

# RE-VISITING OUR DEVELOPMENTS IN POST-OCCUPANCY

## Keepmoat Homes case study



A post-occupancy evaluation took place on our ultra-smart homes in Manchester

## Intelligent homes at Connell Gardens, Manchester

Connell Gardens is a 400 home development designed to standards equivalent to Lifetime Homes and the then Code for Sustainable Homes level 4 and Built for Life Silver.

The development has transformed the West Gorton area into a successful and vibrant neighbourhood, attracting families and young professionals into an area which was once stigmatised by poor housing, high crime and anti-social behaviour.

It is first ever scheme secured by Keepmoat Homes in partnership with Manchester City Council. In the final phase we saw an opportunity to create a [five-plot intelligent home pilot scheme](#) to be monitored for two years post-occupancy by Salford University.

The aim of the pilot was to develop our knowledge of how to reduce energy use and bills for residents using technology with the potential to be scalable and affordable in a less affluent area of the city.

We worked closely with specialist supplier Wondrwall, to incorporate an innovative home energy solution. It's platform uses data from the light switches, batteries and solar panels to intelligently 'time shift' consumption to maximise the use of renewable energy, use off peak energy for any residual requirements and deliver a localised smart micro grid that can disconnect from the main power grid, reinforcing grid resilience and reducing annual energy costs to the homeowner.

The system is voice activated and learns and works around the resident, observing how they live and optimising heating and lighting accordingly to increase comfort and reduce energy consumption and costs without user input.

A post-occupancy study of the homes was conducted by Salford University, while a post-occupancy study of energy costs for residents was conducted by Wondrwall.

## Energy efficiency

The homes reduced energy costs through:

- ▶ Insulation improvements – including a full fill ‘rigid’ cavity wall achieving a very high-end u-value (insulation rating of 0.18W/m<sup>2</sup>K).
- ▶ Twelve solar PV panels and battery storage technology capable of exporting electricity back to the grid or providing battery electricity to the home when demand is high and drawing of the grid is more expensive.
- ▶ A 7.2 KW Wallpod electric vehicle charging point.

A post-occupancy assessment in 2021 has shown:

- ▶ One of the homes reduced bills by £559. The impact of solar and battery savings and grid exported energy accounted for around half this, but the impact was doubled by the customer using recommended time-of-use tariffs.
- ▶ There was great unevenness between the energy use of the homes studied, showing that ultimately user behaviour is as important as any technology.
- ▶ The payback period for the technology deployed would be in the region of eight years.

It also showed:

- ▶ Residents needed support with setting up the best energy deals for their homes. Even though potential savings were substantial, only one household set up the recommended time-of-use tariff for the full saving.
- ▶ Support was required to help residents reduce their direct debit since this had been set up by the energy company using an estimate of an average home.
- ▶ Residents needed some support in system set up.