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9 Joyce Way Whitchurch Shropshire SY13 1TZ	The Gran Farm, Newcastle 1 in 1 year base design	
Date 01/06/2021	Designed by ag	
File 1 IN 1 YEAR BASE DESIGN...	Checked by	
Micro Drainage	Network 2018.1.1	

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)	1	PIMP (%)	100
M5-60 (mm)	18.300	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	0.000
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




Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.018	4-8	0.004

Total Area Contributing (ha) = 0.022


Total Pipe Volume (m<sup>3</sup>) = 1.911

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
1.000	9.050	0.023	393.5	0.006	2.00	0.0	0.600	o	225	Pipe/Conduit	
1.001	26.000	0.065	400.0	0.016	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	29.250	0.612	47.8	0.000	0.00	0.0	0.600	o	150	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)
1.000	50.00	2.23	225.700	0.006	0.0	0.0	0.0	0.65	26.0	0.8
1.001	50.00	2.90	225.677	0.022	0.0	0.0	0.0	0.65	25.8	3.0
1.002	50.00	2.33	225.612	0.000	5.0	0.0	0.0	1.46	25.8	5.0

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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	225	1	226.500	225.700	0.575	Open Manhole	1200
1.001	o	225	2	226.500	225.677	0.598	Open Manhole	1200
1.002	o	150	3	226.500	225.612	0.738	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	9.050	393.5	2	226.500	225.677	0.598	Open Manhole	1200
1.001	26.000	400.0	3	226.500	225.612	0.663	Open Manhole	1200
1.002	29.250	47.8		226.000	225.000	0.850	Open Manhole	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)
1.002		226.000	225.000	0.000	0	0