


Bailey Johnson Hayes		Page 1
Grande House John Dalton St Manchester M2 6FW	LINK 9 BICESTER	
Date July 2016 File Network 4 A SINGLE OUTF...	Designed by S M JOHNSON Checked by	
Micro Drainage	Network 2016.1	

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)	2	Add Flow / Climate Change (%)	0
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio R	0.402	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	100	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		


Designed with Level Inverts

Network Design Table for Storm












PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	85.000	0.170	500.0	0.510	4.00	0.0	0.600	o	450	Pipe/Conduit	☑
1.001	10.000	0.020	500.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	☑
1.002	120.000	0.060	2000.0	0.000	0.00	0.0	15.000	\	-1	Pipe/Conduit	☑
1.003	5.000	0.007	750.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	☑
2.000	25.000	0.050	500.0	0.490	4.00	0.0	0.600	o	450	Pipe/Conduit	☑
2.001	90.000	0.183	491.3	0.510	0.00	0.0	0.600	o	525	Pipe/Conduit	☑
1.004	15.000	0.020	750.0	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	☑
3.000	145.000	0.452	320.8	1.250	4.00	0.0	0.600	o	600	Pipe/Conduit	☑
1.005	120.000	0.060	2000.0	0.000	0.00	0.0	15.000	\	-2	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	67.22	5.57	69.800	0.510	0.0	0.0	0.0	0.90	143.5	92.8
1.001	66.25	5.75	69.630	0.510	0.0	0.0	0.0	0.90	143.5	92.8
1.002	59.03	7.35	69.610	0.510	0.0	0.0	0.0	1.25	15591.5	92.8
1.003	58.58	7.46	69.550	0.510	0.0	0.0	0.0	0.73	116.8	92.8
2.000	73.83	4.46	68.725	0.490	0.0	0.0	0.0	0.90	143.5	98.0
2.001	65.22	5.96	68.675	1.000	0.0	0.0	0.0	1.00	217.3	176.6
1.004	57.50	7.75	68.492	1.510	0.0	0.0	0.0	0.88	249.2	235.1
3.000	66.09	5.78	69.425	1.250	0.0	0.0	0.0	1.35	382.9	223.7
1.005	53.09	9.05	68.472	2.760	0.0	0.0	0.0	1.54	41338.4	396.8


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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.006	45.000	0.060	750.0	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.007	45.000	0.060	750.0	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
1.008	205.000	0.105	1952.4	1.980	0.00	0.0	15.000	\	-6	Pipe/Conduit	
4.000	91.000	0.300	303.3	0.870	4.00	0.0	0.600	o	600	Pipe/Conduit	
4.001	93.000	0.360	258.3	0.870	0.00	0.0	0.600	o	750	Pipe/Conduit	
5.000	90.000	0.180	500.0	0.450	4.00	0.0	0.600	o	375	Pipe/Conduit	
4.002	80.000	0.050	1600.0	0.000	0.00	0.0	15.000	\	-5	Pipe/Conduit	
4.003	90.000	0.135	666.7	1.010	0.00	0.0	0.600	o	900	Pipe/Conduit	
4.004	40.000	0.053	750.0	0.025	0.00	0.0	0.600	o	900	Pipe/Conduit	
1.009	10.000	0.013	769.2	0.000	0.00	0.0	0.600	o	1200	Pipe/Conduit	
1.010	90.000	0.090	1000.0	0.000	0.00	0.0	0.600	\	-3	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)
1.006	50.95	9.79	68.412	2.760	0.0	0.0	0.0	1.01	448.0	396.8
1.007	49.01	10.53	68.352	2.760	0.0	0.0	0.0	1.01	448.0	396.8
1.008	40.31	14.88	68.292	4.740	0.0	0.0	0.0	0.78	1883.6	517.5
4.000	69.91	5.09	69.500	0.870	0.0	0.0	0.0	1.39	393.8	164.7
4.001	65.10	5.98	69.200	1.740	0.0	0.0	0.0	1.74	767.1	306.8
5.000	65.67	5.87	69.500	0.450	0.0	0.0	0.0	0.80	88.7	80.0
4.002	61.17	6.83	68.840	2.190	0.0	0.0	0.0	1.57	53288.0	362.8
4.003	56.31	8.07	68.790	3.200	0.0	0.0	0.0	1.21	767.2	488.0
4.004	54.31	8.66	68.655	3.225	0.0	0.0	0.0	1.14	722.8	488.0
1.009	40.11	15.01	68.197	7.965	0.0	0.0	0.0	1.34	1516.6	865.3
1.010	39.09	15.68	68.174	7.965	0.0	0.0	0.0	2.24	15438.1	865.3

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Simulation Criteria for Storm

Synthetic Rainfall Details


Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Storm Duration (mins)	15
Ratio R	0.405		

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Summary of Results for 15 minute 2 year Winter (Storm)

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe	Status
							Flow (l/s)	
1.000	1	70.086	-0.164	0.000	0.64	86.7	OK	
1.001	2	69.981	-0.099	0.000	0.96	74.4	OK	
1.002	3	69.682	-1.528	0.000	0.00	64.6	OK	
1.003	4	69.681	-0.319	0.000	0.19	21.5	OK	
2.000	5	69.078	-0.097	0.000	0.75	89.8	OK	
2.001	6	69.050	-0.150	0.000	0.69	140.9	OK	
1.004	7	69.003	-0.089	0.000	1.13	125.4	OK	
3.000	8	69.783	-0.242	0.000	0.66	240.8	OK	
1.005	9	68.737	-1.735	0.000	0.01	306.5	OK	
1.006	10	68.737	-0.425	0.000	0.19	86.2	OK*	
1.007	11	68.740	-0.362	0.000	0.22	81.2	OK	
1.008	11	68.743	-0.349	0.000	0.10	250.6	OK	
4.000	12	69.786	-0.314	0.000	0.43	156.5	OK	
4.001	12	69.527	-0.423	0.000	0.38	264.3	OK	
5.000	14	69.815	-0.060	0.000	1.00	84.9	OK	
4.002	15	69.051	-1.289	0.000	0.01	307.3	OK	
4.003	16	69.051	-0.639	0.000	0.16	123.3	OK*	
4.004	17	68.902	-0.653	0.000	0.17	122.2	OK*	
1.009	18	68.744	-0.643	0.000	0.02	16.9	OK	
1.010	12	68.239	-1.435	0.000	0.00	16.9	OK	

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Conduit Sections for Storm


NOTE: Diameters less than 66 refer to section numbers of hydraulic conduits. These conduits are marked by the symbols:- [] box culvert, \ / open channel, oo dual pipe, ooo triple pipe, O egg.

Section numbers < 0 are taken from user conduit table

Section Number	Conduit Type	Major Dimn. (mm)	Minor Dimn. (mm)	Side Slope (Deg)	Corner Splay (mm)	4*Hyd Radius (m)	XSect Area (m ²)
-1	\ /	5000	1600	30.0		4.363	12.434
-2	\ /	10000	2000	30.0		5.984	26.928
-3	\ /	2000	1500	30.0		3.449	6.897
-5	\ /	20000	1500	30.0		5.215	33.897
-6	\ /	3000	800	90.0		2.087	2.400

PJ


1.002
1.005
1.010
4.002
1.008

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Summary of Results for 15 minute 30 year Winter (Storm)

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


PN	US/MH Name	Water	Surcharged	Flooded	Pipe		Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Flow (l/s)	
1.000	1	70.399	0.149	0.000	1.21	164.2	SURCHARGED
1.001	2	70.123	0.043	0.000	2.16	167.3	SURCHARGED
1.002	3	69.742	-1.468	0.000	0.01	149.9	OK
1.003	4	69.739	-0.261	0.000	0.37	42.6	OK
2.000	5	69.599	0.424	0.000	1.38	166.2	SURCHARGED
2.001	6	69.500	0.300	0.000	1.39	282.4	SURCHARGED
1.004	7	69.101	0.009	0.000	2.65	294.0	SURCHARGED
3.000	8	70.227	0.202	0.000	1.20	437.0	SURCHARGED
1.005	9	68.902	-1.570	0.000	0.02	663.9	OK
1.006	10	68.901	-0.260	0.000	0.32	143.5	OK*
1.007	11	68.915	-0.186	0.000	0.33	124.6	OK
1.008	11	68.940	-0.151	0.000	0.19	465.5	OK
4.000	12	69.939	-0.161	0.000	0.84	305.6	OK
4.001	12	69.704	-0.246	0.000	0.77	532.6	OK
5.000	14	70.306	0.431	0.000	1.83	155.2	SURCHARGED
4.002	15	69.175	-1.165	0.000	0.01	619.0	OK
4.003	16	69.162	-0.528	0.000	0.32	242.4	OK*
4.004	17	69.028	-0.527	0.000	0.33	239.4	OK*
1.009	18	69.003	-0.384	0.000	0.02	16.9	OK
1.010	12	68.239	-1.435	0.000	0.00	16.9	OK

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Summary of Results for 30 minute 30 year Winter (Storm)

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


PN	US/MH Name	Water			Flooded		Pipe Flow (l/s)	Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)		
1.000	1	70.350	0.100	0.000	1.17	158.4	SURCHARGED	
1.001	2	70.089	0.009	0.000	2.04	157.8	SURCHARGED	
1.002	3	69.781	-1.429	0.000	0.01	142.4	OK	
1.003	4	69.773	-0.227	0.000	0.49	56.8	OK	
2.000	5	69.598	0.423	0.000	1.28	153.8	SURCHARGED	
2.001	6	69.510	0.310	0.000	1.43	290.9	SURCHARGED	
1.004	7	69.111	0.019	0.000	2.86	318.0	SURCHARGED	
3.000	8	70.094	0.069	0.000	1.10	401.8	SURCHARGED	
1.005	9	69.108	-1.364	0.000	0.02	661.3	OK	
1.006	10	69.105	-0.057	0.000	0.26	117.6	OK*	
1.007	11	69.208	0.106	0.000	0.24	88.5	SURCHARGED	
1.008	11	69.298	0.206	0.000	0.21	506.5	SURCHARGED	
4.000	12	69.904	-0.196	0.000	0.76	278.7	OK	
4.001	12	69.693	-0.257	0.000	0.76	526.5	OK	
5.000	14	70.198	0.323	0.000	1.70	144.4	SURCHARGED	
4.002	15	69.283	-1.057	0.000	0.01	613.7	OK	
4.003	16	69.269	-0.421	0.000	0.43	328.8	OK*	
4.004	17	69.309	-0.246	0.000	0.43	309.1	OK*	
1.009	18	69.306	-0.081	0.000	0.03	17.5	OK	
1.010	12	68.239	-1.435	0.000	0.00	17.4	OK	

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Summary of Results for 60 minute 30 year Winter (Storm)

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


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status
1.000	1	70.190	-0.060	0.000	0.77	104.9	OK
1.001	2	70.080	0.000	0.000	1.35	104.8	OK
1.002	3	69.780	-1.430	0.000	0.01	95.1	OK
1.003	4	69.772	-0.228	0.000	0.49	56.3	OK
2.000	5	69.329	0.154	0.000	0.86	103.9	SURCHARGED
2.001	6	69.295	0.095	0.000	1.01	205.1	SURCHARGED
1.004	7	69.296	0.204	0.000	2.15	239.0	SURCHARGED
3.000	8	69.808	-0.217	0.000	0.73	266.7	OK
1.005	9	69.295	-1.177	0.000	0.01	462.3	OK
1.006	10	69.294	0.133	0.000	0.16	71.9	SURCHARGED*
1.007	11	69.294	0.192	0.000	0.15	56.3	SURCHARGED
1.008	11	69.356	0.264	0.000	0.14	351.2	SURCHARGED
4.000	12	69.804	-0.296	0.000	0.50	184.1	OK
4.001	12	69.584	-0.366	0.000	0.52	361.2	OK
5.000	14	69.906	0.031	0.000	1.13	95.8	SURCHARGED
4.002	15	69.359	-0.981	0.000	0.01	424.3	OK
4.003	16	69.342	-0.348	0.000	0.36	279.2	OK*
4.004	17	69.329	-0.226	0.000	0.34	247.6	OK*
1.009	18	69.359	-0.028	0.000	0.03	17.9	OK
1.010	12	68.239	-1.434	0.000	0.00	17.9	OK

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Summary of Results for 120 minute 30 year Winter (Storm)

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


PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)			
1.000	1	70.041	-0.209	0.000	0.49		66.0	OK	
1.001	2	69.947	-0.133	0.000	0.84		65.2	OK	
1.002	3	69.759	-1.451	0.000	0.00		60.0	OK	
1.003	4	69.753	-0.247	0.000	0.42		48.3	OK	
2.000	5	69.459	0.284	0.000	0.53		63.8	SURCHARGED	
2.001	6	69.457	0.257	0.000	0.62		127.0	SURCHARGED	
1.004	7	69.455	0.364	0.000	1.47		163.8	SURCHARGED	
3.000	8	69.706	-0.319	0.000	0.45		163.4	OK	
1.005	9	69.451	-1.020	0.000	0.01		299.2	OK	
1.006	10	69.435	0.273	0.000	0.10		44.6	SURCHARGED*	
1.007	11	69.434	0.333	0.000	0.11		39.2	SURCHARGED	
1.008	11	69.433	0.342	0.000	0.06		150.3	SURCHARGED	
4.000	12	69.729	-0.371	0.000	0.31		113.4	OK	
4.001	12	69.493	-0.457	0.000	0.32		225.3	OK	
5.000	14	69.730	-0.145	0.000	0.69		58.8	OK	
4.002	15	69.450	-0.890	0.000	0.01		266.9	OK	
4.003	16	69.436	-0.254	0.000	0.25		188.2	OK*	
4.004	17	69.435	-0.120	0.000	0.24		170.5	OK*	
1.009	18	69.434	0.047	0.000	0.03		18.5	SURCHARGED	
1.010	12	68.240	-1.434	0.000	0.00		18.5	OK	

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Summary of Results for 240 minute 30 year Winter (Storm)

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


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe	Status
							Flow (l/s)	
1.000	1	69.970	-0.280	0.000	0.29		39.4	OK
1.001	2	69.857	-0.223	0.000	0.51		39.2	OK
1.002	3	69.719	-1.491	0.000	0.00		37.7	OK
1.003	4	69.716	-0.284	0.000	0.29		33.8	OK
2.000	5	69.573	0.398	0.000	0.31		37.7	SURCHARGED
2.001	6	69.571	0.371	0.000	0.36		73.6	SURCHARGED
1.004	7	69.567	0.475	0.000	0.93		103.3	SURCHARGED
3.000	8	69.634	-0.391	0.000	0.27		96.9	OK
1.005	9	69.563	-0.909	0.000	0.00		175.5	OK
1.006	10	69.551	0.389	0.000	0.07		32.2	SURCHARGED*
1.007	11	69.549	0.447	0.000	0.08		30.9	SURCHARGED
1.008	11	69.548	0.456	0.000	0.04		102.1	SURCHARGED
4.000	12	69.673	-0.427	0.000	0.18		67.3	OK
4.001	12	69.561	-0.389	0.000	0.19		134.4	OK
5.000	14	69.667	-0.208	0.000	0.41		34.9	OK
4.002	15	69.549	-0.791	0.000	0.00		155.5	OK
4.003	16	69.546	-0.144	0.000	0.15		116.4	OK*
4.004	17	69.546	-0.009	0.000	0.15		105.8	OK*
1.009	18	69.548	0.161	0.000	0.03		19.2	SURCHARGED
1.010	12	68.240	-1.434	0.000	0.00		19.2	OK

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Summary of Results for 360 minute 30 year Winter (Storm)

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


PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)			
1.000	1	69.941	-0.309	0.000	0.21		28.8	OK	
1.001	2	69.819	-0.261	0.000	0.37		28.8	OK	
1.002	3	69.698	-1.512	0.000	0.00		28.0	OK	
1.003	4	69.695	-0.305	0.000	0.23		26.2	OK	
2.000	5	69.614	0.439	0.000	0.23		27.9	SURCHARGED	
2.001	6	69.612	0.412	0.000	0.28		56.0	SURCHARGED	
1.004	7	69.610	0.518	0.000	0.71		79.0	SURCHARGED	
3.000	8	69.611	-0.414	0.000	0.19		70.7	OK	
1.005	9	69.608	-0.864	0.000	0.00		132.9	OK	
1.006	10	69.604	0.442	0.000	0.07		32.5	SURCHARGED*	
1.007	11	69.603	0.502	0.000	0.09		31.9	SURCHARGED	
1.008	11	69.603	0.511	0.000	0.03		83.2	SURCHARGED	
4.000	12	69.646	-0.454	0.000	0.14		49.2	OK	
4.001	12	69.612	-0.338	0.000	0.14		98.4	OK	
5.000	14	69.640	-0.235	0.000	0.30		25.5	OK	
4.002	15	69.607	-0.733	0.000	0.00		109.8	OK	
4.003	16	69.606	-0.084	0.000	0.11		82.6	OK*	
4.004	17	69.555	0.000	0.000	0.11		77.5	SURCHARGED*	
1.009	18	69.603	0.216	0.000	0.03		19.6	SURCHARGED	
1.010	12	68.240	-1.433	0.000	0.00		19.6	OK	

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Summary of Results for 480 minute 30 year Winter (Storm)

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


PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Flow / Overflow (l/s)			
1.000	1	69.924	-0.326	0.000	0.17		23.1	OK	
1.001	2	69.797	-0.283	0.000	0.30		23.1	OK	
1.002	3	69.683	-1.527	0.000	0.00		22.6	OK	
1.003	4	69.680	-0.320	0.000	0.19		21.4	OK	
2.000	5	69.642	0.467	0.000	0.18		22.2	SURCHARGED	
2.001	6	69.641	0.441	0.000	0.22		45.2	SURCHARGED	
1.004	7	69.639	0.547	0.000	0.58		64.4	SURCHARGED	
3.000	8	69.639	-0.386	0.000	0.16		56.5	OK	
1.005	9	69.637	-0.834	0.000	0.00		108.9	OK	
1.006	10	69.635	0.473	0.000	0.07		32.7	SURCHARGED*	
1.007	11	69.635	0.533	0.000	0.09		32.1	SURCHARGED	
1.008	11	69.636	0.544	0.000	0.03		66.9	SURCHARGED	
4.000	12	69.647	-0.453	0.000	0.11		39.4	OK	
4.001	12	69.646	-0.304	0.000	0.11		78.2	OK	
5.000	14	69.644	-0.231	0.000	0.24		20.4	OK	
4.002	15	69.643	-0.697	0.000	0.00		89.3	OK	
4.003	16	69.642	-0.048	0.000	0.09		68.1	OK*	
4.004	17	69.555	0.000	0.000	0.09		64.2	SURCHARGED*	
1.009	18	69.636	0.249	0.000	0.03		19.9	SURCHARGED	
1.010	12	68.241	-1.433	0.000	0.00		19.9	OK	

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Summary of Results for 600 minute 30 year Winter (Storm)

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


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Pipe	Status
						Flow (l/s)	
1.000	1	69.913	-0.337	0.000	0.14	19.4	OK
1.001	2	69.782	-0.298	0.000	0.25	19.4	OK
1.002	3	69.673	-1.537	0.000	0.00	19.1	OK
1.003	4	69.670	-0.330	0.000	0.16	18.4	OK
2.000	5	69.659	0.484	0.000	0.16	18.7	SURCHARGED
2.001	6	69.657	0.457	0.000	0.19	38.0	SURCHARGED
1.004	7	69.656	0.564	0.000	0.49	54.9	SURCHARGED
3.000	8	69.656	-0.369	0.000	0.13	47.5	OK
1.005	9	69.655	-0.817	0.000	0.00	91.9	OK
1.006	10	69.653	0.491	0.000	0.07	32.8	SURCHARGED*
1.007	11	69.653	0.551	0.000	0.09	32.2	SURCHARGED
1.008	11	69.654	0.562	0.000	0.02	56.5	SURCHARGED
4.000	12	69.669	-0.431	0.000	0.09	33.1	OK
4.001	12	69.668	-0.282	0.000	0.09	65.7	OK
5.000	14	69.667	-0.208	0.000	0.20	17.1	OK
4.002	15	69.666	-0.674	0.000	0.00	74.9	OK
4.003	16	69.666	-0.024	0.000	0.08	59.5	OK*
4.004	17	69.555	0.000	0.000	0.08	56.3	SURCHARGED*
1.009	18	69.654	0.267	0.000	0.03	20.0	SURCHARGED
1.010	12	68.241	-1.433	0.000	0.00	20.0	OK

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Summary of Results for 15 minute 100 year Winter (Storm)

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


PN	US/MH Name	Water	Surcharged	Flooded	Pipe		Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Flow (l/s)	
1.000	1	70.940	0.690	0.000	1.87	252.9	SURCHARGED
1.001	2	70.247	0.167	0.000	3.27	253.5	SURCHARGED
1.002	3	69.801	-1.409	0.000	0.01	226.3	OK
1.003	4	69.791	-0.209	0.000	0.56	64.5	OK
2.000	5	70.302	1.127	2.000	1.92	231.5	FLOOD
2.001	6	70.130	0.930	0.000	2.11	429.5	SURCHARGED
1.004	7	69.249	0.157	0.000	4.06	451.2	SURCHARGED
3.000	8	71.002	0.977	1.896	1.80	654.0	FLOOD
1.005	9	69.114	-1.358	0.000	0.02	1022.9	OK
1.006	10	69.112	-0.050	0.000	0.38	170.5	OK*
1.007	11	69.216	0.114	0.000	0.35	128.9	SURCHARGED
1.008	11	69.309	0.217	0.000	0.29	702.5	SURCHARGED
4.000	12	70.452	0.352	0.000	1.24	450.5	SURCHARGED
4.001	12	70.092	0.142	0.000	1.14	791.0	SURCHARGED
5.000	14	70.804	0.929	3.883	2.50	212.5	FLOOD
4.002	15	69.294	-1.046	0.000	0.02	911.1	OK
4.003	16	69.282	-0.408	0.000	0.51	393.1	OK*
4.004	17	69.339	-0.216	0.000	0.53	380.3	OK*
1.009	18	69.321	-0.066	0.000	0.03	17.6	OK
1.010	12	68.239	-1.434	0.000	0.00	17.6	OK

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Summary of Results for 30 minute 100 year Winter (Storm)

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


PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)			
1.000	1	70.579	0.329	0.000	1.51	204.2	SURCHARGED		
1.001	2	70.173	0.093	0.000	2.63	203.5	SURCHARGED		
1.002	3	69.820	-1.390	0.000	0.01	183.6	OK		
1.003	4	69.808	-0.192	0.000	0.63	72.0	OK		
2.000	5	69.983	0.808	0.000	1.64	196.8	SURCHARGED		
2.001	6	69.858	0.658	0.000	1.84	374.5	SURCHARGED		
1.004	7	69.313	0.221	0.000	3.74	415.0	SURCHARGED		
3.000	8	70.480	0.455	0.000	1.44	523.7	SURCHARGED		
1.005	9	69.309	-1.163	0.000	0.02	861.8	OK		
1.006	10	69.301	0.139	0.000	0.20	87.4	SURCHARGED*		
1.007	11	69.360	0.258	0.000	0.15	56.3	SURCHARGED		
1.008	11	69.547	0.456	0.000	0.26	640.0	SURCHARGED		
4.000	12	70.091	-0.009	0.000	0.98	358.7	OK		
4.001	12	69.797	-0.153	0.000	0.98	683.9	OK		
5.000	14	70.548	0.673	0.000	2.19	186.0	FLOOD RISK		
4.002	15	69.432	-0.908	0.000	0.02	795.8	OK		
4.003	16	69.412	-0.278	0.000	0.54	418.0	OK*		
4.004	17	69.516	-0.039	0.000	0.50	360.3	OK*		
1.009	18	69.568	0.181	0.000	0.03	19.3	SURCHARGED		
1.010	12	68.240	-1.433	0.000	0.00	19.3	OK		

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Summary of Results for 60 minute 100 year Winter (Storm)

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


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Pipe	Status
						Flow (l/s)	
1.000	1	70.271	0.021	0.000	1.04	140.6	SURCHARGED
1.001	2	70.080	0.000	0.000	1.82	140.7	SURCHARGED
1.002	3	69.817	-1.393	0.000	0.01	128.6	OK
1.003	4	69.806	-0.194	0.000	0.62	71.0	OK
2.000	5	69.511	0.336	0.000	1.12	135.1	SURCHARGED
2.001	6	69.511	0.311	0.000	1.32	268.9	SURCHARGED
1.004	7	69.511	0.419	0.000	2.87	318.5	SURCHARGED
3.000	8	69.892	-0.133	0.000	0.96	350.7	OK
1.005	9	69.505	-0.967	0.000	0.01	613.9	OK
1.006	10	69.497	0.335	0.000	0.16	69.9	SURCHARGED*
1.007	11	69.497	0.395	0.000	0.14	53.3	SURCHARGED
1.008	11	69.547	0.455	0.000	0.17	411.7	SURCHARGED
4.000	12	69.860	-0.240	0.000	0.66	242.1	OK
4.001	12	69.656	-0.294	0.000	0.68	474.6	OK
5.000	14	70.070	0.195	0.000	1.48	125.5	SURCHARGED
4.002	15	69.556	-0.784	0.000	0.01	556.8	OK
4.003	16	69.537	-0.153	0.000	0.42	321.1	OK*
4.004	17	69.527	-0.028	0.000	0.37	267.4	OK*
1.009	18	69.557	0.170	0.000	0.03	19.3	SURCHARGED
1.010	12	68.240	-1.434	0.000	0.00	19.2	OK

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Summary of Results for 120 minute 100 year Winter (Storm)

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

PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status
		Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)			
1.000	1	70.134	-0.116	0.000	0.63	85.9		OK	
1.001	2	70.075	-0.005	0.000	1.05	81.7		OK	
1.002	3	69.794	-1.416	0.000	0.00	77.7		OK	
1.003	4	69.784	-0.216	0.000	0.53	61.4		OK	
2.000	5	69.711	0.536	0.000	0.70	84.0		SURCHARGED	
2.001	6	69.708	0.508	0.000	0.83	169.5		SURCHARGED	
1.004	7	69.704	0.612	0.000	1.92	213.4		SURCHARGED	
3.000	8	69.757	-0.268	0.000	0.59	214.7		OK	
1.005	9	69.700	-0.772	0.000	0.01	385.9		OK	
1.006	10	69.675	0.513	0.000	0.10	46.7		SURCHARGED*	
1.007	11	69.674	0.572	0.000	0.11	41.8		SURCHARGED	
1.008	11	69.675	0.583	0.000	0.08	196.7		SURCHARGED	
4.000	12	69.786	-0.314	0.000	0.41	149.0		OK	
4.001	12	69.768	-0.182	0.000	0.43	296.0		OK	
5.000	14	69.780	-0.095	0.000	0.91	77.3		OK	
4.002	15	69.687	-0.653	0.000	0.01	337.9		OK	
4.003	16	69.669	-0.021	0.000	0.26	202.1		OK*	
4.004	17	69.555	0.000	0.000	0.25	177.9		SURCHARGED*	
1.009	18	69.675	0.288	0.000	0.03	20.1		SURCHARGED	
1.010	12	68.241	-1.433	0.000	0.00	20.1		OK	

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Summary of Results for 240 minute 100 year Winter (Storm)

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

PN	US/MH Name	Water	Surcharged	Flooded	Pipe		Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	
1.000	1 70.002	-0.248	0.000	0.38	51.4	OK	
1.001	2 69.898	-0.182	0.000	0.66	51.2	OK	
1.002	3 69.807	-1.403	0.000	0.00	49.0	OK	
1.003	4 69.807	-0.193	0.000	0.39	44.7	OK	
2.000	5 69.814	0.639	0.000	0.41	48.9	SURCHARGED	
2.001	6 69.811	0.611	0.000	0.48	98.1	SURCHARGED	
1.004	7 69.807	0.715	0.000	1.22	135.1	SURCHARGED	
3.000	8 69.836	-0.189	0.000	0.35	126.0	OK	
1.005	9 69.805	-0.667	0.000	0.01	231.6	OK	
1.006	10 69.797	0.635	0.000	0.07	32.0	SURCHARGED*	
1.007	11 69.801	0.699	0.000	0.08	28.4	SURCHARGED	
1.008	11 69.812	0.720	0.000	0.05	114.4	SURCHARGED	
4.000	12 69.926	-0.174	0.000	0.24	87.9	OK	
4.001	12 69.910	-0.040	0.000	0.25	173.7	OK	
5.000	14 69.832	-0.043	0.000	0.54	45.5	OK	
4.002	15 69.823	-0.517	0.000	0.00	195.7	OK	
4.003	16 69.802	0.112	0.000	0.16	121.1	SURCHARGED*	
4.004	17 69.555	0.000	0.000	0.15	109.6	SURCHARGED*	
1.009	18 69.812	0.425	0.000	0.03	21.0	SURCHARGED	
1.010	12 68.241	-1.433	0.000	0.00	21.0	OK	

Grange House

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BICESTER

Manchester M2 6FW

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Summary of Results for 360 minute 100 year Winter (Storm)

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


PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe	Status
							Flow (l/s)	
1.000	1	69.965	-0.285	0.000	0.28		37.4	OK
1.001	2	69.862	-0.218	0.000	0.48		37.3	OK
1.002	3	69.861	-1.349	0.000	0.00		36.4	OK
1.003	4	69.861	-0.139	0.000	0.30		34.2	OK
2.000	5	69.866	0.691	0.000	0.29		34.6	SURCHARGED
2.001	6	69.864	0.664	0.000	0.35		70.3	SURCHARGED
1.004	7	69.861	0.769	0.000	0.92		101.7	SURCHARGED
3.000	8	69.878	-0.147	0.000	0.25		91.7	OK
1.005	9	69.860	-0.612	0.000	0.00		171.2	OK
1.006	10	69.858	0.696	0.000	0.07		31.9	SURCHARGED*
1.007	11	69.864	0.762	0.000	0.08		28.7	SURCHARGED
1.008	11	69.875	0.783	0.000	0.04		92.7	SURCHARGED
4.000	12	69.963	-0.137	0.000	0.18		63.9	OK
4.001	12	69.950	0.000	0.000	0.18		125.5	OK
5.000	14	69.880	0.005	0.000	0.39		33.0	SURCHARGED
4.002	15	69.876	-0.464	0.000	0.00		139.9	OK
4.003	16	69.864	0.174	0.000	0.11		83.6	SURCHARGED*
4.004	17	69.555	0.000	0.000	0.11		77.8	SURCHARGED*
1.009	18	69.876	0.489	0.000	0.03		21.4	SURCHARGED
1.010	12	68.241	-1.432	0.000	0.00		21.4	OK

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Summary of Results for 480 minute 100 year Winter (Storm)

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Pipe	Status
						Flow (l/s)	
1.000	1 69.944	-0.306	0.000	0.22	29.8	OK	
1.001	2 69.900	-0.180	0.000	0.38	29.8	OK	
1.002	3 69.900	-1.310	0.000	0.00	29.2	OK	
1.003	4 69.900	-0.100	0.000	0.24	28.0	OK	
2.000	5 69.903	0.728	0.000	0.23	27.5	SURCHARGED	
2.001	6 69.902	0.702	0.000	0.28	56.3	SURCHARGED	
1.004	7 69.901	0.809	0.000	0.74	82.7	SURCHARGED	
3.000	8 69.901	-0.124	0.000	0.20	73.0	OK	
1.005	9 69.901	-0.571	0.000	0.00	139.3	OK	
1.006	10 69.901	0.739	0.000	0.09	39.7	SURCHARGED*	
1.007	11 69.906	0.804	0.000	0.08	29.0	SURCHARGED	
1.008	11 69.913	0.821	0.000	0.03	64.1	SURCHARGED	
4.000	12 69.905	-0.195	0.000	0.14	50.9	OK	
4.001	12 69.905	-0.045	0.000	0.14	99.5	OK	
5.000	14 69.905	0.030	0.000	0.31	26.3	SURCHARGED	
4.002	15 69.904	-0.436	0.000	0.00	109.3	OK	
4.003	16 69.903	0.213	0.000	0.09	69.3	SURCHARGED*	
4.004	17 69.555	0.000	0.000	0.09	65.4	SURCHARGED*	
1.009	18 69.913	0.526	0.000	0.03	21.6	SURCHARGED	
1.010	12 68.242	-1.432	0.000	0.00	21.6	OK	

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Grange House John Dalton St Manchester M2 6FW	LINK 9 BICESTER	
Date July 2016 File 600 MIN 100 YEAR WINTER...	Designed by BJH Checked by	
Micro Drainage	Network 2016.1	

Summary of Results for 600 minute 100 year Winter (Storm)

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

PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)			
1.000	1	69.930	-0.320	0.000	0.18		25.0	OK	
1.001	2	69.926	-0.154	0.000	0.32		25.0	OK	
1.002	3	69.925	-1.285	0.000	0.00		24.6	OK	
1.003	4	69.925	-0.075	0.000	0.21		23.7	OK	
2.000	5	69.928	0.753	0.000	0.19		23.0	SURCHARGED	
2.001	6	69.927	0.727	0.000	0.23		47.1	SURCHARGED	
1.004	7	69.925	0.834	0.000	0.63		69.6	SURCHARGED	
3.000	8	69.935	-0.090	0.000	0.17		61.2	OK	
1.005	9	69.925	-0.547	0.000	0.00		115.8	OK	
1.006	10	69.923	0.761	0.000	0.07		32.2	SURCHARGED*	
1.007	11	69.928	0.826	0.000	0.08		28.8	SURCHARGED	
1.008	11	69.938	0.847	0.000	0.03		62.3	SURCHARGED	
4.000	12	69.991	-0.109	0.000	0.12		42.6	OK	
4.001	12	69.950	0.000	0.000	0.12		83.1	OK	
5.000	14	69.935	0.060	0.000	0.26		22.0	SURCHARGED	
4.002	15	69.932	-0.408	0.000	0.00		92.0	OK	
4.003	16	69.928	0.238	0.000	0.08		58.7	SURCHARGED*	
4.004	17	69.555	0.000	0.000	0.08		55.4	SURCHARGED*	
1.009	18	69.939	0.552	0.000	0.03		21.8	SURCHARGED	
1.010	12	68.242	-1.432	0.000	0.00		21.8	OK	