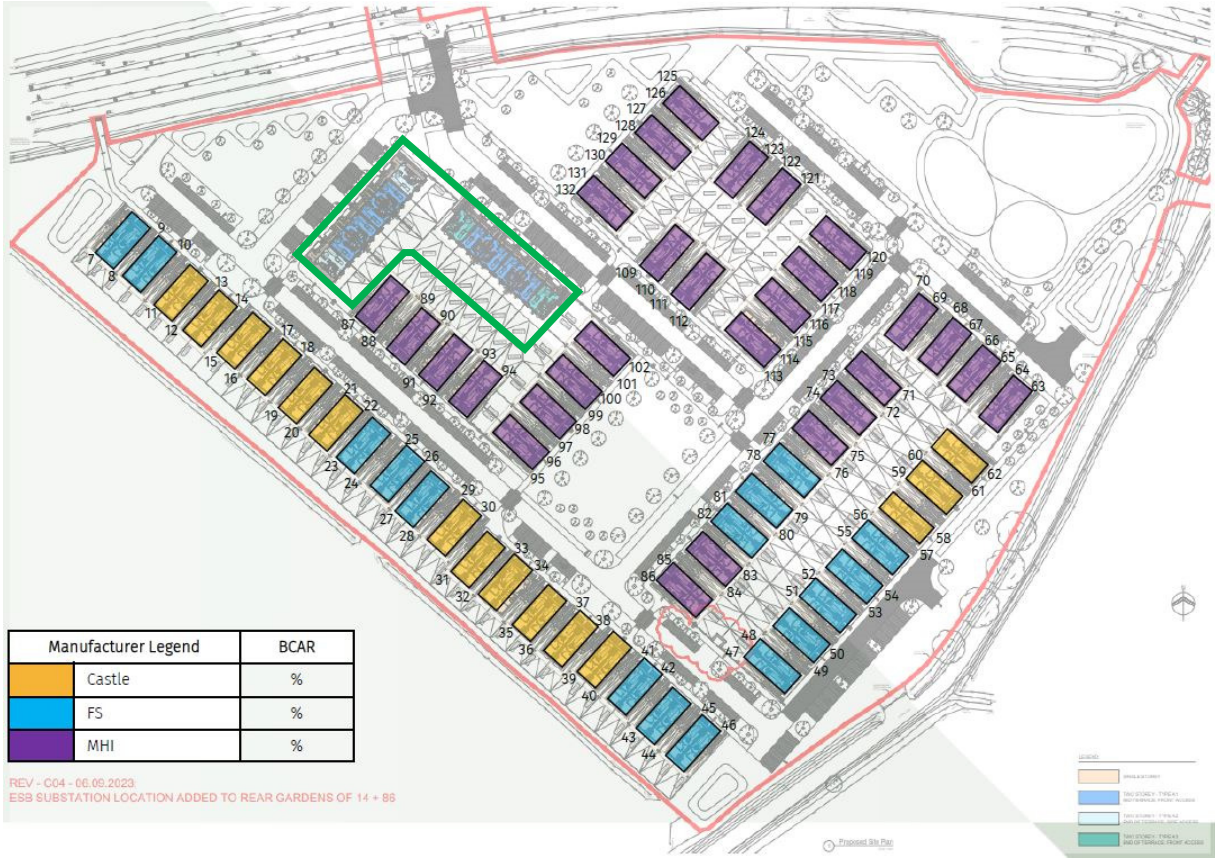
Rapid Build Modular Homes Programme.

Modern Methods of Construction (MMC)

Two Storey Unit - Proof of Concept

OPW - December 2023

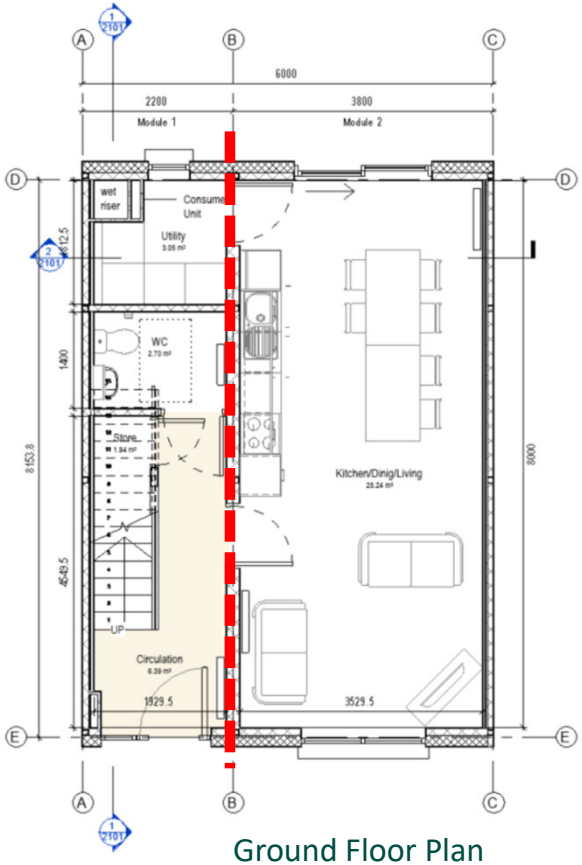
URMH – Backweston, Lucan, Co. Dublin



12no. Two-Storey Houses
(2 no. terraced blocks of 6 houses)

URMH – Two-Storey Modular house,

- 3 Bed Layout
- Modules – 4 per dwelling (integrated roof on top 2 modules)
- Roofscape – low pitch due to height restrictions (4.5m max height – for transport purposes)

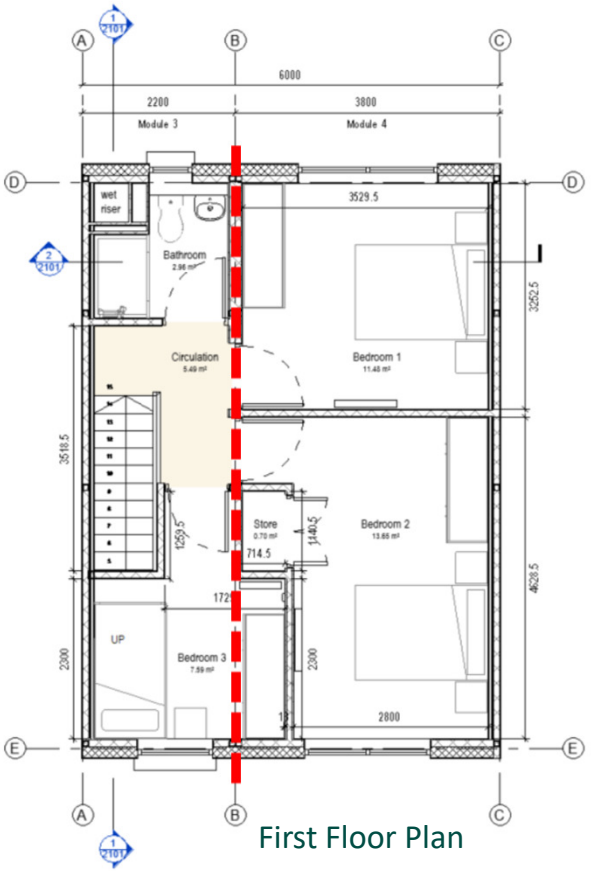


Ground Floor Plan

Key Dimensions (Internal)

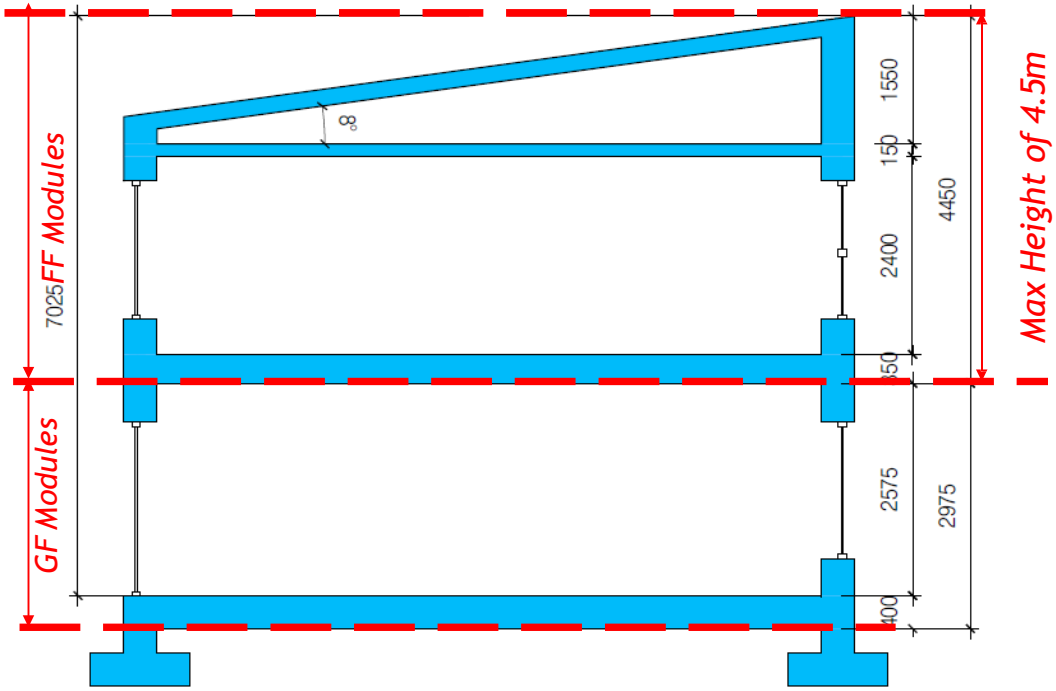
- Plot width – 6.5m
- Plot Depth – 7.8m
- GIA – 98m2

*Red line indicates join line between modules



First Floor Plan

URMH – Two-Storey House: MonoPitch



Section – Key Considerations

- Ceiling Heights – 2575mm & 2400mm
- Floor Cassettes – 350mm (TBC)
- Ceiling Cassette – 150mm (TBC)
- Max Module height – 4.5m
- 4 modules required

URMH – Two-Storey House Materiality

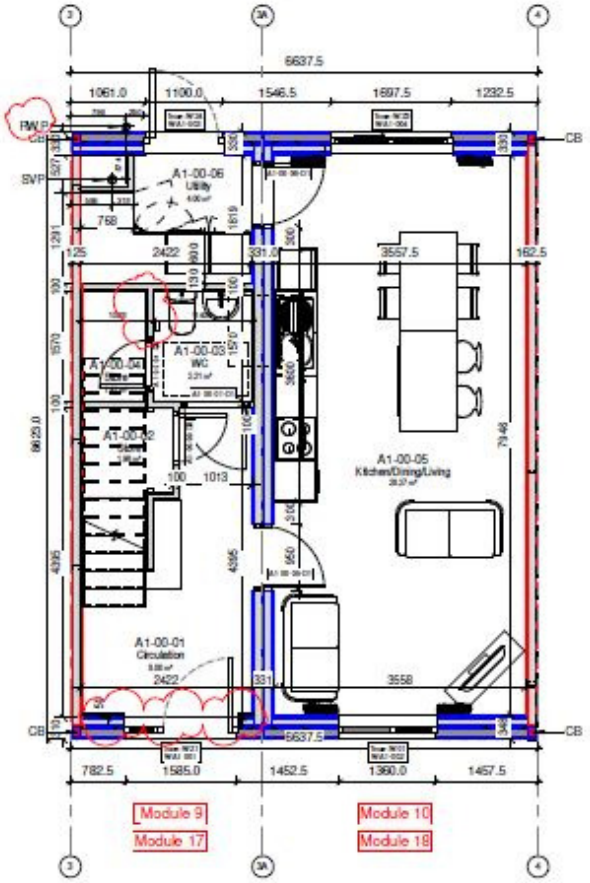
Simple Material Palette

Walls
- Brick Slips & Render

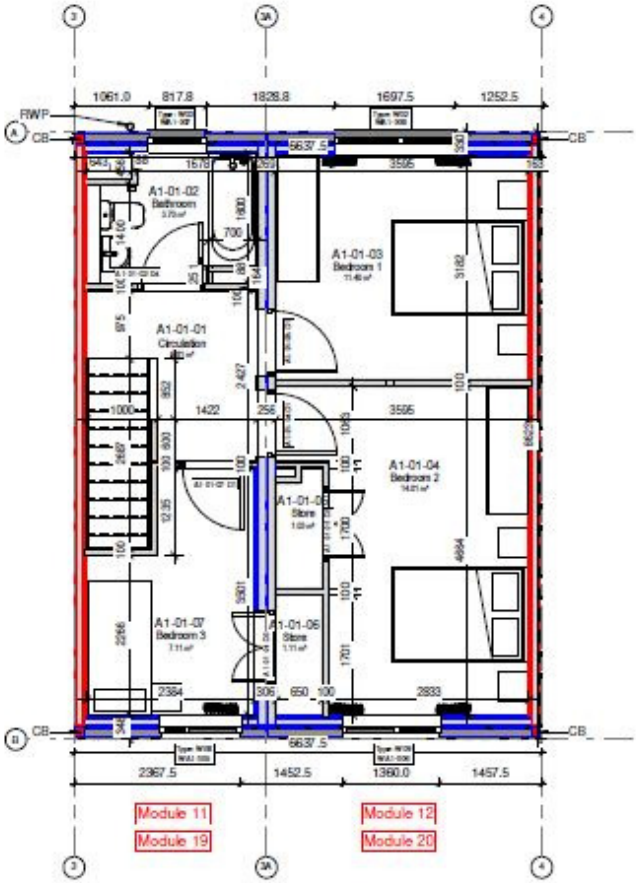
Windows & Doors
- Double glazed units.

Roof
- Standing Seam Roof System.

URMH – Two-Storey Single Unit Plans



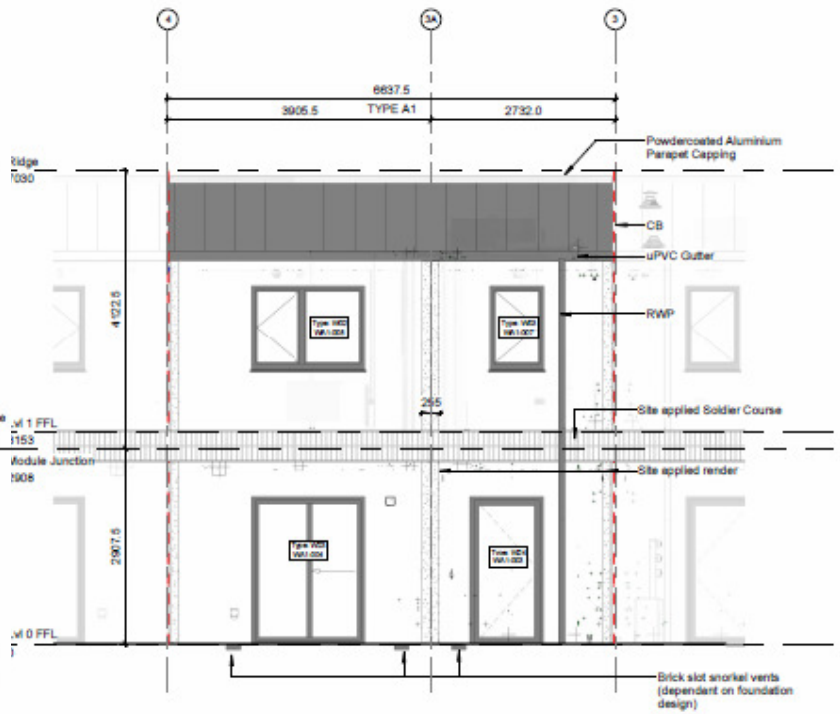
TYPE A1 - Ground Floor Plan - Typical / Mid Terrace
1 : 50



TYPE A1 - First Floor Plan - Typical / Mid Terrace
1 : 50

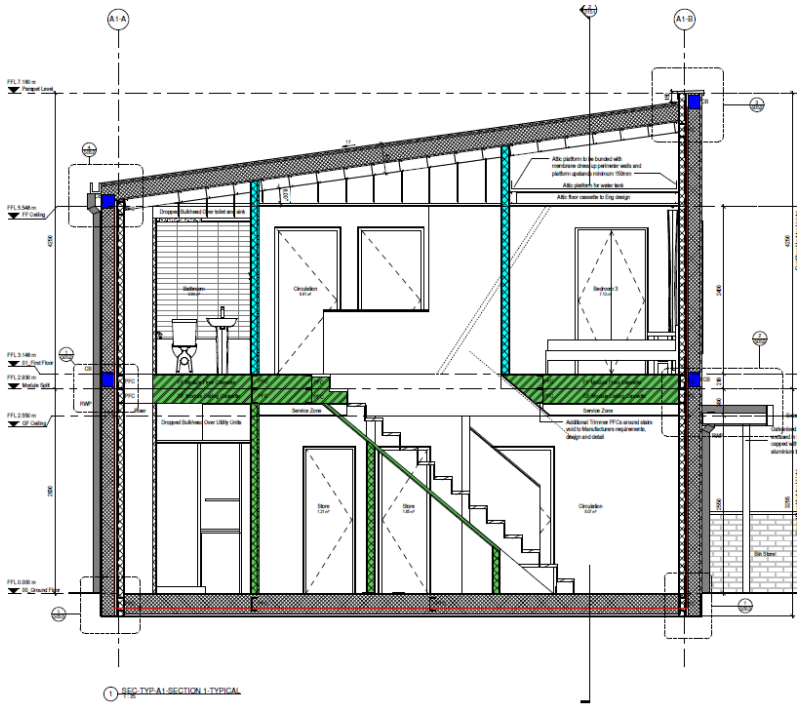
URMH – Two-Storey Single Unit Elevations

A1-5 ELE-TYP-A1-FRONT ELEVATION-MID TERRACE
1 : 50

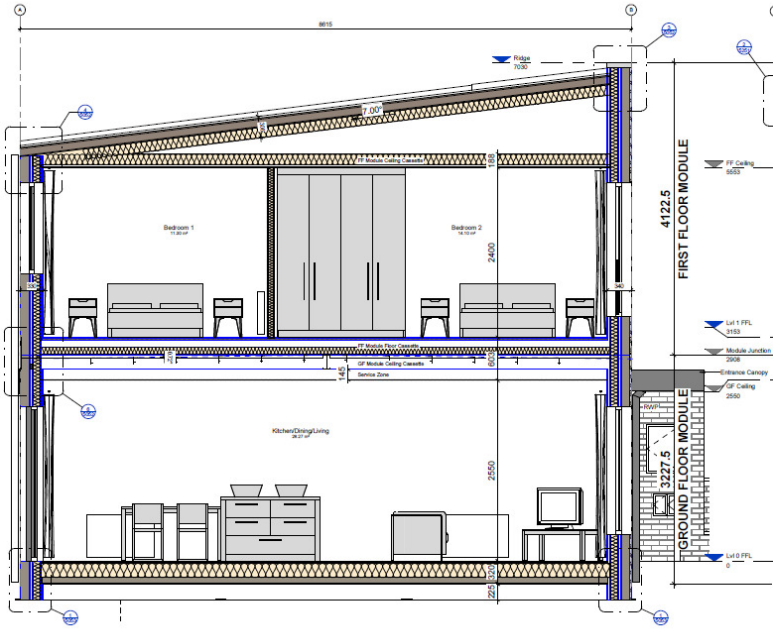


A1-5 ELE-TYP-A1-REAR ELEVATION-MID TERRACE
1 : 50

URMH – Two-Storey Single Unit Sections

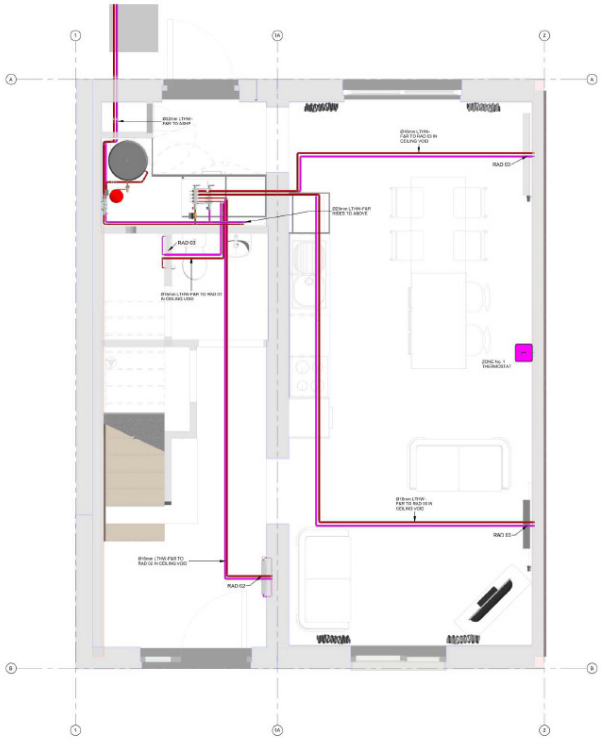


1 SEC TYP A1-SECTION 1-TYPICAL

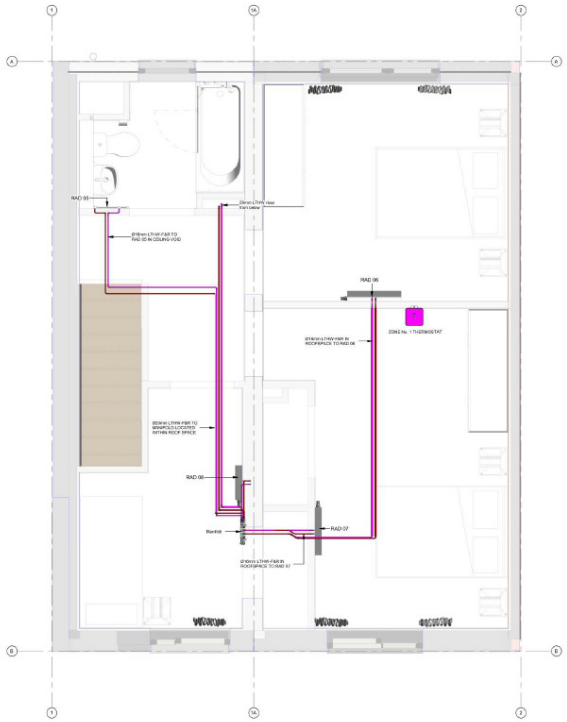


SEC-TYP-A-SECTION 1-TYPICAL
1 : 25

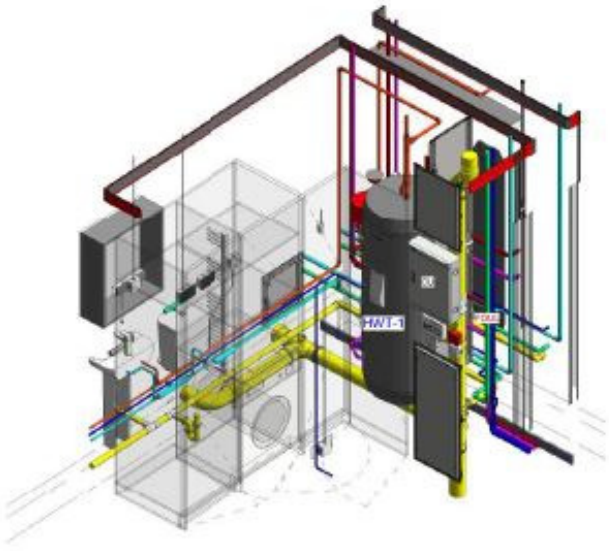
URMH – Two-Storey Single Unit M&E Services



1 GROUND FLOOR - HEATING LAYOUT
1 : 25

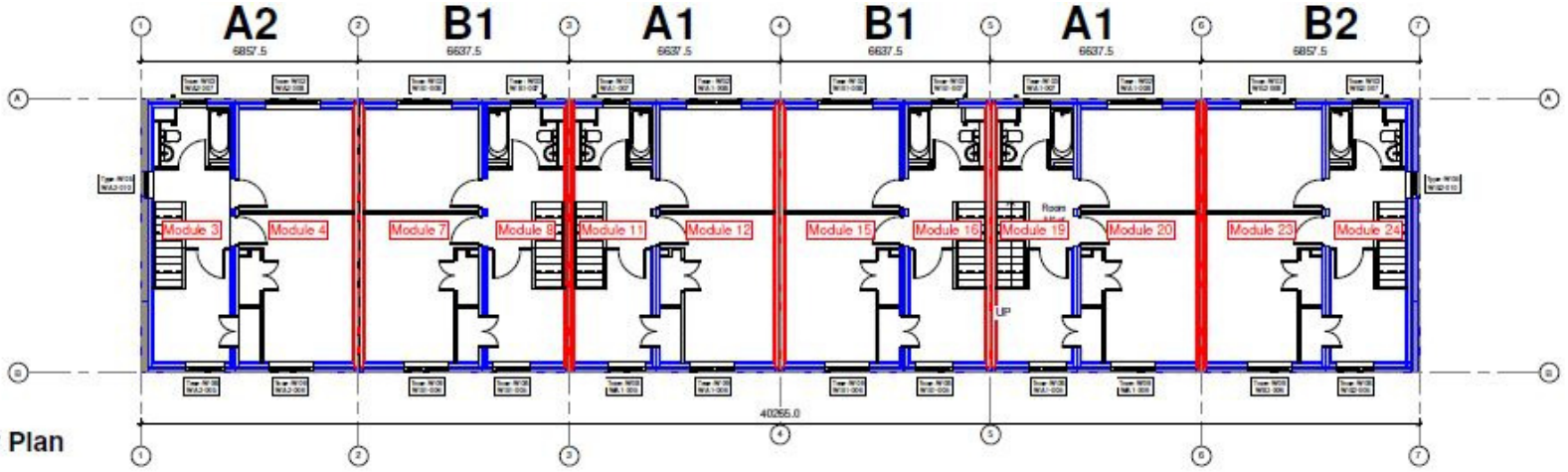


2 FIRST FLOOR - HEATING LAYOUT
1 : 25

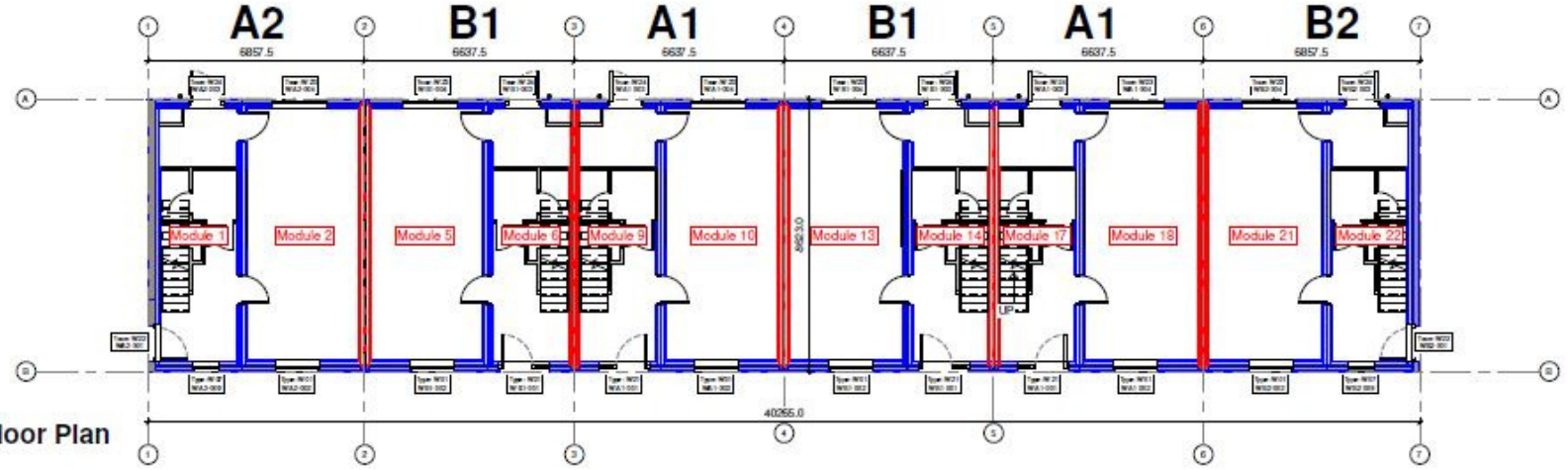


6 AXONOMETRIC UTILITY FRONT

URMH – Two-Storey Block Plans



Block 1 - First Floor Plan
1 : 100



Block 1 - Ground Floor Plan
1 : 100

URMH – Two-Storey Terrace Elevations

Block 1 - Front Elevation
1 : 100

Block 1 Rear Elevation
1 : 100

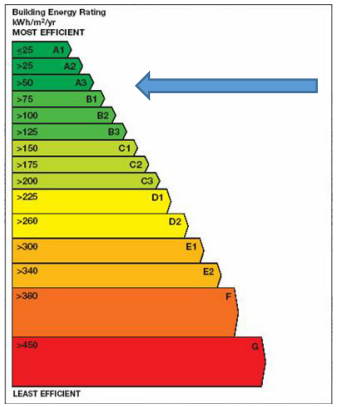
URMH – Two-Storey House: Renewables

Calculation 3: Improved TB factor

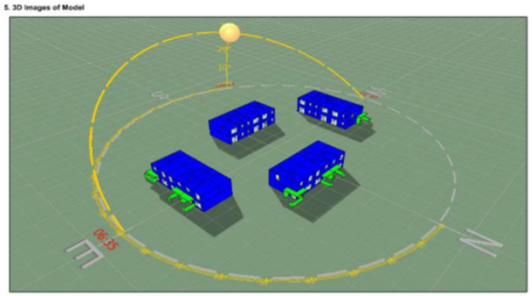
House	Thermal Bridging	BER	Energy Value	CO2 Emission	EPC	CPC	RER	PV required for A1		Part L compliant
	W/m2K		kWh/m2/yr	kgCO2/m2/yr	<0.3	<0.35	>0.2	No. Panels	kWh.yr	
EoT1	0.15 (default)	A2	44.19	8.69	0.268	0.257	0.514	3	900	Yes
	0.11	A2	41.97	8.25	0.255	0.245	0.513	3	800	Yes
	0.08 (ACDs)	A2	40.31	7.93	0.244	0.235	0.511	3	700	Yes
	0.035	A2	37.83	7.44	0.229	0.220	0.509	2	600	Yes
MT	0.15 (default)	A2	40.24	7.91	0.266	0.257	0.511	3	700	Yes
	0.11	A2	38.51	7.57	0.254	0.246	0.510	2	650	Yes
	0.08 (ACDs)	A2	37.22	7.32	0.246	0.238	0.508	2	550	Yes
	0.035	A2	35.31	6.94	0.233	0.225	0.506	2	500	Yes
EoT2	0.15 (default)	A2	43.98	8.65	0.267	0.256	0.514	3	850	Yes
	0.11	A2	41.81	8.22	0.254	0.244	0.513	3	750	Yes
	0.08 (ACDs)	A2	40.18	7.90	0.244	0.234	0.511	3	700	Yes
	0.035	A2	37.76	7.42	0.229	0.220	0.509	2	600	Yes

Notes: U-Values mentioned below are used for the calculations.

Building Fabric	U-Value
Roof	0.15 W/m2K
Walls	0.18 W/m2K
Floor	0.18 W/m2K
Windows & Doors	1.20 W/m2K
Air Permeability	$3m^3/(hr.m^2)$ @50pa (0.15 ac/h)



A2 Rating Achieved



End.