

RISE

Retrofit information,
support & expertise

Retrofit project overview

Toolkit

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Summary

Large-scale social housing retrofit projects are complex. They require the coordination of many teams within your organisation, managing a diverse supply chain, working with partners and various stakeholder groups.

This toolkit gives an overview of the main activities across a typical retrofit project lifecycle. The lifecycle divides into three phases:

- Project preparation – all the actions required to plan and collect the resources necessary for a successful project
- Project delivery – execution of the project and physical installation of energy efficiency measures
- Post-retrofit – bedding in the upgrades, performance monitoring, and long-term maintenance.

Who should use the toolkit?

The toolkit is aimed at anyone responsible for setting up and delivering a large-scale retrofit project. It will be helpful for those associated with the project who need an overview of the whole project lifecycle.

When should you use the toolkit?

The toolkit is useful throughout the project. Particularly when bringing new groups or individuals into the team or communicating with various stakeholder groups. However, its primary use is to support the core team during the setup phase, summarising all critical tasks and activities.

How should you use the toolkit?


The toolkit has two main sections:

- **Level 1** – a brief introduction
- **Level 2** – a framework for understanding the core tasks and activities in the project lifecycle

Supported by links to other toolkits, on-demand Masterclasses, and other resources.

Recommended process

- Read the information in Levels 1 and 2 to understand the toolkit basics
- Access useful resource links for further information



Note: This toolkit is designed to offer a comprehensive outline of the project lifecycle. While it doesn't delve into the specifics of key tasks and activities, it directs you to pertinent RISE Toolkits and additional resources for in-depth guidance and support.

Level 1 – Introduction

Retrofit projects are large, complex and usually delivered at speed. They will stretch the capabilities of organisations to plan and execute them effectively. This toolkit gives you an overview of a retrofit project lifecycle and links you to many resources that provide more detailed support.

One area where the expectations and practice of social landlords need to change is compliance with the PAS 2035 standard on “retrofitting dwellings for improved energy performance”. Publicly funded projects in the UK, including Government-funded programmes, must comply with the standard.

It is essential to retrofit existing homes to a high level of performance if we are to meet the UK’s net zero targets. It is not easy, and the [“Each Home Counts”](#) review in 2017 identified many of the problems:

- **Performance gap** – predicted energy savings are not delivered in practice
- **Defects** – failures in installation create future problems for the building and residents
- **Shallow retrofit** – only tackling single measures leading to poor performance and higher costs in the long term
- **Unintended consequences** – poor design and installation make the building worse; for example, increasing airtightness without controlled ventilation can lead to damp, mould, and rot
- **Lack of accountability** – participants in a project passing the buck

PAS 2035 provides a standard process and good practices for retrofit projects to solve these problems. The basic concepts are simple:

- A **‘Whole House’** approach – making sure a solution is developed for the entire home, not simply fitting the most obvious or easiest energy efficiency measures
- **‘Fabric first’** – in retrofitting, first focus on improving the energy efficiency of the building’s outer skin (the ‘building envelope’), and then add low-carbon heating, cooling, and appliances
- **‘Medium-term plan’** – it may not be possible to carry out all the improvements at the same time. A plan covering 20-30 years can show in which order to make upgrades to get the best performance improvements for the available funds. It avoids the risk of making an improvement that is not compatible with the long-term goals and needs replacing in the future at additional cost
- **Retrofit Coordinator** – the project should be managed by someone with the appropriate skills and experience, trained in energy efficiency and retrofit. The Retrofit Coordinator ensures the retrofit process is efficient and meets all the requirements of the standard. PAS 2035 identifies five key roles for retrofit projects, but the Retrofit Coordinator is the key



This toolkit will help you to:

- Understand the overall lifecycle of a retrofit project
- Map the different activities to different project phases and understand how they interact
- Understand the purpose of each activity and what it will deliver
- Link to the wealth of toolkits, guidance, and support available for each activity

Level 2 – Framework

Preparation

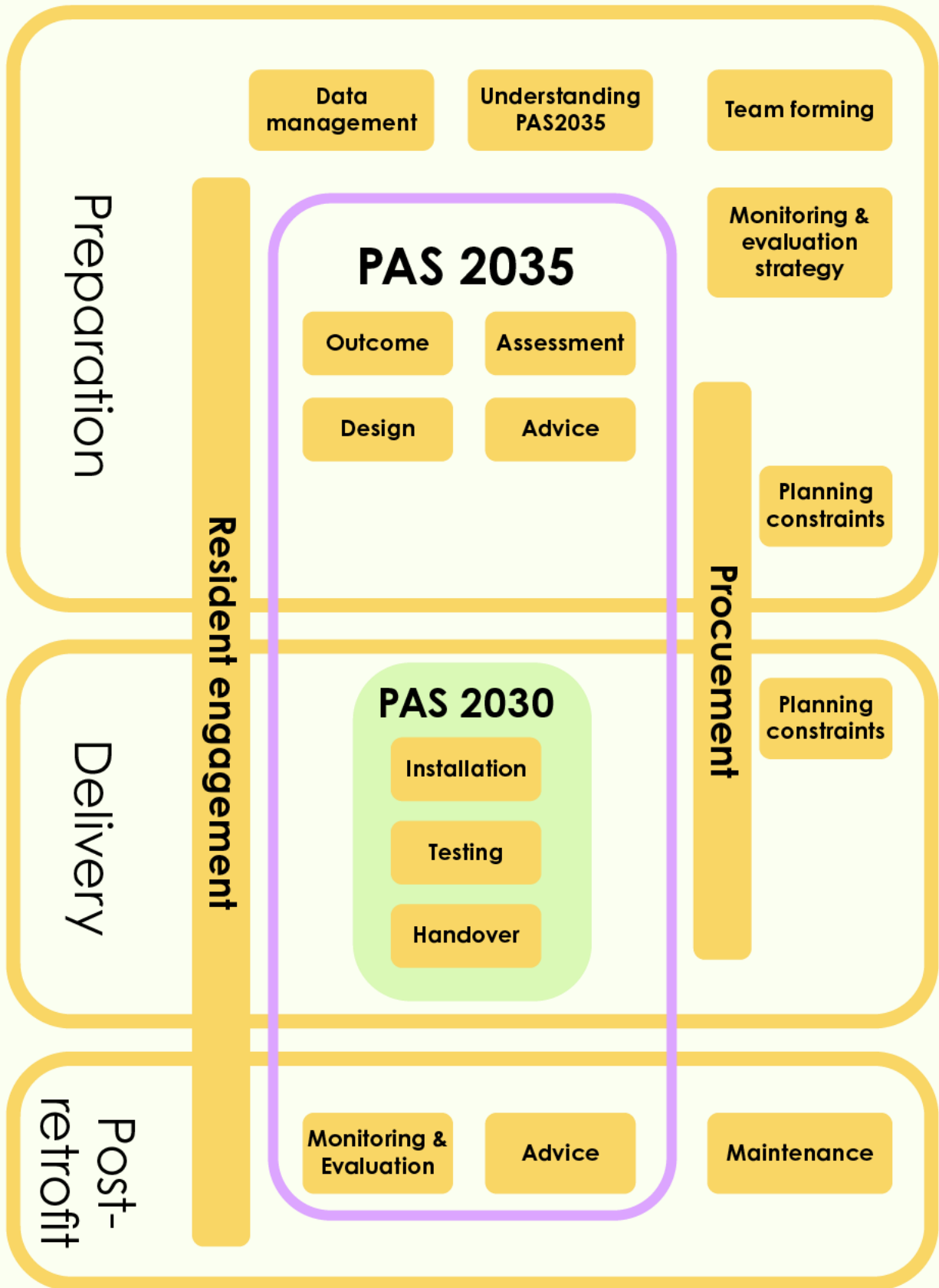
Delivery

Post-retrofit

The lifecycle of a project can be usefully divided into three distinct phases:

- Preparation of the retrofit project – including preparation of any bids for external funding
- Delivery of the project – installation, testing and handover of the physical retrofit
- Post-retrofit – ongoing monitoring and evaluation, and continuing support to users

The Preparation phase has the largest number of distinct activities within it, and the Delivery phase, with its focus on physical installation of energy efficiency measures, may be the longest. It is useful to break out all the key activities of a retrofit project into these three phases.



This chart maps all the key tasks and activities in the project lifecycle onto the three project phases.

Resident Engagement and **Procurement** bridge across more than one project phase.

The centre group of activities are all part of the PAS 2035/2030 standard.

The following sections define each activity and link to more detailed guidance in other toolkits, on-demand Masterclasses, and other external resources.

Preparation

Business Case

A good business case is essential for a successful social housing retrofit project. There are always competing demands for limited financial and staff resources. Your business case explains why your project should be preferred to the other options available to decision-makers.

The business case should:

- Enable the internal and external stakeholders to understand, influence and shape a project's scope and direction from the beginning of the planning process
- Allow you to test your plan for weaknesses and anticipate the concerns and objections of other stakeholders
- Make the project's purpose clear to everyone involved and affected, setting out what it is and why it has been chosen. It will be used to communicate the project story to both internal and external stakeholders
- Demonstrate that the project has been thought through. Show that the target outcomes are clear and desirable, the risks are properly evaluated, the finances viable and the project plan is practical and deliverable
- Help decision-makers understand the project, the key issues and the evidence base
- Provide the basis for management, monitoring and evaluation during and after implementation

External resources:

- [Knowledge Hub, Building a Business Case](#)

Senior Management Buy-In

Getting the buy-in of senior managers and other key stakeholders is vital for a successful retrofit project.

To get buy-in, you must tell a convincing story. Facts and projections are not enough. People must feel the importance of the project. Getting buy-in involves more than creating a good business case and getting it signed off.

Senior management buy-in and agreement are usually required to release the resources for the project. However, their support can offer much more than that:

- The commitment of your senior team is vital in any bid for external funding. A firm commitment from the leadership team strengthens the bid

- When seeking external funding, evidence of senior management commitment can be a requirement of bid submission
- Many functions, departments and individuals must work together to deliver a large retrofit project. The leadership team can commit the whole organisation
- You will almost certainly involve external partners in the project, either consortium members or critical suppliers and contractors. Senior commitment will give them the confidence to put their energy, expertise, and resources into the project
- Senior managers can have information about plans that may affect your project. For example, estate regeneration or disposals. Early information will avoid wasted effort
- A large retrofit programme is a complex activity. You will ask many parts of the organisation to do difficult things, sometimes taking resources from other priorities. The leadership team can show the organisation this is an important activity. They can break through organisational barriers in a way that you cannot
- Senior management buy-in can unify various organisational segments, fostering a culture of cooperation and shared vision. This is essential because a cohesive approach can significantly streamline processes and enhance the efficiency of project delivery

External resources:

- [Knowledge Hub, Gaining Senior Level Buy-In](#)

Secure Funding

A large-scale retrofit project will require substantial funding. Securing funding is a critical step in developing a project.

Options for project financing include:

- Use of internal financial surpluses
- Commercial loans
- Municipal and corporate bonds
- Grants – Governmental or non-governmental

The amount of financing required and the feasibility of raising it can affect the scale of the project.

Consortium Forming

Consortia are partnerships, associations, or groups of organisations working together to achieve a common goal. Typically, they will be bound by a legal agreement, defining the objectives, responsibilities, and ways of working together. Being a member of a consortium brings many potential advantages compared to delivering a project on your own:

- You can learn from peers who are further along with their decarbonisation and retrofit journey and build capacity together
- Pooling resources to make a bigger impact can enhance a funding application's appeal
- Working together can enable joint procurement opportunities, providing economies of scale when engaging the supply chain
- Sharing of bid writing resources and ideas can provide both efficiency and better bids
- Blending the property mix can help address 'pepper-potting' stock issues. E.g., average Energy Performance Certificate (EPC) starting bands, maximum mixed tenure allowances, etc. This can result in a more innovative and attractive proposal – leaving fewer houses behind in a local area
- You can be more ambitious than a single organisation can afford to be
- Partners may have complementing skills and service offerings, making a joint bid more attractive to funders

However, a consortium also brings extra work in setting up, managing, and the potential for disputes. It is important to balance the costs and benefits in deciding whether or not a consortium arrangement will work for you.

External resources:

- [Knowledge Hub, Forming a Consortium and Creating a Team](#)

Team Forming

To deliver a successful project, you must have the right resources available at the right time with the right skills. Those resources must also be aligned to the same objectives, collaboratively driving the project forward, and mutually supportive. You will need to:

- Build a picture of the tasks to be completed and the skills and capabilities required
- Map the existing resources to the tasks and roles
- Identify gaps in coverage and prioritise the most significant
- Develop a realistic plan to bridge the gaps
- Manage the team to keep them aligned and effective

External resources:

- [Knowledge Hub: Forming a Consortium and Creating a Team](#)

PAS 2035 is a national standard for carrying out retrofit projects to ensure they deliver the intended outcomes, and avoid unintended consequences such as damp, mould, and rot.

All domestic retrofit projects receiving public funding in the UK must comply with PAS 2035. It is also good practice for any retrofit programme. Before plunging into the project details, you must take the time to understand what PAS 2035 is and how it works.

External resources:

- [Knowledge Hub, Understanding PAS 2035](#)
- [BSI Standard, PAS 2035/2030:2023 Retrofitting Dwellings for Improved Energy Efficiency](#)
- [Retrofit Academy, PAS 2035: the Movie](#)
- [Retrofit Academy, Midlands Retrofit Toolkit](#)

Data Management

Good quality data is the foundation for any retrofit project. Confidence in your underlying stock portfolio data will aid you in retrofit programme decisions and prioritising which homes you'll target with which retrofit measures.

Some of the common challenges housing providers face in acquiring and managing portfolio data for retrofit projects are:

- Adequate resource availability - Some housing providers have no internal resource with the data analysis experience required
- Housing stock data can often be incomplete, inconsistent, and poor quality, leading to errors in stock modelling scenarios - 'Garbage in, Garbage out'.
- Not having access to valid and reliable data sources or tools to calculate energy performance

These challenges, if unresolved, can cause:

- Increased costs to business operations
- Project delays
- Poor quality outcomes
- Poor value for money
- Failure to meet strategic objectives

The benefits of clear policies and good data practice are:

- Reduced time, costs and complexity for your organisation in working with tools and software to analyse and model your stock
- Reduced costs and reduced waste in retrofit projects by using data to target the right measures and KPIs
- Better management and transparency of retrofit projects risks and reduced costs to rectify poor performing projects
- Making better and informed decisions for quality and measurable outcomes in your housing stock upgrade estimates
- Improved internal business process efficiencies
- Better capability to monitor organisation and programme performance to deliver continuous improvement

Build stronger business cases to present to the senior management team for capital investment

Resident Engagement

Developing and delivering a successful retrofit plan requires a clear resident engagement plan. Well planned resident engagement can help to:

- Improve no or low access rates. A good resident engagement process may encourage people to participate, so you don't have a low take-up
- Address residents' main concerns. Residents' concerns vary with the demographic and type of households – there are concerns about disruption, changes to homes and lack of understanding about the benefits of retrofitted homes. Myth-busting about technologies is essential
- Comply with PAS 2035 requirements. Resident engagement is a key part of PAS 2035 compliance and is required for all public sector retrofit support programmes
- Support all residents through the process in a tailored way. It is essential to support vulnerable residents and those who may not understand the retrofit process. Ensure that information is tailored for residents, including those with general accessibility, visual, hearing, physical or learning difficulties
- Improve residents' satisfaction. Increasing resident participation can improve their satisfaction and evidence that residents have been involved in decision-making. Good resident engagement may also improve the relationship between residents, contractors and the organisation
- Save your organisation cost and time. Trying to recontact residents who will not engage is timely and costly

- Reduce the risk of long-term maintenance failures or residents not understanding how to use their new system. By providing behaviour change to all, including information on the operation of new systems
- Reduce reputational and financial risks. Not reaching your net-zero target may cause damage to your organisation's name, with risk to in market share. Good resident engagement is a key part of reaching your net-zero carbon targets

Resident engagement runs throughout the project. You should be developing your plan as the project comes together. Engage with the residents early and frequently so that they know what is coming and can contribute their ideas. With its uncertainties, interruptions, and hassle, the Delivery phase will be difficult for the residents, and you should give plenty of support. Finally, in the Post-Retrofit phase, you must support residents to use the technologies in their new home effectively, and you need to learn from their feedback for future projects.

Procurement

Developing and delivering a successful retrofit project requires a sound, compliant, and ethical procurement method. There are different procurement options, each with different strengths and weaknesses. You will have to decide on the best approach to procurement in the Preparation phase and execute it in the Delivery phase.

Effective procurement aligns the objectives of multiple project stakeholders to maximise value creation. It will support you to deliver your objectives, provide quality outcomes for residents, and motivate the supply chain to engage with the project. Effective procurement will:

- Clarify your organisation's and residents' needs and communicate these with potential suppliers
- Shape retrofit projects which find the best solutions for the project objectives
- Set the project budget and timeline
- Help to deliver the project on time and budget
- Maintain a good relationship between you and the supplier
- Ensure ethical standards are met

Procurement should follow these steps:

- Engage early with your procurement team. Explore what you want to achieve and the best approach to deliver it
- Engage with the supply chain to shape your procurement strategy. Can the market deliver your objectives already, or will you need to work with the market on innovation?
- Set objectives. Work collectively to identify what needs you are trying to fulfil through this procurement exercise. This will link your overall retrofit project objectives with any procurement values. For example, you might want to emphasise innovation or local supply chain development

- Understand the financial constraints you are working within. Procuring in line with specific funder requirements could set a timetable or other rules you need to comply with
- Agree your procurement approach. Your organisation may favour one procurement process, but you will need to consider whether this is suitable for a retrofit project, given your objectives and any constraints. The most common procurement approach (open or restricted tender) may be limiting where you are not buying a standard or specified product. Other approaches can be a better fit
- Execute the procurement strategy. The pathway taken will depend on the approach chosen

Monitoring and Evaluation Strategy

Monitoring and Evaluation (M&E) is a key part of a retrofit project and is required in PAS 2035. The complexity of the M&E process depends on the risk of the retrofit programme. Projects carrying greater risk through their scale or combination of energy efficiency measures require more detailed evaluation.

The task during the Preparation phase is to decide the best M&E strategy for your project. If you need to install monitoring equipment into the building, it is essential to know that before the installation. You will need to make space physically, in the budget, and in installation resource.

The Monitoring and Evaluation Strategy should:

- Enable the internal stakeholders to understand and define the scope of the M&E process
- Allow the project team to select information to gather in the M&E process, and the appropriate way to measure and evaluate their impact on the residents, as well as improvements in carbon emissions
- Help the project team document and report on the findings; both the positive impacts and any accidental negative impacts that need to be documented and learnt from
- Help decision-makers to understand the project, the key issues, and the evidence base
- Provide the basis for learning how to get better results from future projects

Planning Constraints

It is a good idea to identify any potential planning issues as soon as possible. They may mean you have to adjust your project targets. Find any problems before getting too deep into the project to avoid later delays and difficulties. Always seek the advice of the relevant local authority's planning team to confirm your conclusions.

Many types of retrofit work fall under Permitted Development Rights and do not require planning permission. For example, installing PV roof panels, air-source heat

pumps, external wall insulation (EWI) and loft insulation. However, these rights can be removed and mean consent or permission is needed.

All UK local authorities should have a Local Development Plan (or Local Plan) that sets out their building development policies and designations for different geographic areas. These local plans can exclude some Permitted Development Rights, so make sure they are checked.

There are additional planning requirements for buildings in Conservation Areas or National Parks. Also, buildings of architectural and historical interest (listed Grade I, II* or II) or identified as locally listed in the Local Plan.

It is essential to check local planning conditions at an early stage of your project to identify any approvals that you might need. You can then build the time and resources required to get these approvals into your business plan. If, for example, installing EWI on a building requires planning permission, it can take 8-16 weeks to work through the approval process.

All necessary planning approvals must be in place before the retrofit works start. The potential risks of proceeding without all the required permissions include financial loss, reputational damage, and a criminal offence if the work affects a protected historic building. Important questions for you to consider at an early stage of your retrofit project:

- Do the proposed retrofit measures to the target properties have permitted development rights?
- Is the retrofit proposed for a historic building?
- Have you checked whether the property is in a Conservation Area?
- Is the property in an area with restrictive conditions, as set out in the local authority's Local Plan?
- Have you allowed for the time and costs in the business plan for obtaining planning permissions and any historic building consents?

External resources:

- [Knowledge Hub, Identifying Planning Constraints](#)
- [Planning Portal](#)


PAS 2035 – Preparation

PAS 2035 is the core process for designing and delivering retrofits. It runs across all three phases of the project.

In the Preparation phase, the projected **Outcome** is the planned performance target of the retrofit project.

The **Assessment** covers surveying the homes to understand their characteristics and current performance and identifying the risks in the project.

Design deals with selecting energy efficiency measures and planning how they will be integrated into the homes to deliver the Outcome.



Advice to the homeowner and occupier is provided throughout the project. It is strongly linked to the broader Resident Engagement activity. The main points of engagement are in the Preparation and Post-retrofit phases. There is evidence that providing advice and guidance improves the project outcomes. It helps to overcome resistance from residents, engages them fully in the project, and makes sure that they get the best out of the upgrade and avoid problems due to misuse of new technologies.

In the preparation phase, advice centres on:

- Discussing the potential for improving the performance of the home and the quality of life of the residents
- Explaining how the retrofit will be carried out and the implications for residents
- Gathering information that can help with selecting the best retrofit strategy and design, for example, occupancy and energy consumption patterns

Advice, Outcome, Assessment and Design work together to create the retrofit plan.

External resources:

- [Knowledge Hub, Understanding PAS 2035](#)
- [Retrofit Academy, PAS 2035: the Movie](#)
- [Retrofit Academy, Midlands Retrofit Toolkit](#)

Delivery

Planning Consents

In the project's Preparation phase, you identified any planning issues or constraints connected with the retrofit. Before starting work on the homes, ensure that all queries have been resolved and all necessary permissions obtained.

PAS 2030 – Installation

PAS 2030 is a standard for the installation of energy efficiency measures. It works with and is usually seen as part of PAS 2035.

PAS 2030 takes over for the Delivery phase to ensure that the **Installation** is carried out correctly. After Installation, the energy efficiency measures must undergo commissioning and **Testing** to ensure they deliver to the specification.

Finally, there is a **Handover** process to transfer all the information about the installed systems to the project manager, homeowner and residents. This includes documentation, test results, user guides and instructions, etc.

Post-Retrofit

PAS 2035 – Post-Retrofit Actions

PAS 2035 specifies two ongoing activities post-retrofit:

- Monitoring and Evaluation to measure actual performance in use. This helps:
 - Identify whether the design performance has been achieved
 - Learn lessons to integrate into future projects
- Providing **Advice** and guidance shortly after the retrofit is complete. This covers:
 - The operation and use of installed energy efficiency measures
 - Any behavioural changes necessary to get the best out of the upgrades
 - Repair and maintenance schedules required to sustain performance.
 - Advice should always be integrated into the wider Resident Engagement activities

Maintenance

After installing energy performance measures, the characteristics of the home and the way it is used will probably change. For example, new ventilation systems may need more regular cleaning and maintenance, and low-carbon heating systems and appliances may need different usage patterns and maintenance schedules for the best results. New tenants coming into the property may need to be taught how to use unfamiliar systems. You should develop your ongoing maintenance plan before the end of the project. Then, it can usefully be linked to the M&E programme.



RISE Toolkits available online

The full selection of RISE Toolkits are available at:
www.riseretrofit.org.uk/resources/toolkits