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370 Loughborough Road Leicester LE4 5PR	Normandy Fields Hinckley SW Road 3	
Date 15/08/2025 File 2025-08-15 network.MDX	Designed by EG Checked by EG	
Micro Drainage	Network 2019.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm - Road 3

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	2
FEH Rainfall Version	1999
Site Location GB 440550 294500 SP 40550 94500	
C (1km)	-0.028
D1 (1km)	0.364
D2 (1km)	0.347
D3 (1km)	0.258
E (1km)	0.307
F (1km)	2.353
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm - Road 3

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.561	4-8	0.080

Total Area Contributing (ha) = 0.640

Total Pipe Volume (m³) = 10.033

Network Design Table for Storm - Road 3

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
S3.000	26.229	0.327	80.2	0.119	4.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	20.281	0.253	80.2	0.091	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.002	26.268	0.465	56.5	0.038	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.003	14.575	0.265	55.0	0.066	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.004	29.961	0.515	58.2	0.060	0.00	0.0	0.600	o	300	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)
S3.000	50.00	4.25	102.116	0.119	0.0	0.0	0.0	1.76	124.2	16.1
S3.001	50.00	4.44	101.789	0.209	0.0	0.0	0.0	1.76	124.2	28.4
S3.002	50.00	4.65	101.536	0.247	0.0	0.0	0.0	2.10	148.2	33.4
S3.003	50.00	4.76	101.071	0.313	0.0	0.0	0.0	2.12	150.2	42.5
S3.004	50.00	5.01	100.806	0.373	0.0	0.0	0.0	2.07	146.0	50.6

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Network Design Table for Storm - Road 3

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
S3.005	15.763	0.273	57.7	0.267	0.00	0.0	0.600	o	375	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)
S3.005	50.00	5.12	100.216	0.640	0.0	0.0	0.0	2.39	263.8	86.7

Manhole Schedules for Storm - Road 3

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)
S9	103.772	1.656	Open Manhole	1200	S3.000	102.116	300				
S10	103.358	1.569	Open Manhole	1200	S3.001	101.789	300	S3.000	101.789	300	
S11	103.506	1.970	Open Manhole	1200	S3.002	101.536	300	S3.001	101.536	300	
S12	103.123	2.052	Open Manhole	1200	S3.003	101.071	300	S3.002	101.071	300	
S13	102.819	2.013	Open Manhole	1200	S3.004	100.806	300	S3.003	100.806	300	
S14	102.214	1.998	Open Manhole	1500	S3.005	100.216	375	S3.004	100.291	300	
S	101.884	1.941	Open Manhole	0		OUTFALL		S3.005	99.943	375	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S9	440601.910	295001.938	440601.910	295001.938	Required	
S10	440593.012	294977.264	440593.012	294977.264	Required	
S11	440586.461	294958.070	440586.461	294958.070	Required	
S12	440565.126	294942.746	440565.126	294942.746	Required	
S13	440560.164	294929.041	440560.164	294929.041	Required	
S14	440551.127	294900.475	440551.127	294900.475	Required	
S	440546.492	294885.409			No Entry	



PIPELINE SCHEDULES for Storm - Road 3

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)
S3.000	o	300	S9	103.772	102.116	1.356	Open Manhole	1200
S3.001	o	300	S10	103.358	101.789	1.269	Open Manhole	1200
S3.002	o	300	S11	103.506	101.536	1.670	Open Manhole	1200
S3.003	o	300	S12	103.123	101.071	1.752	Open Manhole	1200
S3.004	o	300	S13	102.819	100.806	1.713	Open Manhole	1200
S3.005	o	375	S14	102.214	100.216	1.623	Open Manhole	1500

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)
S3.000	26.229	80.2	S10	103.358	101.789	1.269	Open Manhole	1200
S3.001	20.281	80.2	S11	103.506	101.536	1.670	Open Manhole	1200
S3.002	26.268	56.5	S12	103.123	101.071	1.752	Open Manhole	1200
S3.003	14.575	55.0	S13	102.819	100.806	1.713	Open Manhole	1200
S3.004	29.961	58.2	S14	102.214	100.291	1.623	Open Manhole	1500
S3.005	15.763	57.7	S	101.884	99.943	1.566	Open Manhole	0

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Area Summary for Storm - Road 3

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
3.000	User	-	100	0.063	0.063	0.063
	User	-	100	0.006	0.006	0.069
	User	-	100	0.006	0.006	0.075
	User	-	100	0.044	0.044	0.119
3.001	User	-	100	0.008	0.008	0.008
	User	-	100	0.013	0.013	0.021
	User	-	100	0.009	0.009	0.031
	User	-	100	0.010	0.010	0.041
	User	-	100	0.050	0.050	0.091
3.002	User	-	100	0.016	0.016	0.016
	User	-	100	0.021	0.021	0.038
3.003	User	-	100	0.026	0.026	0.026
	User	-	100	0.008	0.008	0.034
	User	-	100	0.008	0.008	0.042
	User	-	100	0.024	0.024	0.066
3.004	-	-	100	0.060	0.060	0.060
3.005	-	-	100	0.267	0.267	0.267
				Total	Total	Total
				0.640	0.640	0.640

Free Flowing Outfall Details for Storm - Road 3

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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S3.005	S	101.884	99.943	0.000	0	0
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Simulation Criteria for Storm - Road 3

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	0.000
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	0
Number of Online Controls	0	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	E (1km)	0.307
Return Period (years)	2	F (1km)	2.353
FEH Rainfall Version	1999	Summer Storms	Yes
Site Location GB 440550 294500 SP 40550 94500		Winter Storms	No
C (1km)	-0.028	Cv (Summer)	0.750
D1 (1km)	0.364	Cv (Winter)	0.840
D2 (1km)	0.347	Storm Duration (mins)	30
D3 (1km)	0.258		

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm - Road 3

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /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 Offline Controls	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
		Number of Storage Structures	0
		Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.258
FEH Rainfall Version	1999	E (1km)	0.307
Site Location	GB 440550 294500 SP 40550 94500	F (1km)	2.353
C (1km)	-0.028	Cv (Summer)	0.750
D1 (1km)	0.364	Cv (Winter)	0.840
D2 (1km)	0.347		
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		
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)
S3.000	S9	15 Winter	1	+0%	100/15 Summer				102.188	-0.228
S3.001	S10	15 Winter	1	+0%	100/15 Summer				101.883	-0.206
S3.002	S11	15 Winter	1	+0%	100/15 Summer				101.628	-0.208
S3.003	S12	15 Winter	1	+0%	100/15 Summer				101.176	-0.195
S3.004	S13	15 Winter	1	+0%	30/15 Summer				100.916	-0.190
S3.005	S14	15 Winter	1	+0%	30/15 Summer				100.360	-0.231

Flooded			Pipe		
PN	US/MH Name	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Level Exceeded
S3.000	S9	0.000	0.13	14.4	OK
S3.001	S10	0.000	0.21	22.9	OK
S3.002	S11	0.000	0.20	26.8	OK
S3.003	S12	0.000	0.27	33.2	OK
S3.004	S13	0.000	0.29	38.8	OK
S3.005	S14	0.000	0.31	63.3	OK

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm - Road 3

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /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 Offline Controls	0
Number of Online Controls	0	Number of Storage Structures	0
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.258
FEH Rainfall Version	1999	E (1km)	0.307
Site Location	GB 440550 294500 SP 40550 94500	F (1km)	2.353
C (1km)	-0.028	Cv (Summer)	0.750
D1 (1km)	0.364	Cv (Winter)	0.840
D2 (1km)	0.347		
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
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)
S3.000	S9	15 Winter	30	+0%	100/15 Summer				102.251	-0.165
S3.001	S10	15 Winter	30	+0%	100/15 Summer				101.986	-0.103
S3.002	S11	15 Summer	30	+0%	100/15 Summer				101.727	-0.109
S3.003	S12	15 Winter	30	+0%	100/15 Summer				101.366	-0.005
S3.004	S13	15 Winter	30	+0%	30/15 Summer				101.150	0.044
S3.005	S14	15 Winter	30	+0%	30/15 Summer				100.630	0.039

Flooded			Pipe			Status	Level Exceeded
PN	US/MH Name	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)		
S3.000	S9	0.000	0.42		46.7	OK	
S3.001	S10	0.000	0.75		81.7	OK	
S3.002	S11	0.000	0.71		95.0	OK	
S3.003	S12	0.000	0.92		114.7	OK	
S3.004	S13	0.000	1.01		133.7	SURCHARGED	
S3.005	S14	0.000	1.09		223.6	SURCHARGED	

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm - Road 3

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /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 Offline Controls	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
		Number of Storage Structures	0
		Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.258
FEH Rainfall Version	1999	E (1km)	0.307
Site Location	GB 440550 294500 SP 40550 94500	F (1km)	2.353
C (1km)	-0.028	Cv (Summer)	0.750
D1 (1km)	0.364	Cv (Winter)	0.840
D2 (1km)	0.347		
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
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)
S3.000	S9	15 Winter	100	+40%	100/15 Summer				103.200	0.784
S3.001	S10	15 Winter	100	+40%	100/15 Summer				103.114	1.025
S3.002	S11	15 Winter	100	+40%	100/15 Summer				102.895	1.059
S3.003	S12	15 Winter	100	+40%	100/15 Summer				102.544	1.173
S3.004	S13	15 Winter	100	+40%	30/15 Summer				102.171	1.065
S3.005	S14	15 Winter	100	+40%	30/15 Summer				101.186	0.595

Flooded			Pipe			Level Exceeded
PN	US/MH Name	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	
S3.000	S9	0.000	0.66		73.3	SURCHARGED
S3.001	S10	0.000	0.98		105.7	FLOOD RISK
S3.002	S11	0.000	0.94		124.3	SURCHARGED
S3.003	S12	0.000	1.25		156.6	SURCHARGED
S3.004	S13	0.000	1.42		188.7	SURCHARGED
S3.005	S14	0.000	1.79		366.5	SURCHARGED