

JPP Consulting Ltd		Page 1
Cedar Barn White Lodge Walgrave Northampton NN6 9PY	26417 - Station Road, Market Bosworth - 1 in 100 Yr +40% CC (FSR)	
Date 11/10/2024 15:21	Designed by CDG	
File 26417 - DRAINAGE MODEL ...	Checked by TL	
XP Solutions		Network 2016.1

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 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 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

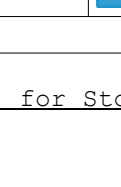
Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
Site Location	439400 302750 SK 39400 02750
C (1km)	-0.029
D1 (1km)	0.362
D2 (1km)	0.338
D3 (1km)	0.281
E (1km)	0.309
F (1km)	2.369
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	30

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JPP Consulting Ltd		Page 2
Cedar Barn White Lodge Walgrave Northampton NN6 9PY	26417 - Station Road, Market Bosworth - 1 in 100 Yr +40% CC (FSR)	
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Online Controls for Storm Hydro-Brake Optimum® Manhole: SA35, DS/PN: S1.014, Volume (m³): 6.0 Unit Reference MD-SHE-0203-2120-1025-2120 Design Head (m)1.025 Design Flow (l/s)21.2 Flush-Flo™Calculated ObjectiveMinimise upstream storage ApplicationSurface Sump AvailableYes Diameter (mm)203 Invert Level (m)94.125 Minimum Outlet Pipe Diameter (mm)225 Suggested Manhole Diameter (mm)1500 Control Points Head (m) Flow (l/s) Design Point (Calculated)1.02521.2 Flush-Flo™0.34921.1 Kick-Flo®0.73718.1 Mean Flow over Head Range-17.8 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) 0.1007.0 1.20022.8 3.00035.4 7.00053.3 0.20019.4 1.40024.6 3.50038.1 7.50055.2 0.30021.0 1.60026.2 4.00040.7 8.00056.9 0.40021.1 1.80027.7 4.50043.1 8.50058.6 0.50020.7 2.00029.1 5.00045.3 9.00060.3 0.60020.2 2.20030.5 5.50047.5 9.50061.9 0.80018.8 2.40031.8 6.00049.5 1.00020.9 2.60033.1 6.50051.5 ©1982-2016 XP Solutions		

JPP Consulting Ltd		Page 3								
Cedar Barn White Lodge Walgrave Northampton NN6 9PY	26417 - Station Road, Market Bosworth - 1 in 100 Yr +40% CC (FSR)									
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Storage Structures for Storm Tank or Pond Manhole: SHW3, DS/PN: S1.013 Invert Level (m) 94.150 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>1900.0</td><td>1.000</td><td>1900.0</td></tr></tbody></table>			Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	1900.0	1.000	1900.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)							
0.000	1900.0	1.000	1900.0							
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JPP Consulting Ltd		Page 4
Cedar Barn White Lodge Walgrave Northampton NN6 9PY	26417 - Station Road, Market Bosworth - 1 in 100 Yr +40% CC (FSR)	
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Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	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	0.400
Region	England and Wales Cv (Summer)		0.750
M5-60 (mm)	20.200 Cv (Winter)	0.840	

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30
Return Period(s) (years)	100
Climate Change (%)	40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) SurchARGE	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	SA1	15 Winter	100	+40%	100/15 Summer			
S1.001	SA2	15 Winter	100	+40%	100/15 Summer			
S1.002	SA3	15 Winter	100	+40%	100/15 Summer			
S2.000	SA4	15 Winter	100	+40%	100/15 Winter			
S2.001	SA5	15 Winter	100	+40%	100/15 Summer			
S2.002	SA6	15 Winter	100	+40%	100/15 Summer			
S2.003	SA7	15 Winter	100	+40%	100/15 Summer	100/15 Winter		
S2.004	SA8	15 Winter	100	+40%	100/15 Summer			
S2.005	SA9	15 Winter	100	+40%	100/15 Summer			
S2.006	SA10	15 Winter	100	+40%	100/15 Summer			
S1.003	SA11	15 Winter	100	+40%	100/15 Summer			
S1.004	SA12	15 Winter	100	+40%	100/15 Summer			
S3.000	SA13	15 Winter	100	+40%	100/15 Winter			
S3.001	SA14	15 Winter	100	+40%	100/15 Summer			
S3.002	SA15	15 Winter	100	+40%	100/15 Summer			
S3.003	SA16	15 Winter	100	+40%	100/15 Summer			
S3.004	SA17	15 Winter	100	+40%	100/15 Summer			
S3.005	SA18	15 Winter	100	+40%	100/15 Summer			
S1.005	SA19	15 Winter	100	+40%	100/15 Summer			

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JPP Consulting Ltd		Page 5
Cedar Barn White Lodge Walgrave Northampton NN6 9PY	26417 - Station Road, Market Bosworth - 1 in 100 Yr +40% CC (FSR)	
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Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m³)			Flow (l/s)		
S1.000	SA1	100.071	1.021	0.000	0.84		32.8	FLOOD RISK	
S1.001	SA2	99.749	1.139	0.000	0.75		61.0	SURCHARGED	
S1.002	SA3	99.600	1.260	0.000	1.30		86.9	SURCHARGED	
S2.000	SA4	102.455	0.055	0.000	0.76		48.2	SURCHARGED	
S2.001	SA5	102.327	0.177	0.000	0.57		91.6	SURCHARGED	
S2.002	SA6	102.086	0.986	0.000	0.55		116.4	FLOOD RISK	
S2.003	SA7	101.750	1.690	0.032	2.96		154.1	FLOOD	1
S2.004	SA8	101.374	1.344	0.000	3.24		191.3	FLOOD RISK	
S2.005	SA9	100.738	0.768	0.000	1.49		229.7	SURCHARGED	
S2.006	SA10	99.665	0.220	0.000	0.56		257.4	SURCHARGED	
S1.003	SA11	99.267	1.202	0.000	2.34		365.6	FLOOD RISK	
S1.004	SA12	98.813	0.833	0.000	1.21		390.3	SURCHARGED	
S3.000	SA13	102.369	0.019	0.000	0.59		48.1	SURCHARGED	
S3.001	SA14	102.176	0.551	0.000	0.81		81.3	SURCHARGED	
S3.002	SA15	100.582	1.407	0.000	3.43		119.0	FLOOD RISK	
S3.003	SA16	99.687	0.587	0.000	0.97		157.6	SURCHARGED	
S3.004	SA17	98.616	0.716	0.000	0.77		193.1	SURCHARGED	
S3.005	SA18	98.474	0.774	0.000	1.63		232.6	SURCHARGED	
S1.005	SA19	98.339	0.689	0.000	1.42		635.4	SURCHARGED	

JPP Consulting Ltd		Page 6
Cedar Barn White Lodge Walgrave Northampton NN6 9PY	26417 - Station Road, Market Bosworth - 1 in 100 Yr +40% CC (FSR)	
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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.
S1.006	SA20	15 Winter	100	+40%	100/15 Summer			
S1.007	SA21	15 Winter	100	+40%	100/15 Summer			
S1.008	SA22	15 Winter	100	+40%	100/15 Summer			
S4.000	SA23	15 Winter	100	+40%	100/15 Summer			
S4.001	SA24	15 Winter	100	+40%	100/15 Summer	100/15 Winter		
S4.002	SA25	15 Winter	100	+40%	100/15 Summer			
S1.009	SA26	15 Winter	100	+40%	100/15 Summer			
S1.010	SA27	15 Winter	100	+40%	100/15 Summer	100/15 Winter		
S5.000	SA28	15 Winter	100	+40%				
S5.001	SA29	15 Winter	100	+40%				
S5.002	SA30	15 Winter	100	+40%				
S5.003	SA31	15 Winter	100	+40%				
S5.004	SA32	15 Winter	100	+40%	100/15 Summer			
S1.011	SA33	15 Winter	100	+40%	100/15 Summer			
S1.012	SHW1	15 Winter	100	+40%	100/15 Summer			
S6.000	SA34	30 Winter	100	+40%				
S6.001	SHW2	30 Winter	100	+40%	100/15 Winter			
S1.013	SHW3	30 Winter	100	+40%				
S1.014	SA35	30 Winter	100	+40%	100/15 Summer			

PN	US/MH Name	Water Surcharged			Flooded		Pipe		Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	
S1.006	SA20	97.950	0.500	0.000	1.72		668.0	SURCHARGED	
S1.007	SA21	97.526	0.226	0.000	0.54		687.0	SURCHARGED	
S1.008	SA22	96.998	1.563	0.000	2.61		707.6	SURCHARGED	
S4.000	SA23	99.051	0.951	0.000	0.57		40.1	FLOOD RISK	
S4.001	SA24	98.900	1.200	0.269	1.37		70.8	FLOOD	1
S4.002	SA25	97.317	0.517	0.000	0.87		104.0	SURCHARGED	
S1.009	SA26	96.489	1.099	0.000	1.28		815.3	SURCHARGED	
S1.010	SA27	96.051	0.916	1.423	1.70		850.4	FLOOD	1
S5.000	SA28	97.633	-0.067	0.000	0.81		47.3	OK	
S5.001	SA29	97.071	-0.079	0.000	0.87		97.9	OK	
S5.002	SA30	96.891	-0.059	0.000	0.98		148.7	OK	
S5.003	SA31	96.154	-0.046	0.000	0.72		197.8	OK	
S5.004	SA32	96.032	0.132	0.000	0.66		219.2	SURCHARGED	
S1.011	SA33	95.787	0.717	0.000	3.57		1021.6	FLOOD RISK	
S1.012	SHW1	95.357	0.307	0.000	1.79		1014.8	SURCHARGED	
S6.000	SA34	94.658	-0.142	0.000	0.07		5.0	OK	
S6.001	SHW2	94.653	0.128	0.000	0.16		5.0	SURCHARGED	
S1.013	SHW3	94.640	-0.260	0.000	0.07		26.8	OK	
S1.014	SA35	94.674	0.324	0.000	0.32		21.1	SURCHARGED	