

Retrofit for flats: Example initial business case for a block of flats

Preparing London for a clean, green energy future



This work has been prepared and developed by Repowering London in collaboration with Future Climate and made available for public information thanks to the generous support of the MCS Charitable Foundation. It is intended to complement the Greater London Authority's Toolkit for Blocks of Flat Retrofit, hosted on the GLA website, with additional detail on two aspects of the retrofit journey for blocks of flats: an example review of options and an example initial business case.

NOTE THIS IS A FICTIONAL EXAMPLE CREATED TO SHOW THE STRUCTURE AND LAYOUT OF A SIMPLE BUSINESS CASE FOR RETROFIT IN A TYPICAL BLOCK OF FLATS. THE HYPOTHETICAL BLOCK WE USE IN THIS EXAMPLE IS THE SAME AS THE EXAMPLE REVIEW OF OPTIONS. INFORMATION ON MEASURES, COSTS, GRANTS AND ALL OTHER INFORMATION PRESENTED SHOULD NOT BE TAKEN AS TYPICAL OR IN ANY WAY INDICATIVE. THIS STRUCTURE IS TO PROVIDE INFORMATION ONLY: IT MAY NOT COVER ALL ELEMENTS THAT NEED TO BE CONSIDERED FOR RETROFIT IN A BLOCK.

Headings for the business case sections are based on the [Social Housing Retrofit Accelerator Business Case Template](#)



Creating Local Energy



Future Climate



Introduction

Model business case

This is a simple model business case based on a hypothetical four-storey block comprising 20 flats, nearly all having an EPC rating of D. An EPC rating of C or above is usually considered the improvement to aim for in a retrofit.

Shared Purpose: Why should we improve the energy performance of our building?

There are 20 flats in the building, with individual gas-fired combi boilers, and they are mostly rated D. The EPC certificates suggest that, on average, each flat's energy bill for heating, lighting and hot water is about £770 per year (approximately 315kWh/m²/year) but our resident survey shows that bills vary widely between households, and some paid nearly twice this EPC estimate last winter.

To reduce bills, we need to improve the energy performance of our homes. Each individual EPC certificate lists minor changes that could be made in each flat to shift the rating towards a C. Changes to the building could boost energy performance and reduce bills. This whole building approach is perhaps the only chance in a 25 or 50-year cycle of investment and upkeep to make the building fit for the future.

Our target is to reduce our energy bills by at least 15 per cent within two years.

Why now?

Energy costs - and other costs of living - are rising relative to incomes. We cannot predict energy prices, inflation or interest rates, but our bills are already uncomfortably high because our building is poorly insulated. In addition, our resident survey shows that many of our leaseholders are expecting to spend more time at home over the next 5-10 years because we are retiring, caring for children or working from home.

There are also factors far outside our building that are lining up in favour of our retrofit project:

- Political: secure, affordable energy underpins a stable, healthy society
- Economic: improving energy-efficiency is one of the most cost-effective routes to reducing energy demand
- Environmental: reducing the carbon emissions from our building

Project objectives

Our shared purpose

Reduce energy bills	the retrofit project will improve the typical EPC rating to C and reduce energy bills by at least 15 per cent.
Reduce emissions	it is also important to residents that we reduce local air pollution (e.g. NOx) and greenhouse gas emissions (e.g. CO2) from burning fuel in our building for heating and hot water. We estimate our current emissions – based on the EPC certificates – to be around 80 tonnes CO2 per year.
Design affordable works	Residents face very different scenarios in terms of income and wealth and the retrofit costs and financing solutions will need to balance the cost savings against the cost of works over time.
Co-ordinate delivery	to minimise disruption or decanting of residents in our block and maximise co-ordination between work packages and other works or responsive repairs while recognising that we cannot bundle every issue with the building into our retrofit project.

Financing options

The Management Committee looked at three retrofit options suggested by the Review of Options. We also considered three different types of finance:

- Self-funding: financing by leaseholders (as co-owners of the freehold and/or as beneficiaries of measures installed within individual flats).
- Arranging a loan.
- Getting grants.

To reduce energy bills for our residents as a priority, and avoid reliance on securing grant funding or the complexity of loan financing, we opted for Option 1: the package of measures that would be within a self-funded budget.

This section will then need to discuss arrangements and process for cost recovery from leaseholders taking account of the type of measures and which measures will be installed within flats and which in common areas of the building.

Resources

The Management Committee made a strategic decision to apply the PAS 2035 approach and adopt the framework's pre-defined roles for the project. Due to the assessed risk of the project this means appointing a Retrofit Coordinator during the project, who will also take responsibility for coordinating the wider delivery team (design, installation etc.).

We also agree that the members of the Management Committee will take part in PAS 2035 Awareness Training (3 hours) in order to act as a more "informed client" during the retrofit project. Finally, we plan to appoint a Resident Liaison Officer, from within the block, to support clear and timely communication with the committee, property management company, individual residents and non-resident leaseholders.

We will also seek legal advice to ensure our contracts are adequate and protect the interests of residents sufficiently. This will also be an important issue to discuss with the Retrofit Coordinator and get their support in the tendering process. Our plan is to work with the Retrofit Coordinator to appoint a main contractor who will take responsibility for delivering the installation stage, from design through to installation.

Finally, the Management Committee will work closely with the Retrofit Coordinator to ensure handover is delivered effectively and that all necessary monitoring and evaluation requirements are carried out.

Note: for a detailed breakdown on the various retrofit roles as described in PAS 2035, the Retrofit Academy has a number of helpful documents and infographics that breaks down each role.

Retrofit actions

See Review of Options which has identified the chosen retrofit measures. The actions selected were:

- Cavity wall insulation.
- Flat roof insulation.
- Floor insulation.
- Draught-proofing and air-tightness measures.
- New external doors.
- Replacement windows to ensure all windows are double-glazed.
- Energy-efficient lighting.
- Heating controls.
- Mechanical ventilation with heat recovery (replace aging mechanical extract ventilation with humidistat-controlled fans).

Costs

Note: for the purpose of this example exercise we assume that costs are the same as those estimated at the assessment phase. In reality, this is unlikely to be the case as the project transitions from assumptions to detailed design and cost breakdown.

Following Section 20 processes, the Management Committee has worked with a Retrofit Coordinator to request quotations from three contractors to develop cost estimates for our leaseholders.

The condition survey showed that preparatory works to remedy damp patches in the walls would be needed before the retrofit work could begin to make sure insulation was installed into dry cavities.

Full Costs for chosen measures

Area	Upgrade	Costs (including material, labour and prelims)
Preparatory works	<ul style="list-style-type: none"> • Repair to guttering • Replacement of damaged downpipe • Repair to damaged pointing 	£9,500
Ventilation and related works	<ul style="list-style-type: none"> • Replace mechanical ventilation in kitchens and bathrooms • Replace ductwork and seal penetrations 	£4,000
Insulation	<ul style="list-style-type: none"> • Cavity wall insulation • Flat roof insulation • Floor insulation 	£73,000
Controls and lighting	<ul style="list-style-type: none"> • Heating controls • LED lighting 	£2,900
Doors, windows and draughtproofing	<ul style="list-style-type: none"> • Draught-proofing and air-tightness • New windows designed to avoid cold bridges and with cavity closers and insulated • New external doors 	£24,000
Sub-total works		£113,400

Full Costs for chosen measures cont.

Other fees:

Professional advice	£10,000
Legal advice	£2,000
PAS 2035 training for Management Committee	£500
Resident liaison officer	£3,600
Sub-total works and fees	£129,500
Contingency @ 10 per cent	£12,950
Total	£142,450

Outcomes and benefits

The ultimate goal for the retrofit is to improve 20 properties from an average EPC rating of D to C and cut bills for residents by 15 per cent within two years.

Our shared purpose

Outcomes

Reduce energy bills – The retrofit project will improve the EPC ratings to C and reduce energy bills by at least 15 per cent.

Energy bills based on SAP modelling are estimated to be reduced from an average of £770 per year to £655 per year.

Reduce emissions – It is also important to residents that we reduce local air pollution (e.g. NOx) and greenhouse gas emissions (e.g. CO2) from burning fuel in our building for heating and hot water. We estimate our current emissions – based on the EPC certificates – to be around 80 tonnes CO2 per year.

CO2 emissions based on SAP modelling are estimated to be reduced by 12 tCO2e/year to 68 tCO2e/year.

Outcomes and benefits cont.

Our shared purpose

Outcomes

Design affordable works

The project budget will be < £150,000.

The freeholder will complete the preparatory Works (structural repairs) before the project begins.

Co-ordinate delivery – To minimise disruption or decanting of residents in our block and maximise co-ordination between work packages and other works or responsive repairs while recognising that we cannot bundle every issue with the building into our retrofit project

The building will be upgraded within two years. Residents will not have to move out during the project.

The main contractor will recruit a part-time resident engagement officer from the building/local community to support communication and co-ordination.

Delivery plan

The delivery plan is based on the PAS 2035 process which offers a specific project delivery framework for retrofit. Following the PAS 2035 framework will help ensure 'the necessary improvement measures in stages' and ensures 'measures are installed in the correct order, without blocking future measures, and with measures that should be installed together in the same stages.'

The delivery plan is not only about the construction work but also the experience of stakeholders. We aim to ensure that the process is clear to stakeholders – residents, non-resident leaseholders, all parties who need to consent to the work and neighbours – and communicated at the right time and in the right way.

In the summary below, we have included key milestones against months for delivery and highlighted issues which can affect the timing and disruption of retrofit: weather, because drying out of the fabric is best in the summer; seasons, because fitting windows or switching over heating or utilities is uncomfortable in the winter; scaffolding, because it can be invasive and disrupt access and views; and stages when contractors require access inside flats, because this can be frustrating and needs good co-ordination, communication and cooperation.

The property manager is also planning to communicate any details and issues about each milestone to all stakeholders via meetings, emails, letters and blog posts.

Example initial business case for a block of flats

Outline delivery plan table

KEY Not required Required in part Required

Process stages	Description	Scaffolding	Access	Month	
Assess project risk	See Risk Management section			Depends on issues, agreement and required consents identified.	
Assessment	Assessment of retrofit options				
Strategy	Set retrofit strategy				
Legal advice and consents	Start on consents and permission				
Tender process	Publish tender, receive bids, bid evaluation, award contract		Site visit, one flat	April-May	
Installation	Design and specification		Site visits	June	
	Consents and permission			June	
	Enabling works	Repair to guttering			July (requires dry weather)
		Replacement of damaged downpipe			
		Repair to damaged pointing			
	Mechanical ventilation	Replace mechanical ventilation in kitchens and bathrooms			July (requires dry weather)
Replace ductwork and seal penetrations					

Example initial business case for a block of flats

Outline delivery plan table cont.

KEY Not required Required in part Required

Process stages	Description	Scaffolding	Access	Month	
Installation	Doors, windows and draught-proofing	Draught-proofing and air-tightness	Required	Required	August
		New windows designed to avoid cold bridges and with cavity closers and insulated	Required	Required	August
		New external doors	Not required	Required	August
	Fabric upgrade	Cavity wall insulation	Required	Not required	Sept. – Oct.
		Flat roof insulation	Required	Not required	
		Floor insulation	Not required	Required in part (Ground floor only)	
	Controls and appliances	Heating controls	Not required	Not required	Sept. – Oct.
		Energy-efficient lighting	Not required	Not required	
	Handover	Site clean-up and testing, commissioning based on handover plan	Not required	Not required	November
Monitoring and evaluation	Checking outcomes are met based on questionnaires and inspection	Not required	Required in part (Sample)	December	

Procurement

The Management Committee's decisions on procurement are based on managing risks and costs faced by leaseholders and the resources and expertise of our team.

In retrofit projects, this is a choice on a spectrum between directly managing every decision and stage of the project, including all the installers, and outsourcing all decisions and management to a contractor. We have opted for a mid-point which recognises that the management committee and property manager are not experts on retrofit design and contract management but must act in the best interests of leaseholders. This means we will directly appoint the Retrofit Coordinator and the Retrofit Assessor, because these roles are designed to protect the building owner (client) and residents (leaseholders and tenants) from the project risks.

We will then tender a retrofit design and installation project which will be awarded to a single retrofit contractor responsible for detailed retrofit design and for managing the risks linked to the correct sequencing and co-ordination of each work package (so ventilation installers do not damage the work of cavity wall insulation installers, for instance). The idea is that the benefits of better co-ordination outweigh the costs of paying a contractor to manage this directly.

The management committee will still have to manage a JCT contract - a standardised construction contract - and consultancy agreements with the retrofit co-ordinator and retrofit assessor but these forms of contract are familiar territory for our property manager and limited in number.

Risk management

In terms of project delivery risks, although we are not relying on public funds to deliver our retrofit, the management committee decided to adopt the PAS 2035 framework because it is specifically designed to manage retrofit risks such as defects, unintended consequences, poor design, accountability, cost-effectiveness and misleading claims about performance improvements.

The PAS 2035 framework provides a structure to assess the risks of different retrofit project and sets different procedures and requirements based on the risk level identified. Projects involving multiple homes (including blocks of flats) are identified as contributing towards a higher potential project risk.