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Unit 16 St Asaph Business Park St Asaph Denbighshire LL17...	Coedmawr Bangor Existing Drainage	
Date 21/02/2024 File Existing Drainage Calcu...	Designed by NWO Checked by	
XP Solutions	Network 2017.1.2	

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)	18.000	Add Flow / Climate Change (%)	0
Ratio R	0.272	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
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	0.200	4-8	0.013

Total Area Contributing (ha) = 0.213


Total Pipe Volume (m³) = 1.089

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	32.342	1.570	20.6	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	29.266	1.230	23.8	0.213	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	39.90	5.24	51.000	0.000	0.0	0.0	0.0	2.23	39.4	0.0
1.001	39.22	5.48	49.430	0.213	0.0	0.0	0.0	2.07	36.6	22.6

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
mh1	52.250	1.250	Open Manhole	1200	1.000	51.000	150				
mh2	50.660	1.230	Open Manhole	1200	1.001	49.430	150	1.000	49.430	150	
mh3	49.500	1.300	Open Manhole	0		OUTFALL		1.001	48.200	150	

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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	150	mh1	52.250	51.000	1.100	Open Manhole	1200
1.001	o	150	mh2	50.660	49.430	1.080	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	32.342	20.6	mh2	50.660	49.430	1.080	Open Manhole	1200
1.001	29.266	23.8	mh3	49.500	48.200	1.150	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)
1.001	mh3	49.500	48.200	0.000	0	0