



Micro
Drainage

PRP		Page 2
Catherine House Old Harborough Road Brixworth NN6 9BX	Harlands SW Network	
Date 13/06/2025 15:21	Designed by AZ	
File 82960 - HARLANDS - SW NE...	Checked by	
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)	Pipe Out			Pipes In			Backdrop (mm)
					PN	Invert Level (m)	Diameter (mm)	PN	Invert Level (m)	Diameter (mm)	
1	53.200	1.000	Open Manhole	600	1.000	52.200	150				
2	52.400	3.750	Open Manhole	1200	1.001	48.650	225	1.000	48.725	150	
3	48.500	1.075	Open Manhole	600	1.002	47.425	225	1.001	47.425	225	
4	48.095	0.993	Open Manhole	600	1.003	47.102	225	1.002	47.102	225	
5	48.045	1.091	Open Manhole	600	1.004	46.954	225	1.003	46.954	225	
6	48.100	1.505	Open Manhole	1200	1.005	46.595	225	1.004	46.595	225	
	48.200	2.250	Open Manhole	1200		OUTFALL		1.005	45.950	225	

No coordinates have been specified, layout information cannot be produced.

PRP		Page 3
Catherine House Old Harborough Road Brixworth NN6 9BX	Harlands SW Network	
Date 13/06/2025 15:21 File 82960 - HARLANDS - SW NE...	Designed by AZ Checked by	
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)
1.000	o	150	1	53.200	52.200	0.850	Open Manhole	600
1.001	o	225	2	52.400	48.650	3.525	Open Manhole	1200
1.002	o	225	3	48.500	47.425	0.850	Open Manhole	600
1.003	o	225	4	48.095	47.102	0.768	Open Manhole	600
1.004	o	225	5	48.045	46.954	0.866	Open Manhole	600
1.005	o	225	6	48.100	46.595	1.280	Open Manhole	1200

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	17.585	5.1	2	52.400	48.725	3.525	Open Manhole	1200
1.001	19.720	16.1	3	48.500	47.425	0.850	Open Manhole	600
1.002	22.160	68.6	4	48.095	47.102	0.768	Open Manhole	600
1.003	22.160	149.7	5	48.045	46.954	0.866	Open Manhole	600
1.004	3.016	8.4	6	48.100	46.595	1.280	Open Manhole	1200
1.005	5.989	9.3		48.200	45.950	2.025	Open Manhole	1200

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)
1.005		48.200	45.950	0.000	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 * 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	1	Number of Storage Structures	2	Number of Real Time Controls	0

Synthetic Rainfall Details

©1982-2020 Innovyze

PRP		Page 4																				
Catherine House Old Harborough Road Brixworth NN6 9BX	Harlands SW Network																					
Date 13/06/2025 15:21	Designed by AZ																					
File 82960 - HARLANDS - SW NE...	Checked by																					
Micro Drainage	Network 2020.1.3																					
Synthetic Rainfall Details <table><tr><td>Rainfall Model</td><td>FSR</td><td>Profile Type</td><td>Summer</td></tr><tr><td>Return Period (years)</td><td>100</td><td>Cv (Summer)</td><td>0.750</td></tr><tr><td>Region</td><td>England and Wales</td><td>Cv (Winter)</td><td>0.840</td></tr><tr><td>M5-60 (mm)</td><td>20.000</td><td>Storm Duration (mins)</td><td>30</td></tr><tr><td>Ratio R</td><td>0.330</td><td></td><td></td></tr></table>			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)	20.000	Storm Duration (mins)	30	Ratio R	0.330		
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)	20.000	Storm Duration (mins)	30																			
Ratio R	0.330																					
©1982-2020 Innovyze																						

PRP		Page 5
Catherine House Old Harborough Road Brixworth NN6 9BX	Harlands SW Network	
Date 13/06/2025 15:21 File 82960 - HARLANDS - SW NE...	Designed by AZ Checked by	
Micro Drainage Network 2020.1.3		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: 6, DS/PN: 1.005, Volume (m³): 1.8

Unit Reference	MD-SHE-0092-3500-0800-3500
Design Head (m)	0.800
Design Flow (l/s)	3.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	92
Invert Level	46.595
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	3.5	Kick-Flo®	0.521	2.9
Flush-Flo™	0.238	3.5	Mean Flow over Head Range	-	3.0

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	2.9	1.200	4.2	3.000	6.5	7.000	9.7
0.200	3.5	1.400	4.5	3.500	7.0	7.500	10.0
0.300	3.5	1.600	4.8	4.000	7.4	8.000	10.3
0.400	3.3	1.800	5.1	4.500	7.8	8.500	10.6
0.500	3.0	2.000	5.3	5.000	8.2	9.000	10.9
0.600	3.1	2.200	5.6	5.500	8.6	9.500	11.2
0.800	3.5	2.400	5.8	6.000	9.0		
1.000	3.9	2.600	6.0	6.500	9.3		

©1982-2020 Innovyze

PRP		Page 6
Catherine House Old Harborough Road Brixworth NN6 9BX	Harlands SW Network	
Date 13/06/2025 15:21 File 82960 - HARLANDS - SW NE...	Designed by AZ Checked by	
Micro Drainage Network 2020.1.3		

Storage Structures for Storm

Porous Car Park Manhole: 5, DS/PN: 1.004

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	42.5
Max Percolation (l/s)	56.7	Slope (1:X)	40.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	46.954	Membrane Depth (mm)	0

Cellular Storage Manhole: 6, DS/PN: 1.005

Invert Level (m)	46.595	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	105.0	105.0	0.900	0.0	140.2
0.800	105.0	140.2			

©1982-2020 Innovyze

PRP		Page 7	
Catherine House Old Harborough Road Brixworth NN6 9BX		Harlands SW Network	
Date 13/06/2025 15:21 File 82960 - HARLANDS - SW NE...		Designed by AZ Checked by	
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	0
Number of Online Controls	1	Number of Storage Structures	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.330
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	20.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	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)
1.000	1	15 Winter	1	+0%					52.221
1.001	2	15 Winter	1	+0%					48.678
1.002	3	15 Winter	1	+0%	100/15 Summer				47.494
1.003	4	15 Winter	1	+0%	30/15 Summer				47.208
1.004	5	15 Winter	1	+0%	100/60 Winter				47.023
1.005	6	120 Winter	1	+0%	30/30 Summer				46.711

Surcharged Flooded					Half Drain	Pipe	
PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap. (l/s)	Time (mins)	Flow (l/s)	Level Exceeded Status
1.000	1	-0.129	0.000	0.05		3.4	OK
1.001	2	-0.197	0.000	0.04		4.5	OK
1.002	3	-0.156	0.000	0.20		11.6	OK

©1982-2020 Innovyze

PRP		Page 8
Catherine House Old Harborough Road Brixworth NN6 9BX	Harlands SW Network	
Date 13/06/2025 15:21 File 82960 - HARLANDS - SW NE...	Designed by AZ Checked by	
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	Surcharged	Flooded	Half Drain		Pipe	Level Exceeded	
		Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)		Flow (l/s)
1.003	4	-0.119	0.000	0.45			17.3	OK
1.004	5	-0.156	0.000	0.20		6	17.3	OK
1.005	6	-0.109	0.000	0.03		68	3.2	OK

PRP

Page 9

Catherine House
Old Harborough Road
Brixworth NN6 9BX

Date 13/06/2025 15:21
File 82960 - HARLANDS - SW NE...

Micro Drainage

Harlands
SW Network

Designed by AZ
Checked by

Network 2020.1.3

Micro Drainage

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 1

Number of Storage Structures 2

Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model

FSR

Ratio R 0.330

Region England and Wales Cv (Summer) 0.750

M5-60 (mm)

20.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0

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

	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	Level
1.000	1	15 Winter	30	+0%					52.233
1.001	2	15 Winter	30	+0%					48.698
1.002	3	15 Winter	30	+0%	100/15 Summer				47.550
1.003	4	15 Winter	30	+0%	30/15 Summer				47.421
1.004	5	15 Winter	30	+0%	100/60 Winter				47.078
1.005	6	120 Winter	30	+0%	30/30 Summer				46.921

	US/MH	Depth	Volume	Flow /	Half Drain	Pipe		Level
PN	Name	(m)	(m³)	Cap.	Time	Flow	Status	Exceeded
1.000	1	-0.117	0.000	0.11		8.3	OK	
1.001	2	-0.177	0.000	0.10		11.7	OK	
1.002	3	-0.100	0.000	0.59		33.9	OK	

©1982-2020 Innovyze

