

PRP		Page 1
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

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	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.320	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	110	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

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	35.365	0.157	225.3	0.170	5.00	0.0	0.600	o	300	Pipe/Conduit	
S1.001	32.785	0.146	225.0	0.337	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.002	33.896	0.085	400.0	0.335	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.003	61.237	0.153	400.0	0.168	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.004	62.988	0.157	400.0	0.050	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.005	8.380	0.017	500.0	0.173	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.006	75.212	0.150	500.0	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S1.007	17.980	0.510	35.3	0.241	0.00	0.0	0.600	o	525	Pipe/Conduit	
S2.000	39.651	0.900	44.1	0.259	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.000	22.278	0.223	99.9	0.119	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	52.189	0.543	96.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S4.000	28.857	0.096	300.0	0.459	5.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	57.01	5.56	94.250	0.170	0.0	0.0	0.0	1.04	73.8	26.3
S1.001	55.18	6.02	94.018	0.508	0.0	0.0	0.0	1.20	133.0	75.9
S1.002	53.12	6.58	93.797	0.843	0.0	0.0	0.0	1.01	160.7	121.3
S1.003	49.82	7.59	93.713	1.012	0.0	0.0	0.0	1.01	160.7	136.5
S1.004	46.91	8.63	93.559	1.062	0.0	0.0	0.0	1.01	160.7	136.5
S1.005	46.55	8.77	93.327	1.235	0.0	0.0	0.0	0.99	215.4	155.7
S1.006	43.57	10.03	93.310	1.235	0.0	0.0	0.0	0.99	215.4	155.7
S1.007	43.40	10.11	93.160	1.476	0.0	0.0	0.0	3.78	818.6	173.5
S2.000	57.99	5.33	93.850	0.259	0.0	0.0	0.0	1.98	78.6	40.6
S3.000	58.21	5.28	93.745	0.119	0.0	0.0	0.0	1.31	52.0	18.7
S3.001	55.50	5.94	93.522	0.119	0.0	0.0	0.0	1.33	53.0	18.7
S4.000	57.44	5.46	92.925	0.459	0.0	0.0	0.0	1.04	115.0	71.5

PRP		Page 2
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S5.000	22.230	0.222	100.0	0.119	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.002	13.793	0.040	344.8	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.003	51.366	0.114	450.0	0.184	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.004	19.345	0.391	49.5	0.193	0.00	0.0	0.600	o	450	Pipe/Conduit	
S6.000	34.610	0.346	100.0	0.336	5.00	0.0	0.600	o	300	Pipe/Conduit	
S6.001	32.149	0.321	100.2	0.398	0.00	0.0	0.600	o	375	Pipe/Conduit	
S6.002	25.642	0.723	35.5	0.171	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.000	35.367	0.157	225.0	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit	
S7.001	16.224	0.195	83.2	0.095	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S5.000	58.22	5.28	93.745	0.119	0.0	0.0	0.0	1.31	52.0	18.7
S3.002	54.59	6.17	92.829	0.697	0.0	0.0	0.0	0.97	107.1	103.0
S3.003	51.44	7.07	92.714	0.881	0.0	0.0	0.0	0.95	151.4	122.7
S3.004	51.08	7.18	92.600	1.074	0.0	0.0	0.0	2.90	460.6	148.6
S6.000	57.85	5.37	93.750	0.336	0.0	0.0	0.0	1.57	111.1	52.6
S6.001	56.60	5.66	93.329	0.734	0.0	0.0	0.0	1.81	200.0	112.5
S6.002	56.03	5.80	93.008	0.905	0.0	0.0	0.0	3.05	337.0	137.4
S7.000	56.53	5.68	101.500	0.000	0.0	0.0	0.0	0.87	34.5	0.0
S7.001	55.77	5.87	101.343	0.095	0.0	0.0	0.0	1.43	57.0	14.3

PRP		Page 3
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

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)
S1	95.600	1.350	Open Manhole	1200	S1.000	94.250	300				
S2	95.620	1.602	Open Manhole	1350	S1.001	94.018	375	S1.000	94.093	300	
S3	95.620	1.823	Open Manhole	1350	S1.002	93.797	450	S1.001	93.872	375	
S4	95.620	1.907	Open Manhole	1350	S1.003	93.713	450	S1.002	93.713	450	
S5	95.195	1.636	Open Manhole	1350	S1.004	93.559	450	S1.003	93.559	450	
S6	95.195	1.868	Open Manhole	1500	S1.005	93.327	525	S1.004	93.402	450	
S7	95.195	1.885	Open Manhole	1500	S1.006	93.310	525	S1.005	93.310	525	
S8	95.450	2.290	Open Manhole	1500	S1.007	93.160	525	S1.006	93.160	525	
S107	95.375	2.725	Open Manhole	1800		OUTFALL		S1.007	92.650	525	
S9	95.425	1.575	Open Manhole	1200	S2.000	93.850	225				
S107	95.375	2.425	Open Manhole	1800		OUTFALL		S2.000	92.950	225	
S10	94.295	0.550	Open Manhole	1200	S3.000	93.745	225				
S11	94.540	1.018	Open Manhole	1200	S3.001	93.522	225	S3.000	93.522	225	
S12	94.350	1.425	Open Manhole	1350	S4.000	92.925	375				
S13	94.295	0.550	Open Manhole	1200	S5.000	93.745	225				
S14	94.540	1.711	Open Manhole	1350	S3.002	92.829	375	S3.001	92.979	225	
								S4.000	92.829	375	
								S5.000	93.523	225	544
S15	94.540	1.826	Open Manhole	1350	S3.003	92.714	450	S3.002	92.789	375	
S16	94.540	1.940	Open Manhole	1350	S3.004	92.600	450	S3.003	92.600	450	
S200	94.830	2.621	Open Manhole	1500		OUTFALL		S3.004	92.209	450	
S17	95.300	1.550	Open Manhole	1200	S6.000	93.750	300				
S18	95.425	2.096	Open Manhole	1350	S6.001	93.329	375	S6.000	93.404	300	
S19	95.350	2.342	Open Manhole	1350	S6.002	93.008	375	S6.001	93.008	375	
S200	94.830	2.545	Open Manhole	1500		OUTFALL		S6.002	92.285	375	
S20	102.335	0.835	Open Manhole	1200	S7.000	101.500	225				
S21	102.245	0.902	Open Manhole	1200	S7.001	101.343	225	S7.000	101.343	225	
S100	101.675	0.527	Open Manhole	1200		OUTFALL		S7.001	101.148	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S1	417978.137	427509.377	417978.137	427509.377	Required	
S2	417946.242	427494.099	417946.242	427494.099	Required	
S3	417916.675	427479.932	417916.675	427479.932	Required	
S4	417886.035	427465.436	417886.035	427465.436	Required	
S5	417899.408	427405.677	417899.408	427405.677	Required	

PRP		Page 4
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S6	417926.750	427348.933	417926.750	427348.933	Required	
S7	417930.374	427341.377	417930.374	427341.377	Required	
S8	417962.998	427273.609	417962.998	427273.609	Required	
S107	417968.438	427256.472			No Entry	
S9	417994.267	427286.556	417994.267	427286.556	Required	
S107	417968.438	427256.472			No Entry	
S10	418020.540	427436.625	418020.540	427436.625	Required	
S11	418040.467	427446.584	418040.467	427446.584	Required	
S12	418071.684	427427.038	418071.684	427427.038	Required	
S13	418042.884	427390.079	418042.884	427390.079	Required	
S14	418063.011	427399.516	418063.011	427399.516	Required	
S15	418068.970	427387.076	418068.970	427387.076	Required	
S16	418091.162	427340.751	418091.162	427340.751	Required	
S200	418095.574	427321.917			No Entry	
S17	418009.742	427293.967	418009.742	427293.967	Required	
S18	418040.955	427308.920	418040.955	427308.920	Required	
S19	418069.948	427322.809	418069.948	427322.809	Required	
S200	418095.574	427321.917			No Entry	
S20	417853.090	427406.111	417853.090	427406.111	Required	

PRP		Page 5
Catherine House Old Harborborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S21	417839.630	427438.817	417839.630	427438.817	Required	
S100	417854.094	427446.167			No Entry	



PRP		Page 6
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	300	S1	95.600	94.250	1.050	Open Manhole	1200
S1.001	o	375	S2	95.620	94.018	1.227	Open Manhole	1350
S1.002	o	450	S3	95.620	93.797	1.373	Open Manhole	1350
S1.003	o	450	S4	95.620	93.713	1.457	Open Manhole	1350
S1.004	o	450	S5	95.195	93.559	1.186	Open Manhole	1350
S1.005	o	525	S6	95.195	93.327	1.343	Open Manhole	1500
S1.006	o	525	S7	95.195	93.310	1.360	Open Manhole	1500
S1.007	o	525	S8	95.450	93.160	1.765	Open Manhole	1500
S2.000	o	225	S9	95.425	93.850	1.350	Open Manhole	1200
S3.000	o	225	S10	94.295	93.745	0.325	Open Manhole	1200
S3.001	o	225	S11	94.540	93.522	0.793	Open Manhole	1200
S4.000	o	375	S12	94.350	92.925	1.050	Open Manhole	1350
S5.000	o	225	S13	94.295	93.745	0.325	Open Manhole	1200
S3.002	o	375	S14	94.540	92.829	1.336	Open Manhole	1350
S3.003	o	450	S15	94.540	92.714	1.376	Open Manhole	1350
S3.004	o	450	S16	94.540	92.600	1.490	Open Manhole	1350
S6.000	o	300	S17	95.300	93.750	1.250	Open Manhole	1200
S6.001	o	375	S18	95.425	93.329	1.721	Open Manhole	1350
S6.002	o	375	S19	95.350	93.008	1.967	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	35.365	225.3	S2	95.620	94.093	1.227	Open Manhole	1350
S1.001	32.785	225.0	S3	95.620	93.872	1.373	Open Manhole	1350
S1.002	33.896	400.0	S4	95.620	93.713	1.457	Open Manhole	1350
S1.003	61.237	400.0	S5	95.195	93.559	1.186	Open Manhole	1350
S1.004	62.988	400.0	S6	95.195	93.402	1.343	Open Manhole	1500
S1.005	8.380	500.0	S7	95.195	93.310	1.360	Open Manhole	1500
S1.006	75.212	500.0	S8	95.450	93.160	1.765	Open Manhole	1500
S1.007	17.980	35.3	S107	95.375	92.650	2.200	Open Manhole	1800
S2.000	39.651	44.1	S107	95.375	92.950	2.200	Open Manhole	1800
S3.000	22.278	99.9	S11	94.540	93.522	0.793	Open Manhole	1200
S3.001	52.189	96.1	S14	94.540	92.979	1.336	Open Manhole	1350
S4.000	28.857	300.0	S14	94.540	92.829	1.336	Open Manhole	1350
S5.000	22.230	100.0	S14	94.540	93.523	0.792	Open Manhole	1350
S3.002	13.793	344.8	S15	94.540	92.789	1.376	Open Manhole	1350
S3.003	51.366	450.0	S16	94.540	92.600	1.490	Open Manhole	1350
S3.004	19.345	49.5	S200	94.830	92.209	2.171	Open Manhole	1500
S6.000	34.610	100.0	S18	95.425	93.404	1.721	Open Manhole	1350
S6.001	32.149	100.2	S19	95.350	93.008	1.967	Open Manhole	1350
S6.002	25.642	35.5	S200	94.830	92.285	2.170	Open Manhole	1500

PRP		Page 7
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd	Diam	MH	C.Level	I.Level	D.Depth	MH	MH DIAM., L*W
Sect	(mm)	Name	(m)	(m)	(m)	Connection	(mm)	
S7.000	o	225	S20	102.335	101.500	0.610	Open Manhole	1200
S7.001	o	225	S21	102.245	101.343	0.677	Open Manhole	1200

Downstream Manhole

PN	Length	Slope	MH	C.Level	I.Level	D.Depth	MH	MH DIAM., L*W
(m)	(1:X)	Name	(m)	(m)	(m)	Connection	(mm)	
S7.000	35.367	225.0	S21	102.245	101.343	0.677	Open Manhole	1200
S7.001	16.224	83.2	S100	101.675	101.148	0.302	Open Manhole	1200

PRP		Page 8
Catherine House Old Harborborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.170	0.170	0.170
1.001	User	-	100	0.337	0.337	0.337
1.002	User	-	100	0.335	0.335	0.335
1.003	User	-	100	0.168	0.168	0.168
1.004	User	-	100	0.050	0.050	0.050
1.005	User	-	100	0.173	0.173	0.173
1.006	-	-	100	0.000	0.000	0.000
1.007	User	-	100	0.241	0.241	0.241
2.000	User	-	100	0.168	0.168	0.168
	User	-	100	0.091	0.091	0.259
3.000	User	-	100	0.119	0.119	0.119
3.001	-	-	100	0.000	0.000	0.000
4.000	User	-	100	0.353	0.353	0.353
	User	-	100	0.106	0.106	0.459
5.000	User	-	100	0.119	0.119	0.119
3.002	-	-	100	0.000	0.000	0.000
3.003	User	-	100	0.184	0.184	0.184
3.004	User	-	100	0.115	0.115	0.115
	User	-	100	0.078	0.078	0.193
6.000	User	-	100	0.336	0.336	0.336
6.001	User	-	100	0.339	0.339	0.339
	User	-	100	0.027	0.027	0.365
	User	-	100	0.033	0.033	0.398
6.002	User	-	100	0.171	0.171	0.171
7.000	-	-	100	0.000	0.000	0.000
7.001	User	-	100	0.068	0.068	0.068
	User	-	100	0.027	0.027	0.095
				Total	Total	Total
				3.809	3.809	3.809

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
---------------------	--------------	--------------	--------------	------------------	----------	--------

S1.007	S107	95.375	92.650	92.500	1800	0
--------	------	--------	--------	--------	------	---

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
---------------------	--------------	--------------	--------------	------------------	----------	--------

S2.000	S107	95.375	92.950	92.500	1800	0
--------	------	--------	--------	--------	------	---

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
---------------------	--------------	--------------	--------------	------------------	----------	--------

S3.004	S200	94.830	92.209	91.984	1500	0
--------	------	--------	--------	--------	------	---

PRP		Page 9
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

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)
------------------------	-----------------	-----------------	-----------------	------------------------	-------------	-----------

S6.002	S200	94.830	92.285	0.000	1500	0
--------	------	--------	--------	-------	------	---

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
------------------------	-----------------	-----------------	-----------------	------------------------	-------------	-----------

S7.001	S100	101.675	101.148	100.923	1200	0
--------	------	---------	---------	---------	------	---

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	12
Number of Online Controls	0	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.320		

PRP		Page 10
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

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 12
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.320 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 25.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 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, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	30 Winter	1	+0%	100/15 Summer	100/30 Winter			94.331	-0.219
S1.001	S2	30 Winter	1	+0%	100/15 Summer				94.152	-0.241
S1.002	S3	30 Winter	1	+0%	100/15 Summer				94.002	-0.246
S1.003	S4	30 Winter	1	+0%	30/30 Winter				93.921	-0.241
S1.004	S5	30 Winter	1	+0%	30/30 Winter				93.770	-0.239
S1.005	S6	30 Winter	1	+0%	100/15 Summer				93.624	-0.228
S1.006	S7	30 Winter	1	+0%	100/15 Summer				93.535	-0.300
S1.007	S8	30 Winter	1	+0%					93.300	-0.384
S2.000	S9	30 Winter	1	+0%	100/30 Winter				93.922	-0.153
S3.000	S10	15 Winter	1	+0%	100/15 Summer	100/15 Winter			93.830	-0.140
S3.001	S11	15 Winter	1	+0%	100/15 Summer				93.604	-0.143
S4.000	S12	30 Winter	1	+0%	30/30 Winter				93.087	-0.213
S5.000	S13	15 Winter	1	+0%	100/15 Summer				93.830	-0.140
S3.002	S14	15 Winter	1	+0%	30/15 Summer				93.046	-0.158
S3.003	S15	30 Winter	1	+0%	100/15 Summer				92.922	-0.242
S3.004	S16	30 Winter	1	+0%					92.738	-0.312
S6.000	S17	30 Winter	1	+0%	100/30 Winter				93.844	-0.206
S6.001	S18	30 Winter	1	+0%	100/15 Winter				93.461	-0.243
S6.002	S19	30 Winter	1	+0%					93.123	-0.260
S7.000	S20	15 Summer	1	+0%					101.500	-0.225
S7.001	S21	15 Winter	1	+0%	100/15 Summer				101.410	-0.157

PN	US/MH Name	Flooded		Half Drain Time (mins)	Pipe Flow (l/s)	Level Exceeded
		Volume (m ³)	Flow / Overflow Cap. (l/s)			
S1.000	S1	0.000	0.16		11.1	OK 1
S1.001	S2	0.000	0.28		33.0	OK
S1.002	S3	0.000	0.39		54.7	OK
S1.003	S4	0.000	0.44		65.1	OK

PRP		Page 11
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

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

PN	US/MH Name	Flooded		Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)				
S1.004	S5	0.000	0.45		66.2	OK	
S1.005	S6	0.000	0.61		76.4	OK	
S1.006	S7	0.000	0.38		75.6	OK	
S1.007	S8	0.000	0.16		88.6	OK	
S2.000	S9	0.000	0.23		16.9	OK	
S3.000	S10	0.000	0.30		14.3	OK	1
S3.001	S11	0.000	0.28		14.1	OK	
S4.000	S12	0.000	0.30		30.5	OK	
S5.000	S13	0.000	0.30		14.4	OK	
S3.002	S14	0.000	0.63		49.6	OK	
S3.003	S15	0.000	0.44		60.0	OK	
S3.004	S16	0.000	0.21		72.6	OK	
S6.000	S17	0.000	0.21		22.0	OK	
S6.001	S18	0.000	0.27		48.0	OK	
S6.002	S19	0.000	0.20		59.3	OK	
S7.000	S20	0.000	0.00		0.0	OK	
S7.001	S21	0.000	0.19		9.8	OK	

PRP		Page 12
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

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 12
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.320 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 25.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 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, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	30 Winter	30	+0%	100/15 Summer	100/30 Winter			94.382	-0.168
S1.001	S2	30 Winter	30	+0%	100/15 Summer				94.311	-0.082
S1.002	S3	30 Winter	30	+0%	100/15 Summer				94.247	0.000
S1.003	S4	30 Winter	30	+0%	30/30 Winter				94.178	0.015
S1.004	S5	30 Winter	30	+0%	30/30 Winter				94.019	0.009
S1.005	S6	30 Winter	30	+0%	100/15 Summer				93.852	0.000
S1.006	S7	30 Winter	30	+0%	100/15 Summer				93.693	-0.142
S1.007	S8	30 Winter	30	+0%					93.382	-0.302
S2.000	S9	30 Winter	30	+0%	100/30 Winter				93.970	-0.105
S3.000	S10	15 Winter	30	+0%	100/15 Summer	100/15 Winter			93.892	-0.078
S3.001	S11	15 Winter	30	+0%	100/15 Summer				93.661	-0.086
S4.000	S12	30 Winter	30	+0%	30/30 Winter				93.304	0.004
S5.000	S13	15 Winter	30	+0%	100/15 Summer				93.892	-0.078
S3.002	S14	30 Winter	30	+0%	30/15 Summer				93.255	0.051
S3.003	S15	30 Winter	30	+0%	100/15 Summer				93.164	0.000
S3.004	S16	30 Winter	30	+0%					92.825	-0.225
S6.000	S17	30 Winter	30	+0%	100/30 Winter				93.905	-0.145
S6.001	S18	30 Winter	30	+0%	100/15 Winter				93.552	-0.152
S6.002	S19	30 Winter	30	+0%					93.194	-0.188
S7.000	S20	15 Summer	30	+0%					101.500	-0.225
S7.001	S21	15 Winter	30	+0%	100/15 Summer				101.469	-0.099

PN	US/MH Name	Flooded		Half Drain		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)				
S1.000	S1	0.000	0.40		27.3		OK		1
S1.001	S2	0.000	0.67		79.0		OK		
S1.002	S3	0.000	0.91		127.7		OK		
S1.003	S4	0.000	1.02		151.0		SURCHARGED		

PRP		Page 13
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

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

PN	US/MH Name	Flooded		Half Drain		Pipe	Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)		
S1.004	S5	0.000	1.02			152.2	SURCHARGED	
S1.005	S6	0.000	1.40			175.5	OK	
S1.006	S7	0.000	0.87			174.0	OK	
S1.007	S8	0.000	0.38			205.8	OK	
S2.000	S9	0.000	0.56			41.7	OK	
S3.000	S10	0.000	0.74			35.0	OK	1
S3.001	S11	0.000	0.67			34.3	OK	
S4.000	S12	0.000	0.75			76.3	SURCHARGED	
S5.000	S13	0.000	0.74			35.1	OK	
S3.002	S14	0.000	1.51			119.0	SURCHARGED	
S3.003	S15	0.000	1.05			145.1	OK	
S3.004	S16	0.000	0.50			175.9	OK	
S6.000	S17	0.000	0.53			54.0	OK	
S6.001	S18	0.000	0.66			117.9	OK	
S6.002	S19	0.000	0.49			142.1	OK	
S7.000	S20	0.000	0.00			0.0	OK	
S7.001	S21	0.000	0.60			30.3	OK	

PRP		Page 14
Catherine House	62954	
Old Harborough Road	Interchange 26, Bradford	
Brixworth NN6 9BX	100yr + 40 2021.08.02	
Date 02/08/2021 14:21	Designed by GF	
File 62954 Storm Network 2021.08...	Checked by MS	
Micro Drainage	Network 2020.1.3	

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 12
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.320 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 25.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 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, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1 30	Winter	100	+40%	100/15 Summer	100/30 Winter			95.601	1.051
S1.001	S2 30	Winter	100	+40%	100/15 Summer				95.561	1.168
S1.002	S3 30	Winter	100	+40%	100/15 Summer				95.391	1.144
S1.003	S4 30	Winter	100	+40%	30/30 Winter				95.186	1.024
S1.004	S5 30	Winter	100	+40%	30/30 Winter				94.698	0.689
S1.005	S6 30	Winter	100	+40%	100/15 Summer				94.189	0.337
S1.006	S7 30	Winter	100	+40%	100/15 Summer				94.025	0.189
S1.007	S8 30	Winter	100	+40%					93.475	-0.210
S2.000	S9 30	Winter	100	+40%	100/30 Winter				94.080	0.005
S3.000	S10 15	Winter	100	+40%	100/15 Summer	100/15 Winter			94.295	0.325
S3.001	S11 15	Winter	100	+40%	100/15 Summer				94.083	0.336
S4.000	S12 30	Winter	100	+40%	30/30 Winter				93.875	0.575
S5.000	S13 15	Winter	100	+40%	100/15 Summer				94.105	0.135
S3.002	S14 30	Winter	100	+40%	30/15 Summer				93.708	0.504
S3.003	S15 30	Winter	100	+40%	100/15 Summer				93.431	0.267
S3.004	S16 30	Winter	100	+40%					92.930	-0.119
S6.000	S17 30	Winter	100	+40%	100/30 Winter				94.139	0.089
S6.001	S18 30	Winter	100	+40%	100/15 Winter				93.824	0.120
S6.002	S19 30	Summer	100	+40%					93.281	-0.102
S7.000	S20 15	Winter	100	+40%					101.557	-0.168
S7.001	S21 15	Winter	100	+40%	100/15 Summer				101.571	0.003

PN	US/MH Name	Flooded		Flow / Overflow (l/s)	Half Drain	Pipe	Status	Level
		Volume (m³)	Flow / Cap.		Time (mins)	Flow (l/s)		Exceeded
S1.000	S1	1.315	0.80			54.3	FLOOD	1
S1.001	S2	0.000	1.11			132.2	SURCHARGED	
S1.002	S3	0.000	1.58			221.3	SURCHARGED	

PRP		Page 15
Catherine House Old Harborough Road Brixworth NN6 9BX	62954 Interchange 26, Bradford 100yr + 40 2021.08.02	
Date 02/08/2021 14:21 File 62954 Storm Network 2021.08...	Designed by GF Checked by MS	
Micro Drainage	Network 2020.1.3	

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

PN	US/MH Name	Flooded		Flow / Cap.	Overflow (l/s)	Half Drain Pipe		Status	Level Exceeded
		Volume (m³)	Flow			Time (mins)	Flow (l/s)		
S1.003	S4	0.000	1.78				263.8	SURCHARGED	
S1.004	S5	0.000	1.79				266.7	SURCHARGED	
S1.005	S6	0.000	2.48				310.0	SURCHARGED	
S1.006	S7	0.000	1.54				307.4	SURCHARGED	
S1.007	S8	0.000	0.67				365.8	OK	
S2.000	S9	0.000	1.01				75.2	SURCHARGED	
S3.000	S10	0.071	1.10				52.5	FLOOD	1
S3.001	S11	0.000	0.91				46.5	SURCHARGED	
S4.000	S12	0.000	1.37				138.6	SURCHARGED	
S5.000	S13	0.000	1.28				60.7	SURCHARGED	
S3.002	S14	0.000	2.61				205.7	SURCHARGED	
S3.003	S15	0.000	1.87				257.5	SURCHARGED	
S3.004	S16	0.000	0.89				314.0	OK	
S6.000	S17	0.000	0.95				97.4	SURCHARGED	
S6.001	S18	0.000	1.20				212.8	SURCHARGED	
S6.002	S19	0.000	0.85				248.3	OK	
S7.000	S20	0.000	0.01				0.4	OK	
S7.001	S21	0.000	1.01				50.9	SURCHARGED	