



GUIDE

RETROFITTING:

THE KEY TO IMPROVING THE ENERGY EFFICIENCY OF OUR EXISTING HOUSING STOCK

RLB

Rider
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RETROFITTING: THE KEY TO IMPROVING THE ENERGY EFFICIENCY OF OUR EXISTING HOUSING STOCK

Retrofitting existing housing stock to be carbon neutral can be more challenging and complex than building carbon neutral new homes. Through our extensive experience in providing support for various residential clients on retrofit projects, we have gathered and answered some of the most commonly asked questions.

1. WHAT IS RETROFIT AND WHY IS IT IMPORTANT?

All new build projects focus on sustainability and energy efficiency, which can be easily addressed at the design stage. The challenge comes with existing building stock, where sustainability and energy efficiency measures were either not targeted or technologies were not as readily available at the time of construction.

The industry understands the importance of reducing carbon emissions to zero by 2050. For this to be achieved, the following targets must be met (data taken from the Retrofit Academy):

Existing buildings can be retrofitted to improve sustainability and energy efficiency. Various measures can be taken to accomplish this, such as installing new windows, and insulating external walls and roofs

Improving efficiencies in homes not only boosts energy efficiency but also results in lower energy consumption, leading to reduced costs for occupants.

THE COST OF NOT RETROFITTING DOES NOT ONLY AFFECT CLIMATE CHANGE BUT ALSO:

- Building deterioration
- Occupant's health
- Occupant's comfort
- Increased running costs
- Energy security



25 million

homes need to be comprehensively retrofitted within 30 years.

That equates to



833 thousand

homes per year, which is one retrofit every 40 seconds (including night time and weekends) or 3307 per working day.



28 million

UK homes are among the least energy efficient in Europe (expected to rise to 31 million by 2037). Heating these homes contributes 14% to the country's total carbon emissions.

The challenge is clear-approximately 20 million pre-1990 built homes will need to be refurbished by 2050. It is therefore necessary to install new measures in energy-inefficient buildings, and retrofit can help.

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2. HOW CAN WE ENSURE WE HAVE THE BEST RETROFIT APPROACH WITH LIMITED RESOURCES?

PAS 2035 is a British standard that ensures a comprehensive and quality-controlled approach to retrofitting and improving the energy efficiency of buildings.

The standard was introduced to ensure that energy improvement measures are implemented holistically, taking into account the entire building and its occupants' comfort.

Failure to consider an energy efficiency measure in its entirety can have negative consequences on a building's performance or the well-being of its occupants. For instance, the implementation of external wall insulation can improve a building's thermal performance, but if installed in isolation, it can cause moisture imbalance internally and result in the growth of mould. By following the PAS 2035 process, the entire building is evaluated, and measures are taken to address any potential issues, such as ensuring proper ventilation.

When it comes to retrofitting, clients may prioritise renewable technologies, but the "Fabric First" approach should be a primary consideration for improving energy performance at a lower cost. This approach emphasises improving the building's envelope and insulation to prevent energy loss, which ultimately provides the most cost-effective solution for reducing energy consumption. In other words, the most economical way to improve energy efficiency is by preventing energy from being wasted in the first place.

THE KEY PRINCIPLES OF A TYPICAL RETROFIT PROJECT MAY INCLUDE:

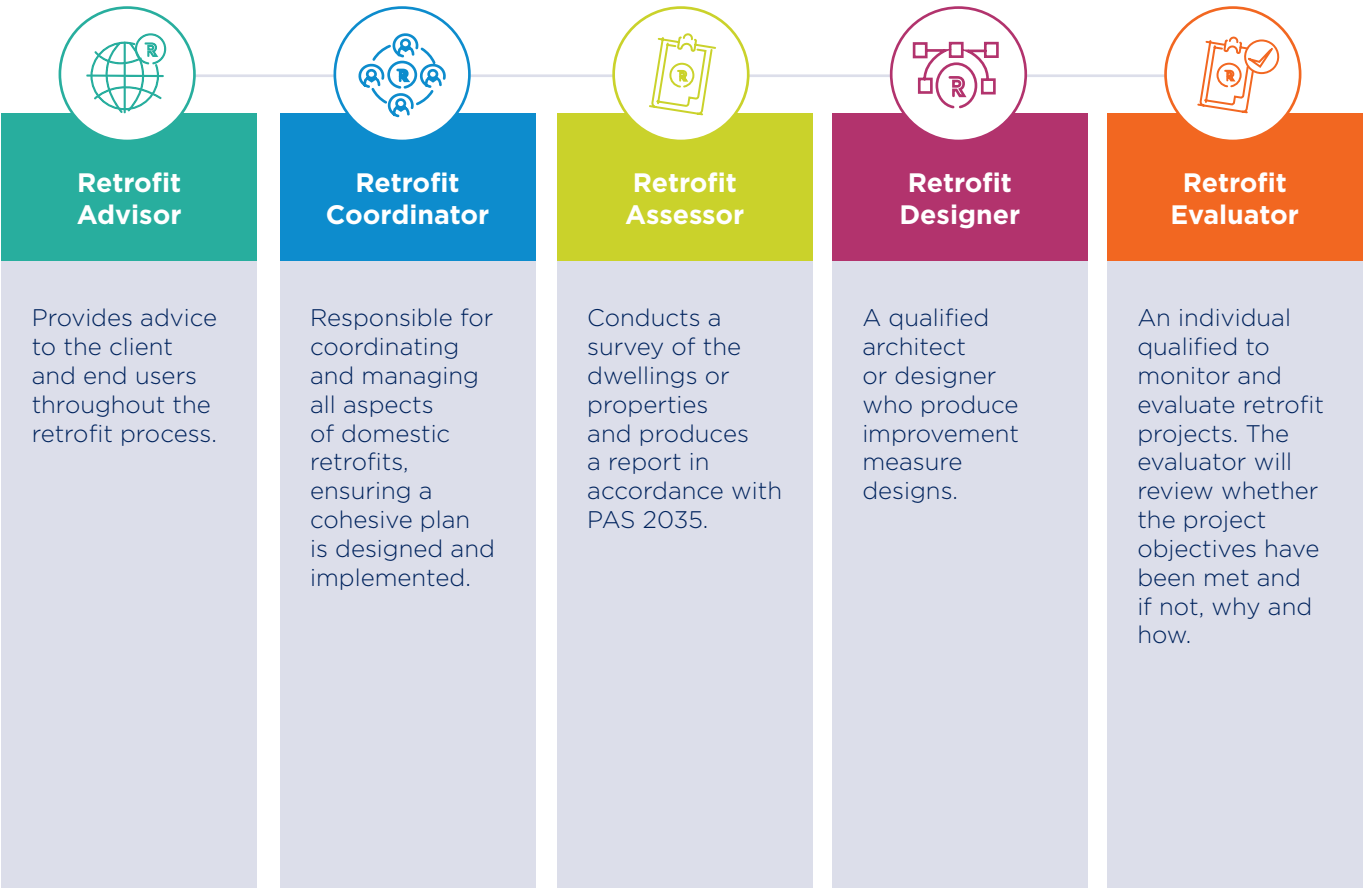
- Creating an air-tight dwelling
- Insulating the entire envelope
- Encouraging vapour permeable construction
- Controlling thermal capacity
- Implementing correct construction details at integral junctions
- Mitigating solar gains
- Ensuring a ventilation strategy is in place
- Ensuring a heating strategy is in place

Retrofit provides a best practice approach to improving the energy efficiency of existing housing stock and can be implemented on all residential properties.

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3. WHAT ARE THE KEY ROLES INVOLVED WITH RETROFIT?

A successful PAS compliant project requires several key roles to be filled.



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4. WHAT ARE THE KEY STEPS NEEDED WHEN PLANNING A RETROFIT PROJECT?

PAS 2035 establishes a project timeline that enables the selection of the most effective approach for installing energy efficiency measures (EEMs), taking into account both technical characteristics and occupancy factors. By following this comprehensive approach, the building is thoroughly evaluated prior to implementing the measures.

PAS 2035 sets specific milestones that promote a cohesive, 'Whole-House' approach for achieving project success. Retrofit Advisors can provide guidance on implementing PAS 2035 principles.

THE KEY PHASES OF PAS 2035 INCLUDE:

STAGE 1	Preliminaries/ Intended Outcomes: A retrofit coordinator should be appointed by the client, who will then agree on the project's intended results.
STAGE 2	Risk Assessment: The retrofit coordinator identifies the project's risk path (A, B, or C), which will then determine whether surveys or additional appointments are required.
STAGE 3	Whole Dwelling Assessment: A retrofit assessor is appointed to conduct a whole dwelling assessment using SAP or RDSAP data. Perform air permeability tests, ventilation assessments, BS 7913 significance assessments, or structural assessments, depending on the risk pathway.
STAGE 4	Retrofit Design: A PAS 2035 compliant design is produced and dependent on the risk pathway, a retrofit designer is appointed. The retrofit coordinator prepares an options evaluation and obtains the necessary statutory approvals based on the targeted EEMs.
STAGE 5	Installation: During the installation stage, the client-side retrofit coordinator oversees the installation of the EEMs and ensures that PAS 2030 guidelines are followed.
STAGE 6	Testing and Commissioning: The retrofit installer should ensure that all EEMs comply with PAS 2030 testing and commissioning procedures. All certifications should be received and stored by the retrofit coordinator.
STAGE 7	Handover: The retrofit installer should hand over all of the EEMs, providing all relevant copies of the O&M information. A new or updated EPC should be produced for every dwelling, demonstrating any improvements..
STAGE 8	Retrofit Advice: The retrofit advisor provides advice and insight into the project to all occupants, taking age, language, and cultural factors into consideration.
STAGE 9	Monitoring and Evaluation: Every project is subject to monitoring and evaluation under PAS 2035, which allows a review to confirm the outcomes and identify problems. There are three types of monitoring and evaluation: Basic Evaluation, Intermediate Evaluation, and Advanced Evaluation.

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5. WHAT CAN RLB DO TO HELP?

RLB's Retrofit Coordinators and Retrofit Designers adhere to PAS 2035, enabling us to take a comprehensive and professional approach to retrofitting. By collaborating with our strategic partners, we are also able to provide the Retrofit Assessor role.

By adding these roles to our multi-disciplinary service offering, we are able to implement PAS 2035 into all residential projects. Working in tandem with the RIBA Plan of Work, we have undertaken retrofit assessments as part of feasibility studies, ensuring a sustainable approach from the onset.

Although PAS 2035 allows individuals with built environment expertise to become Retrofit Coordinators, at RLB, we only appoint chartered building surveyors for this position. Their extensive knowledge of building pathology and construction technology allows them to provide precise recommendations to our clients.

There are a number of funds available to help achieve the Net Zero 2050 targets. These include the Social Housing Decarbonisation Fund, the Energy Company Obligation, the Local Authority Delivery Scheme, and the Home Renovation Grant. Using PAS 2035 guidelines, we can help clients use these funds to implement their decarbonisation objectives.

Our holistic approach to retrofit allows us to influence projects through our built environment. For example, Project Managers can clearly schedule milestones into project programmes to ensure dates are met; Cost Managers can look at whole life impacts including life cycle costs, and our Specialist Solutions team can integrate sustainability and social value requirements.

GET IN TOUCH

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OUR SERVICES

COMMERCIAL SUCCESS

Our cost management service enables clients to make informed decisions.

We deliver commercial confidence throughout the project life cycle, from early business case through to financial close, strengthened by broad sector expertise and bespoke digital solutions.

Cost Management & Quantity Surveying:

- Feasibility Studies
- Cost Planning & Value Management
- Whole Life Costs and Life Cycle Costs
- Cost Benchmarking
- Risk Management
- Contract Administration / Employer's Agent

ASSET OPTIMISATION

Our expert team helps clients manage, improve and enhance their property estates. Through asset data capture we make informed decisions about planned maintenance, statutory compliance and control and optimisation of expenditure.

Building Surveying:

- Strategic Asset Management
- Estate Rationalisation
- Building Surveying
- Facilities Management Consultancy
- Fire Safety services

PROJECT & PROGRAMME SUCCESS

Placing client needs and project drivers at the core, our team works closely with stakeholders to meet time, cost and quality requirements, whilst maintaining predictability and rigour at every stage.

Project and Programme Management:

- Strategic Programme Management
- Project Management
- Development Management
- Procurement & Project Planning
- Design Management
- Project / Fund Monitoring

SPECIALIST SOLUTIONS

Every project has bespoke requirements that often require more specialist support, especially as setting project objectives and defining value is increasingly becoming more complex than simply time, cost and quality. Our experts provide both high level strategic advice and more practical support to achieve the best results for our clients.

- Sustainability, Carbon, and Wellbeing
- Social Value
- Health & Safety, Fire and PD/CDM services
- Specification Consultancy
- Dispute Avoidance & Resolution and Expert Witness
- Business Case Consultancy