Insights paper – area-based retrofit pilot scheme

Produced by Harlow Consulting on behalf of Carbon Co-op

What is retrofit?

The term 'retrofit' is frequently used in the media, by building professionals, local authorities, and homeowners – yet there are multiple interpretations of the term across the construction sector as well as in other industries. One definition from Historic England is 'the improvement of an existing building to ensure it is efficient, resilient and well-adapted to our changing climate.'[1] Though it is not always well understood, retrofit is becoming increasingly important. The UK is committed to reaching net zero by 2050.[2] The UK Green Building Council (UKGBC) estimates 29 million homes will need retrofitting by 2050 to help achieve this target.[3] Retrofitting measures can also generate jobs.[4]

'Whole-house retrofit' is a term used to describe a comprehensive plan of works to improve the energy efficiency of a property. Whole-house retrofit works are often undertaken on one house at the initiative, expense and risk of the homeowners. It also takes place in a social housing context. Any risks in terms of cost overrun, or quality of the work often lies with the householder with contracts either not being made or not being robust in terms of how the quality of the retrofit is measured. On the one hand poor quality of work can have an impact in terms of lack of effectiveness of the measures for improving comfort or saving energy. On the other hand, and often more impactfully for the householder, poor work can cause additional problems such as damp, mouldy walls or even fire hazards.

Area-Based Retrofit – Levenshulme

Manchester-based Carbon Co-op is piloting an innovative Area-Based Retrofit scheme in Levenshulme, South Manchester. Carbon Co-op is a Community Benefit Society whose overarching aim is to radically reduce domestic carbon emissions. One of their organisational goals is for owner occupiers to be able to *simply and affordably reduce their home carbon emissions to 2050 standards through the adoption of fabric first, whole house, energy efficient retrofit works.*

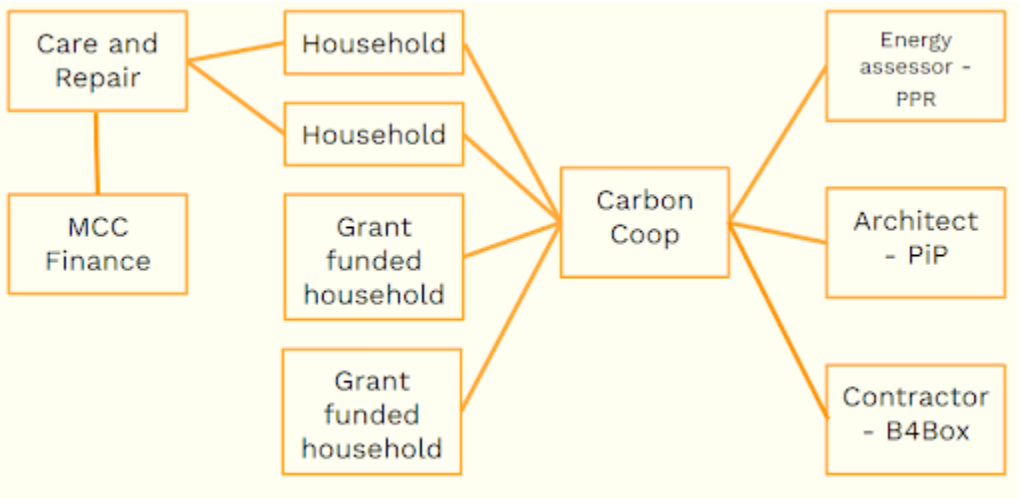
The area-based scheme aims to trial 'the savings and benefits of a street-by-street approach to home retrofits.'[5] Where neighbourhoods have similar homes there should be economies of scale, making work simpler and more efficient. The design stage can repeat modelling. The

[1] Skills Needs Analysis For the Repair, Maintenance and Retrofit of Traditional (pre-1919) Buildings in England (historicengland.org.uk)
[2] The UK's plans and progress to reach net zero by 2050 - House of Commons Library (parliament.uk)
[3] Home Retrofit | UKGBC
[4] Building Renovation: a kick-starter for the EU economy - Renovate Europe (renovate-europe.eu)
[5] Levenshulme Area Based Retrofit Scheme | Carbon Co-op

primary objective is to reduce the barriers to retrofit, through an approach which aggregates demand and enables a collective approach to procurement, financing, design and delivery.

Carbon Co-op are adopting an innovative role in this scheme by acting as an **intermediary** – a role that is essential to the delivery of the scheme. Without Carbon Co-op's involvement, this scheme would not be taking place. Carbon Co-op liaises between householders and the professional parties - architects Progress in Practice and contractor B4Box, having initiated all engagement and contracting for the scheme. They have also negotiated the financial support from Manchester City Council and continue to lead householder engagement and communications.

The scheme is also strongly benefitting from support from the EBENTO Horizon 2020 project – Carbon Co-op being the UK lead for this work. The EBENTO project is providing critical resources and measurement tools to enable data collection and analysis which will measure changes to performance and comfort in the homes participating in this pilot scheme. This enhances the capacity of the scheme through comprehensive physical monitoring including equipment to measure temperature, humidity and air quality sensors. Crucially, this also gives householders access to their own data via a dashboard, to illustrate the difference the retrofit will make. This evidence will help inform measured performance metrics for evaluation for this and any future schemes.



Carbon Co-op's intermediary role bringing all partners together and enabling the scheme delivery
Image credit: Carbon Co-op

Acting as intermediary, bringing together and co-ordinating access to finance, relevant professionals and the contractor on behalf of participating households, Carbon Co-op offered a

set package of work, with small adjustments to fit the home and household's priorities. The proximity of the houses also makes the construction stage more efficient. In this case Carbon Co-op have also been able to employ a larger contractor than an individual homeowner would be able to access.

The works are funded through grant money, and/or 0% interest loans for property owners, thanks to support from Manchester City Council and/or contributions. These grant and zero-interest loan mechanisms were negotiated by Carbon Co-op and provide opportunities for householders who might not otherwise have considered or been able to retrofit their homes to benefit. The resulting improvement to energy efficiency reduces the heating requirements of homes, provides security against rising fuel costs, and restricts carbon emissions. In some cases, householders have also taken the opportunity to have additional works outside of the main package, but which still improve the thermal insulation of their homes, financed directly by them.

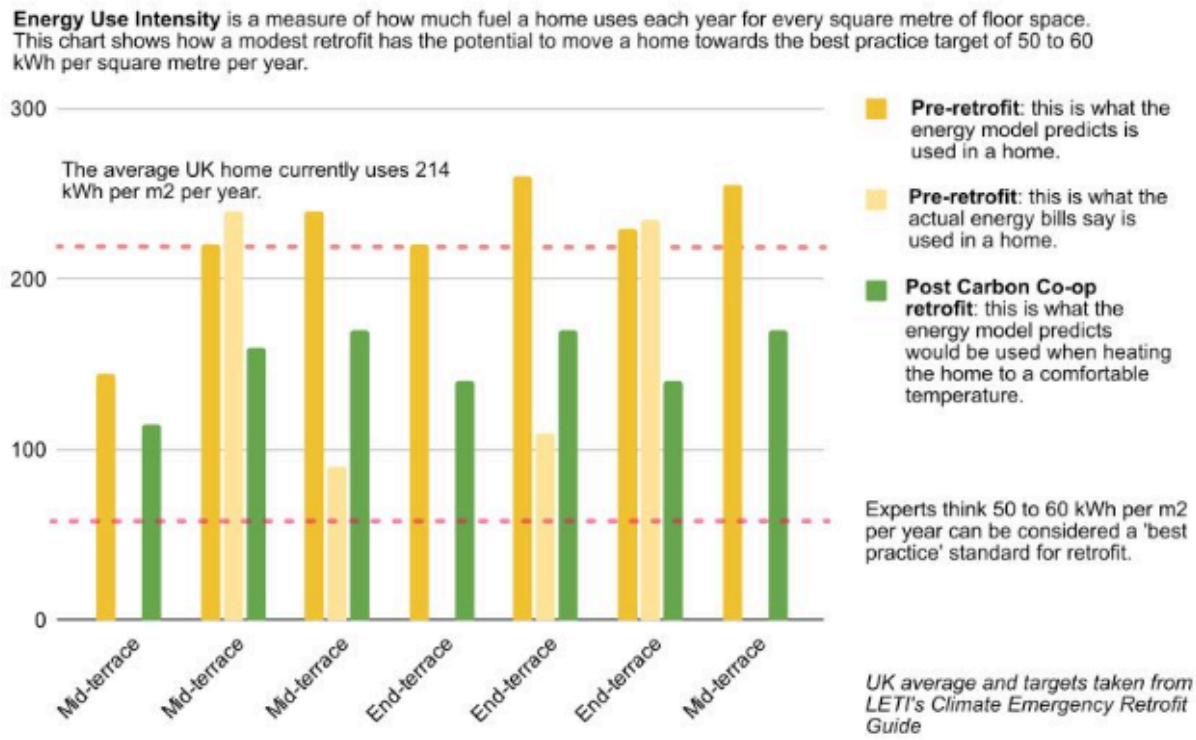


Figure illustrating the current use of energy in homes (in yellow) and the target post-intervention (in green)
Image credit: Carbon Co-op

Following an initial period of engagement in 2022, site visits and designs took place from 2023 to 2024. From an initial group of seven householders, five signed contracts to progress with the scheme. The area-based retrofit scheme is now underway, with contractors on site in Levenshulme. The rest of this paper will dive deeper into what can be learnt from the processes that have led to this point. As with any pilot scheme, these insights can help similar schemes in the future.

Finance

Manchester City Council have supported Carbon Co-op's area-based scheme by helping householders access zero-interest loans, coordinated by Carbon Co-op. A charge on the house is held on the Land Registry against the property, which means that the loan is deducted from the value of the house when it is next sold. This is not equally suited to all homeowners – for example, a homeowner who is likely to sell the house in the near term may doubt whether the works can add sufficient value to the house to make the cost gap affordable. However, for many homeowners it is an attractive offering that encourages them to get involved in the retrofit scheme. There is also an administrative burden which can cause a time delay as the loan is added to the Land Registry. Carbon Co-op supported householders throughout this process – which was a necessary investment of a lot of time to move the scheme forward.

Although Manchester City Council have been able to support this project, an important consideration of designing future schemes would be to research other funding options and sources – as a diverse range of financial offerings may be required to meet householder needs in different situations.

The development and feasibility phase of an area-based scheme is naturally dependent on the involvement of multiple householders. For Carbon Co-op, there was a financial risk in the early stages of the scheme because there are costs before the point of signing contracts. The scheme heavily relied on the commitment of individuals until this point, which is a financial risk.

Economies of scale vs. customised approach

While commitment cannot be guaranteed, it is far more likely where there is a strong sense of trust and necessary details of the project are communicated. Carbon Co-op have taken a personal approach, engaging closely with each householder as individuals. For example, at the early stages, householders were invited to see a successfully retrofitted house, which helped their understanding of the technical process. Though there were common elements, the exact package of works was also not precisely identical across each house. Beyond the base package of measures, some elements could be adjusted to fit the household's priorities, and what was appropriate for each home.

This personalised approach has included a level of agency on the part of the householder. For example, householders could have their say on the render colour, and there was an iterative process around the choices of windows. Although all the choices were approved through the planning process, this is not a given for future projects and the added administration involved can add a potential delay in the pre-construction stage, especially as there are numerous parties involved. The volatility of the current building materials market means that delays can often increase construction costs.

In addition to the differences introduced by each householder's choices, the reality is that properties appearing identical on the outside might be in different conditions and have different histories of works. Thorough site visits are required. In this case Carbon Co-op representatives, Retrofit Assessors and the architects from Progress in Practice visited each property; the contractor, B4Box, also undertook pre-works visits.

The extent of enabling works for each property was a considerable unknown until the on-site phase commences, and investigations (and investment risk) have been needed before householders were willing to commit in order to understand costs and impact of works. Importantly therefore, a number of surveys including structural, and asbestos were conducted at the pre-works stage.

If an identical package of works was insisted on with no potential for adjustment, it is likely that this would impact the retention rate of the scheme, as works might not be suitable to each of the householder's priorities. Some works might also not be appropriate for certain properties, even if they appear the same on the outside. Treating each home as a personalised project element is an appealing aspect of the scheme, strengthening trust, ensuring that the community has agency.

However, each element of customisation makes it more difficult to achieve the efficiencies that an area-based scheme should be able to benefit from, because there are implications for time and costs. A key theme from this pilot is the importance of the balance between treating each house individually and achieving efficiency by making the most of the similarities.

Communications and engagement

Because the relationships involved are markedly different from the more typical models of retrofit work, careful consideration has been given to on-going communications and engagement - necessarily an important consideration of any area-based scheme. Much time has been dedicated to on-going engagement with householders by Carbon Co-op; the architects at Progress in Practice have also played a vital role here, developing and

disseminating information in an accessible manner to householders at regular intervals throughout the process. Moving forward, it may be that efficiencies can be achieved for future schemes – particularly if at a larger scale than this one – to develop video-based content for more straightforward information that may not require questions & answers from householders. Or it may be that video footage could be used as a starting point with householders able to follow up with more detailed questions personal to their own situations.

One challenge around communication is making decisions around what and when information should be relayed from Carbon Co-op to the householders. While Carbon Co-op have held regular project updates, there are some aspects of the scheme that can cause confusion until they are agreed. For example, presentation of costs requires cautious consideration until numbers have been finalised by the contractor. Regular project updates can also be very intensive and risk 'information fatigue' if they are not carefully designed to include the most relevant information.

Equally, it is important to make sure all the relevant information is included – for example, although every technical detail is not always required or understood, it is important to communicate how householders need to adjust their daily habits to use new products effectively in the property once works are completed. This becomes particularly challenging when there is a need for information to be shared urgently, which is one instance where it becomes important to understand the roles of each group involved in the project.

The innovative nature of this scheme means that it is easy for roles and responsibilities to become blurred, as everyone works out how the relationships need to work in order to implement this project effectively and efficiently. Although Carbon Co-op acts as an intermediary, by necessity there is a certain level of direct engagement from the architects and contractors to the householders, facilitated by Carbon Co-op. At the onsite stage, when retrofit works begin, there is a natural transition towards the contractor becoming the main point of contact for the householder.

While a larger scale project might have a specified resident liaison at the contractor end, this is not feasible for this project, and the possibility of a shift in the householder's experience of communications needs to be anticipated.

There is also a challenge to the initial communication stage, where Carbon Co-op were keen to open the scheme to everyone in the area, especially those in fuel poverty who would most benefit from improved energy efficiency. As with any form of inclusive community outreach, individuals will have varying requirements, priorities, levels of understanding and methods of communication. Engaging and supporting a diverse group of householders requires time and

effort. The challenge of inclusivity is to equip the appropriate stakeholders with the skillset and time to appropriately engage and support a diverse group of householders.

There is therefore a tension between including as many as possible in the scheme, and the cost of getting in touch with stakeholders who are often harder-to-reach and less likely to engage. A different approach might be needed for engaging and working with social housing or landlords and private renters.

Interim key messages

This scheme is highly innovative and would not be taking place without the intermediary role adopted by Carbon Co-op. Having an intermediary such as Carbon Co-op can enable a relationship with trusted professionals, including a larger contractor than an individual could employ. This has also reduced the risk for householders. By drawing on support from the EBENTO horizon project, there is scope for comprehensive measurement of performance to evidence the effectiveness of the measures – both for Carbon Co-op and partners, and also for householders.

It is clear that strong, trusted working relationships have developed between Carbon Co-op and their partners. A further benefit has been working with a contractor, B4Box, that has delivered training alongside delivery – thus boosting the supply of retrofit skills and knowledge in the area and building capacity to deliver more high-quality retrofit moving forward. Within the network of actors, it is important to clarify the roles and responsibilities of each party. Careful communication is needed to manage expectations and engage with diverse members of the community.

The financial mechanism employed in this project is attractive to certain homeowners, but this particular funding mechanism would always be dependent on the availability of blended finance i.e., grants and loans available from a local authority or other source. Other financing offers, applicable to the different needs of different householders could be investigated for future similar schemes.

Finally, there is a balance between customising the package for individual homes and homeowners and benefitting from the efficiencies of a collective, standardised area-based approach.

There is still much to be learned to be able to efficiently and effectively deliver area-based retrofit schemes at scale in a way which balances a standardised approach with some room for adaptability to respond to a range of householder needs and circumstances. Carbon Co-op is at

the forefront of this work and remains committed to on-going learning and reflection, to benefit from lessons learned for future schemes – and importantly – to share these reflections with the wider community to support other schemes as well.