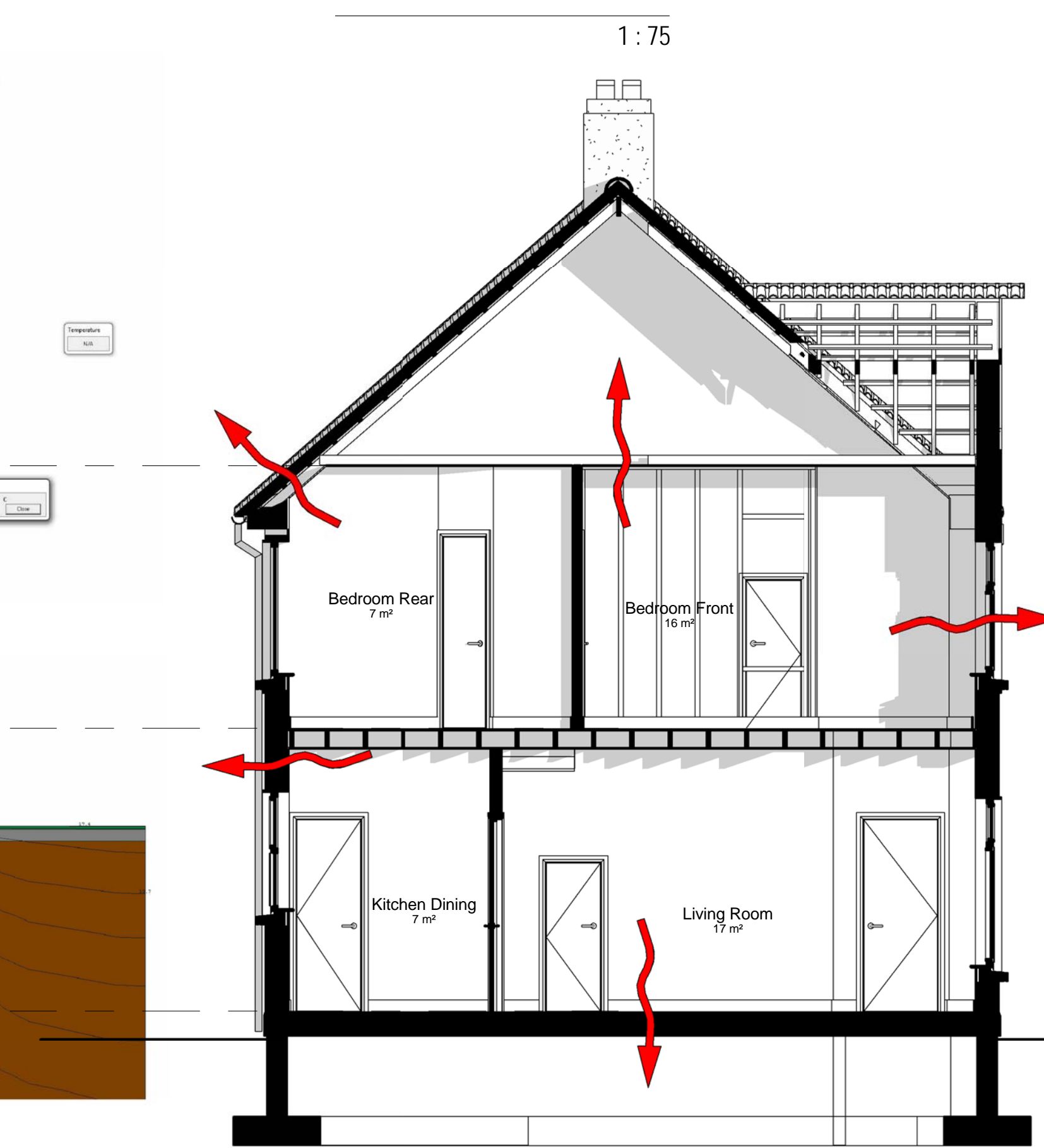
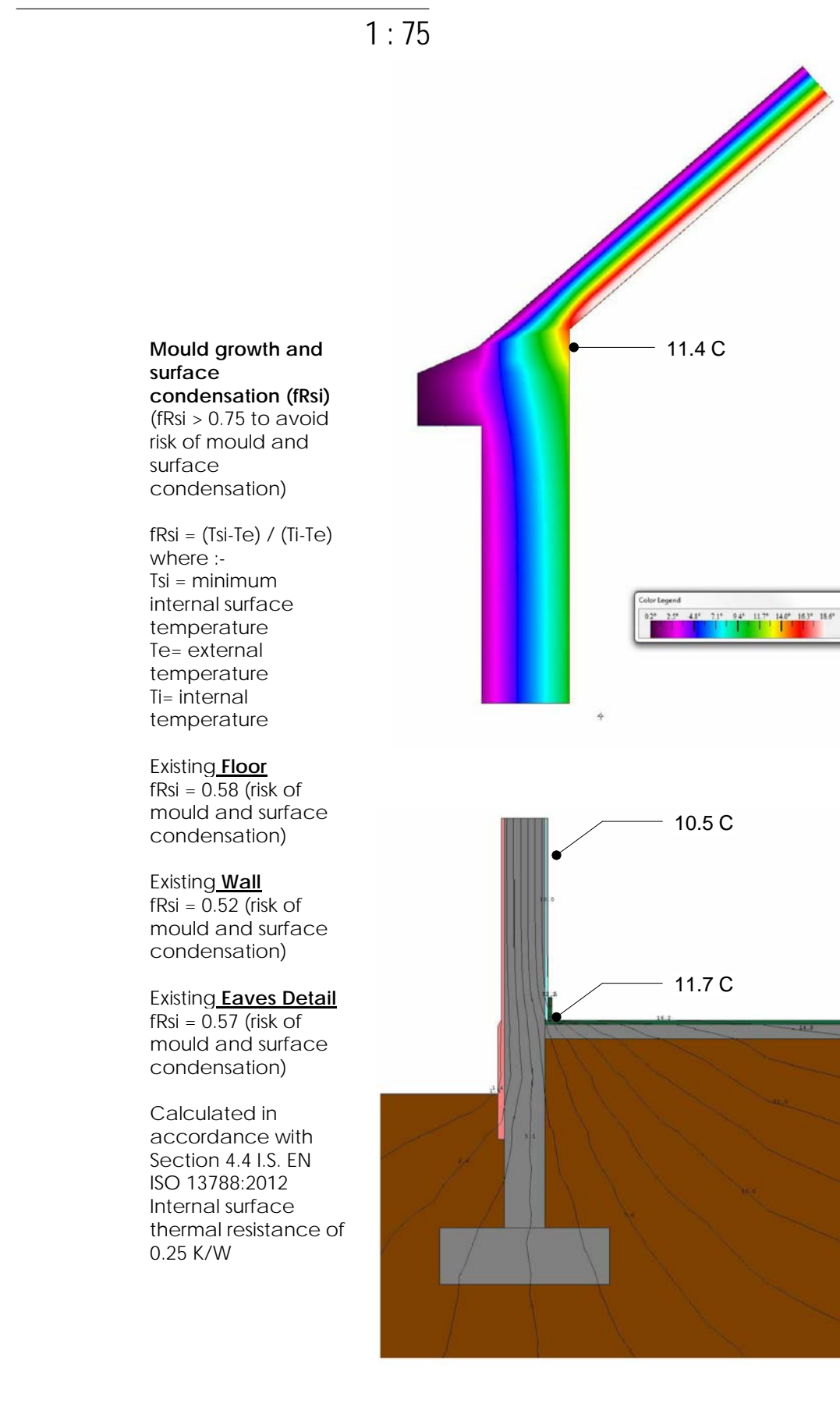
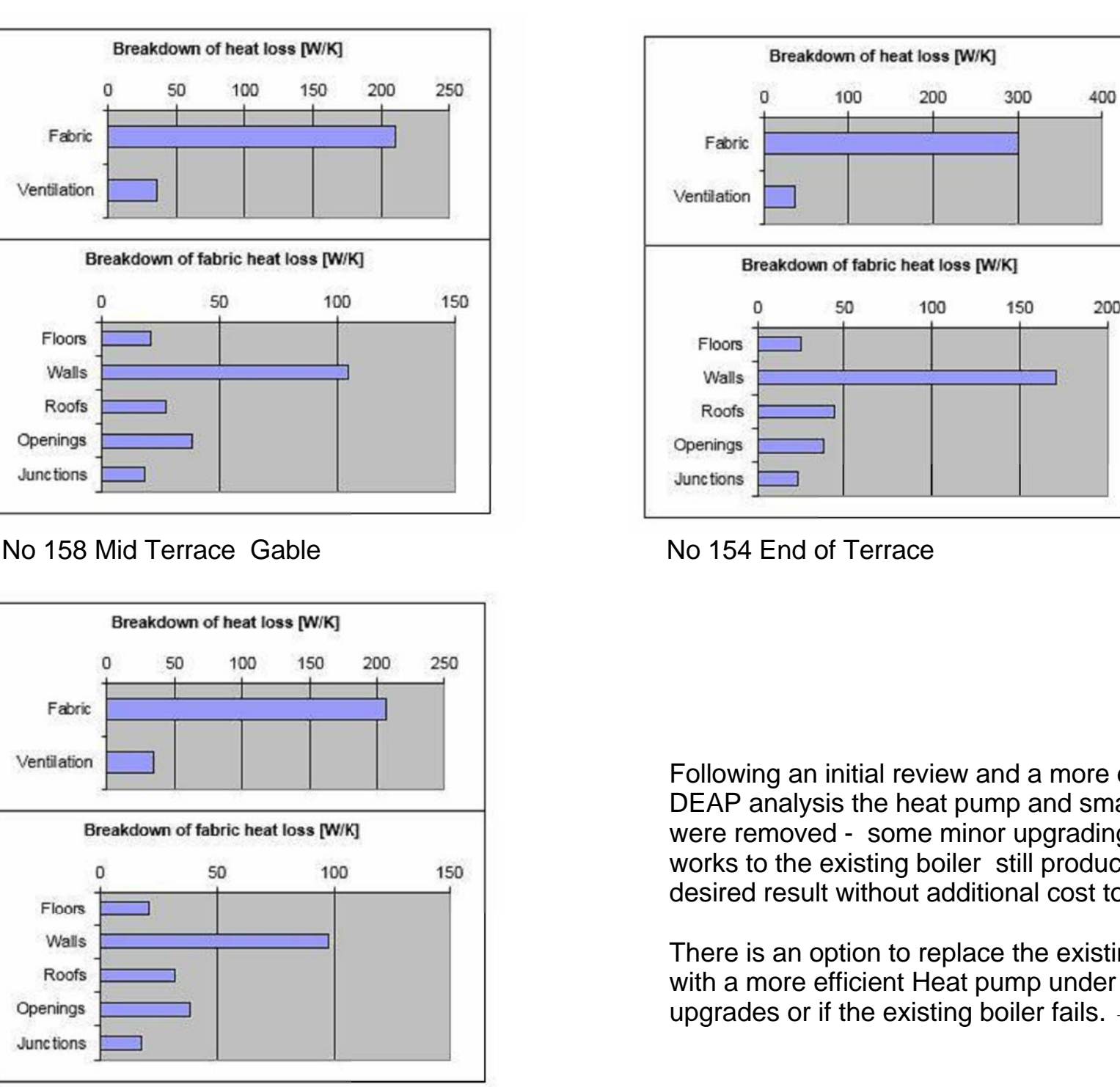


- Existing Building Fabric**
- Walls - 215mm / 90mm solid concrete
 - Ground Floor - Concrete
 - Ceiling - Plaster slab (no insulation)
 - Roof - Concrete roof tiles
 - Windows - Double glazed
 - No Insulation
- Existing Building Energy Rating**
- House No 154
 - House No 156
 - House No 158



Existing Heat loss breakdown (W/K)



The Initial Strategy

Fabric
The fabric upgrade consisted of minimal intervention. After exploring various different options it was decided to wrap the house with external insulation. Replacing the windows and doors and add new floor and roof insulation.

In addition, the existing wall dividing the kitchen from the living room was removed, allowing a more spacious living area with better light and views to the rear.

The application of external insulation is straight forward; however, the concrete band at eaves level proved something of a challenge and several iterations were presented before an acceptable solution was agreed. At all stages of the fabric appraisal, cost and the disturbance factor were considered.

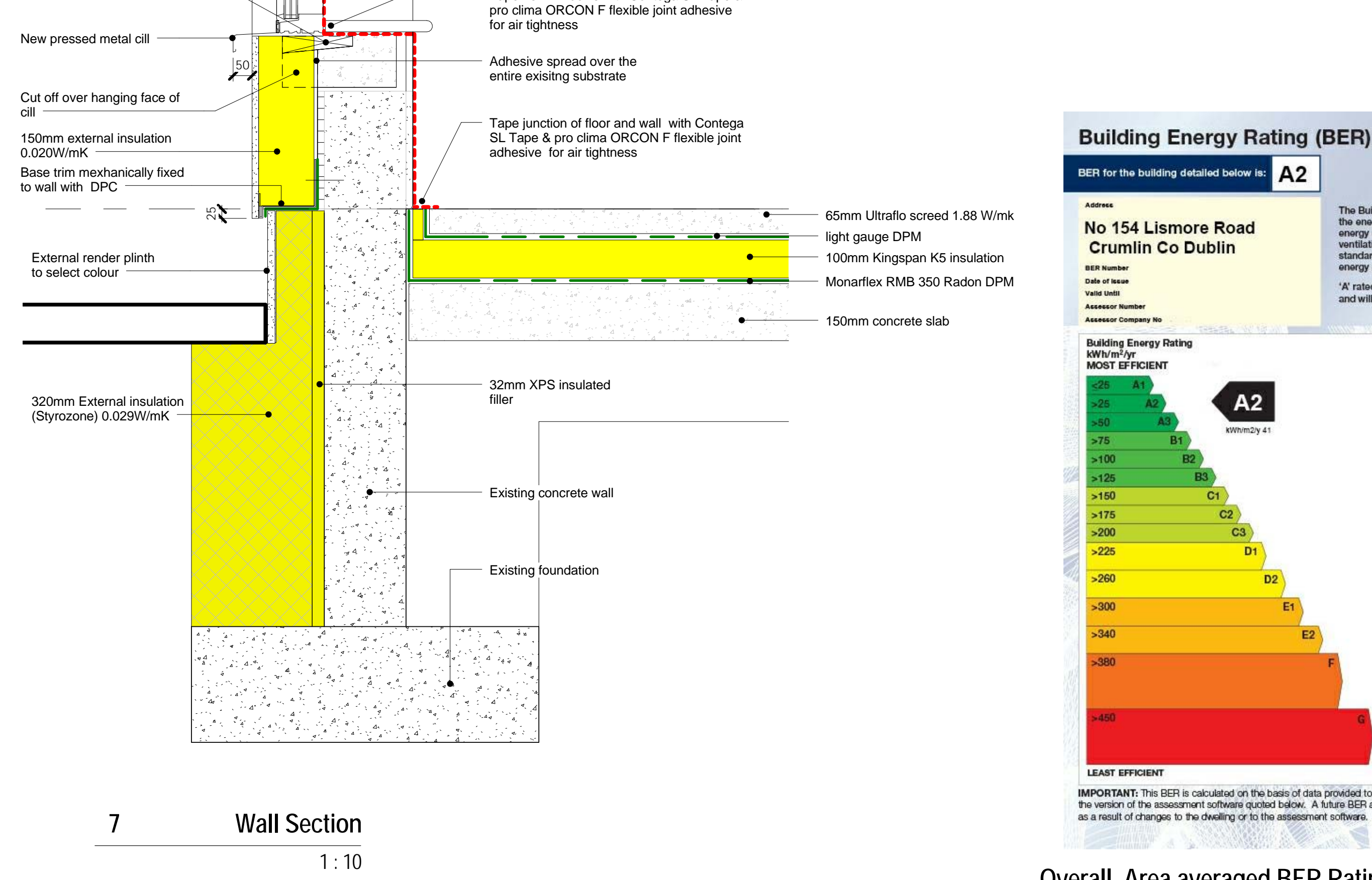
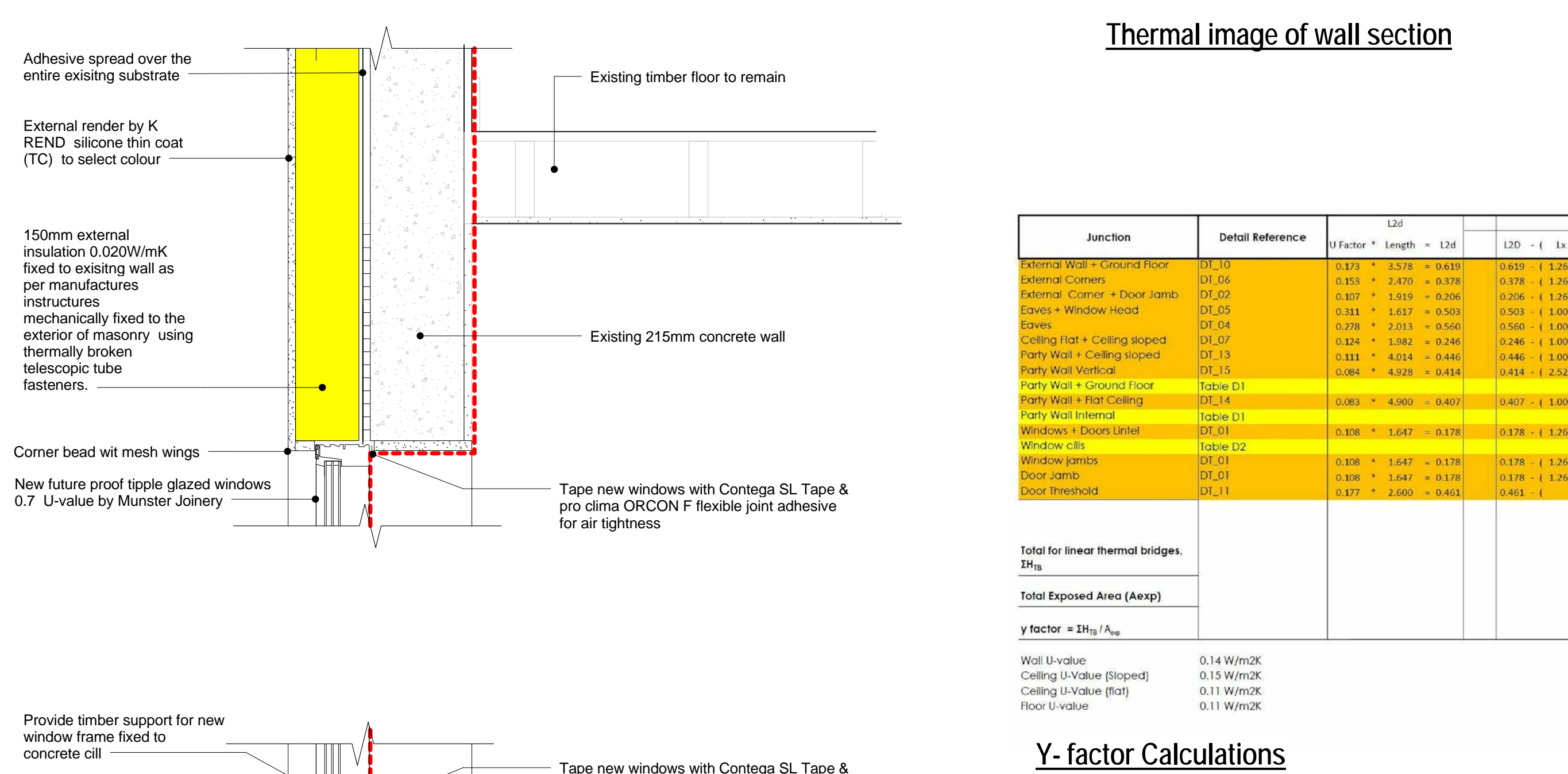
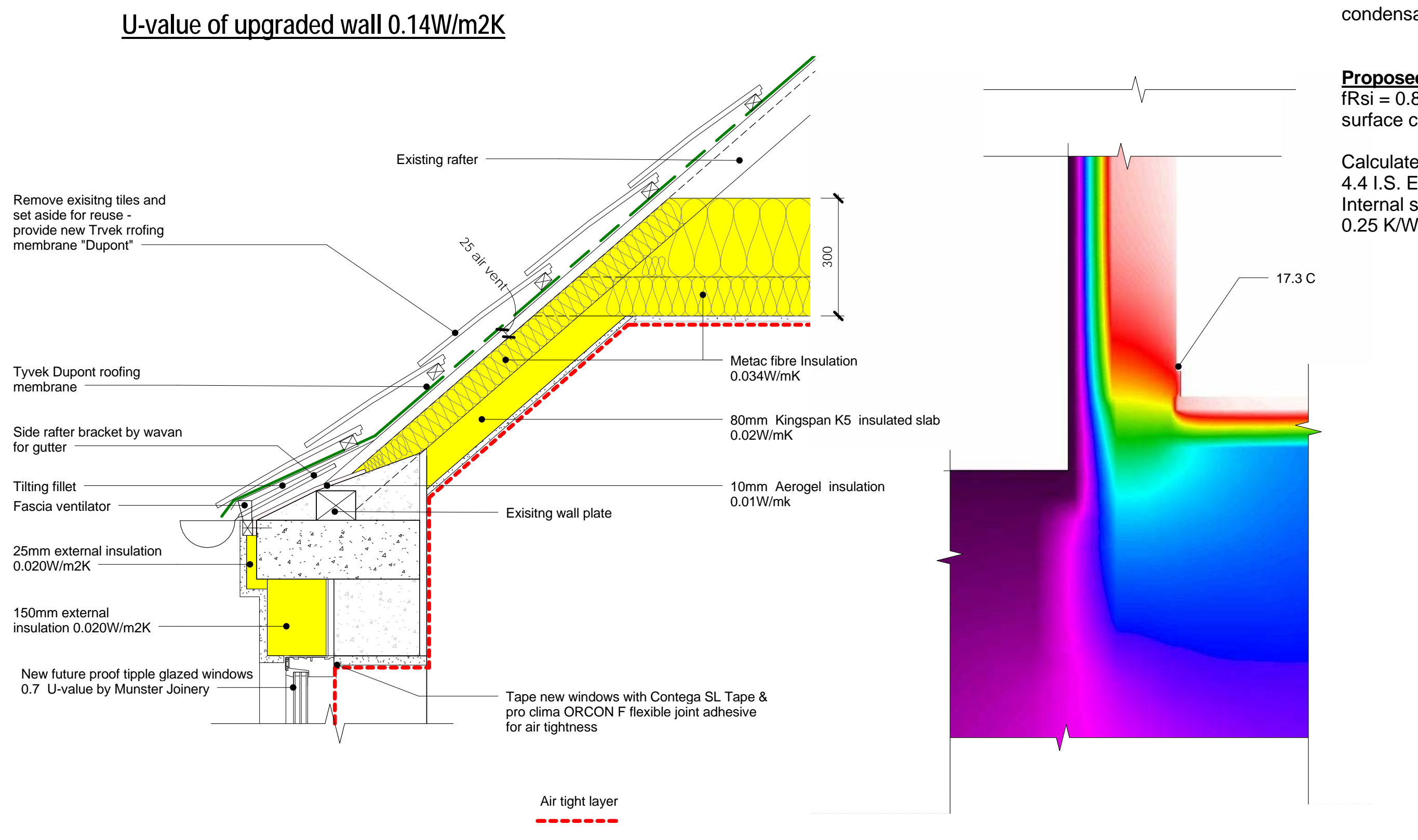
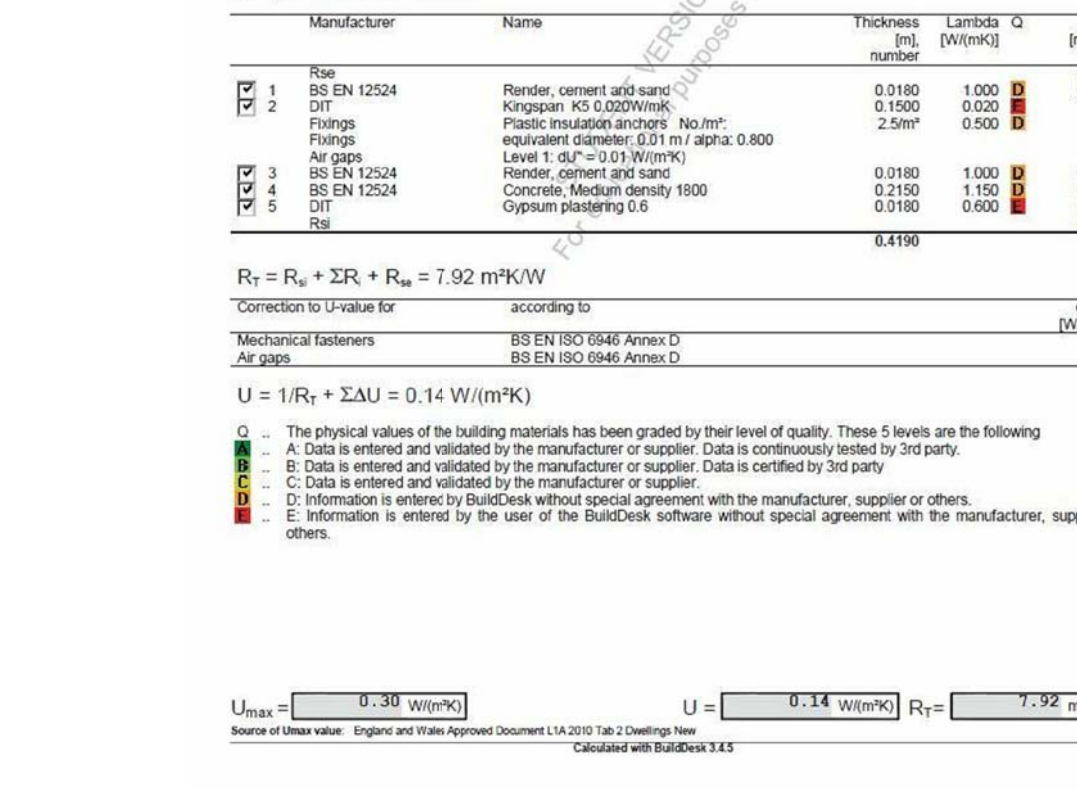
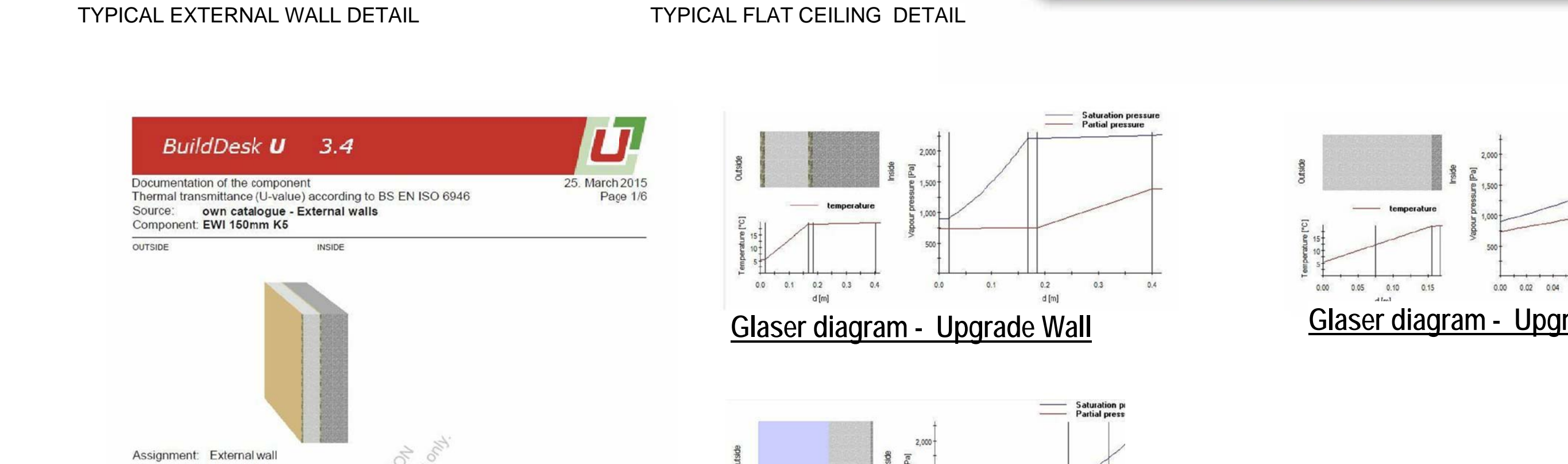
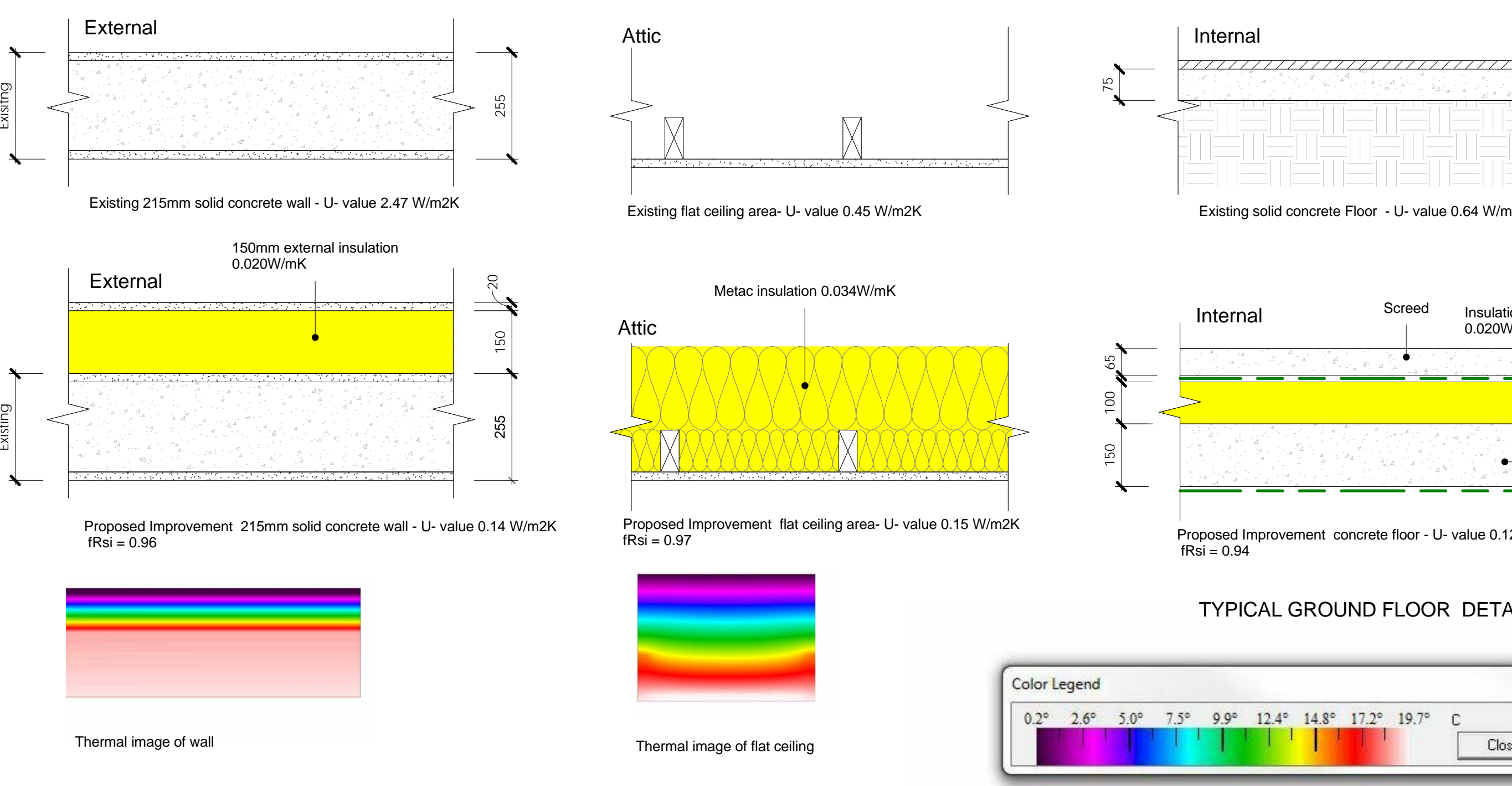
The nature of the solid concrete structure presented some interesting thermal bridging that needed to be addressed. Particularly at first floor ceiling level where dry lining was introduced to overcome the problem.

The decision to upgrade the ground floor was not taken without due consideration.

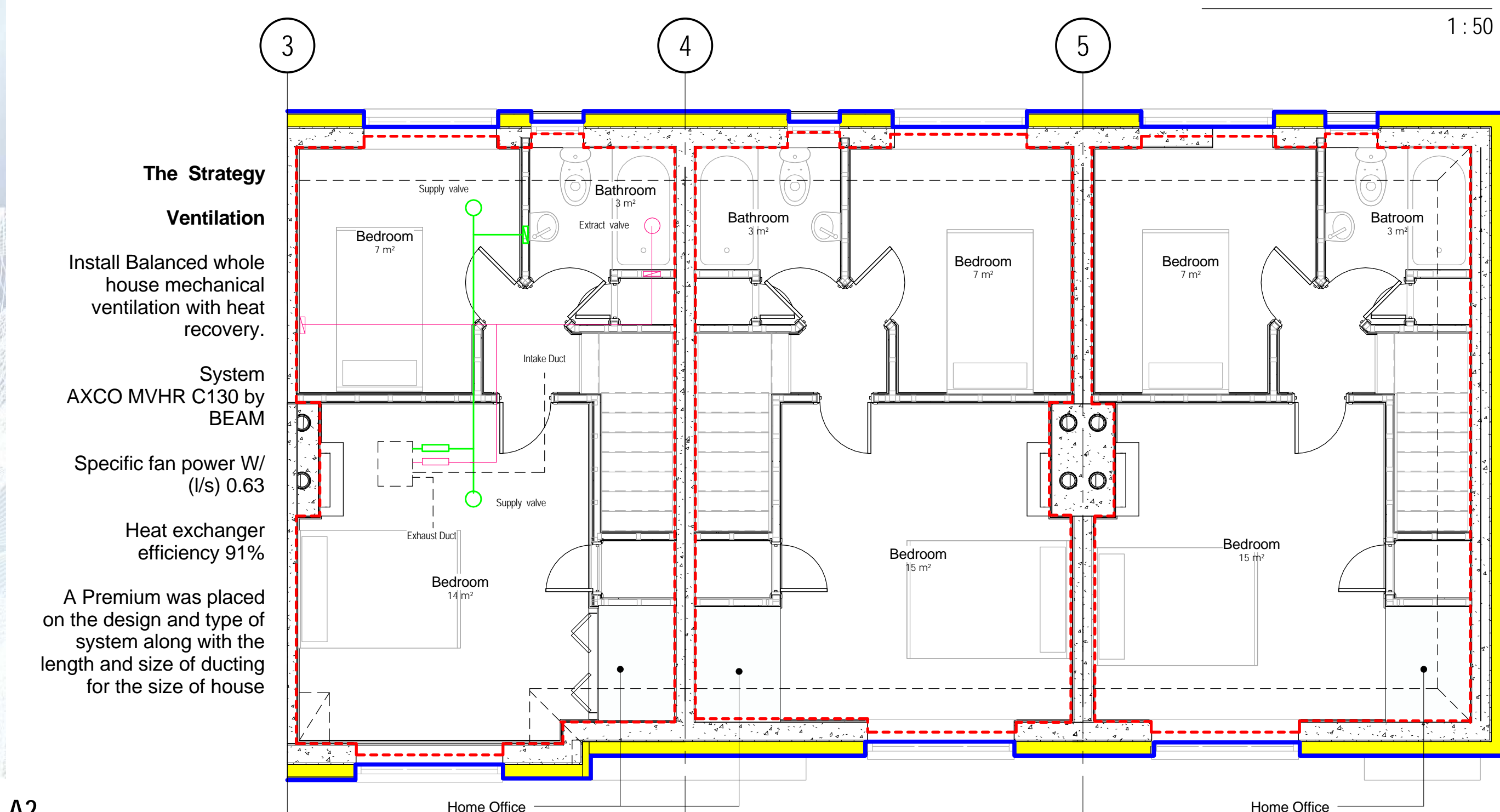
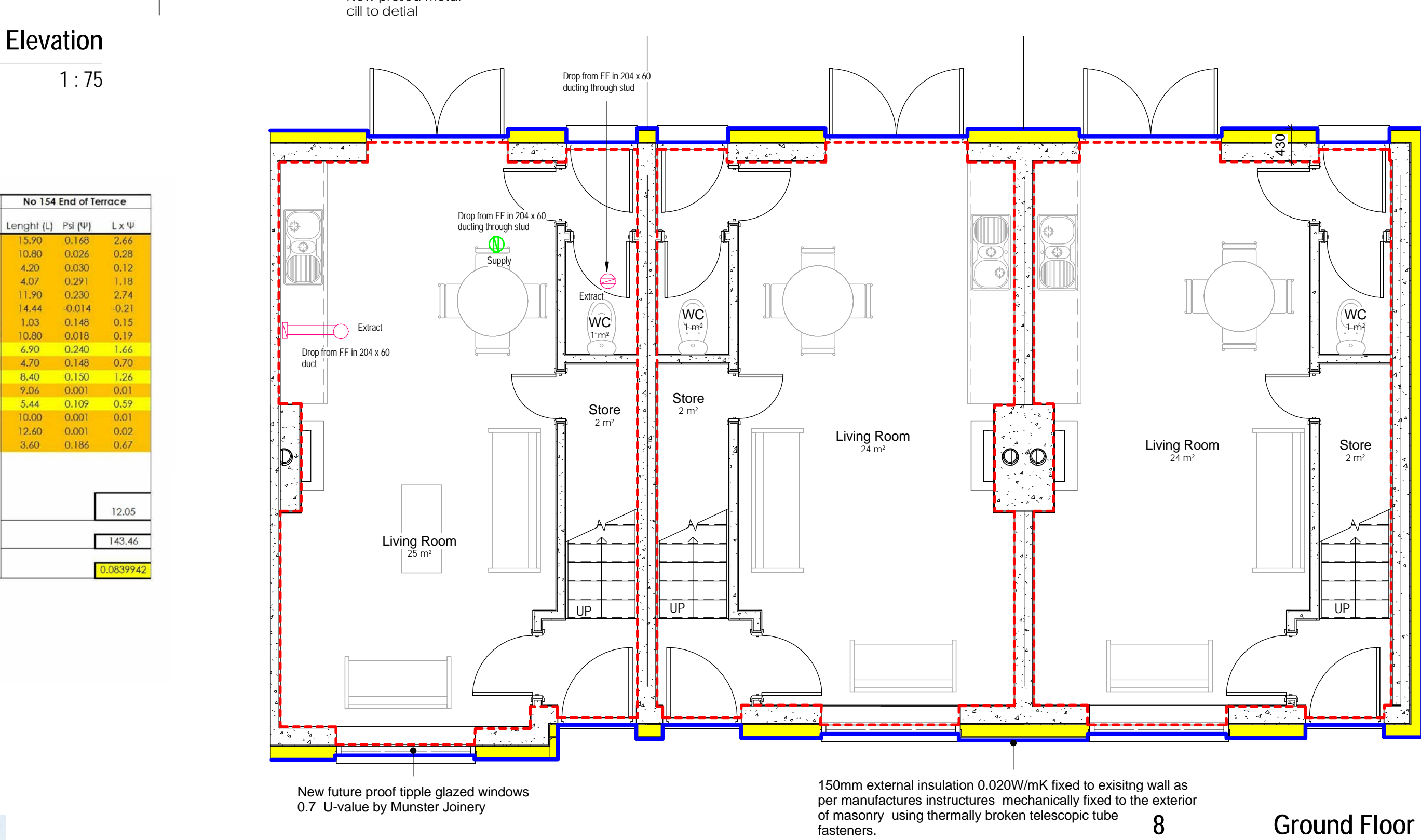
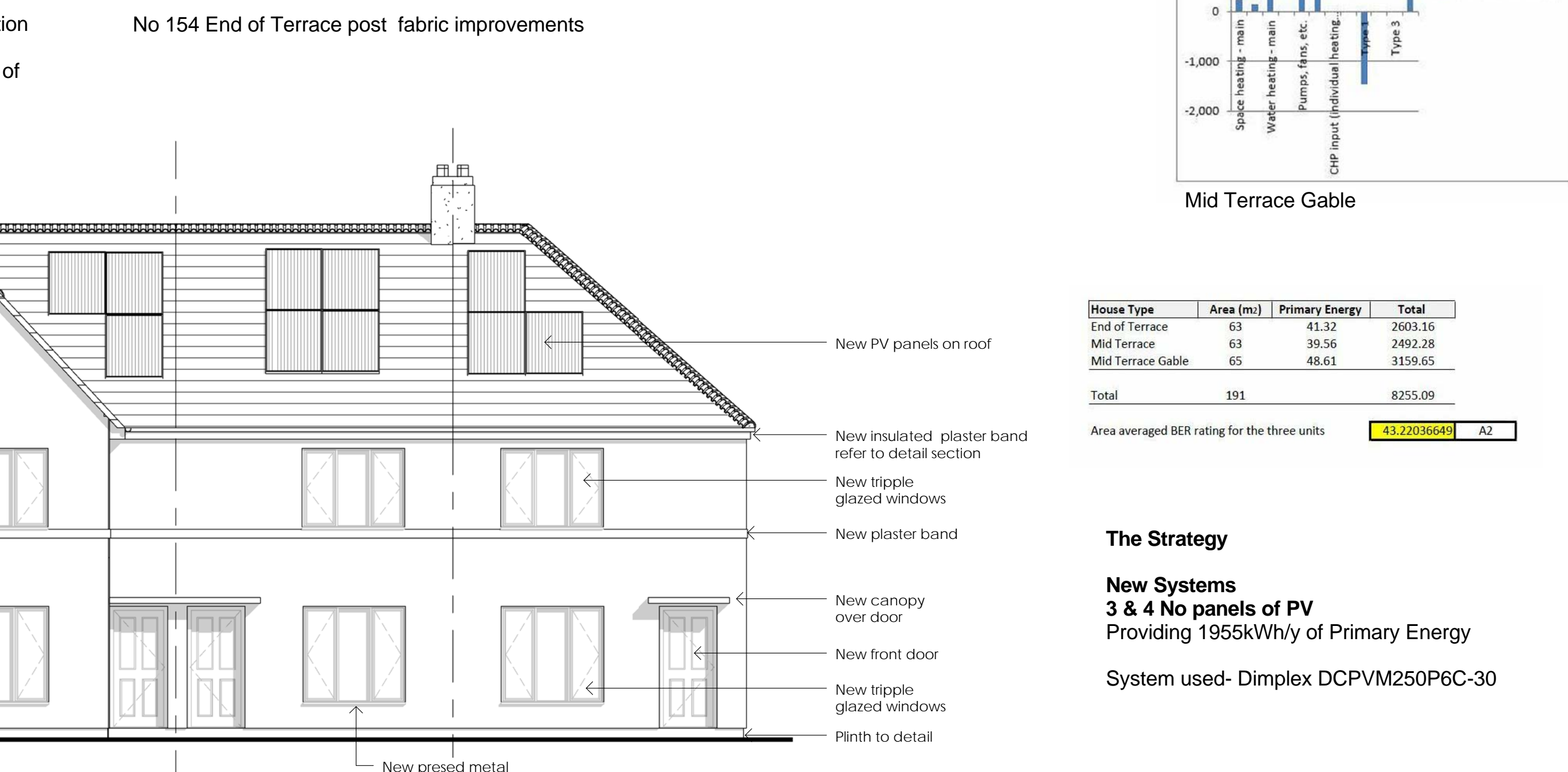
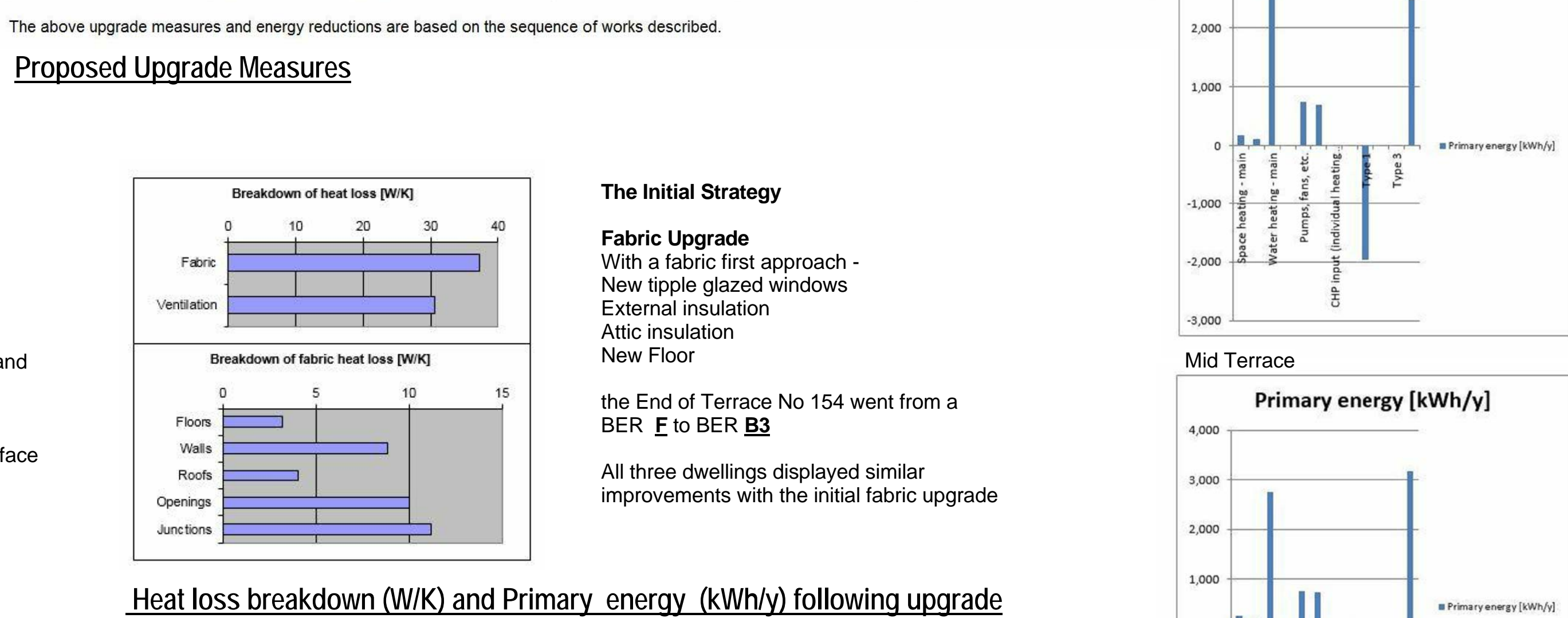
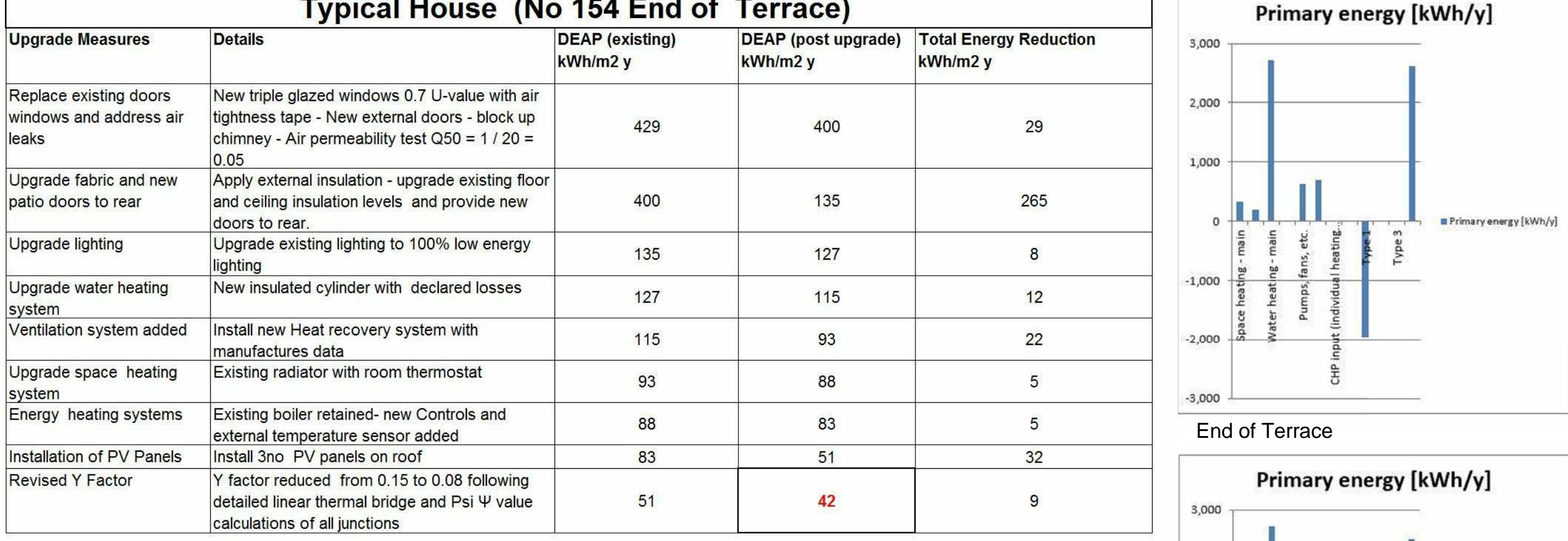
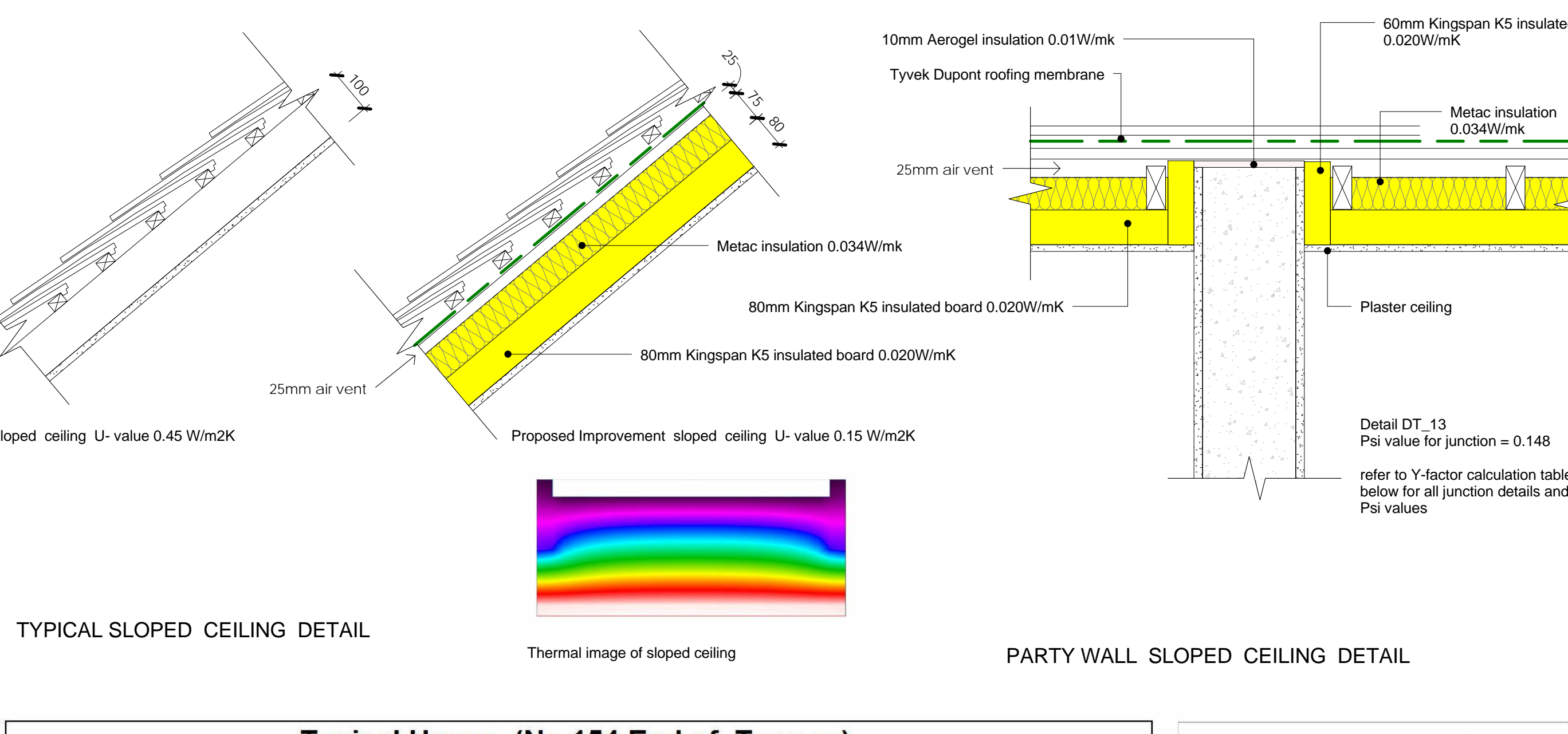
Services
Hot water is provided via a new Air source heat pump and a complementary 200L cylinder and buffer tank. Ground floor under floor heating with separate zone and thermostats and smart radiators at first floor level provide the space heating. Ventilation is provided via a heat recovery ventilation unit housed in the existing attic and fed to the existing rooms via ducts with existing studs or boxed out as required.

Renewables
Between 3 and 4 Photovoltaic (PV) roof panels were installed to the front elevations of each dwelling.

EXISTING FABRIC



Overall Area averaged BER Rating for the three units A2

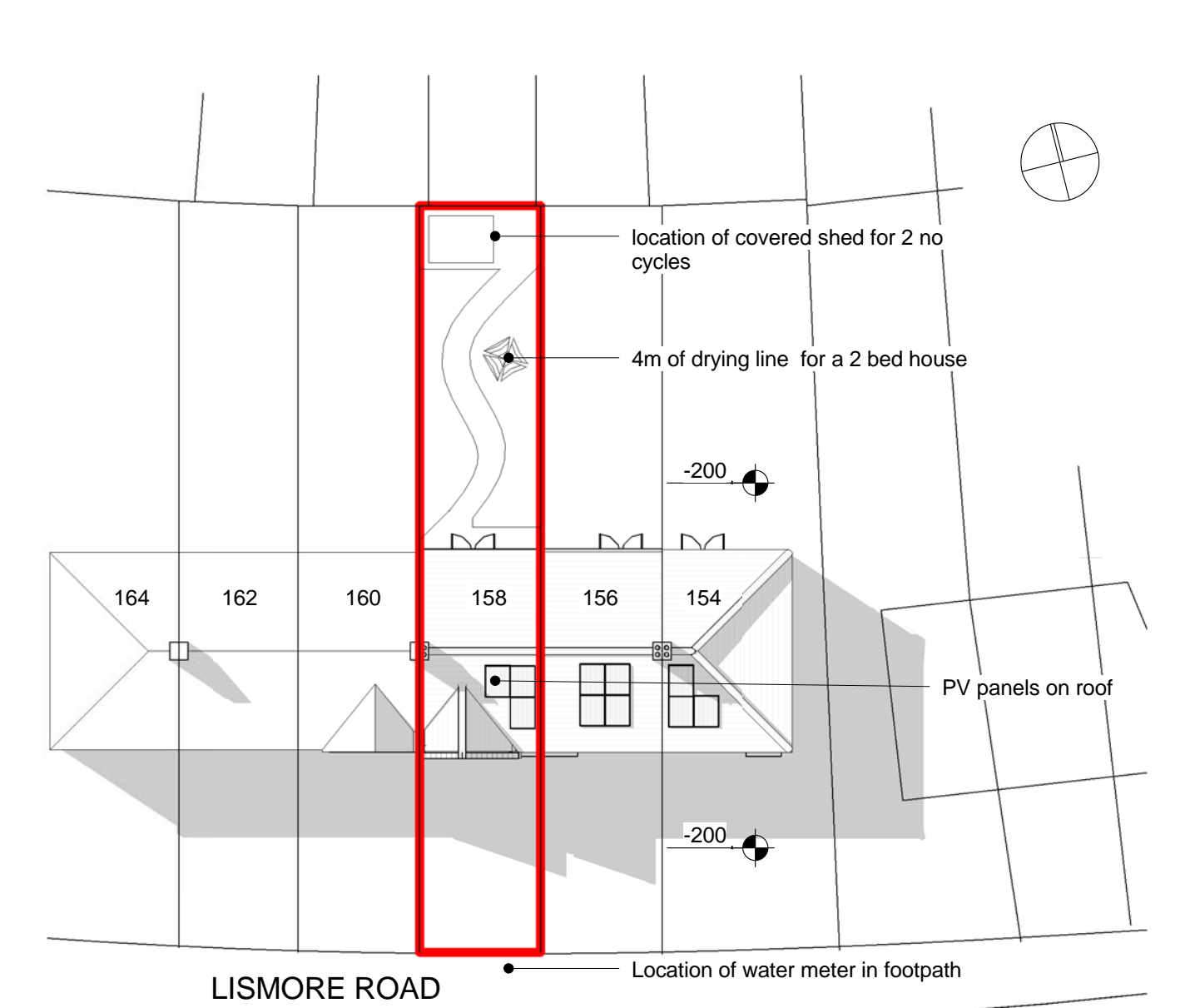


SYSTEMS FABRIC IMPROVEMENTS



BREEAM UK

Category	Weighting	Score	Target	Pass
Energy	10%	100	100	Pass
Water	10%	100	100	Pass
Materials	10%	100	100	Pass
Waste	10%	100	100	Pass
Health & Wellbeing	10%	100	100	Pass
Management	10%	100	100	Pass
Overall Score		1000	1000	Pass



No 158 Lisimore Road Crumlin County Dublin

The house chosen for this project is No 158 Lisimore Road in Crumlin and is one of a number of similar parlour / kitchen type cottage developments throughout Dublin, constructed circa 1940. The aim of this retrofit project is to improve the Building Energy Rating (BER) from its current rate of F to A2.

In addition to improved energy we have been asked to assess the overall sustainability of the project. For this I have selected the Building Research Establishment Environmental Assessment Methodology (BREEAM).

Key BREEAM facts:
BREEAM version: BREEAM Domestic Refurbishment 2014 Pre-Assessment Estimator v0.1
Stage: Design Stage
BREEAM rating: Excellent
Score: 73.08%