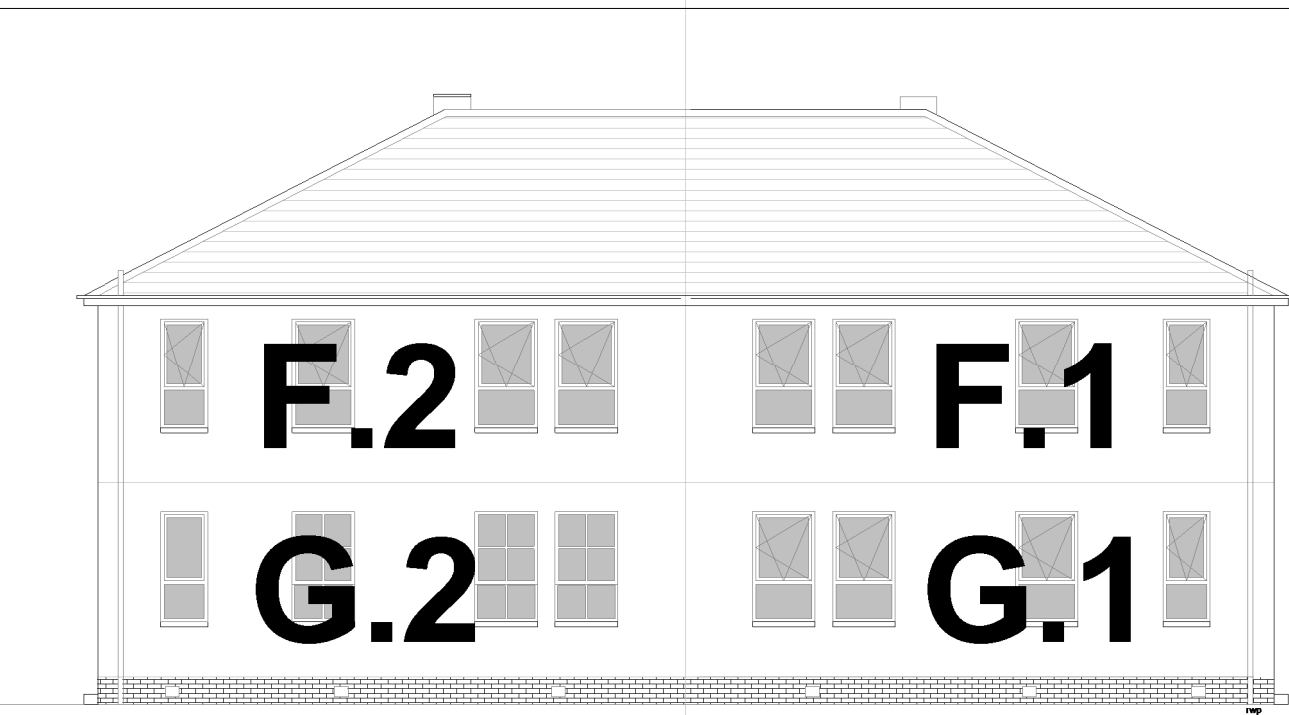
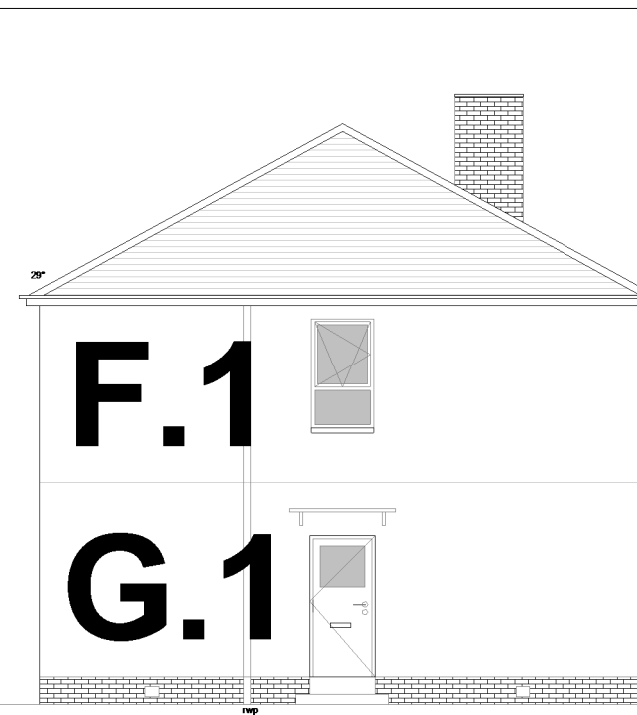


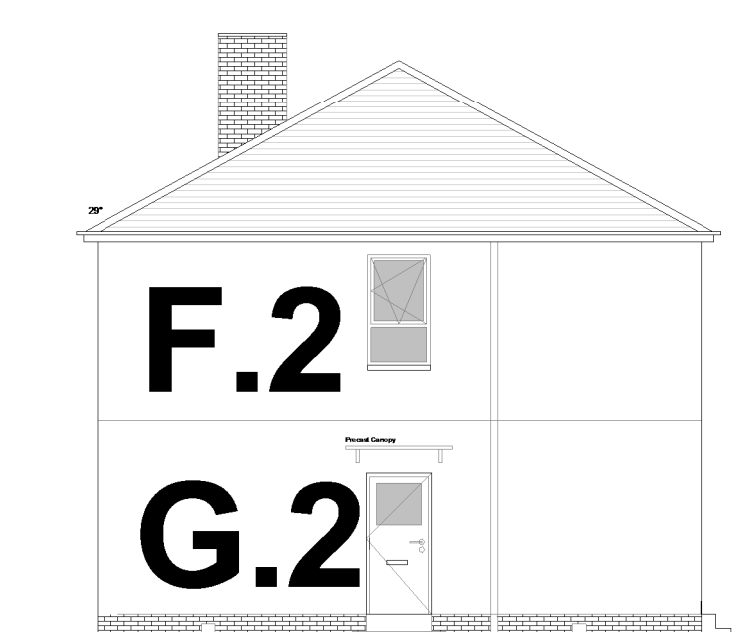
# ARCH1280 -- Four in a Block Retrofit Technology Project --



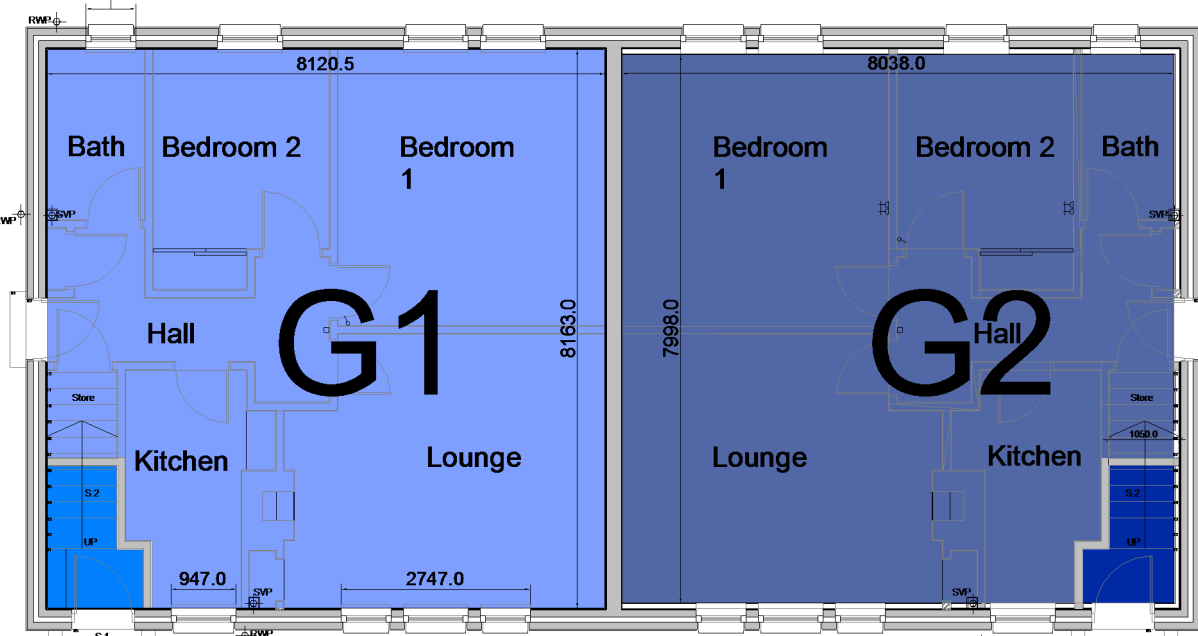
NORTH WEST ELEVATION



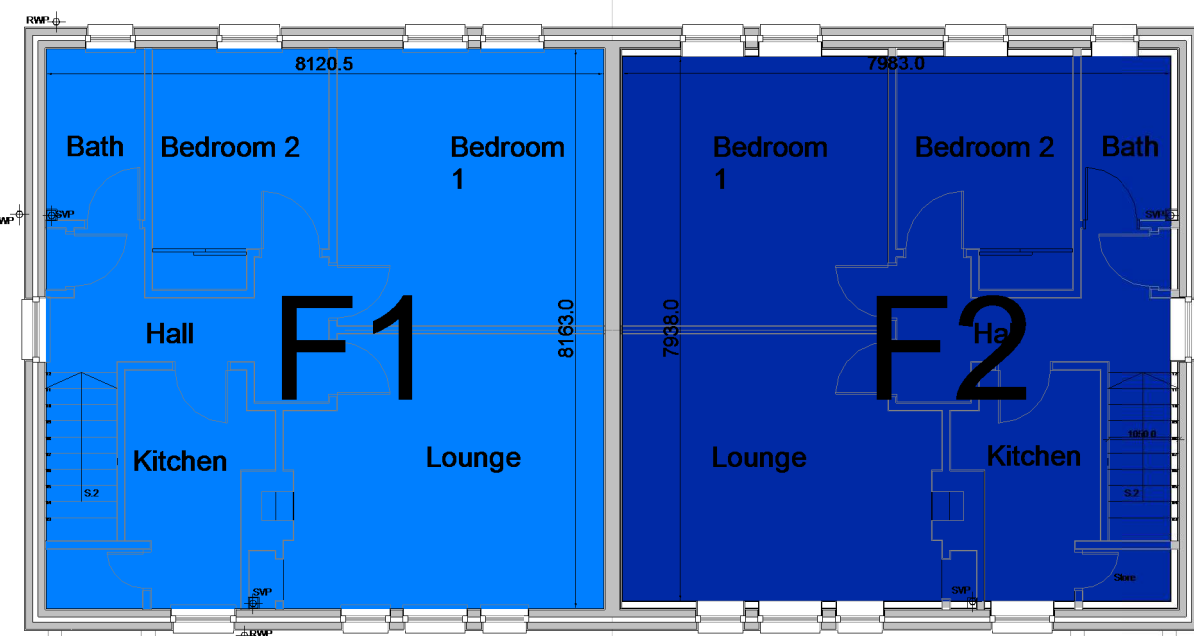
SOUTH WEST



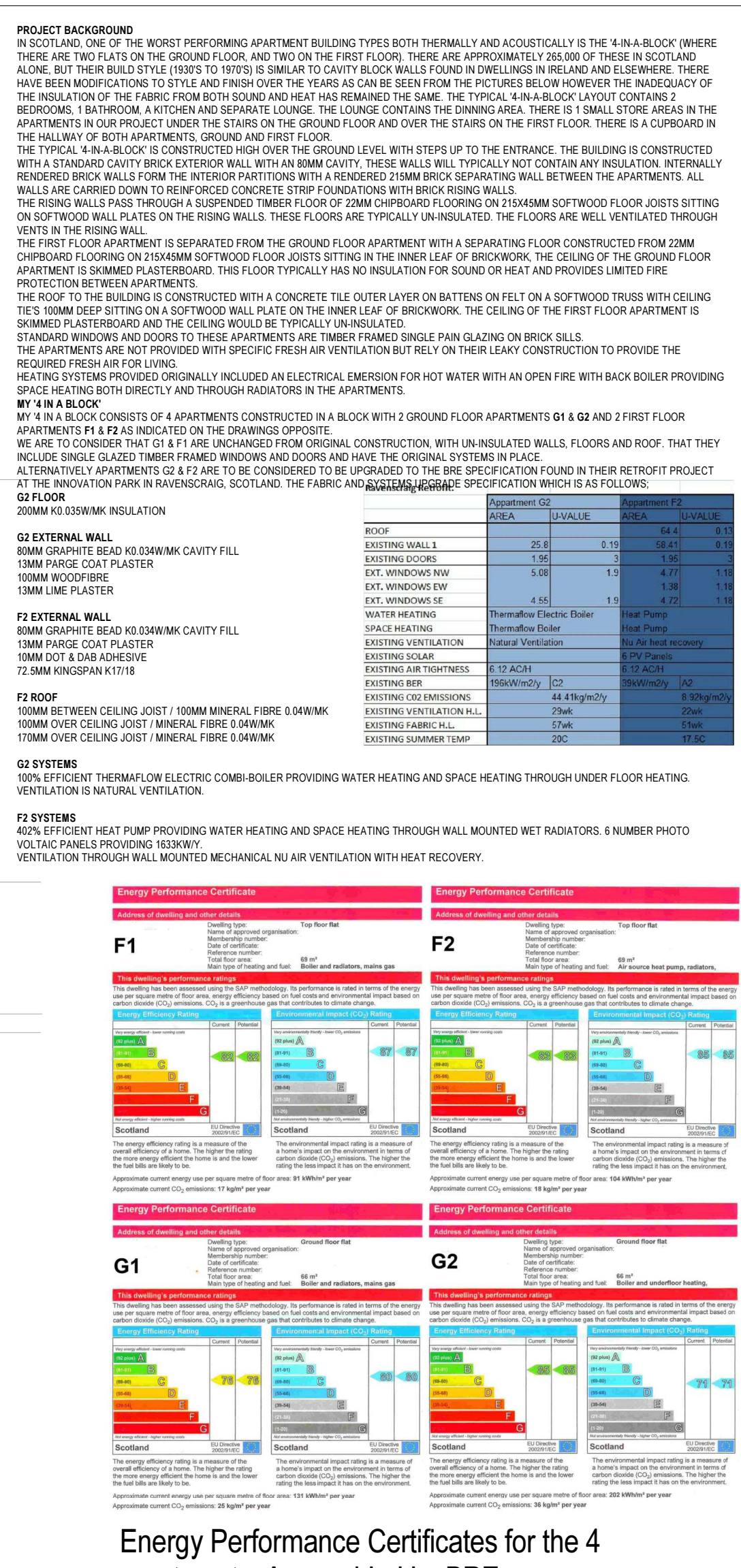
SOUTH EAST ELEVATION



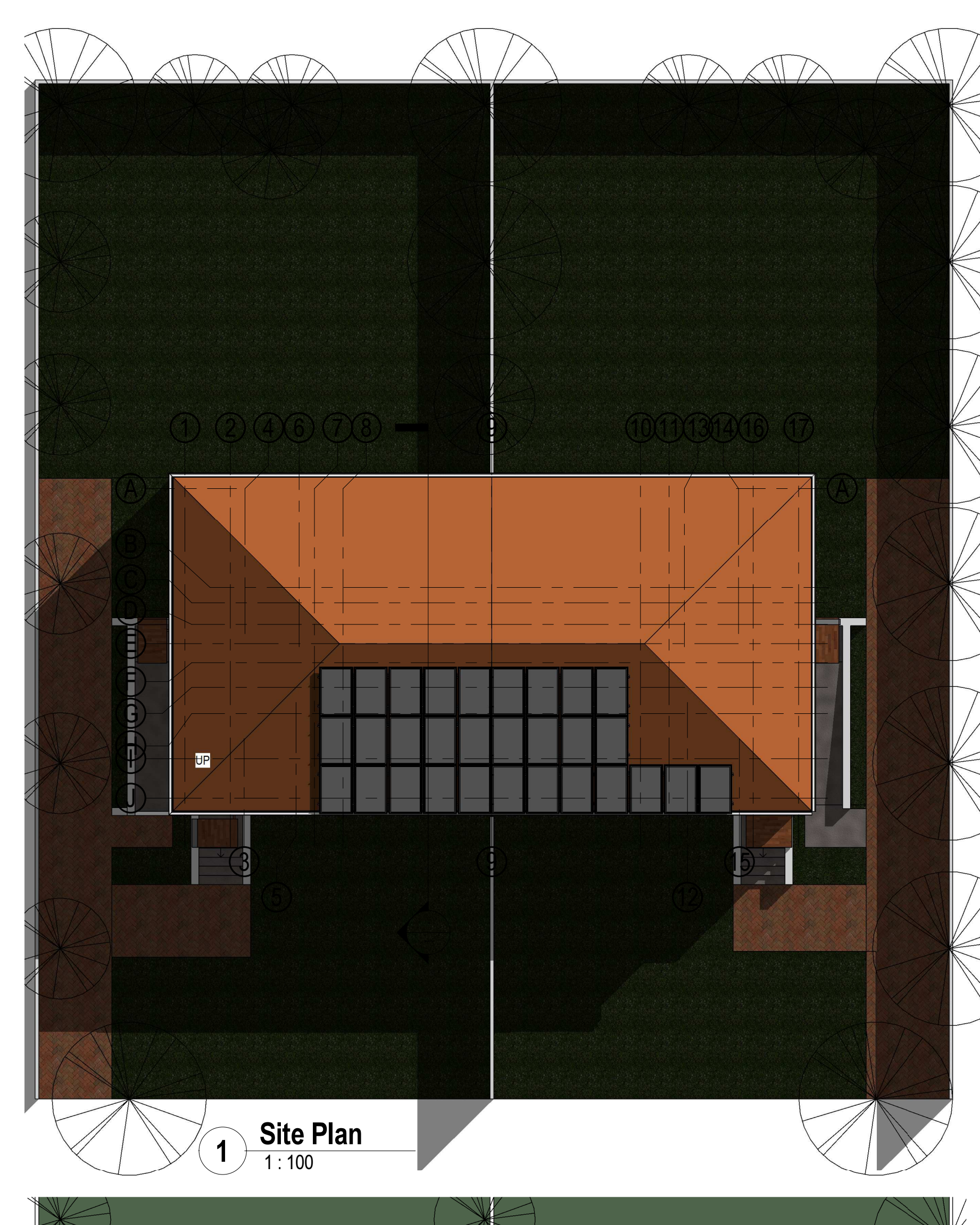
GROUND FLOOR PLAN



FIRST FLOOR PLAN



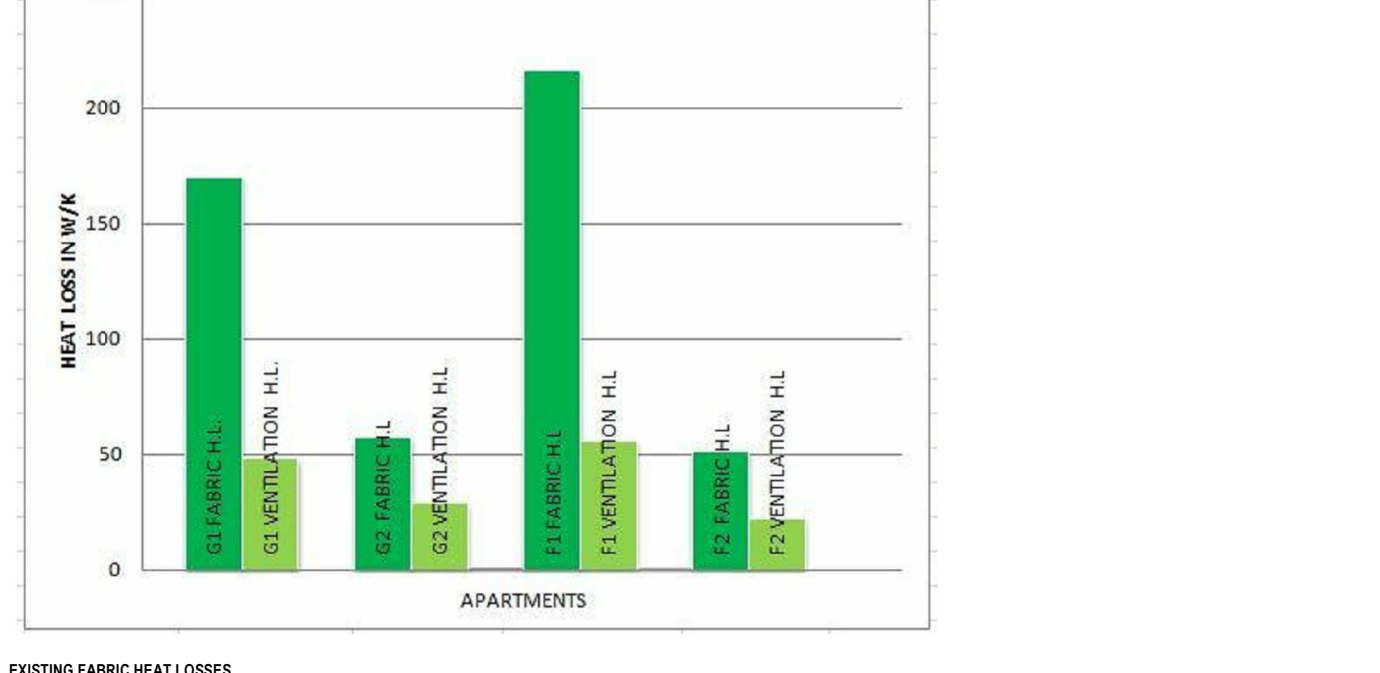
Energy Performance Certificates for the 4 apartments. As provided by BRE



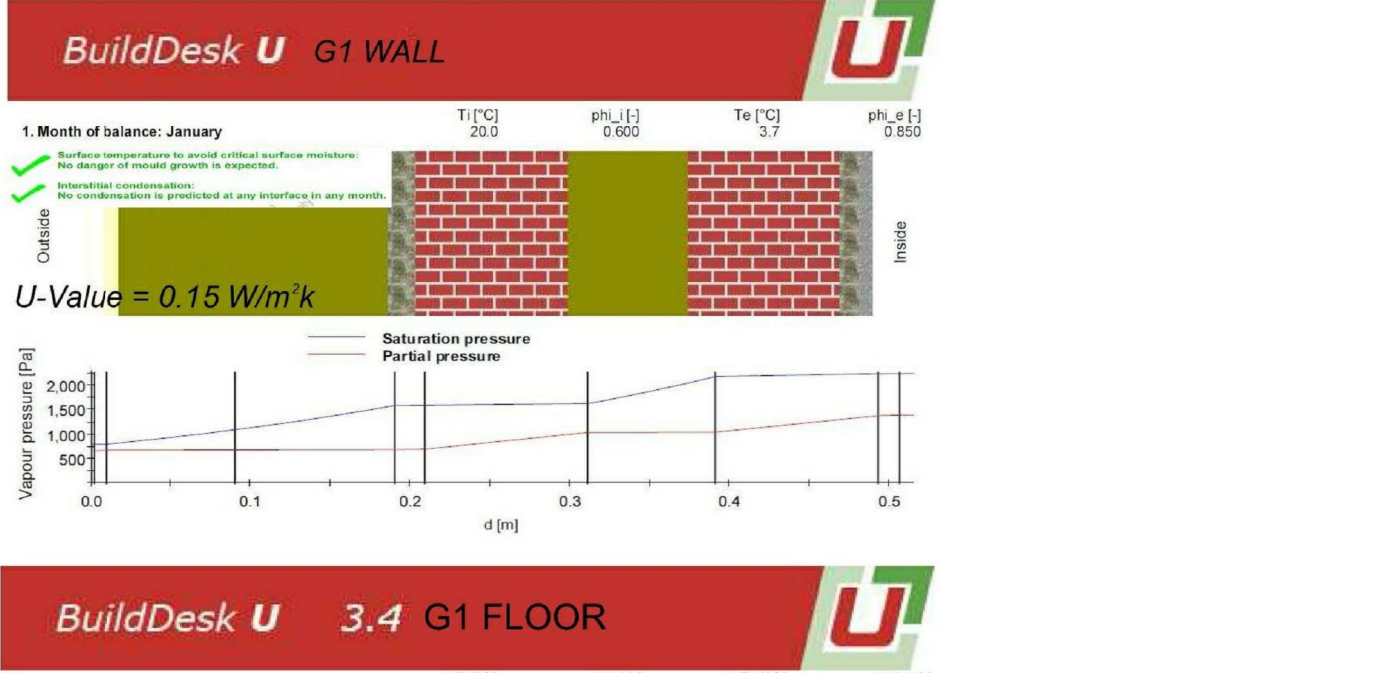
1 Site Plan 1:100

## FABRIC RETROFIT

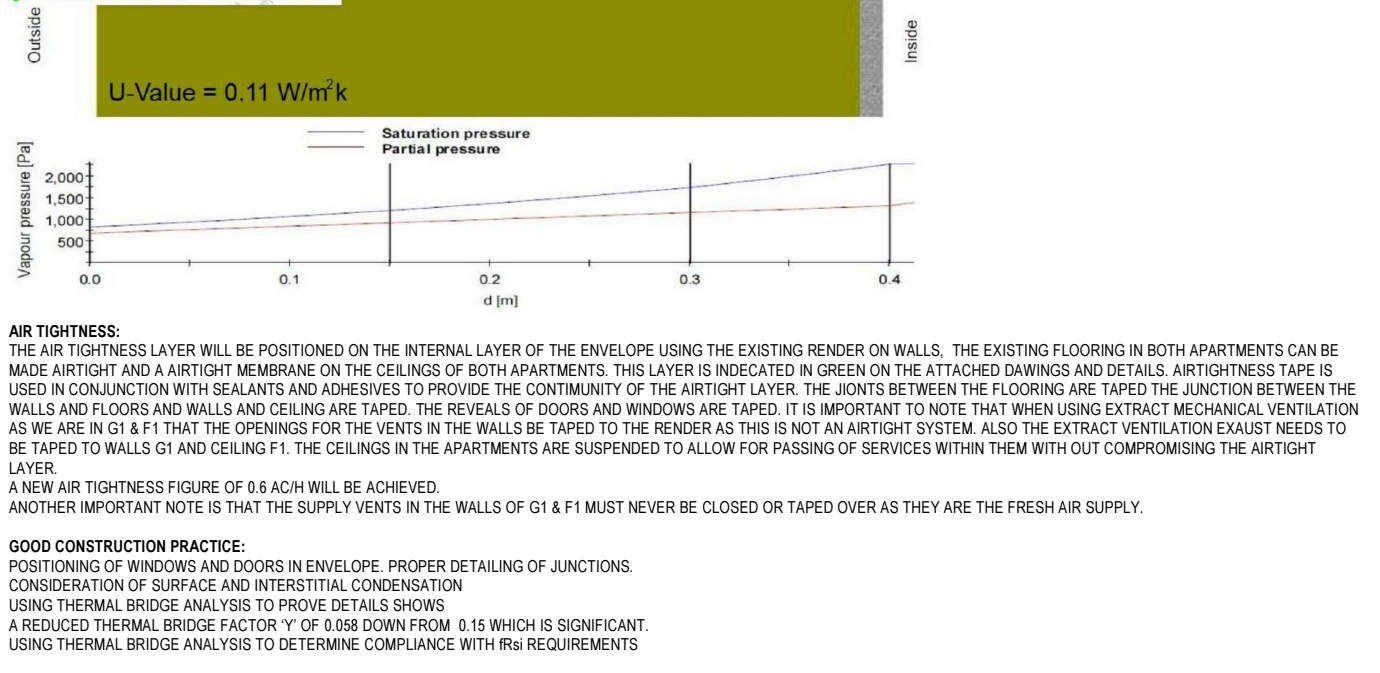
**PROJECT RATIONALE**  
 The project is a retrofit of a four-unit apartment block. The project aims to improve the energy performance of the building by addressing the fabric and ventilation heat loss. The project is a retrofit of a four-unit apartment block. The project aims to improve the energy performance of the building by addressing the fabric and ventilation heat loss.



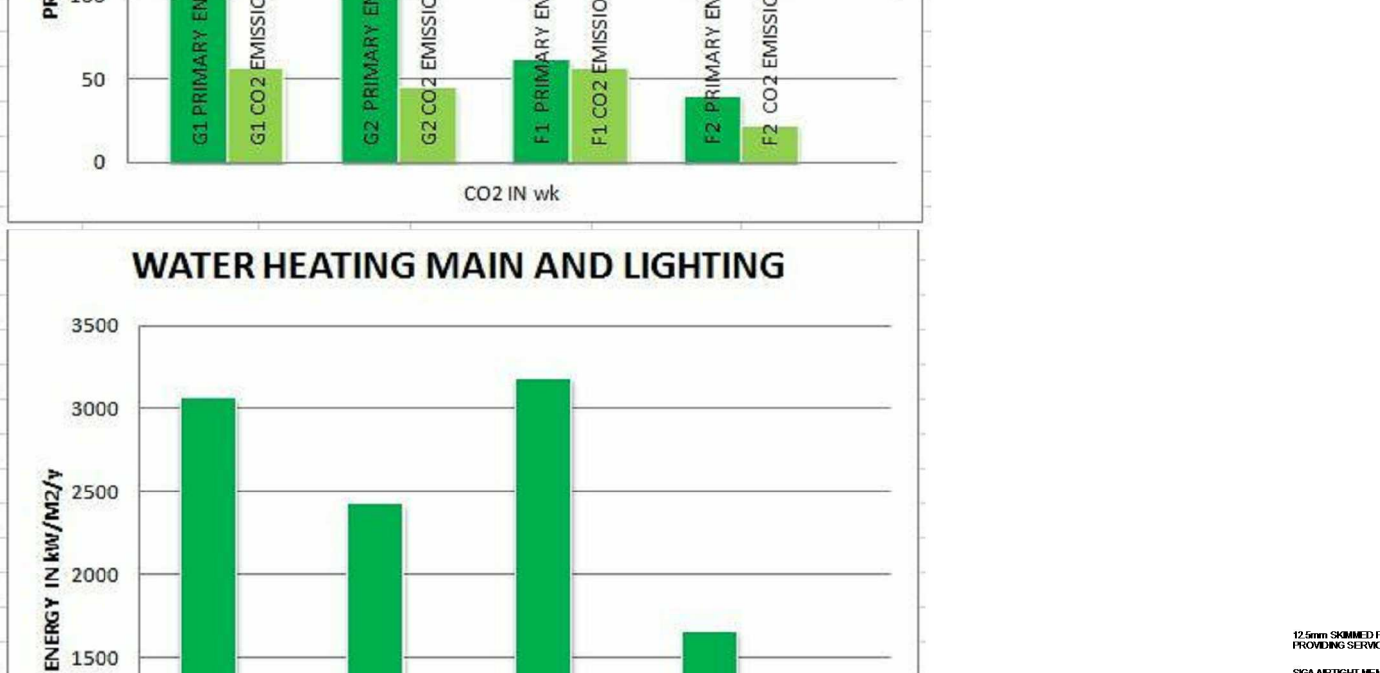
**APARTMENT FABRIC AND VENTILATION HEAT LOSS**  
 The chart shows the heat loss for each unit. Unit G1 has the highest heat loss, followed by G2, F1, and F2.



**PRIMARY ENERGY USE + CO2 EMISSIONS**  
 The chart shows the primary energy use and CO2 emissions for each unit. Unit G1 has the highest energy use and emissions, followed by G2, F1, and F2.

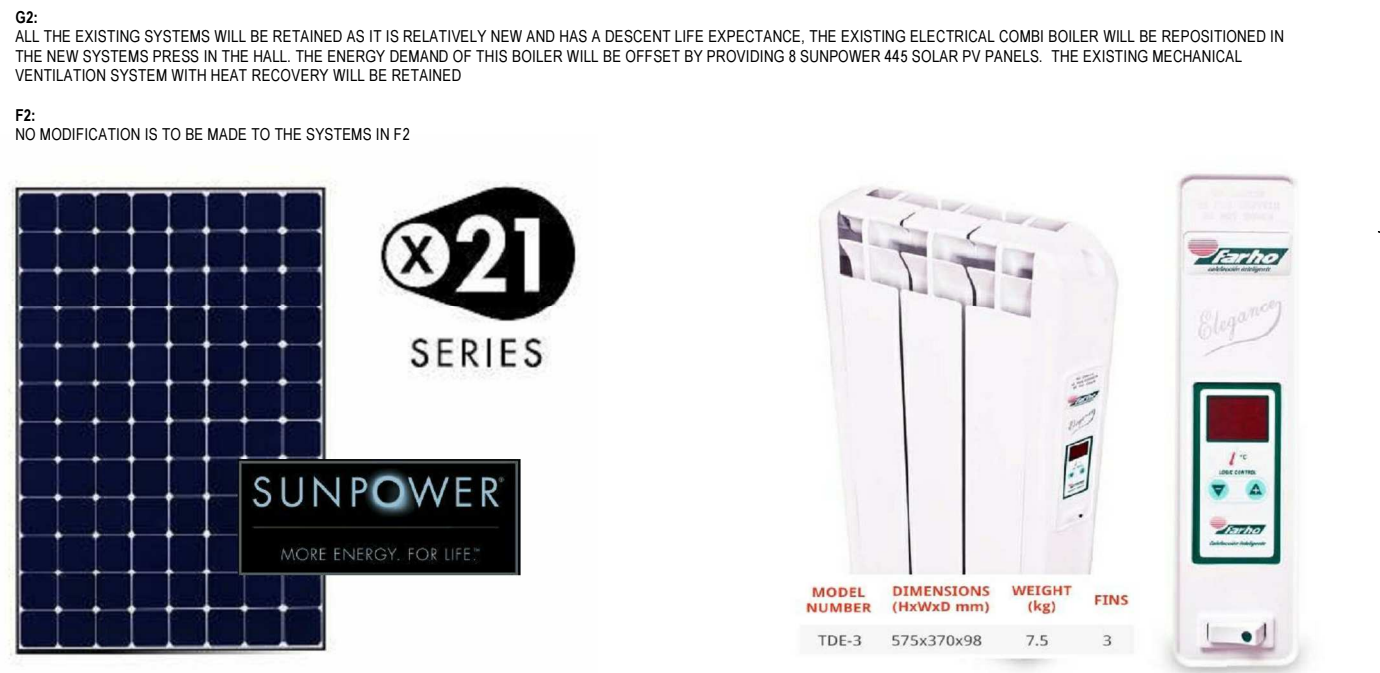


**WATER HEATING MAIN AND LIGHTING**  
 The chart shows the energy use for water heating, main, and lighting for each unit. Unit G1 has the highest energy use, followed by G2, F1, and F2.

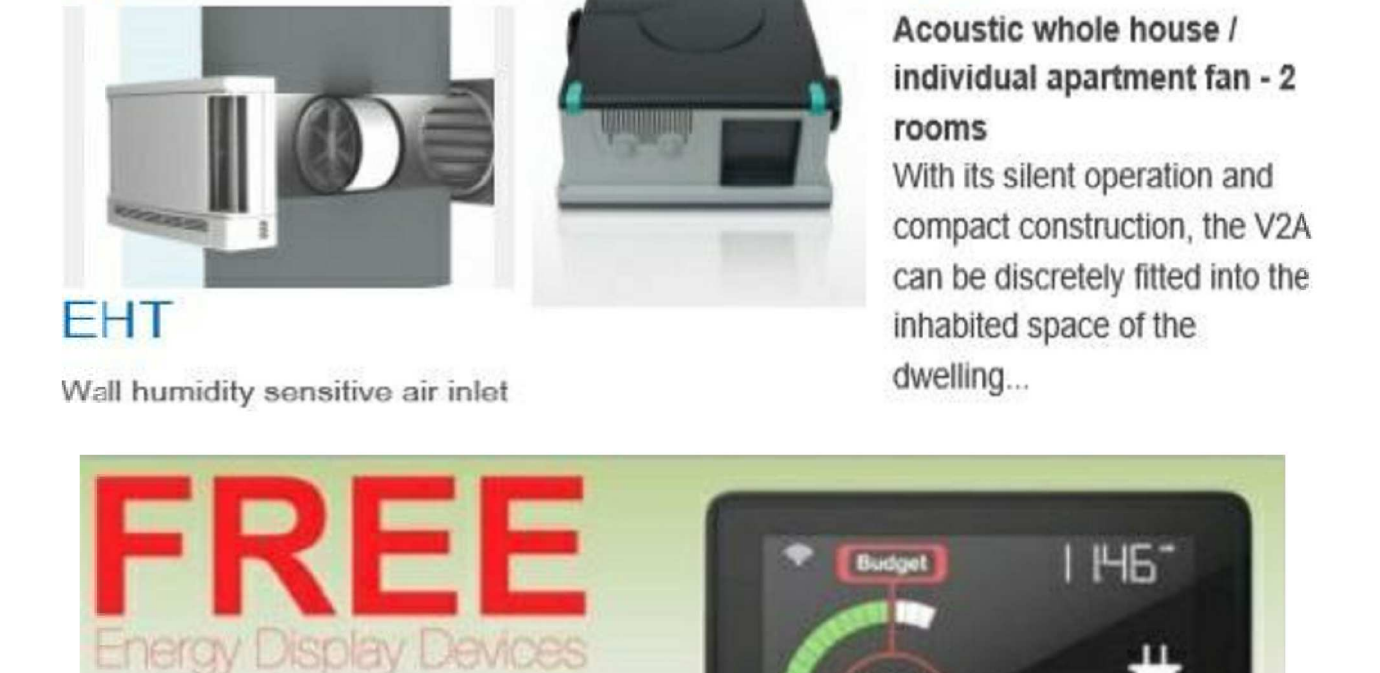


**SPACE HEATING MAIN AND SECONDARY**  
 The chart shows the energy use for space heating, main, and secondary for each unit. Unit G1 has the highest energy use, followed by G2, F1, and F2.

**SYSTEM RETROFIT SUMMARY**  
 The summary table lists the retrofit measures for each unit, including insulation, double glazing, and energy-efficient appliances.



**SUNPOWER**  
 SunPower solar panels are used for the project. They are high-efficiency, monocrystalline silicon panels.

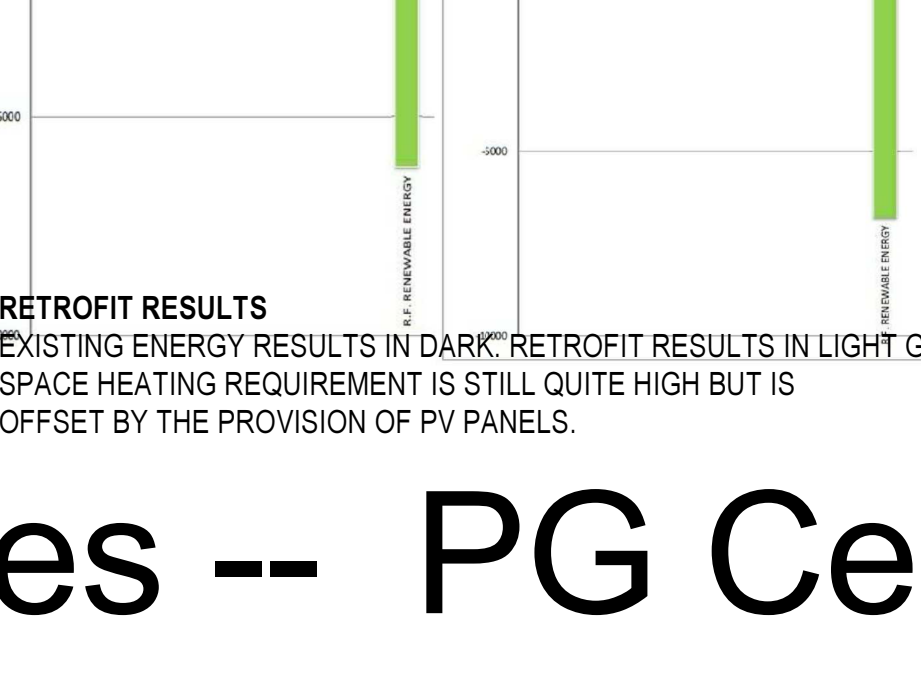
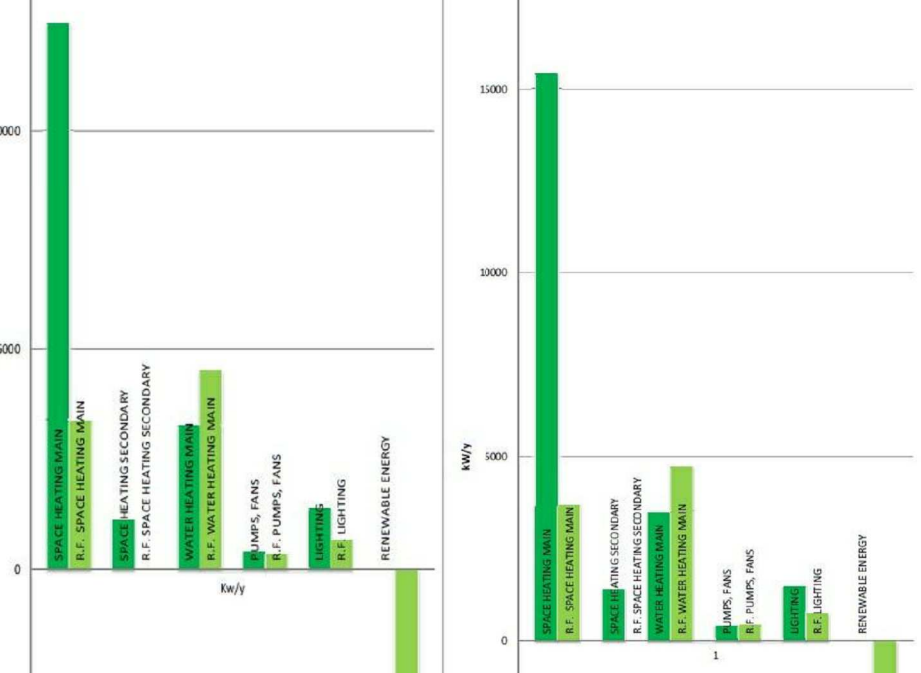
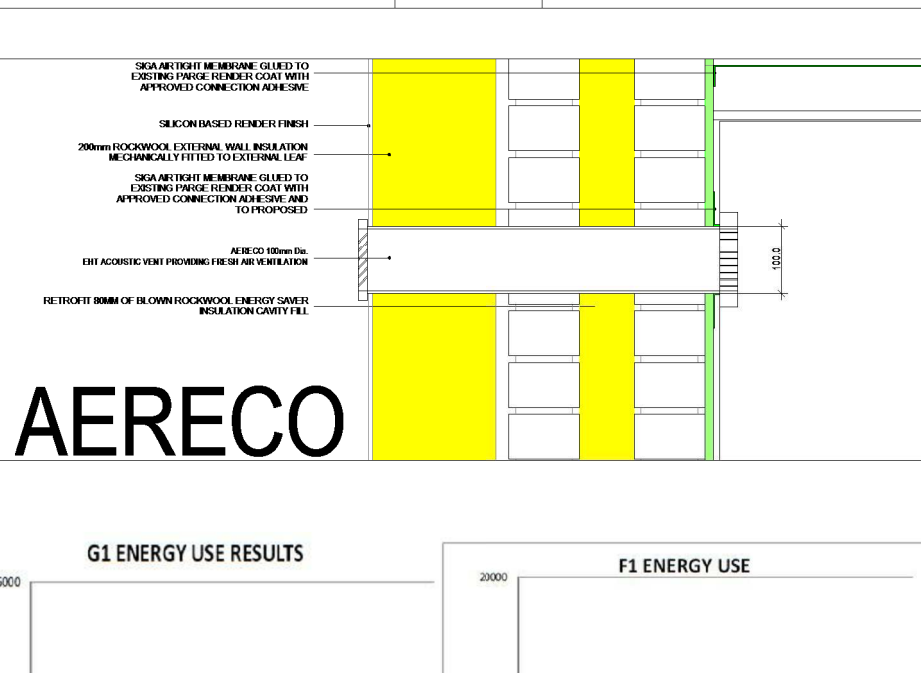
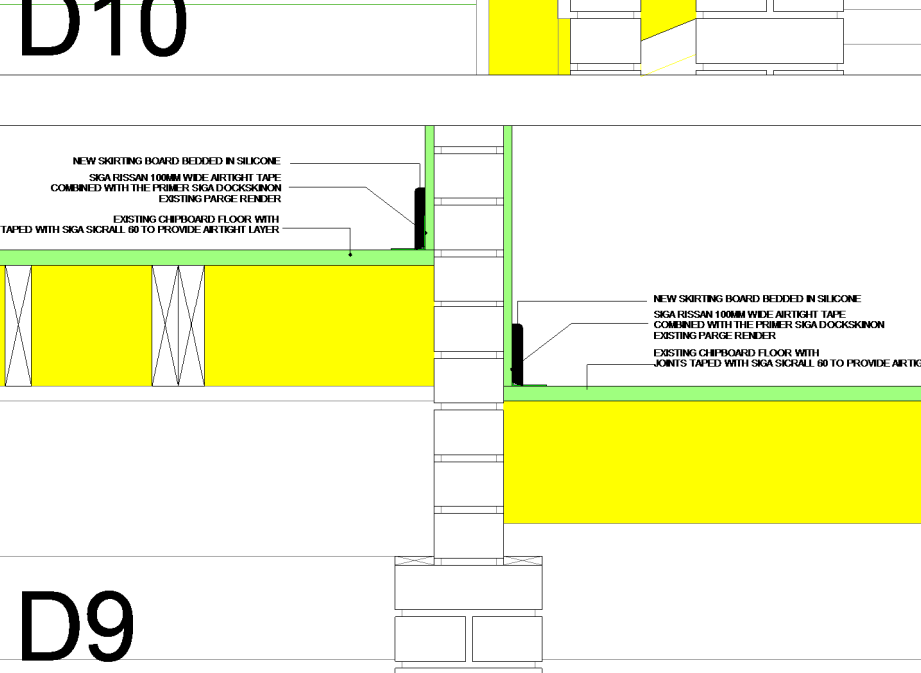
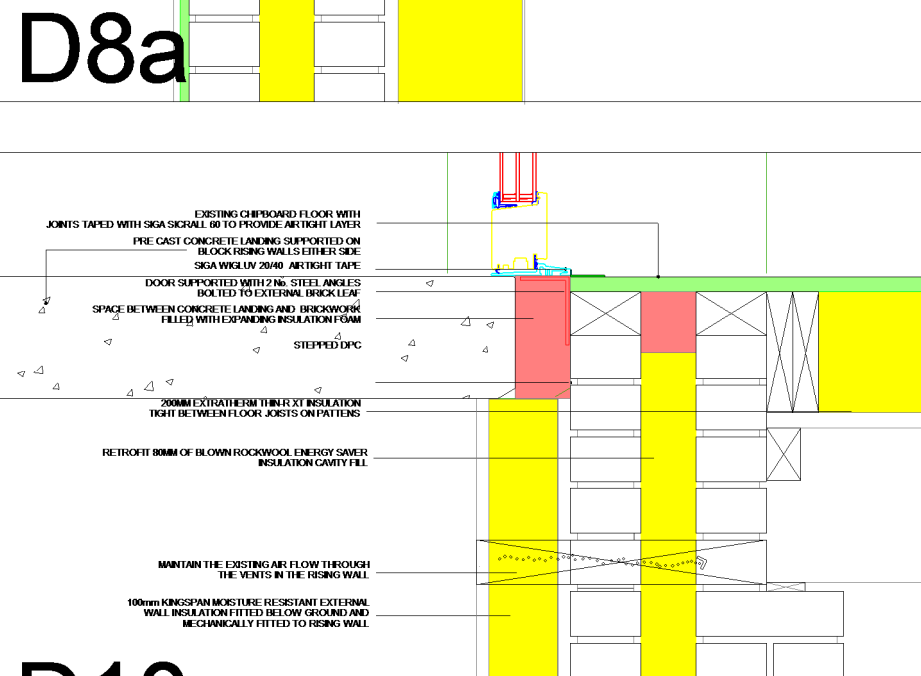
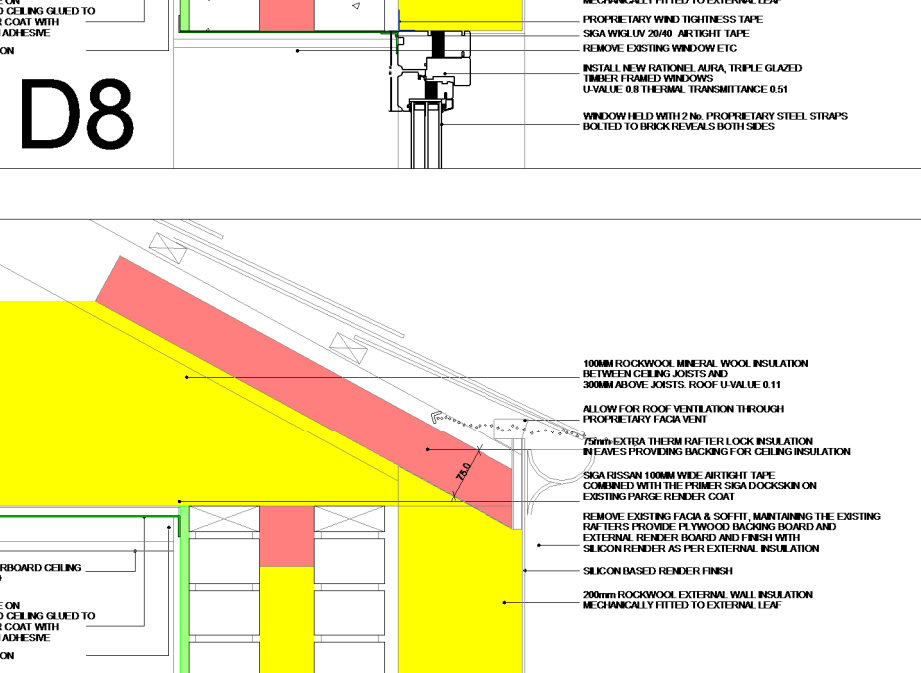
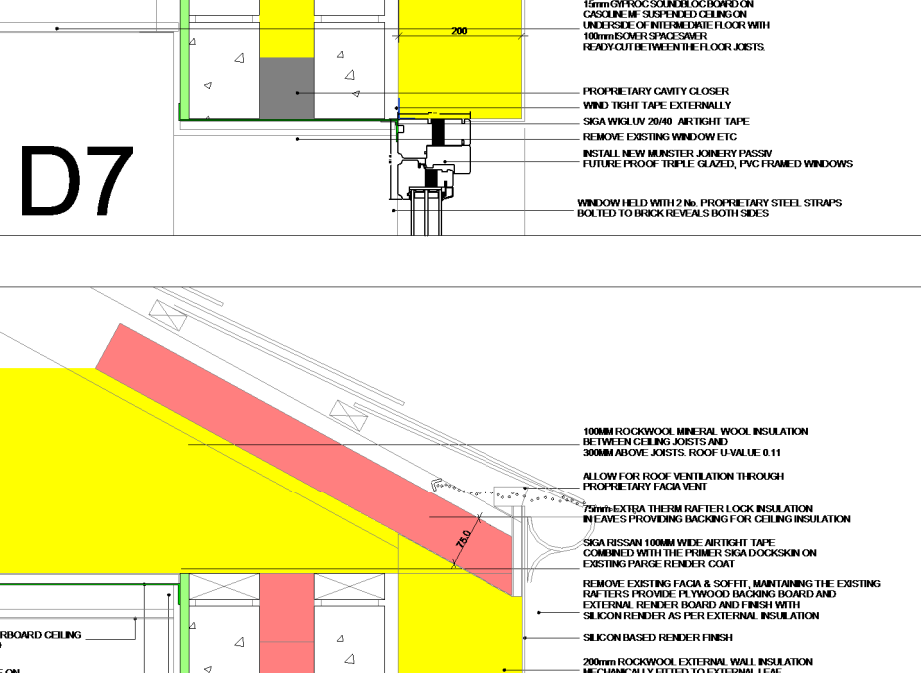
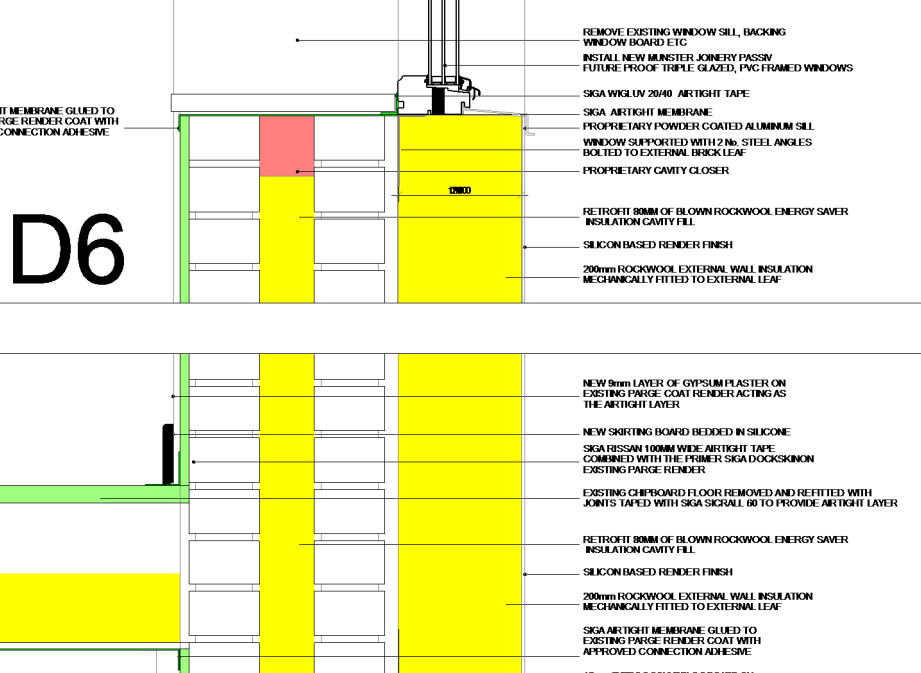
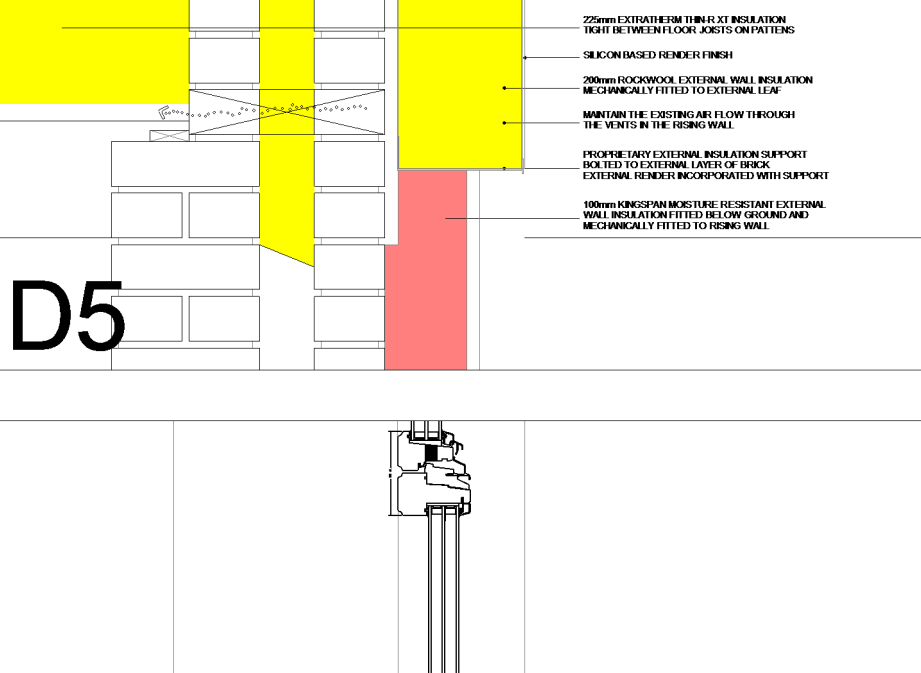
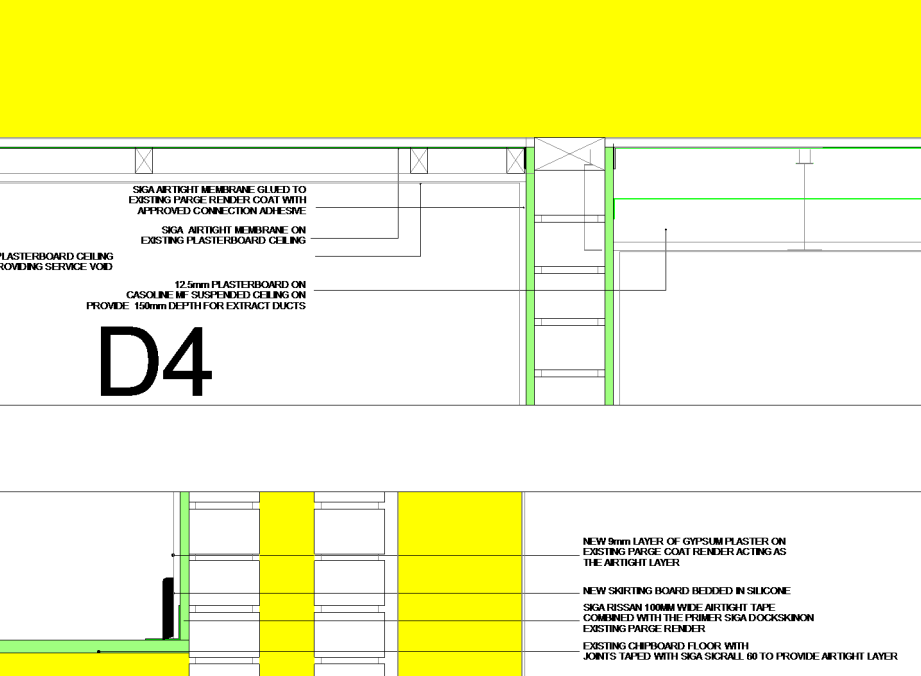
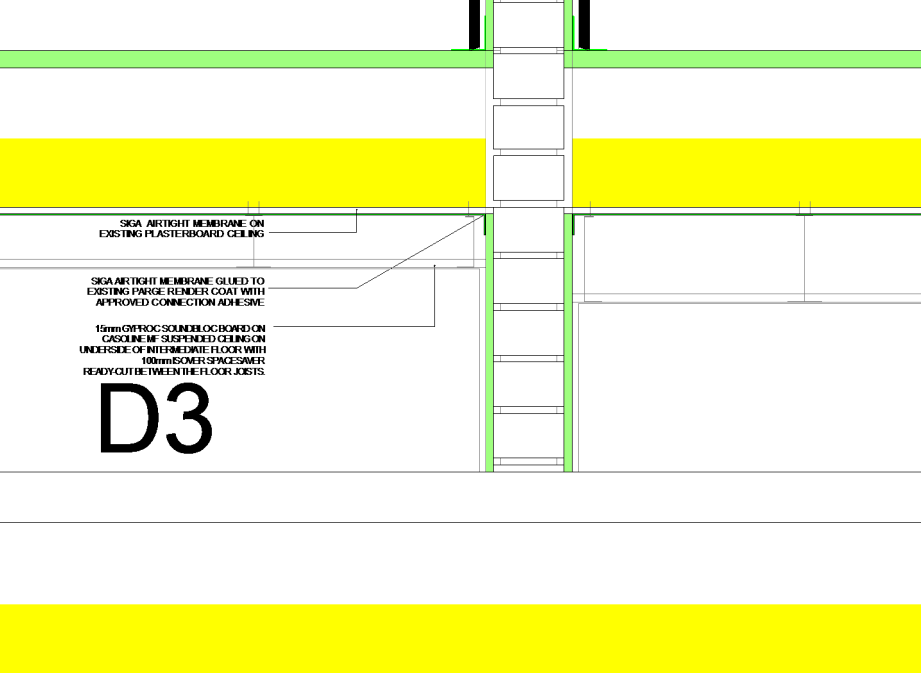
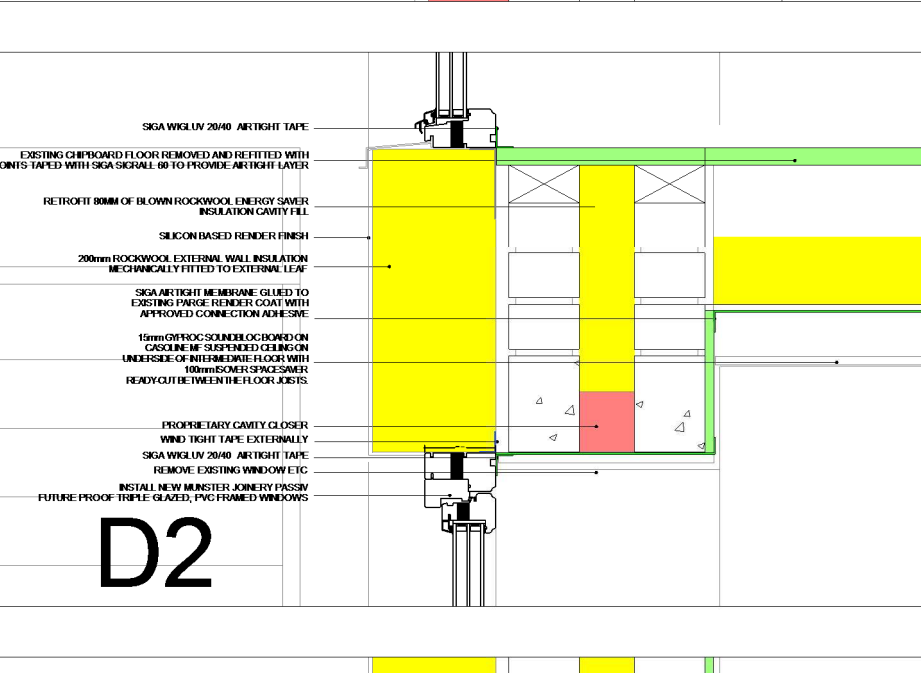
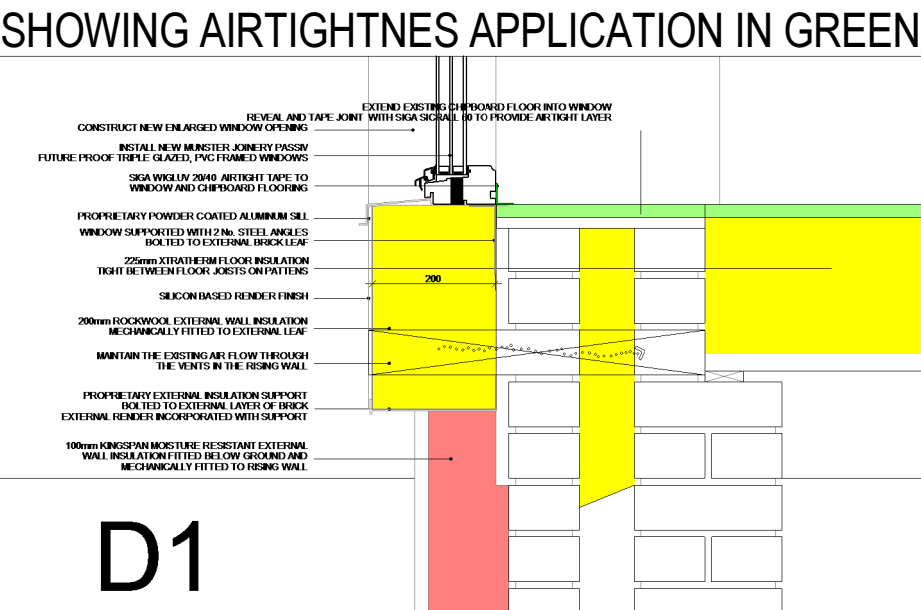


**AERECO**  
 Aereco V2A acoustic vents are used for the project. They provide automatic ventilation while reducing noise.



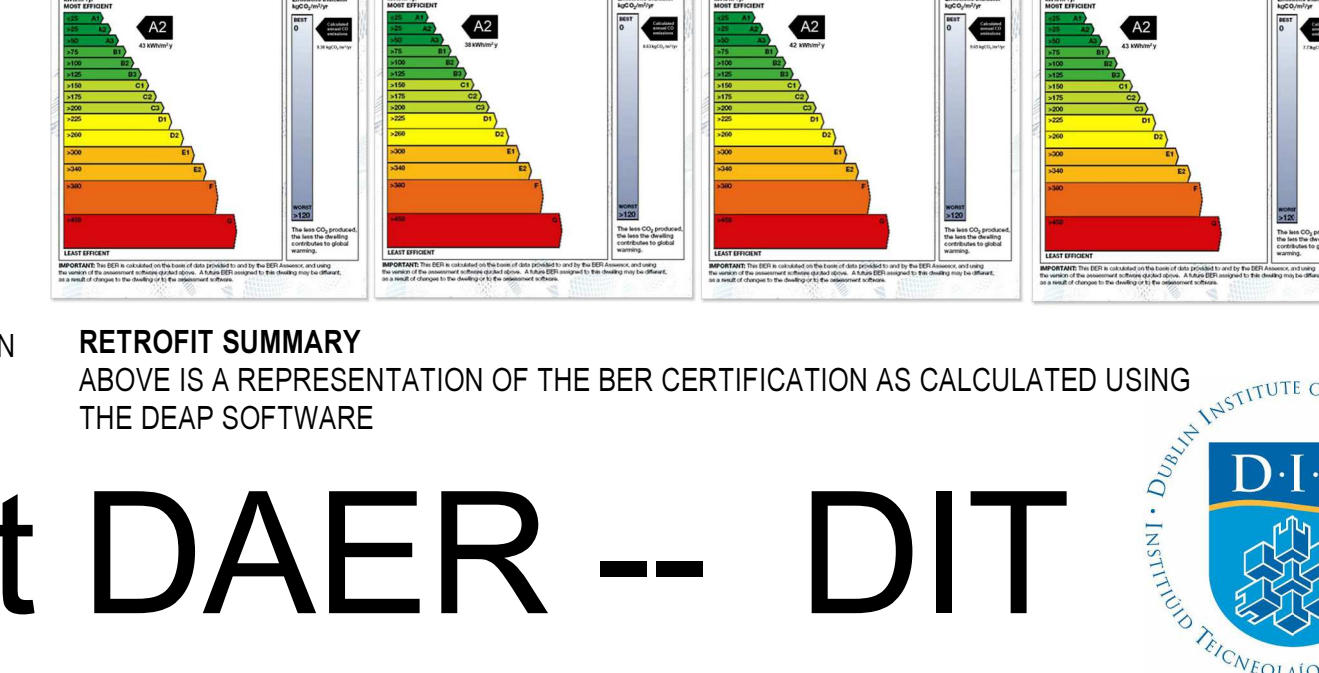
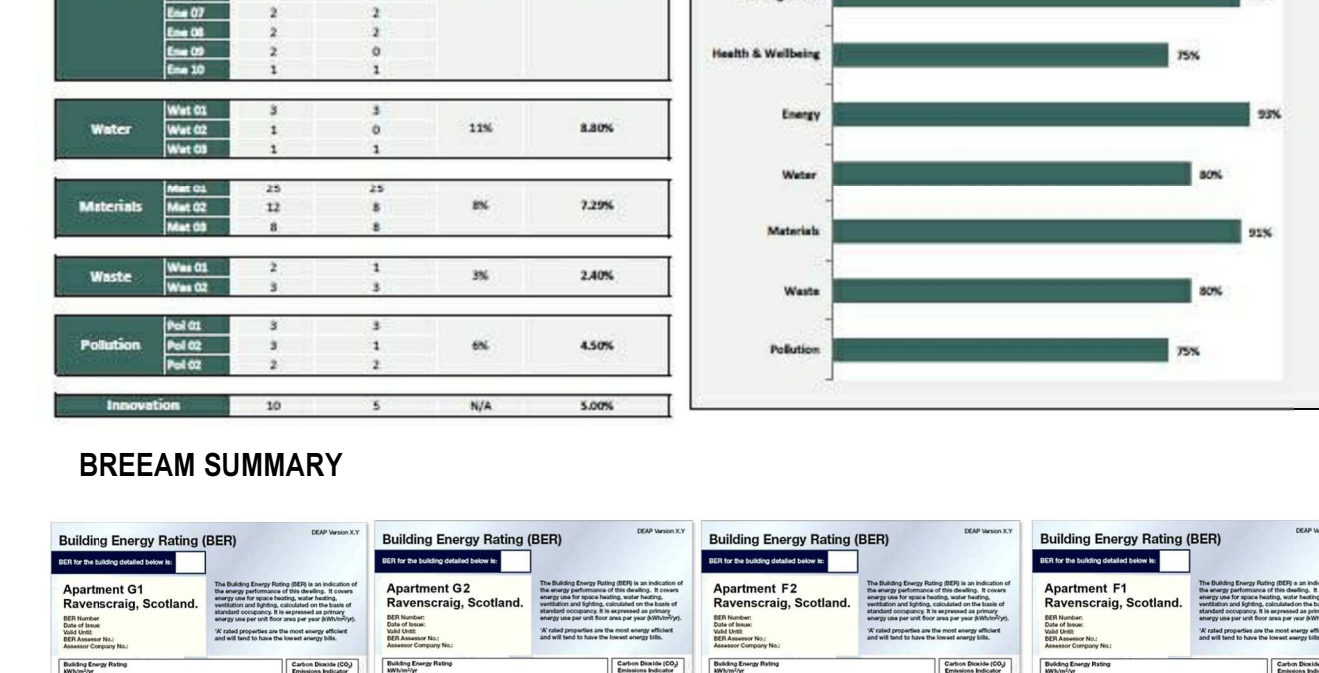
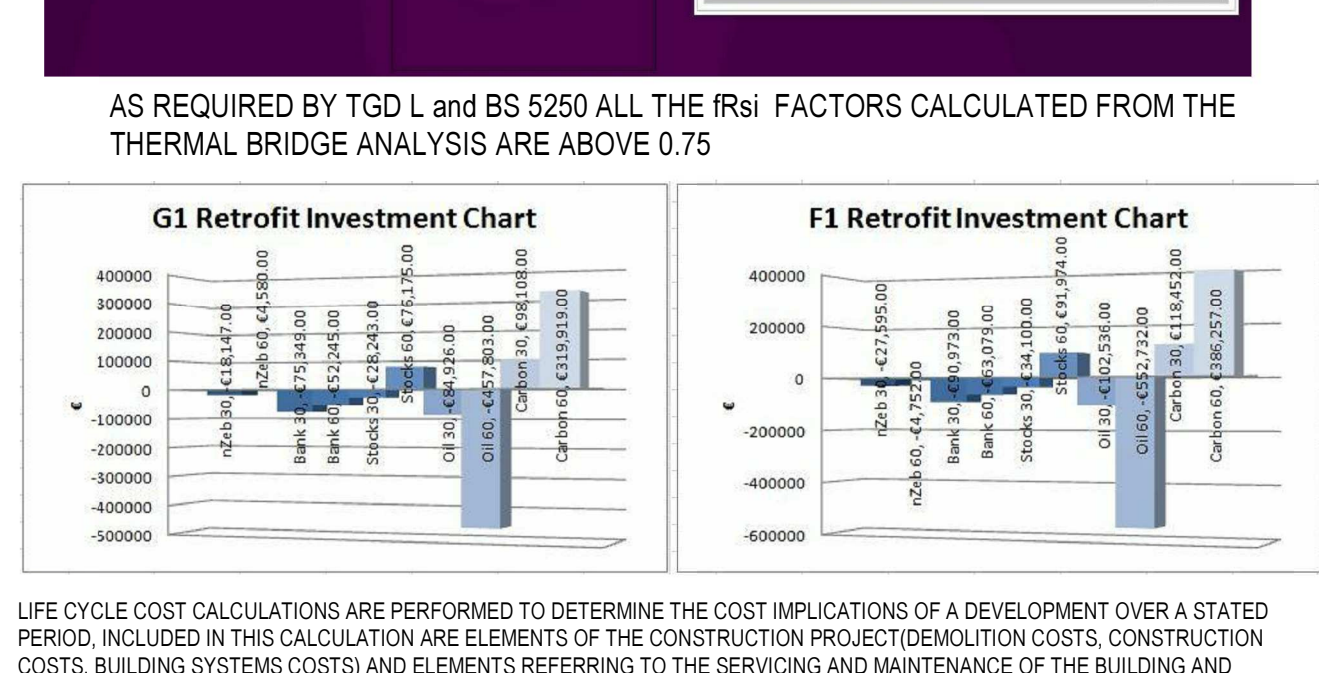
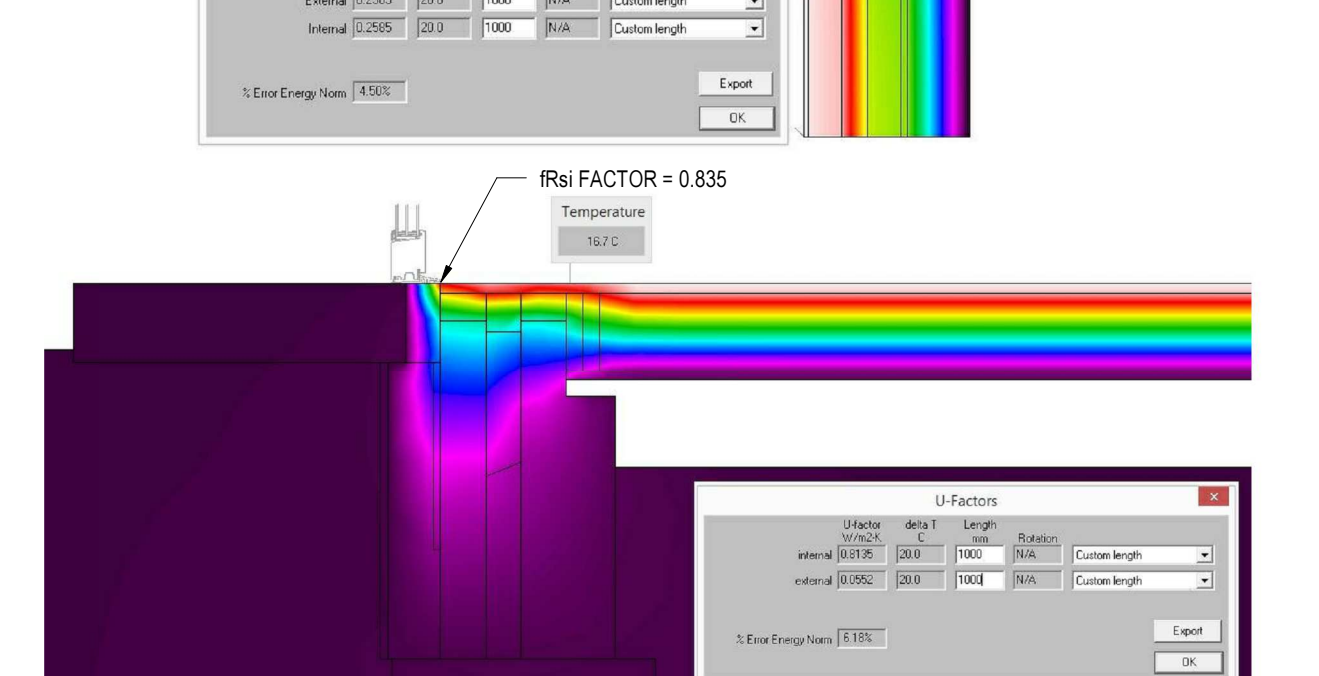
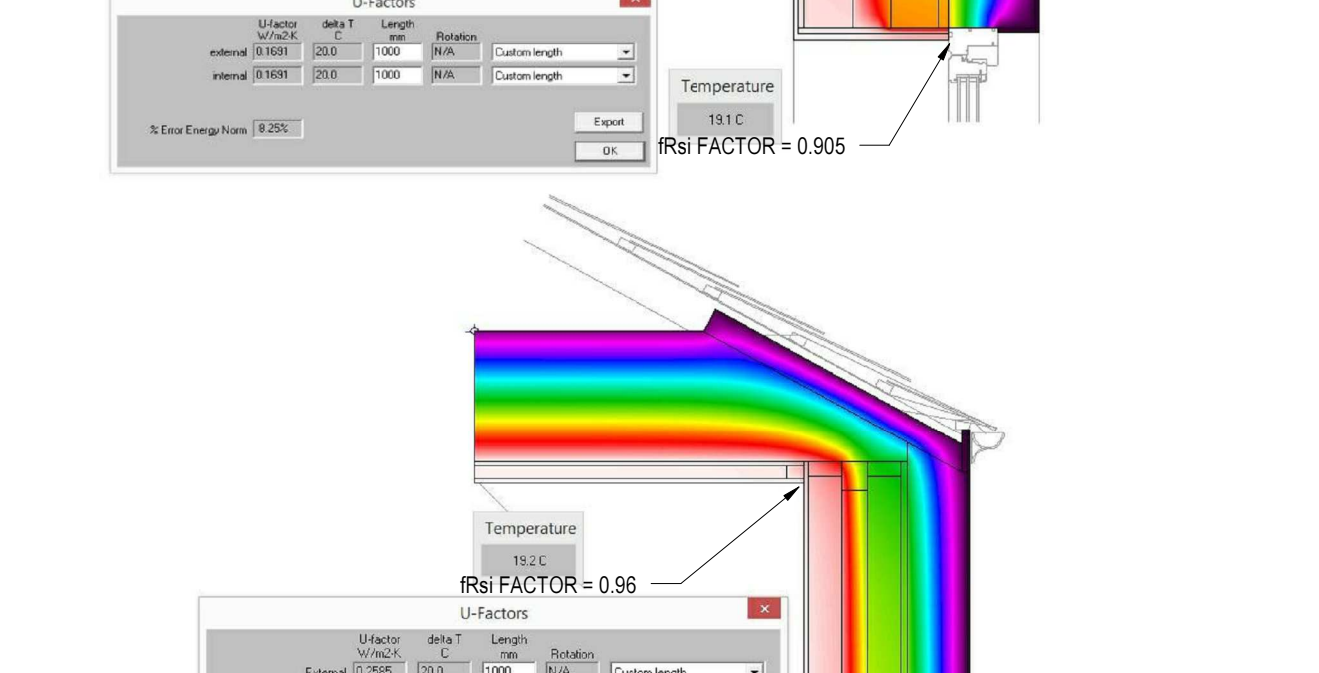
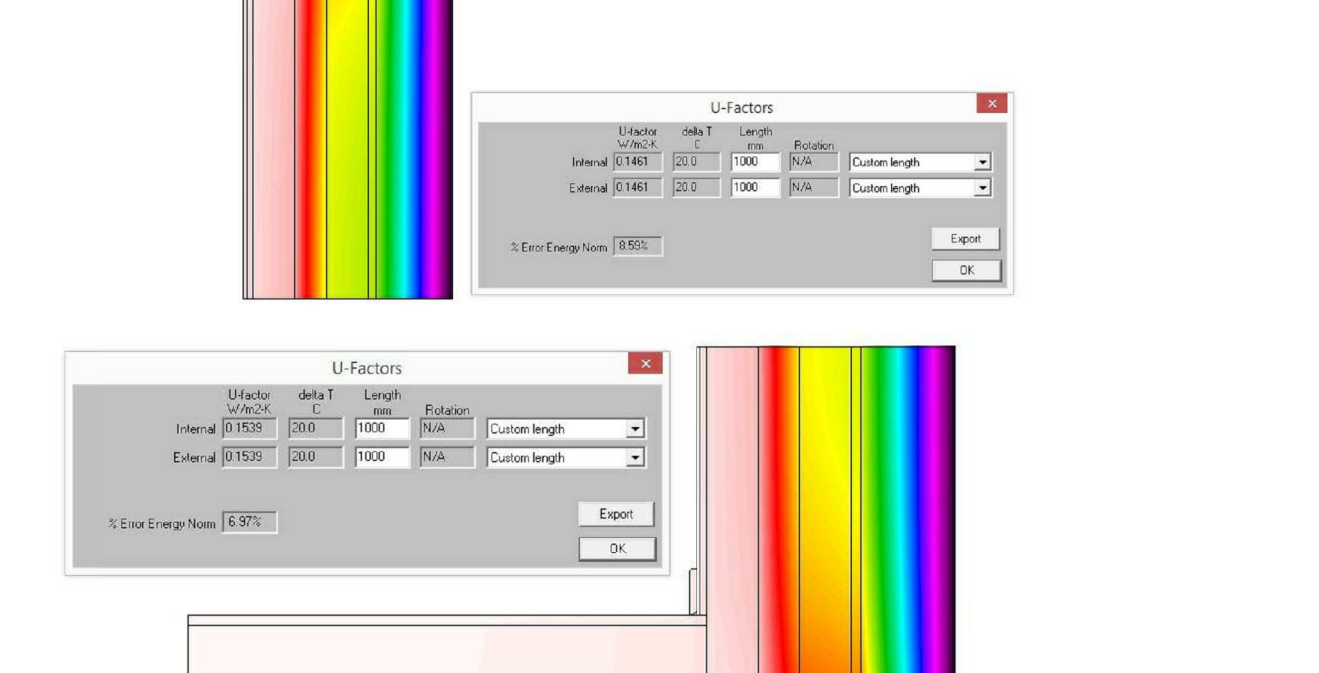
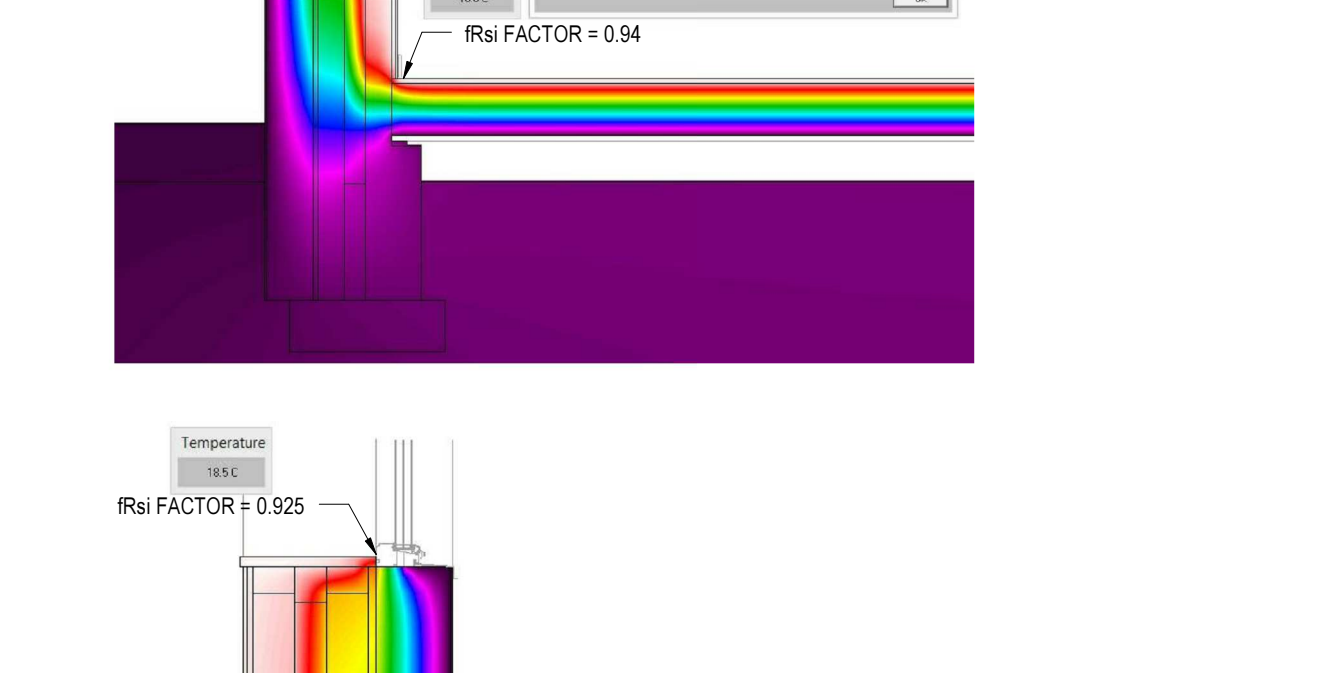
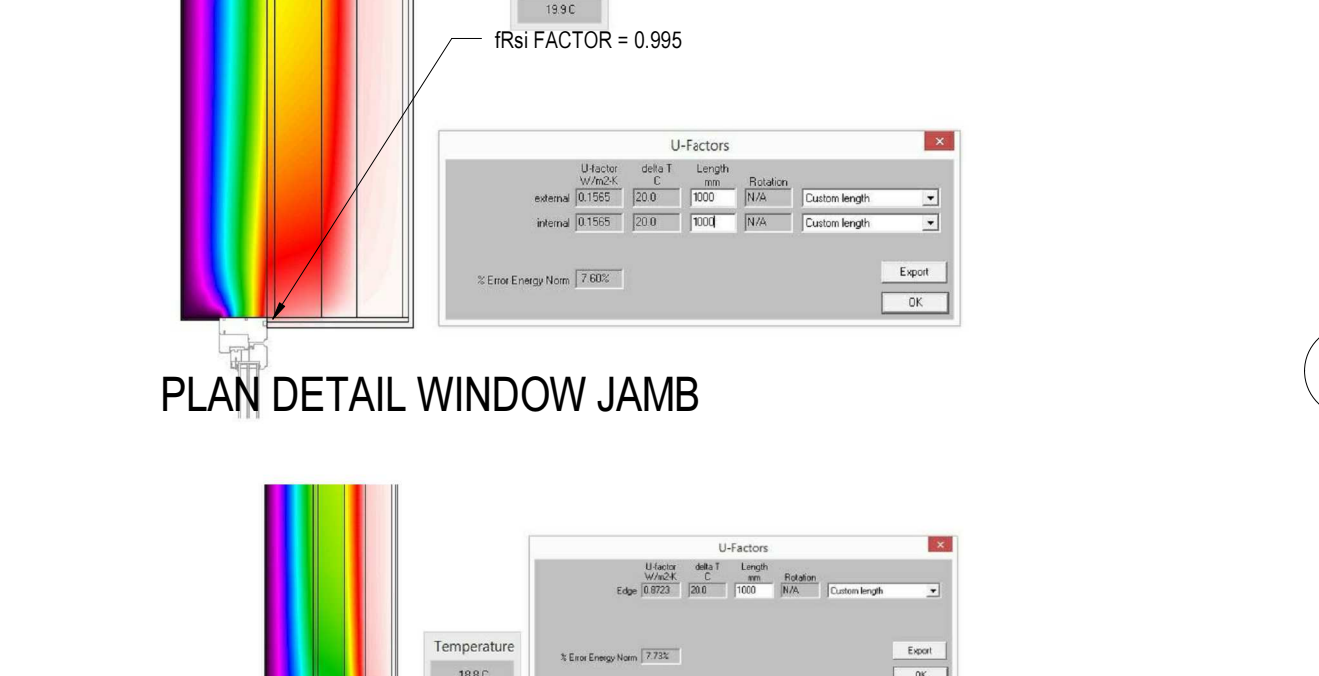
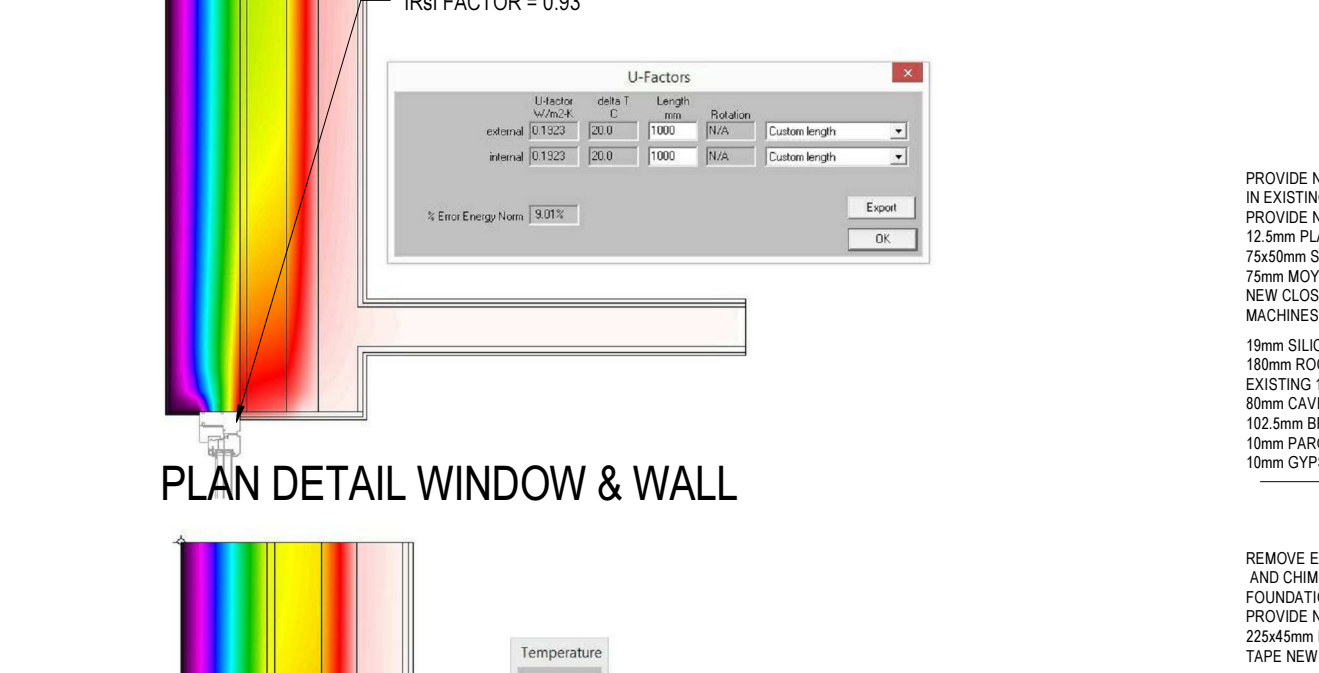
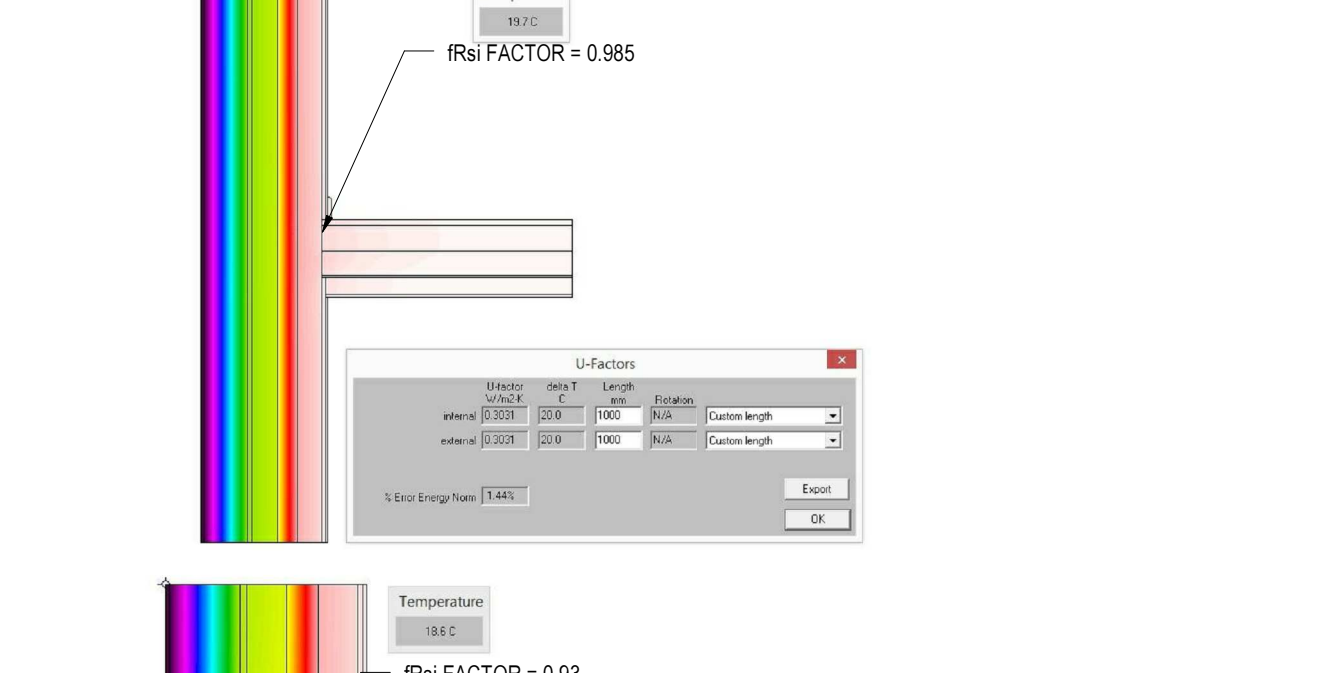
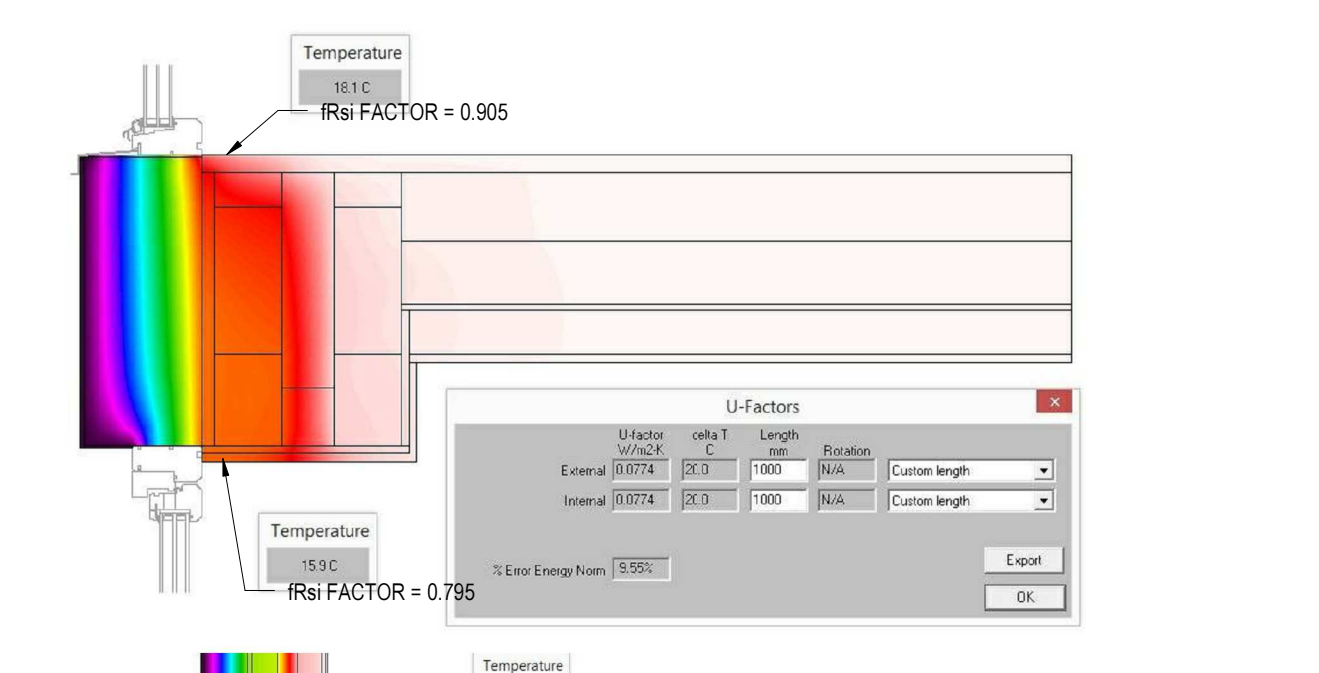
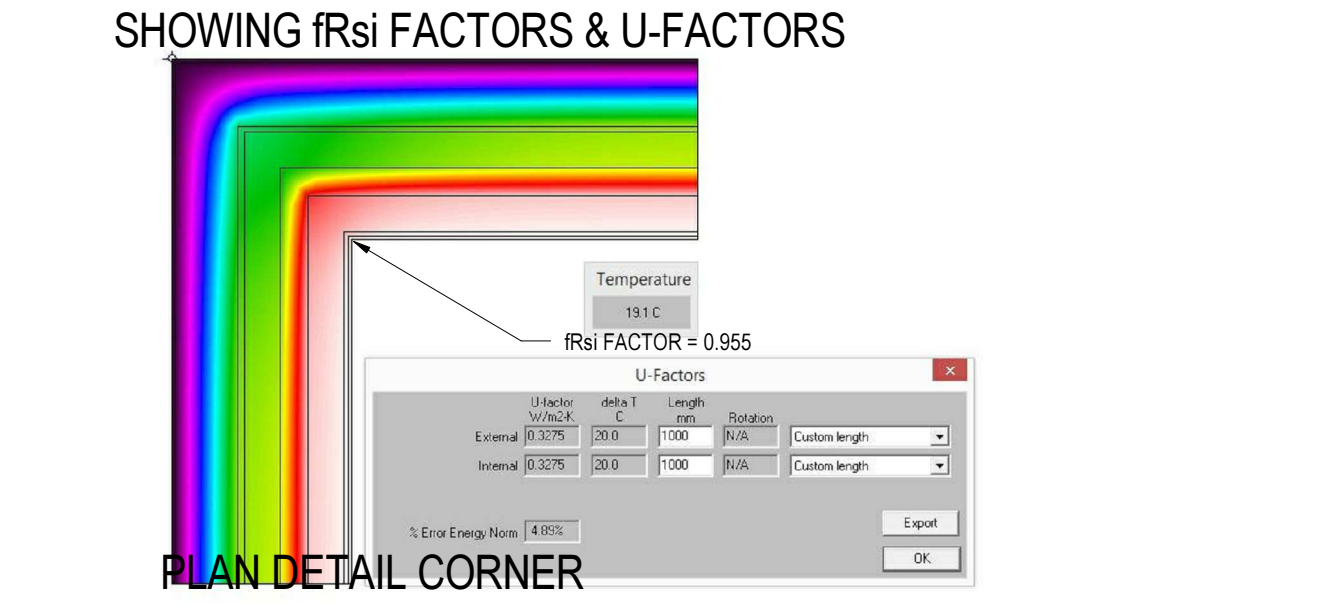
**FREE Energy Display Devices**  
 The project includes free energy display devices to monitor energy use.

## CONSTRUCTION DETAILS SHOWING AIRTIGHTNES APPLICATION IN GREEN

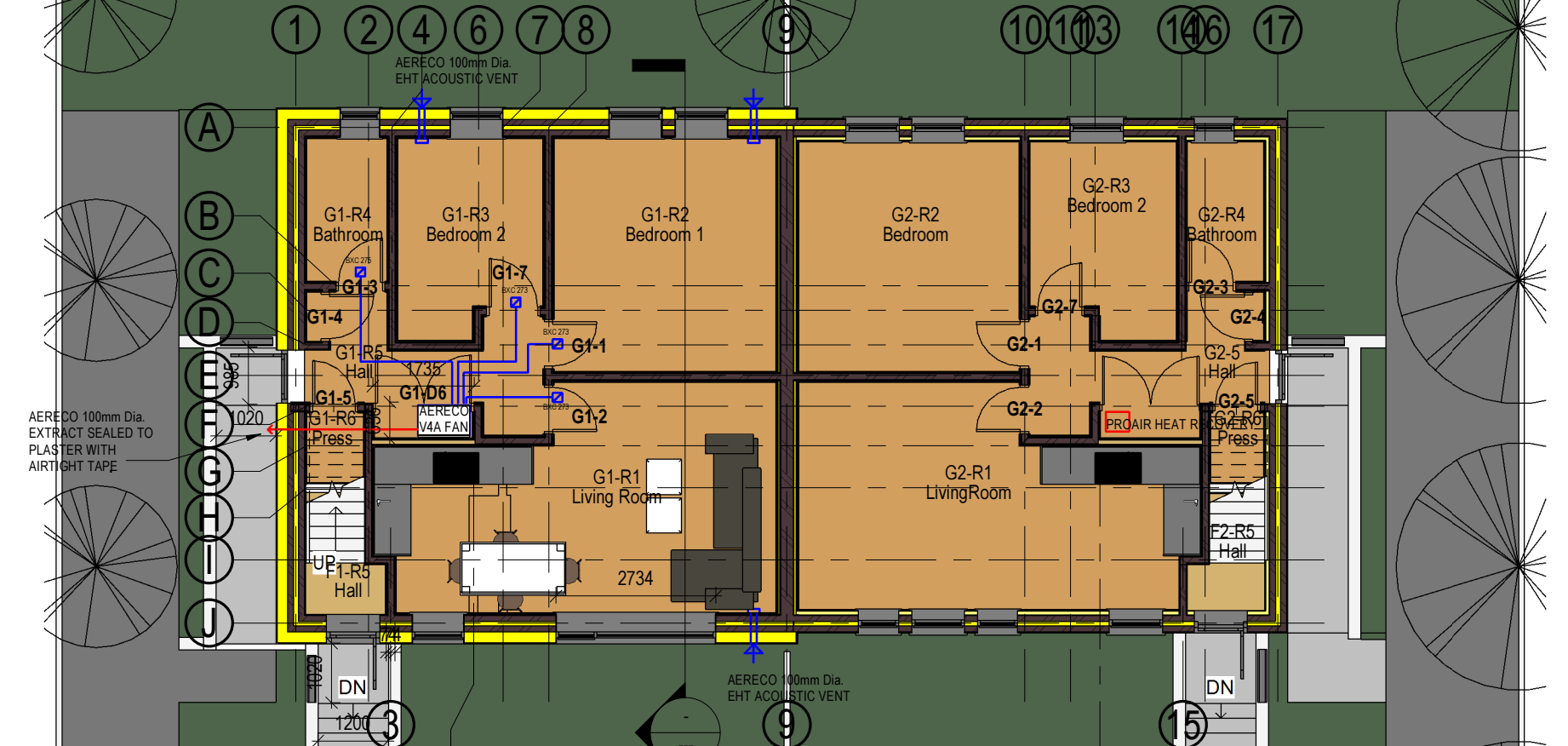


**RETROFIT RESULTS**  
 The results show a significant reduction in energy use and CO2 emissions for all units.

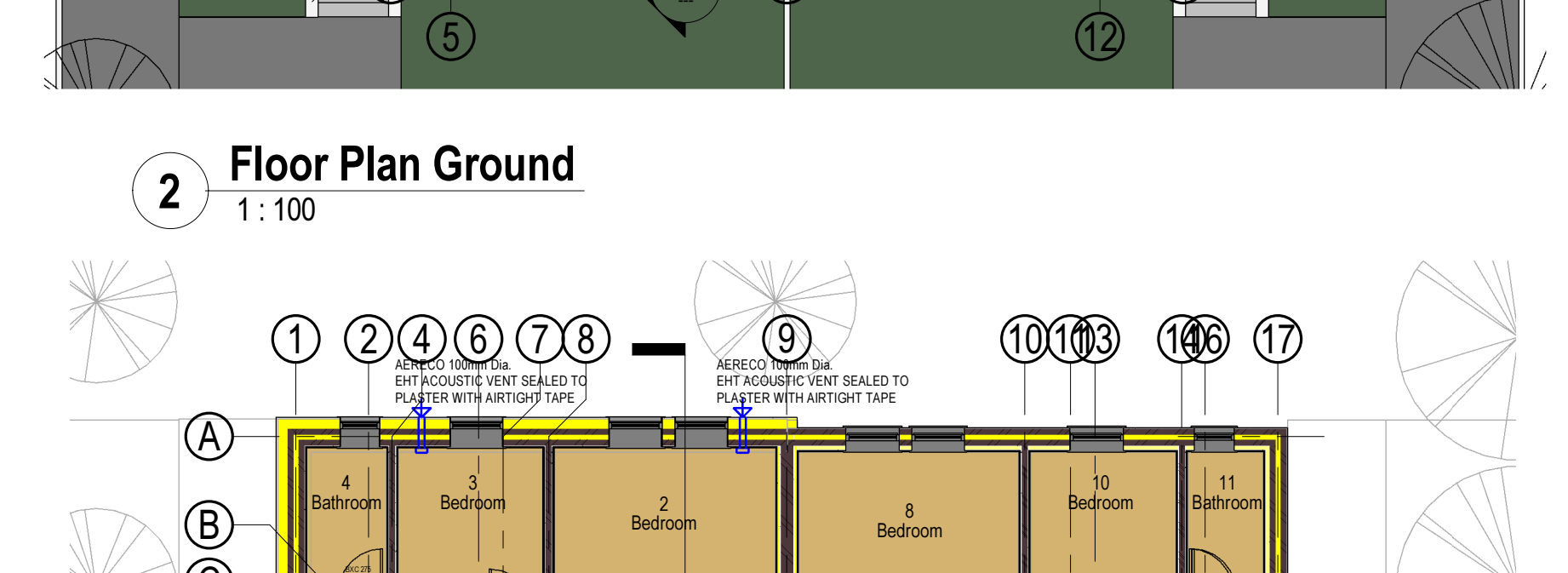
## THERMAL BRIDGE ANALYSIS SHOWING IRsi FACTORS + F-FACTORS



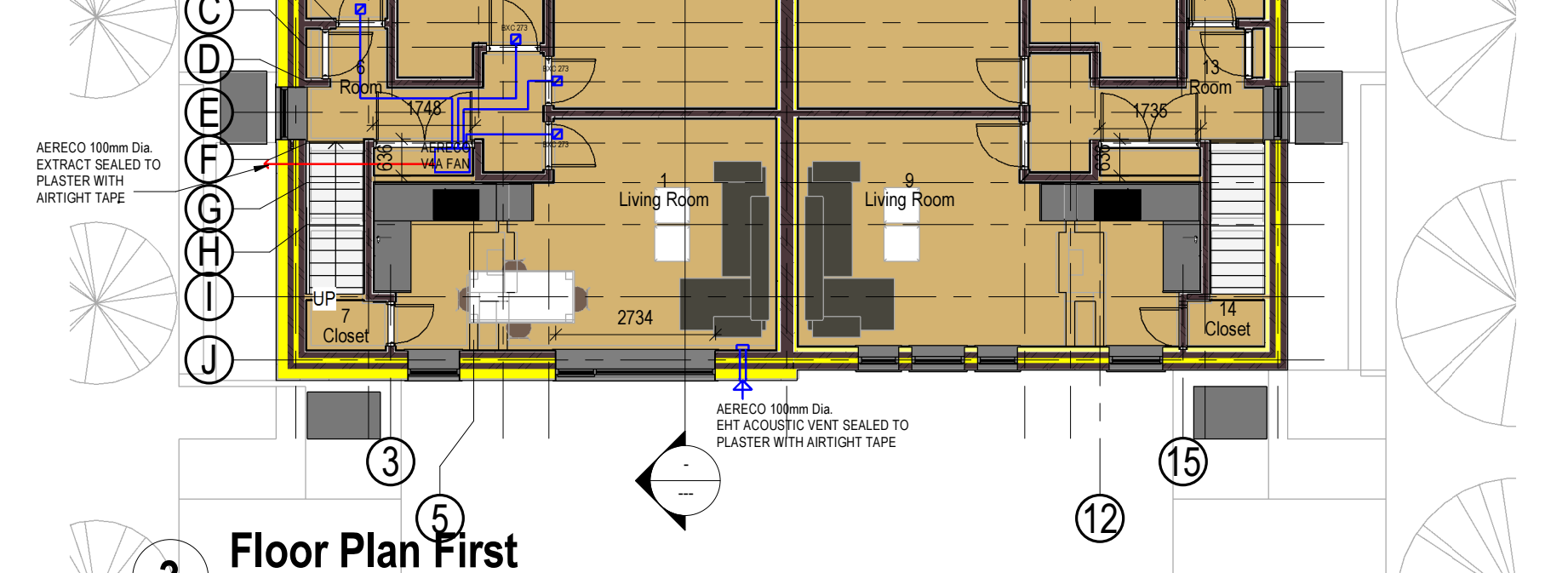
**AS REQUIRED BY TGD L and BS 5250 ALL THE IRsi FACTORS CALCULATED FROM THE THERMAL BRIDGE ANALYSIS ARE ABOVE 0.75**



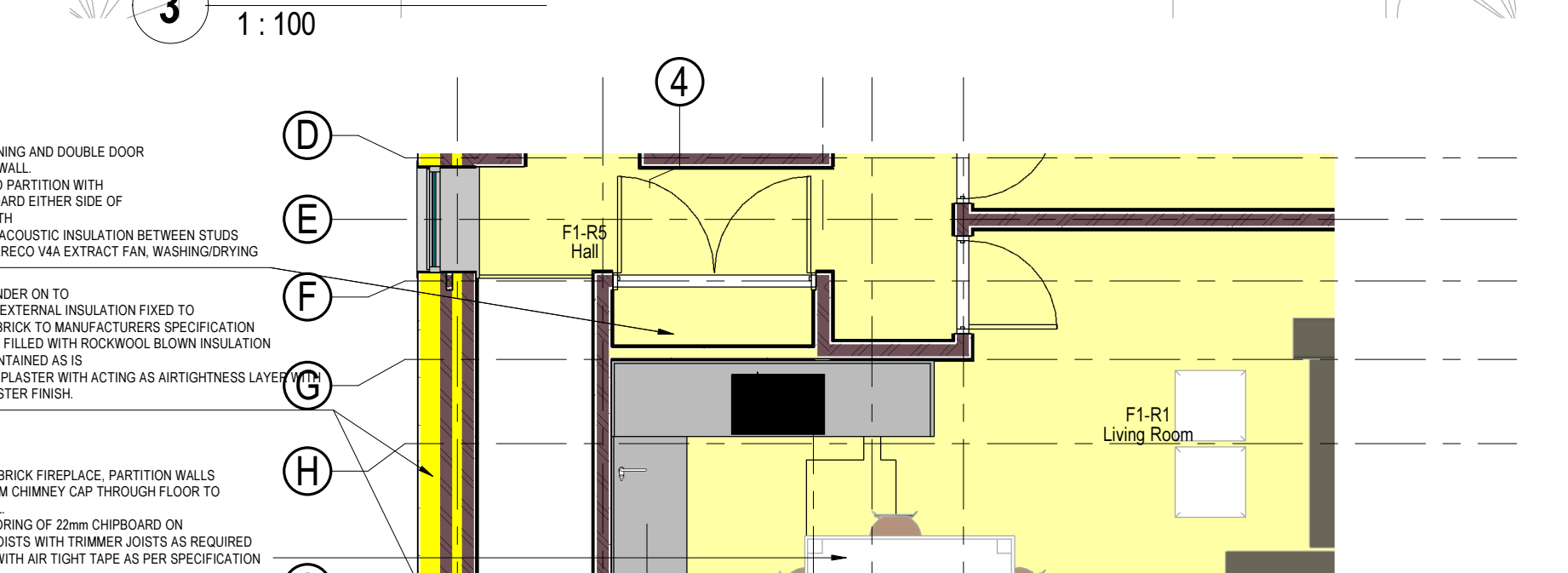
2 Floor Plan Ground 1:100



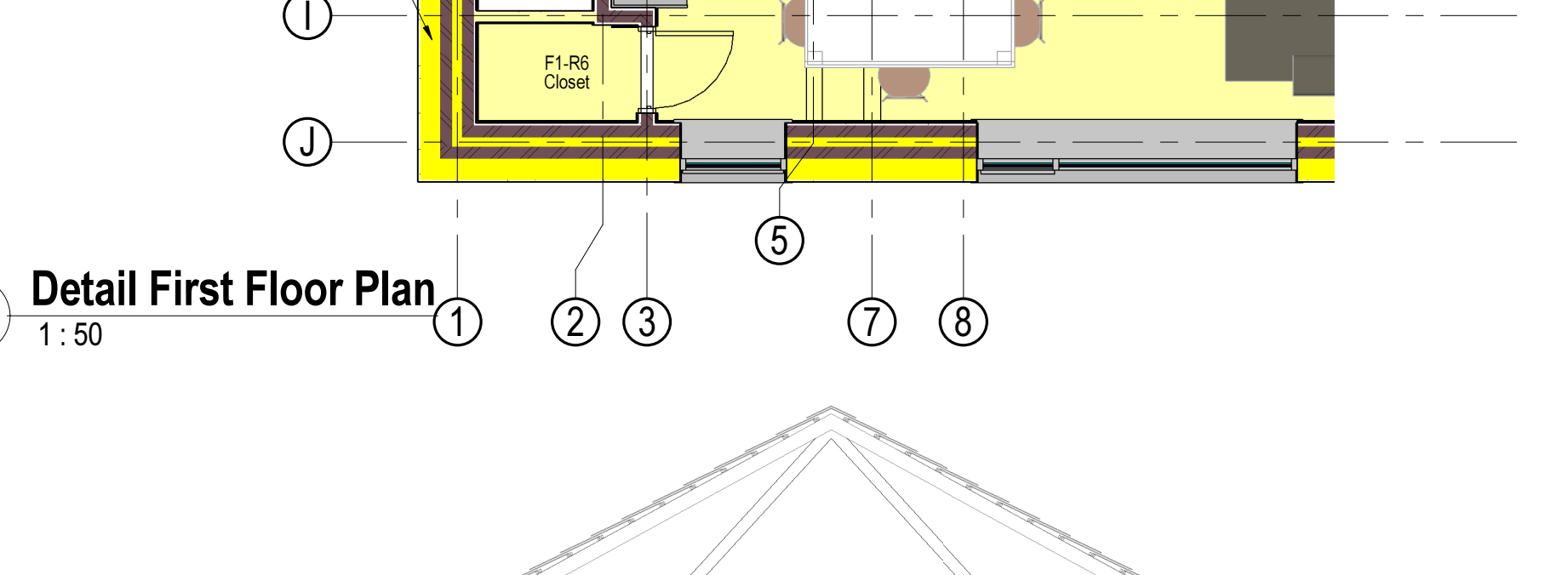
3 Floor Plan First 1:100



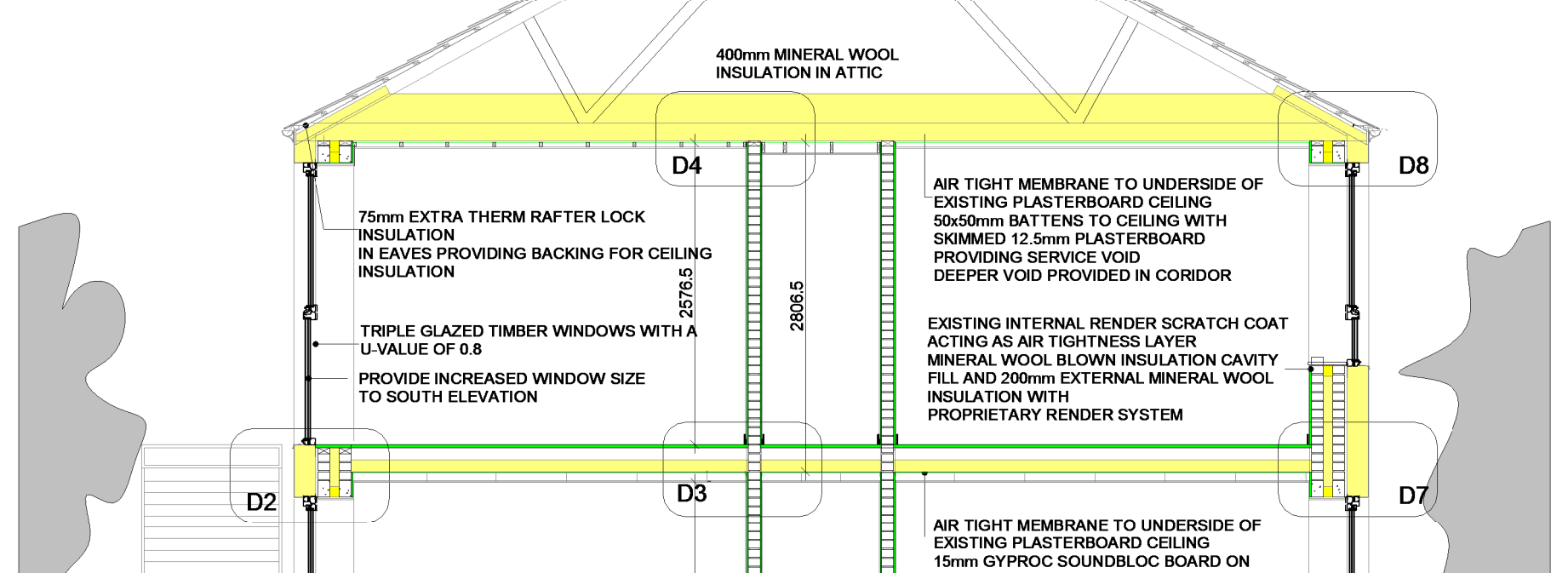
5 Detail First Floor Plan 1:50



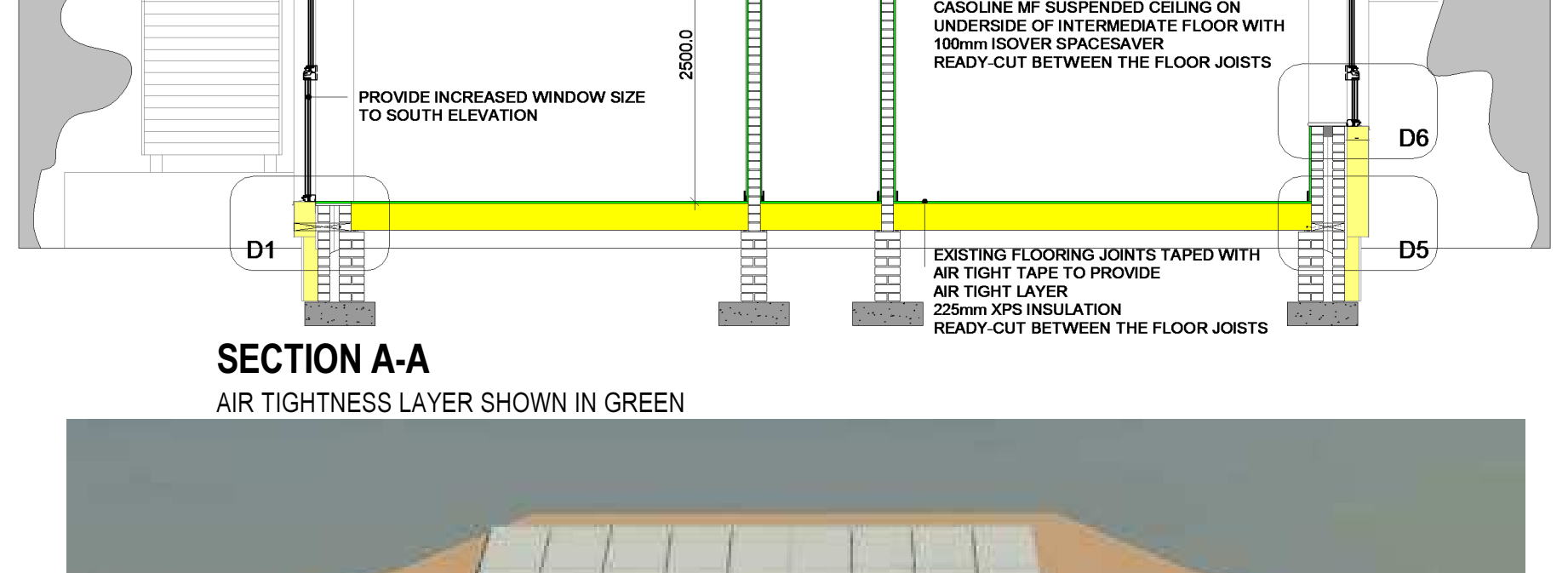
SECTION A-A AIR TIGHTNESS LAYER SHOWN IN GREEN



6 South Elevation 1 1:1



7 SOUTH WEST CORNER 1:1



11 New Entrance F1 1:1



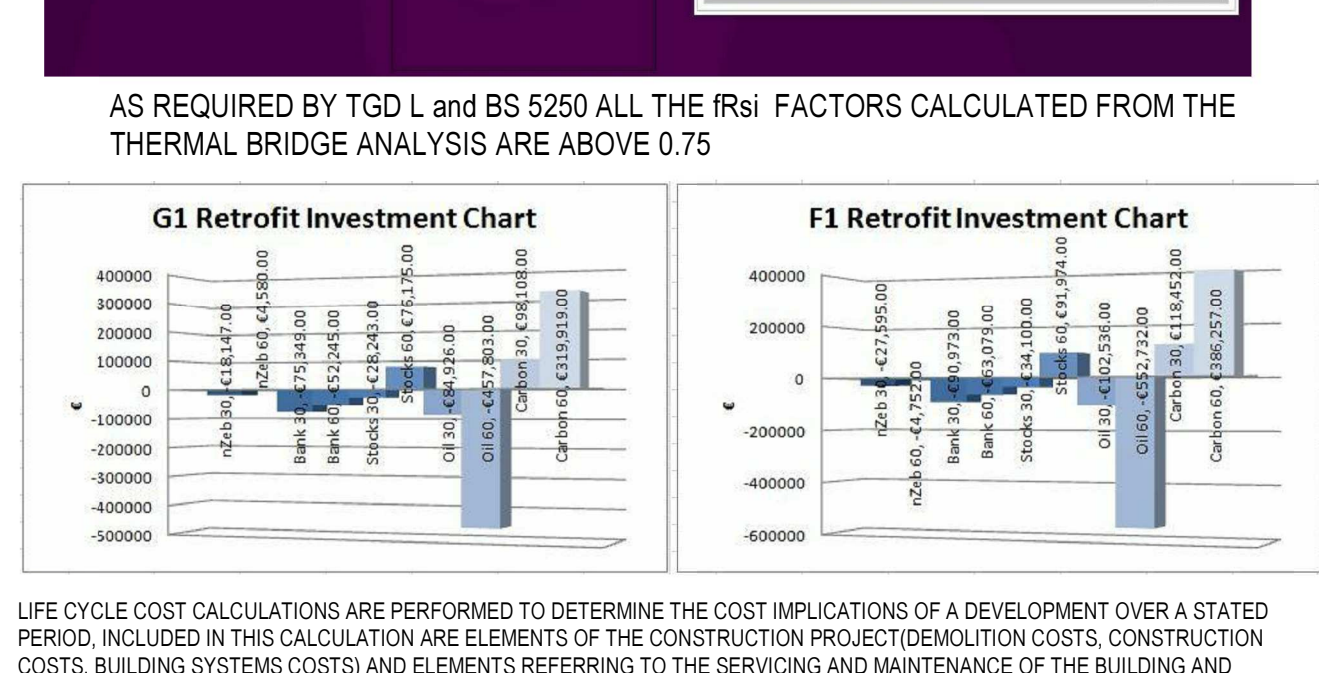
10 RETROFIT WINDOWS 1:1



9 SOUTH EAST CORNER 1:1

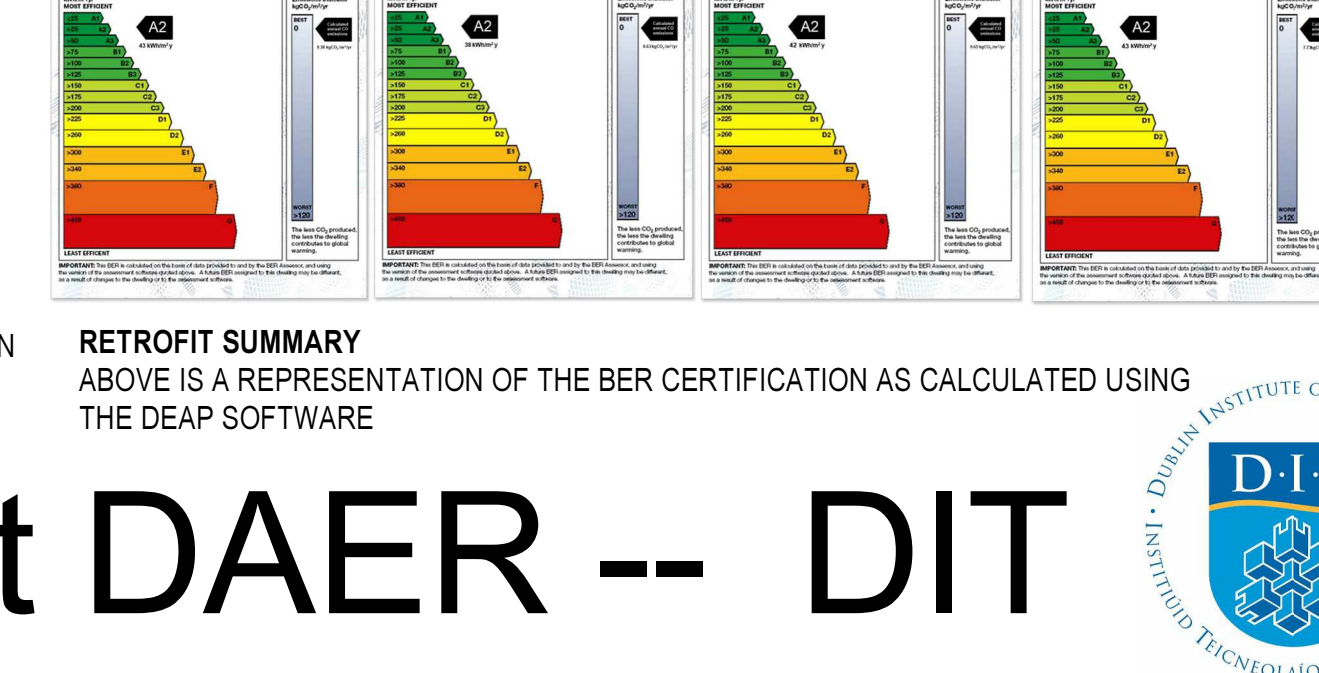


12 LIVING ROOM 1:1



**BREEM SUMMARY**

Category	Target	Actual
Energy Use	100 kWh/m²	85 kWh/m²
CO2 Emissions	100 kg/m²	85 kg/m²
Water Heating	100 kWh/m²	85 kWh/m²
Lighting	100 kWh/m²	85 kWh/m²
Space Heating	100 kWh/m²	85 kWh/m²



**RETROFIT SUMMARY**  
 The project has achieved a significant reduction in energy use and CO2 emissions, meeting the targets set by the BREEM software.