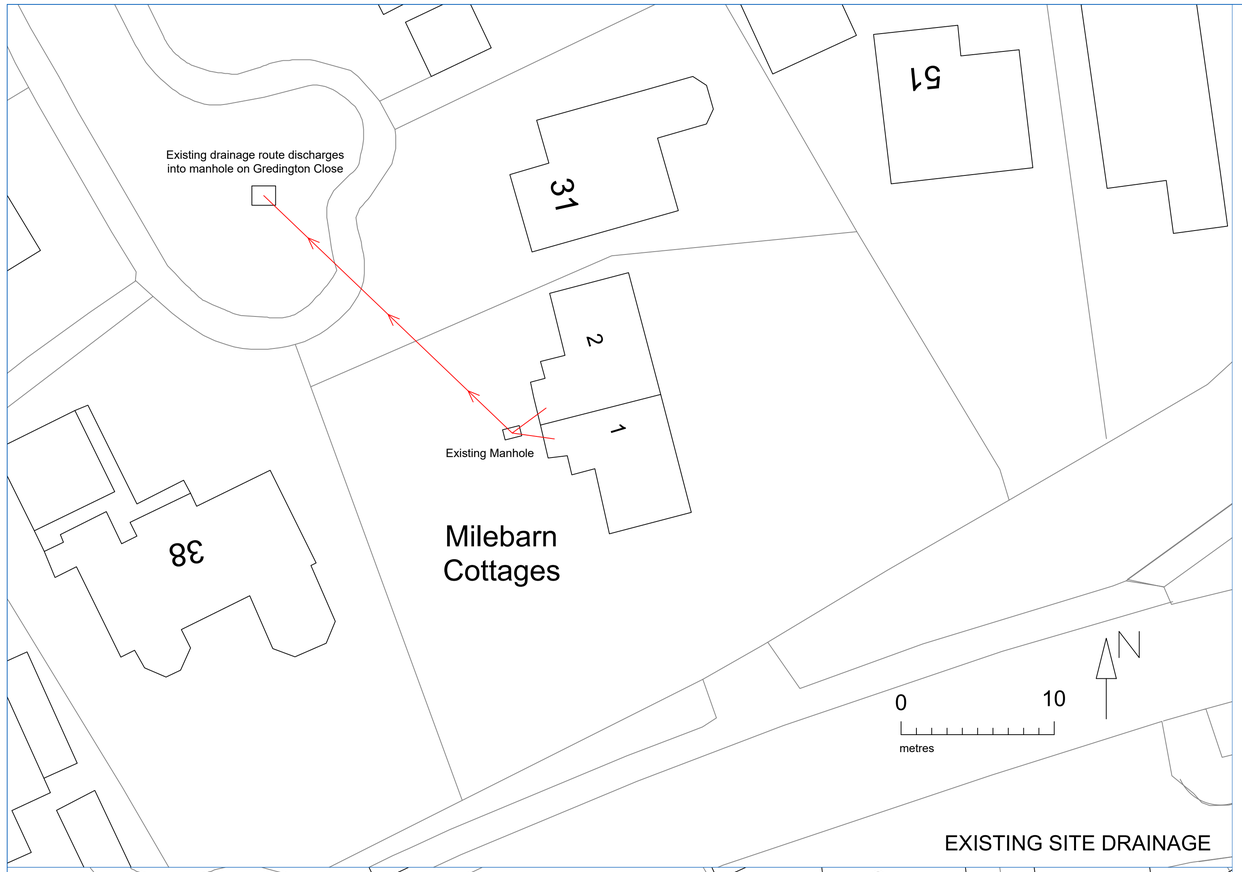
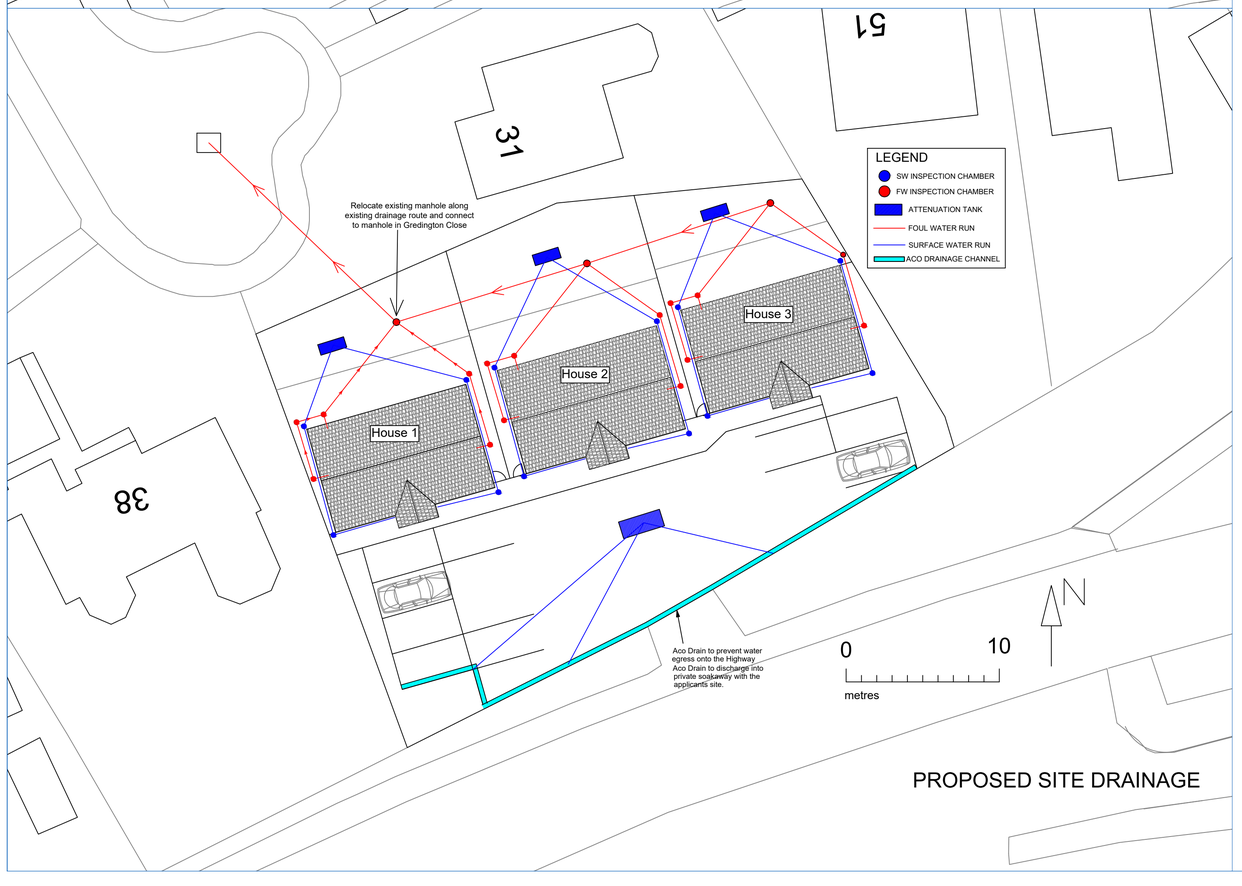
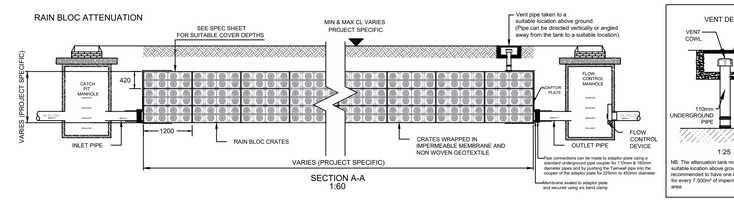
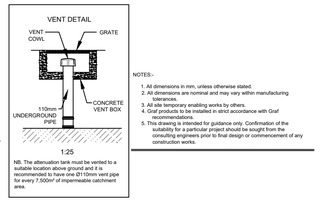


EXISTING SITE DRAINAGE



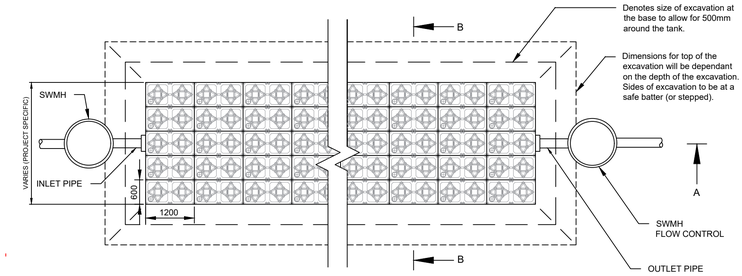
PROPOSED SITE DRAINAGE



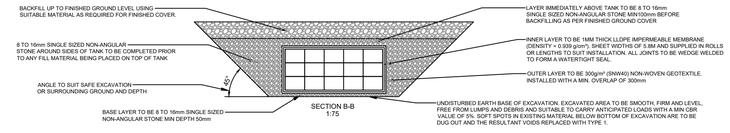


NOTES:-

1. All dimensions in mm, unless otherwise stated.
2. All dimensions are nominal and may vary within manufacturing tolerances.
3. All site temporary enabling works by others.
4. Graf products to be installed in strict accordance with Graf recommendations.
5. This drawing is intended for guidance only. Confirmation of the suitability for a particular project should be sought from the consulting engineers prior to final design or commencement of any construction works.



NOTE: EXCAVATION TO EXCEED TANK SIZE BY 500MM ON ALL SIDES TO ALLOW FOR ACCESS



RAIN BLOC



Crate	
Dimensions (mm)	1200 x 600 x 420
Gross Volume (m3)	0.300m³
Net Volume (m3)	0.285m³
Material	Polypropylene (Upcyclen TV30)
Weight	17kg
~~95%~~ Ratio	
~~No~~spectable	
*UCS Vertical	450 kN/m²
*UCS Lateral	150 kN/m²

*Ultimate Compression Strength

PIPE TESTING

All pipe lines are to be thoroughly cleaned and free from any deleterious materials prior to testing.
All pipe lines are to be tested in accordance with the specified water or air test and achieve the acceptance criteria at the following stages: -

- First stage : After laying & jointing but before sidefill.
- Second stage : After laying and compacting of backfill
- Final stage : After completion of final surfacing and adjacent superstructure.

PIPES, JOINTS AND FITTINGS

Flexible joints to be provided to all pipes
Acceptable materials and associated British Standards for pipes

		Strength Class
Concrete	BS 5911	160
Vitrified Clay	BS EN 295	Refer to manufacturer giving depth and
UPVC	BS EN 1401	surface (Traffic etc.) loading category

Chemical resistance requirements - CLASS 2
Jointing material shall be either mortar type or a proprietary bitumen or resin mastic sealant. The concrete surfaces should be prepared in accordance with manufactures instruction and be free from any site debris or soil. Jointing material should fill the joint cavity.

BACKFILL TO DRAINAGE TRENCHES & MANHOLES

Beneath external paving and ground floor slabs. Approved local granular material is preferred. Alternatively and with the approval of the Engineer selected on site material i.e. natural sand, crushed rock, cohesive materials.

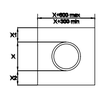
The material shall be unfrozen and exclude boulders, large concrete lumps, timber, vegetable and organic materials etc. Backfill in layers not to exceed 225mm. Beneath landscaped areas: Approved selected site generated or imported material capable of being compacted such that self consolidation or settlement is minimal.

Backfilling around manholes and other structures shall be undertaken in such a manner as to avoid uneven loading or damage.

Adjacent to buildings: concrete of grade applicable to pipe bedding to level of foundation bottom or where the distance between the side of the foundation and the side of the trench is greater than 1m to a level of that distance less 150mm beneath the foundation bottom.

PIPE BEDDING & SURROUND

SHW TABLE 5:3 BS EN 13242 Coarse aggregate for pipe bedding, haunching and surround		
Nominal Pipe Dia (mm)	Aggregate Size mm	
	Graded	Single sized
Not exceeding 140	-	4/10.
Exceeding 140 but not exceeding 400	2/14.or4/20.	4/10. 6/10. or 10/20.
Exceeding 400	2/14. 4/20. or 4/40.	4/10. 6/14. 10/20. or 20/40.



Class S granular bedding - Dims X1 = min 50mm
- Dims X2 = X/6 min 100mm

Type Z concrete bed & surround - Dims X1 = min 50mm
(less than 0.9m cover to pipe soffit) - Dims X2 = X/4 min 100mm

Concrete surround to be ST2 to SHW clause 503.3(iii), maintaining a flexible construction joint at every pipe joint using compressible tiler consisting of bitumen-impregnated insulation board to BSEN 120 and BSEN 317 , or other equally compressible material. The thickness of compressible materials is as follows:

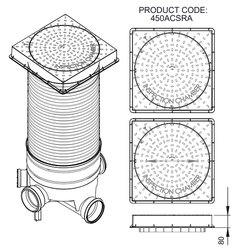
Norminal Pipe Dia (mm)	Thickness of Compressible Filler (mm)
Less than 450	18
450-1200	36
Exceeding 1200	54

All road gully connection pipes to be fully concrete protected to the collecting drain

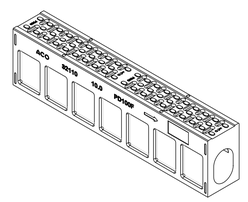
ACCESS COVERS

450ACSRA - A15 LOAD ACCESS COVER - FITS DIRECTLY INTO THE 450Ø CHAMBER SHAFT. THE FRAME ITSELF HAS A Ø350MM ACCESS, INTERNALLY MOULDED. SO CAN ALSO BE USED FOR DEEPER CHAMBERS, REQUIRING RESTRICTED ACCESS. THE COVER LOADING IS A15 RATED.

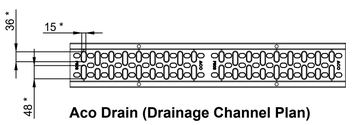
NEW 450ACSB125 - B125 LOAD TESTED ACCESS COVER -
PLEASE NOTE: B125 COVERS NEED TO BE INSTALLED INTO A CONCRETE PLINTH (AS DETAILS BELOW).



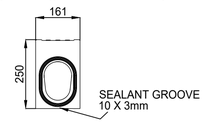
INSPECTION CHAMBER (1:15)



Aco Drain (Drainage Channel 3D)



Aco Drain (Drainage Channel Plan)



Aco Drain (Drainage Channel Section)

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RIBA

CLIENT	DRAWING TITLE	Date	Scale
Willowford Homes Limited	Proposed Residential Development Mile Barn Cottages Holt Road Wrexham LL13 9SA PROPOSED DRAINAGE LAYOUT	April '26	1:200 @A1
		Drawing No. 2025/50/PDL	Rev