

# SWALE BOROUGH COUNCIL



The regeneration plans for Queenborough and Rushenden on the Isle of Sheppey, Kent, are projected to create significant volumes of new housing. The area falls within the Thames Gateway. The existing housing stock in Rushenden, both privately owned and social, suffers from poor energy efficiency and many households are affected by fuel poverty. There is a risk that, unless the existing housing stock in Rushenden is adapted, there would be a significant gulf between the energy efficiency of the existing housing stock in the area and new development.

Swale is currently the 99th most deprived local authority area in England and the third most deprived in Kent. Of the super output areas in the worst 20% nationally, 13 are on the Isle of Sheppey and these include all of Rushenden.

## THE PROJECT

The Rushenden Retrofit project is the first multi tenure retrofit in England, which successfully delivered energy efficiency measures to 65 private homes in a ward within the top 5% of the Indices of Multiple Deprivation delivering real financial savings for residents. It also delivers a comprehensive community programme including training and employment opportunities, through our social landlord partner, Amicus Horizon.

This project is unique in that it is has a multi tenure approach; 65 privately rented/owner occupied homes benefiting from a range of energy efficiency measures including:

- Solid wall insulation
- Cavity wall insulation
- Single glazing replacement
- Solar thermal panels
- Photovoltaic panels
- New central heating systems
- Draught proofing
- Loft insulation

This retrofit project is being delivered in partnership with Swale Borough Council, AmicusHorizon Housing Association, The Homes and Communities Agency (HCA), and the Institute for Sustainability (IfS). This project is a pilot, retrofitting this number of mixed tenure properties with various construction types has not been previously attempted which is why the Homes and Communities Agency have funded a Measuring Monitoring and Evaluation (MME) programme designed to develop a new code for retrofit.

The aims of this national demonstrator are to save 10,000 carbon tonnes, tackle fuel poverty, improve the physical

environment across all tenures, and deliver a comprehensive MME programme, informing a roll out across a wider area.

The HCA-funded MME programme is being delivered by IfS.

It is estimated that each retrofitted property will deliver an average carbon saving of around 40-50% and an annual residential cash saving of approximately £350, assuming current energy prices. It is anticipated that the measures installed will increase the value of the homes; market research suggests that external wall insulation (EWI) alone can add approximately £10,000-£15,000 to a property. The EWI system is designed to improve the aesthetics of the property but also to minimise up keep, the render system is developed so that it will not require 'touching up' or re-painting, therefore providing long term maintenance savings.

IfS collected data on actual energy usage through smart meters installed in the homes, and comparing it with data collected pre-retrofit, through various energy measurement methods including energy bills.

The properties also have pulse meters which collect usage data in 15 minute intervals and so IfS are able to create a very clear picture on when the most energy is being consumed in the house, therefore being able to ask the resident why and identifying if there are ways in which the resident can change their behaviour to reduce usage further.

The final report for the project is scheduled for Spring 2014 and will detail the performance of the homes, financial outcomes and behaviour change for residents, as well as overall learning from the project.

## INVOLVING THE COMMUNITY

Community engagement has been a key component of this project, with local residents involved in the design and delivery.

This engagement has resulted in increased awareness within the community of how behaviour affects energy efficiency,

not only in the home but whenever possible. Local residents have also become 'energy champions' in green behaviour with the ultimate goal to get residents into employment. Furthermore, the project has created a legacy in the wider community with local schools committing to raising awareness of the green agenda through talks and 'Community Energy Days', as well as running the youth energy champions programme.

As a result of the community involvement in the project, the Community Centre in Rushenden attracted Local Energy Assessment funding to install solid wall insulation to their building and to build a show case room to demonstrate the positive benefits of such measures in reducing fuel costs and making carbon savings to other public organisations and businesses. This has helped to raise awareness and get people thinking about what measures would benefit their own homes in the future.

The Green Doctor is a service provided by AmicusHorizon. The Green Doctor is available to visit homes to discuss ways in which the residents can save energy and how they can change their behavior to live more energy efficiently; they also provide energy efficient products such as flush bags, energy efficient light bulbs and standby savers.

## PROCUREMENT

A South East procurement framework was used which was based on ensuring value for money and quality delivery. Also ensuring that local opportunities were created, and local contractors were used to install the measures. Local companies were used to deliver this project and these companies also agreed to sub-contract locally. This gave local people the opportunity to develop their experience and knowledge in green skills as well as a customer environment they had not worked in before, enabling them to explore other opportunities within this market.

The broader objectives of the project incorporated green skills training and employment for immediate residents, Green Community Champions, and a schools programme to educate young children

on energy efficiency within the home. Community engagement and learning has been a key component of this project and has resulted in increased awareness in the community of how behaviour and lifestyle affect energy efficiency.

Due to the nature of this project UK Power Networks carried out the cabling work to make EWI installation safe, free of charge under the charitable arm of their organisation which enabled more homes able to receive works.

The local sub contracted double glazing company offered residents the opportunity to have additional glazing, not covered under the project, carried out at the same costs as procured as part of the project.

## FUNDING

A large proportion of the funding to carry out the physical works to the homes was secured via Climate Energy on behalf of EDF, as part of the Community Energy Saving Programme (CESP).

The first unique aspect of the project is the multi tenure approach; 65 privately rented/owner occupied and 203 social rented homes, benefiting from energy efficiency measures, including solid wall insulation, solar and photovoltaic panels, new central heating systems, draught proofing, among others. This complex retrofit programme was possible due to the strong partnerships and extensive community liaison. This project is a pilot, retrofitting this number of mixed tenure homes has not been previously attempted.

Another unique characteristic is the MME component which is an extensive programme being undertaken by the Institute for Sustainability (IFS). The outcome of this research will form the basis of a National Code for Retrofit. Over half of the private residents have been given an innovative monitoring system with newly developed software, linked to their energy meters to encourage behaviour change and personal responsibility for energy usage.

## CONCLUSION

The published report of the evaluation will confirm this, but residents are already telling us that their homes are considerably warmer. Those who have had the works carried out are already reporting that they are able to see a difference in their energy usage as they do not have to have the heating on for as long or at such a high temperature and once their homes have heated up the property retains the heat.

The Rushenden Retrofit project has been an interesting experience with some key learning points which will be built into future projects:

- the procurement arrangements were complicated due to mixed measures and tenure;
- relationship management was complex, so having a dedicated liaison resource is critical;
- community-led engagement is essential to buy-in and long term success;
- technical expertise is vital;
- behaviour change is possible – supporting residents to be open to becoming green;
- despite the hard work, we have delivered a worthwhile positive effect with and for our community.

## KEY FINDINGS AND RESULTS

The learning and outcomes found in the MME reports help to describe the benefits and potential obstacles that project teams may encounter when undertaking a retrofit project related to funding, financing, design, procurement, delivery and resident engagement.

The reports illustrate how retrofit projects can encourage confidence in return on investment, the comparison of pre and post retrofit data confirms that retrofit projects contribute to energy savings. The report's recommendations aim to provide guidance to improve performance against design predictions and therefore confidence in returns, in future projects.

Some properties demonstrated very high relative humidity levels inside the homes during the summer post-retrofit, this is of concern as can lead to condensation,

damp and mould in the winter. Ventilation education to the residents could counter-act this issue.

Strong onsite management of the retrofit work is crucial in order to manage different stakeholders and to ensure the specification of the retrofit is installed. For SBC this meant assuming a more significant role onsite than was anticipated.

Feedback identified the need for improved sensitivity to residents needs from those on site, a high level of respect for residents and their homes in order to ensure their full support.

A central element to ensuring the success of this project was strong resident engagement, for the project teams, time and investment was necessary to gain the confidence of residents: this is a common feature in retrofit projects.

## RESULTS FROM MME:

- 49 monitored properties (social and private) had reduced electricity consumption
- 48 monitored properties (social and private) had reduced gas consumption
- U-Value testing the external walls of externally insulated properties achieved an average u-value reduction of 37.5% and cavity all properties achieved an average 31% reduction.

The average overall savings per m2 post retrofit are included in the following table:

These savings are shown below as average reductions across all the monitored properties:

Energy and CO <sup>2</sup> Performance	Pre-retrofit (average)	Post –retrofit (average)
Electricity	50.5 kWh/m <sup>2</sup> /year	44.4 kWh/m <sup>2</sup> /year
Gas	114.5 kWh/m <sup>2</sup> /year	92.1 kWh/m <sup>2</sup> /year
CO <sup>2</sup> emissions	4039 kg co <sup>2</sup> –e/m <sup>2</sup> /year	37.1 kg co <sup>2</sup> –e/m <sup>2</sup> /year

Energy and CO <sup>2</sup> performance post-retrofit	Average % savings
Electricity	12.1%
Gas	15.7%
CO <sup>2</sup> emissions	9.3%