

# No.6 Carrigside Renovation Project



## APPROACH

UCC has several residential houses used for teaching and administration offices throughout the campus. The buildings account for 3% of the Universities gas use, which is used for heating the buildings.

No 6 Carrigside was chosen as a trial to install electrical heating with medium fabric upgrades, eliminating the use of gas and aiding the 2030 decarbonisation goals of the University. If successful the cost effective refurbishment model can be used across the houses, reducing the Universities gas use by 1.4 GWh/y.

The team plan to monitor the buildings performance & energy consumption for a year (2023) to help inform future refurbishment plans.

### Works Undertaken

#### Fabric

82mm Insulated Plasterboard installed on all external walls in habitable rooms. 38mm Insulated Plasterboard installed on all ceilings in habitable rooms. 300mm Insulation installed in the attic and a new roof fitted. The old single glaze wooden sliding sash windows in the front of the house were replaced with modern Aluclad sliding slash double glazing.

#### Heating

The gas central heating system (boiler, radiators, and piping) was removed and replaced with electric oil filled aluminium radiators throughout the building. These are programmed to heat up the rooms in readiness for staff arriving each day at 9 am Mon-Fri during heating season. After each room reaches 20C they automatically turn off as an energy-saving measure. The occupant in each room controls the temperature locally by activating the boost button on their radiator on a countdown timer.

Each habitable room has a through-wall ventilation heat recovery unit which provides mechanical ventilation. Heated air in each room is automatically extracted and replaced with fresh air every 3 mins from outside the building. The cool outside air is warmed up on the way into the room by a ceramic core in the heat recovery unit. This greatly reduces the energy required to maintain a comfortable temperature while also keeping the room ventilated with fresh air.

#### Renewable Energy

A 4kW Solar PV system consisting of 9 x 450Watt panels are mounted on the roof. Excess PV Power produced is stored in the 10kW storage battery, which should provide most of the house's energy needs during May-August. In winter, spring and autumn the storage battery will be topped up each evening using off-peak electricity to reduce building running costs.

#### Lighting

Upgraded to LED with absence detection.

## EXPECTED OUTCOMES

- € Annual Cost Savings of €6,500
- ⚡ Decarbonisation of the Buildings heating supply.
- 👥 Improved internal environment for building occupants

