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The Old School House St. Joseph's Street Tadcaster LS24 9HA		
Date 21/05/2020 10:50 File BFJ-JBAU-XX-XX-M2-C-000...	Designed by JFLOWNW Checked by	
Micro Drainage		Network 2018.1.1

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out		Pipes In			Backdrop (mm)
					PN	Invert Level (m)	Diameter (mm)	PN	Invert Level (m)	
1	6.877	1.247	Open Manhole	1500	1.000	5.630	300			
2	6.408	1.309	Open Manhole	2100	1.001	5.099	375	1.000	5.174	300
3	6.103	1.434	Open Manhole	2100	1.002	4.669	525	1.001	4.819	375
4	5.819	1.376	Open Manhole	2100	1.003	4.443	525	1.002	4.443	525
5	6.814	1.350	Open Manhole	1500	2.000	5.464	150			
6	6.444	1.238	Open Manhole	1500	2.001	5.206	225	2.000	5.281	150
7	6.188	1.313	Open Manhole	1500	2.002	4.875	300	2.001	4.950	225
8	5.828	1.162	Open Manhole	1500	3.000	4.666	375			
9	5.944	1.743	Open Manhole	2100	1.004	4.201	525	1.003	4.201	525
								2.002	4.426	300
								3.000	4.577	375
	6.492	2.327	Open Manhole	0		OUTFALL		1.004	4.165	525

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	300	1	6.877	5.630	0.947	Open Manhole	1500
1.001	o	375	2	6.408	5.099	0.934	Open Manhole	2100
1.002	o	525	3	6.103	4.669	0.909	Open Manhole	2100
1.003	o	525	4	5.819	4.443	0.851	Open Manhole	2100
2.000	o	150	5	6.814	5.464	1.200	Open Manhole	1500
2.001	o	225	6	6.444	5.206	1.013	Open Manhole	1500
2.002	o	300	7	6.188	4.875	1.013	Open Manhole	1500
3.000	o	375	8	5.828	4.666	0.787	Open Manhole	1500
1.004	o	525	9	5.944	4.201	1.218	Open Manhole	2100

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	22.629	49.6	2	6.408	5.174	0.934	Open Manhole	2100
1.001	20.518	73.3	3	6.103	4.819	0.909	Open Manhole	2100
1.002	32.621	144.3	4	5.819	4.443	0.851	Open Manhole	2100
1.003	23.847	98.6	9	5.944	4.201	1.218	Open Manhole	2100
2.000	16.971	92.9	6	6.444	5.281	1.013	Open Manhole	1500
2.001	18.385	71.8	7	6.188	4.950	1.013	Open Manhole	1500
2.002	30.480	67.9	9	5.944	4.426	1.218	Open Manhole	2100
3.000	9.013	101.3	9	5.944	4.577	0.992	Open Manhole	2100
1.004	17.949	494.8		6.492	4.165	1.802	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.068	0.068	0.068
	User	-	100	0.038	0.038	0.106
1.001	User	-	100	0.025	0.025	0.025
	User	-	100	0.023	0.023	0.048
	User	-	100	0.016	0.016	0.063
1.002	User	-	100	0.039	0.039	0.039
	User	-	100	0.066	0.066	0.105
	User	-	100	0.022	0.022	0.126
1.003	User	-	100	0.017	0.017	0.017
	User	-	100	0.021	0.021	0.038
	User	-	100	0.038	0.038	0.076
2.000	User	-	100	0.014	0.014	0.014
2.001	User	-	100	0.024	0.024	0.024
2.002	User	-	100	0.027	0.027	0.027
3.000	-	-	100	0.000	0.000	0.000
1.004	User	-	100	0.022	0.022	0.022
	User	-	100	0.035	0.035	0.058
				Total	Total	Total
				0.494	0.494	0.494

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Online Controls for Storm


Hydro-Brake® Optimum Manhole: 9, DS/PN: 1.004, Volume (m³): 13.6

Unit Reference	MD-SHE-0105-5000-1000-5000
Design Head (m)	1.000
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	105
Invert Level (m)	4.201
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	5.0
Flush-Flo™	0.296	5.0
Kick-Flo®	0.637	4.1
Mean Flow over Head Range	-	4.3

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.6	1.200	5.4	3.000	8.4	7.000	12.5
0.200	4.8	1.400	5.8	3.500	9.0	7.500	12.9
0.300	5.0	1.600	6.2	4.000	9.6	8.000	13.3
0.400	4.9	1.800	6.6	4.500	10.1	8.500	13.7
0.500	4.7	2.000	6.9	5.000	10.6	9.000	14.1
0.600	4.3	2.200	7.2	5.500	11.1	9.500	14.5
0.800	4.5	2.400	7.5	6.000	11.6		
1.000	5.0	2.600	7.8	6.500	12.1		

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Storage Structures for Storm

Tank or Pond Manhole: 8, DS/PN: 3.000

Invert Level (m) 5.253

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	988.0	0.325	1099.6	0.575	1189.6

Volume Summary (Static)

Length Calculations based on True Length

Pipe Number	USMH Name	Manhole Volume (m ³)	Pipe Volume (m ³)	Storage Structure Volume (m ³)	Total Volume (m ³)
1.000	1	2.204	1.472	0.000	3.676
1.001	2	4.533	2.034	0.000	6.568
1.002	3	4.968	6.607	0.000	11.575
1.003	4	4.765	4.708	0.000	9.473
2.000	5	2.386	0.273	0.000	2.659
2.001	6	2.187	0.671	0.000	2.859
2.002	7	2.321	2.027	0.000	4.348
3.000	8	2.053	0.797	624.752	627.602
1.004	9	6.038	3.658	0.000	9.696
Total		31.455	22.248	624.752	678.456

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 0.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

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

Synthetic Rainfall Details


Rainfall Model FSR Ratio R 0.359
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 18.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 100.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status OFF
DVD Status ON
Inertia 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.
1.000	1	15	Winter	1	+0%	100/15	Summer	
1.001	2	60	Winter	1	+0%	30/15	Summer	
1.002	3	60	Winter	1	+0%	1/30	Winter	
1.003	4	60	Winter	1	+0%	1/15	Summer	100/15 Winter
2.000	5	15	Winter	1	+0%	100/15	Summer	
2.001	6	60	Winter	1	+0%	100/15	Summer	
2.002	7	60	Winter	1	+0%	1/30	Winter	
3.000	8	60	Winter	1	+0%	1/15	Winter	
1.004	9	60	Winter	1	+0%	1/15	Summer	

PN	US/MH Name	Water Surcharged			Flooded		Pipe		Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Flow (l/s)	Status	
1.000	1	5.691	-0.239	0.000	0.09		12.8	OK	
1.001	2	5.272	-0.201	0.000	0.06		10.9	OK	
1.002	3	5.269	0.075	0.000	0.05		16.3	SURCHARGED	
1.003	4	5.266	0.299	0.000	0.03		11.3	SURCHARGED	

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

PN	US/MH Name	Water		Surcharged		Flooded		Pipe	
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	Level Exceeded
2.000	5	5.495	-0.118	0.000	0.10		1.7		OK
2.001	6	5.268	-0.163	0.000	0.04		2.4		OK
2.002	7	5.265	0.090	0.000	0.03		4.1		SURCHARGED
3.000	8	5.257	0.216	0.000	0.04		4.9		SURCHARGED
1.004	9	5.263	0.537	0.000	0.04		5.1		SURCHARGED

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

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

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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) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Winter	30	+0%	100/15 Summer			
1.001	2	15 Winter	30	+0%	30/15 Summer			
1.002	3	15 Winter	30	+0%	1/30 Winter			
1.003	4	15 Winter	30	+0%	1/15 Summer	100/15 Winter		
2.000	5	15 Winter	30	+0%	100/15 Summer			
2.001	6	15 Winter	30	+0%	100/15 Summer			
2.002	7	15 Winter	30	+0%	1/30 Winter			
3.000	8	120 Winter	30	+0%	1/15 Winter			
1.004	9	15 Winter	30	+0%	1/15 Summer			

PN	US/MH Name	Water Surcharged			Flooded		Pipe		Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Flow (l/s)	Status	
1.000	1	5.822	-0.108	0.000	0.22		31.3	OK	
1.001	2	5.794	0.320	0.000	0.21		41.7	SURCHARGED	
1.002	3	5.698	0.504	0.000	0.18		61.3	SURCHARGED	
1.003	4	5.543	0.576	0.000	0.21		77.9	SURCHARGED	1

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

PN	US/MH Name	Water		Surcharged		Flooded		Pipe	
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	Level Exceeded
2.000	5	5.514	-0.099	0.000	0.24		4.2		OK
2.001	6	5.393	-0.038	0.000	0.19		10.7		OK
2.002	7	5.385	0.210	0.000	0.14		17.5		SURCHARGED
3.000	8	5.331	0.290	0.000	0.04		5.1		SURCHARGED
1.004	9	5.360	0.634	0.000	0.04		5.3		SURCHARGED

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

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 1
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M5-60 (mm) 18.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 100.0
Analysis Timestep 2.5 Second Increment (Extended)
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DVD Status ON
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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.
1.000	1	15 Winter	100	+40%	100/15 Summer			
1.001	2	15 Winter	100	+40%	30/15 Summer			
1.002	3	15 Winter	100	+40%	1/30 Winter			
1.003	4	15 Winter	100	+40%	1/15 Summer	100/15 Winter		
2.000	5	15 Winter	100	+40%	100/15 Summer			
2.001	6	15 Winter	100	+40%	100/15 Summer			
2.002	7	15 Winter	100	+40%	1/30 Winter			
3.000	8	240 Winter	100	+40%	1/15 Winter			
1.004	9	15 Winter	100	+40%	1/15 Summer			

PN	US/MH Name	Water Surcharged			Flooded		Pipe		Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Flow (l/s)	Status	
1.000	1	6.358	0.428	0.000	0.40		55.7	SURCHARGED	
1.001	2	6.158	0.685	0.000	0.45		88.9	SURCHARGED	
1.002	3	5.976	0.783	0.000	0.44		151.9	SURCHARGED	
1.003	4	5.819	0.851	0.239	0.49		185.5	FLOOD	1

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

PN	US/MH Name	Water		Surcharged		Flooded		Pipe	
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Flow (l/s)	Status	Level Exceeded
2.000	5	5.782	0.168	0.000	0.51		8.7	SURCHARGED	
2.001	6	5.757	0.326	0.000	0.35		19.2	SURCHARGED	
2.002	7	5.725	0.550	0.000	0.25		30.3	SURCHARGED	
3.000	8	5.458	0.417	0.000	0.05		5.4	SURCHARGED	
1.004	9	5.658	0.932	0.000	0.04		5.9	SURCHARGED	