		58.7	SURCHARGED	
1.002	1.2	0.000	0.85		72.4	SURCHARGED	
3.000	3.0	0.000	1.00		51.1	OK	
1.003	1.3	0.000	1.48		122.8	SURCHARGED	
1.004	1.4	0.000	1.31		145.8	SURCHARGED	
4.000	4.0	0.000	0.51		24.5	OK	
4.001	4.1	0.000	0.60		36.9	SURCHARGED	
5.000	5.0	0.000	1.11		44.9	SURCHARGED	
4.002	4.2	0.000	1.54		128.9	SURCHARGED	
1.005	1.5	0.000	0.89		322.2	OK	
6.000	W6.0	0.000	0.04		26.7	FLOOD RISK*	
6.001	W6.1	0.000	0.05		26.8	FLOOD RISK*	
6.002	W6.2	0.000	0.09		26.4	FLOOD RISK*	
6.003	W6.3	0.000	0.13		26.4	OK*	
1.006	1.6	0.000	1.05		355.4	SURCHARGED	
1.007	1.7	0.000	0.77		350.3	OK	
7.000	W7.0	0.000	0.37		45.0	FLOOD RISK*	
7.001	W7.1	0.000	0.13		89.2	FLOOD RISK*	
7.002	W7.2	0.000	0.10		105.6	FLOOD RISK*	
8.000	W8.0	0.000	0.17		27.8	FLOOD RISK*	
8.001	W8.1	0.000	0.04		49.8	OK	
8.002	W8.2	0.000	1.17		18.6	SURCHARGED	
8.003	W8.3	0.000	1.20		19.2	SURCHARGED	
8.004	W8.4	0.000	1.11		17.8	SURCHARGED	
8.005	W8.5	0.000	1.28		20.3	SURCHARGED	
8.006	W8.6	0.000	0.02		27.7	FLOOD RISK*	
7.003	W7.3	0.000	0.05		126.5	OK	
7.004	W7.4	0.000	0.06		126.0	OK	
1.008	POND EAST	0.000	0.00		0.0	SURCHARGED	
9.000	9.0	0.000	1.66		21.0	SURCHARGED	
9.001	9.1	0.000	0.87		47.8	SURCHARGED	1
9.002	9.2	0.000	0.77		76.5	SURCHARGED	1
9.003	9.3	0.000	0.94		93.8	SURCHARGED	

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) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
9.004	9.4	15 Winter	30	+0%	30/15 Summer				16.230	0.494	0.000
10.000	10.0	15 Winter	30	+0%	30/15 Summer				15.709	0.225	0.000
9.005	9.5	15 Winter	30	+0%	30/15 Summer				15.512	0.427	0.000
11.000	11.0	15 Winter	30	+0%	100/15 Summer				15.463	-0.062	0.000
9.006	9.6	15 Winter	30	+0%	30/15 Summer				15.210	0.495	0.000
9.007	9.7	15 Winter	30	+0%	30/15 Summer				14.397	0.208	0.000
9.008	9.8	15 Winter	30	+0%	100/15 Summer				13.855	-0.191	0.000
12.000	12.0	15 Winter	30	+0%	100/15 Summer				15.904	-0.121	0.000
12.001	12.1	15 Winter	30	+0%	100/15 Summer				15.812	-0.074	0.000
12.002	12.2	15 Winter	30	+0%	100/15 Summer				15.361	-0.088	0.000
13.000	13.0	15 Winter	30	+0%	100/15 Summer				15.604	-0.123	0.000
12.003	12.3	15 Winter	30	+0%	30/15 Summer				15.329	0.104	0.000
12.004	12.4	15 Winter	30	+0%	30/15 Summer				15.208	0.092	0.000
12.005	12.5	15 Winter	30	+0%	30/15 Summer				14.924	0.087	0.000
12.006	12.6	15 Winter	30	+0%	100/15 Summer				14.606	-0.095	0.000
9.009	9.9	1440 Winter	30	+0%	30/15 Summer				13.449	0.310	0.000
14.000	W14.0	15 Winter	30	+0%					16.752	-0.348	0.000
14.001	W14.1	15 Winter	30	+0%					16.454	-0.446	0.000
14.002	W14.2	15 Winter	30	+0%					16.221	-0.479	0.000
14.003	W14.3	15 Winter	30	+0%					15.544	-0.456	0.000
14.004	W14.4	15 Winter	30	+0%					14.928	-0.472	0.000
14.005	W14.5	15 Winter	30	+0%					14.510	-0.490	0.000
15.000	W15.0	15 Winter	30	+0%					14.697	-0.503	0.000
15.001	W15.1	15 Winter	30	+0%					14.248	-0.452	0.000
9.010	POND WEST	1440 Winter	30	+0%	1/15 Summer				13.446	1.336	0.000
16.000	63	15 Winter	30	+0%	100/15 Summer				18.536	-0.089	0.000
16.001	64	15 Winter	30	+0%	100/15 Summer				18.085	-0.065	0.000
16.002	65	1440 Winter	30	+0%	1/120 Winter				17.493	0.393	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
9.004	9.4	1.08		131.8	SURCHARGED	
10.000	10.0	0.71		63.5	SURCHARGED	
9.005	9.5	0.90		199.8	SURCHARGED	
11.000	11.0	0.85		41.6	OK	
9.006	9.6	1.24		230.7	SURCHARGED	
9.007	9.7	1.60		237.3	SURCHARGED	
9.008	9.8	0.63		239.4	OK	
12.000	12.0	0.44		19.9	OK	
12.001	12.1	0.76		37.4	OK	
12.002	12.2	0.32		36.2	OK	
13.000	13.0	0.43		41.6	OK	
12.003	12.3	1.06		88.1	SURCHARGED	
12.004	12.4	1.00		100.5	SURCHARGED	
12.005	12.5	1.30		119.9	SURCHARGED	
12.006	12.6	0.80		139.0	OK	
9.009	9.9	0.10		34.0	SURCHARGED	
14.000	W14.0	0.07		37.9	FLOOD RISK*	
14.001	W14.1	0.02		38.1	FLOOD RISK*	
14.002	W14.2	0.03		54.2	OK	
14.003	W14.3	0.04		67.9	OK	
14.004	W14.4	0.04		67.5	OK	
14.005	W14.5	0.03		67.5	OK	
15.000	W15.0	0.02		23.2	OK	
15.001	W15.1	0.05		22.8	OK	
9.010	POND WEST	0.01		0.0	SURCHARGED	
16.000	63	0.66		11.0	OK	

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

PN	US/MH Name	Pipe		Status	Level Exceeded
		Flow / Overflow Cap. (l/s)	Flow (l/s)		
16.001	64	0.83	23.0	OK	
16.002	65	0.00	0.0	SURCHARGED	

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 Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 3	Number of Storage Structures 18	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR M5-60 (mm) 19.700 Cv (Summer) 0.750
Region England and Wales	Ratio R 0.319 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 450.0	DVD Status OFF
Analysis Timestep	Fine Inertia Status OFF
DTS Status	ON

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

										Water Surcharged
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)
1.000	1.0	15 Winter	100	+40%	100/15 Summer	100/15 Winter			18.201	1.126
2.000	2.0	15 Winter	100	+40%	100/15 Summer				18.155	0.655
1.001	1.1	15 Winter	100	+40%	30/15 Summer				18.121	1.470
1.002	1.2	15 Winter	100	+40%	30/15 Summer				18.066	1.525
3.000	3.0	15 Winter	100	+40%	100/15 Summer				18.276	0.651
1.003	1.3	15 Winter	100	+40%	30/15 Summer				17.803	1.559
1.004	1.4	15 Winter	100	+40%	30/15 Winter				16.992	0.970
4.000	4.0	15 Winter	100	+40%	100/15 Summer				18.908	0.983
4.001	4.1	15 Winter	100	+40%	30/15 Summer				18.741	1.049
5.000	5.0	15 Winter	100	+40%	30/15 Summer				18.959	0.909
4.002	4.2	15 Winter	100	+40%	30/15 Summer				18.419	1.102
1.005	1.5	15 Winter	100	+40%	100/15 Summer				16.858	0.879
6.000	W6.0	15 Winter	100	+40%					19.824	-0.276
6.001	W6.1	15 Winter	100	+40%					18.735	-0.265
6.002	W6.2	15 Winter	100	+40%					18.582	-0.218
6.003	W6.3	15 Winter	100	+40%					18.148	-0.202
1.006	1.6	15 Winter	100	+40%	30/15 Winter				16.136	0.628
1.007	1.7	15 Winter	100	+40%	100/15 Summer				15.448	0.182
7.000	W7.0	15 Winter	100	+40%					17.563	-0.037
7.001	W7.1	15 Winter	100	+40%					17.433	-0.217
7.002	W7.2	15 Winter	100	+40%					17.339	-0.361
8.000	W8.0	15 Winter	100	+40%					18.075	-0.125
8.001	W8.1	60 Winter	100	+40%					18.012	-0.438
8.002	W8.2	60 Winter	100	+40%	30/15 Summer				18.010	0.226
8.003	W8.3	60 Winter	100	+40%	30/15 Summer				17.948	0.204
8.004	W8.4	60 Winter	100	+40%	30/15 Summer				17.865	0.170
8.005	W8.5	30 Winter	100	+40%	30/30 Summer				17.549	0.061
8.006	W8.6	30 Summer	100	+40%					17.294	-0.406
7.003	W7.3	15 Winter	100	+40%					16.937	-0.563
7.004	W7.4	15 Winter	100	+40%					16.820	-0.480
1.008	POND EAST	1440 Winter	100	+40%	30/240 Winter				15.194	0.853
9.000	9.0	15 Winter	100	+40%	30/15 Summer				17.827	1.102
9.001	9.1	15 Winter	100	+40%	30/15 Summer	100/15 Winter			17.800	1.133
9.002	9.2	15 Winter	100	+40%	30/15 Summer	100/15 Winter			17.550	1.294
9.003	9.3	15 Winter	100	+40%	30/15 Summer				17.224	1.233

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

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1.0	0.551	0.49		27.4	FLOOD	1
2.000	2.0	0.000	0.87		83.6	FLOOD RISK	
1.001	1.1	0.000	1.34		103.1	FLOOD RISK	
1.002	1.2	0.000	1.34		113.6	FLOOD RISK	
3.000	3.0	0.000	1.81		92.3	FLOOD RISK	
1.003	1.3	0.000	2.24		185.9	SURCHARGED	
1.004	1.4	0.000	1.86		206.1	SURCHARGED	
4.000	4.0	0.000	0.88		41.8	FLOOD RISK	
4.001	4.1	0.000	1.00		61.7	FLOOD RISK	
5.000	5.0	0.000	1.47		59.8	FLOOD RISK	
4.002	4.2	0.000	2.31		193.7	SURCHARGED	
1.005	1.5	0.000	1.35		484.9	SURCHARGED	
6.000	W6.0	0.000	0.07		48.4	FLOOD RISK*	
6.001	W6.1	0.000	0.09		48.6	FLOOD RISK*	
6.002	W6.2	0.000	0.16		47.8	FLOOD RISK*	
6.003	W6.3	0.000	0.23		48.0	OK*	
1.006	1.6	0.000	1.67		567.9	SURCHARGED	
1.007	1.7	0.000	1.25		568.5	SURCHARGED	
7.000	W7.0	0.000	0.67		82.1	FLOOD RISK*	
7.001	W7.1	0.000	0.25		163.9	FLOOD RISK*	
7.002	W7.2	0.000	0.18		186.6	FLOOD RISK*	
8.000	W8.0	0.000	0.30		50.7	FLOOD RISK*	
8.001	W8.1	0.000	0.04		52.0	FLOOD RISK*	
8.002	W8.2	0.000	1.27		20.1	FLOOD RISK	
8.003	W8.3	0.000	1.31		20.8	SURCHARGED	
8.004	W8.4	0.000	1.29		20.8	SURCHARGED	
8.005	W8.5	0.000	1.74		27.7	SURCHARGED	
8.006	W8.6	0.000	0.04		49.0	FLOOD RISK*	
7.003	W7.3	0.000	0.08		221.0	OK	
7.004	W7.4	0.000	0.10		220.5	OK	
1.008	POND EAST	0.000	0.00		0.0	SURCHARGED	
9.000	9.0	0.000	3.31		41.9	FLOOD RISK	
9.001	9.1	0.028	0.97		53.0	FLOOD	1
9.002	9.2	0.379	1.14		113.3	FLOOD	1
9.003	9.3	0.000	1.69		168.2	FLOOD RISK	

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) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
9.004	9.4	30 Winter	100	+40%	30/15 Summer				16.624	0.888	0.000
10.000	10.0	15 Winter	100	+40%	30/15 Summer				16.930	1.446	0.000
9.005	9.5	15 Winter	100	+40%	30/15 Summer				16.315	1.230	0.000
11.000	11.0	15 Winter	100	+40%	100/15 Summer				16.548	1.023	0.000
9.006	9.6	15 Winter	100	+40%	30/15 Summer				15.989	1.274	0.000
9.007	9.7	15 Winter	100	+40%	30/15 Summer				14.905	0.716	0.000
9.008	9.8	15 Winter	100	+40%	100/15 Summer				14.373	0.327	0.000
12.000	12.0	15 Winter	100	+40%	100/15 Summer				16.698	0.673	0.000
12.001	12.1	15 Winter	100	+40%	100/15 Summer				16.656	0.770	0.000
12.002	12.2	15 Winter	100	+40%	100/15 Summer				16.462	1.013	0.000
13.000	13.0	15 Winter	100	+40%	100/15 Summer				16.710	0.983	0.000
12.003	12.3	15 Winter	100	+40%	30/15 Summer				16.432	1.207	0.000
12.004	12.4	15 Winter	100	+40%	30/15 Summer				16.203	1.087	0.000
12.005	12.5	15 Winter	100	+40%	30/15 Summer				15.685	0.848	0.000
12.006	12.6	15 Winter	100	+40%	100/15 Summer				15.236	0.535	0.000
9.009	9.9	1440 Winter	100	+40%	30/15 Summer				14.171	1.032	0.000
14.000	W14.0	15 Winter	100	+40%					16.804	-0.296	0.000
14.001	W14.1	15 Winter	100	+40%					16.485	-0.415	0.000
14.002	W14.2	15 Winter	100	+40%					16.261	-0.439	0.000
14.003	W14.3	15 Winter	100	+40%					15.593	-0.407	0.000
14.004	W14.4	15 Winter	100	+40%					14.973	-0.427	0.000
14.005	W14.5	15 Winter	100	+40%					14.549	-0.451	0.000
15.000	W15.0	15 Winter	100	+40%					14.731	-0.469	0.000
15.001	W15.1	15 Winter	100	+40%					14.296	-0.404	0.000
9.010	POND WEST	1440 Winter	100	+40%	1/15 Summer				14.165	2.055	0.000
16.000	63	1440 Winter	100	+40%	100/15 Summer				19.136	0.511	0.000
16.001	64	1440 Winter	100	+40%	100/15 Summer				19.136	0.986	0.000
16.002	65	1440 Winter	100	+40%	1/120 Winter				19.136	2.036	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
9.004	9.4	1.38		168.7	FLOOD RISK	
10.000	10.0	1.29		115.0	SURCHARGED	
9.005	9.5	1.00		222.1	SURCHARGED	
11.000	11.0	1.21		59.5	FLOOD RISK	
9.006	9.6	1.45		269.3	SURCHARGED	
9.007	9.7	1.93		285.6	SURCHARGED	
9.008	9.8	0.76		291.1	SURCHARGED	
12.000	12.0	1.06		47.8	FLOOD RISK	
12.001	12.1	1.16		57.6	FLOOD RISK	
12.002	12.2	0.62		71.4	SURCHARGED	
13.000	13.0	0.78		76.4	SURCHARGED	
12.003	12.3	1.58		130.8	SURCHARGED	
12.004	12.4	1.44		144.2	SURCHARGED	
12.005	12.5	1.82		166.9	SURCHARGED	
12.006	12.6	1.11		194.7	SURCHARGED	
9.009	9.9	0.17		59.5	SURCHARGED	
14.000	W14.0	0.13		67.8	FLOOD RISK*	
14.001	W14.1	0.04		67.2	FLOOD RISK*	
14.002	W14.2	0.06		95.6	FLOOD RISK*	
14.003	W14.3	0.08		122.3	FLOOD RISK*	
14.004	W14.4	0.07		120.7	FLOOD RISK*	
14.005	W14.5	0.05		121.4	OK	
15.000	W15.0	0.03		42.0	OK	
15.001	W15.1	0.09		41.8	FLOOD RISK*	
9.010	POND WEST	0.01		0.0	FLOOD RISK	
16.000	63	0.07		1.2	SURCHARGED	

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

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
				Flow (l/s)		
16.001	64	0.09		2.4	FLOOD RISK	
16.002	65	0.00		0.0	SURCHARGED	