



Climate Crisis/Housing Crisis: How can social landlords reconcile safety and energy saving?

LSE Housing and Communities
February 2022

CASE Report 139



Centre for Analysis of Social Exclusion

Research at LSE ■

Supported by the LSE Research Support Fund 2021

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Part 1: The Housing Safety and Climate Change Challenges

Social landlords are facing two significant challenges: they must respond to the building safety recommendations set out in the Hackitt Review and the Grenfell Inquiry; and they must improve the energy performance of their stock to meet net-zero targets in response to the climate crisis. These two issues create major budget pressures. In addition, a shortage of social housing means that the stock must be protected in order to continue to provide homes for people in need. This report explores the safety and energy pressures social landlords must meet, and highlights innovative responses to these challenges, by identifying 24 case studies where social landlords have retrofitted their rented homes to improve safety and energy performance while protecting the supply of social housing.

1. The Housing Safety Crisis

The Hackitt Review

Following the Grenfell Fire in 2017, the government appointed Dame Judith Hackitt to undertake a review of building safety standards, The Independent Review of Building Regulations and Fire Safety (also known as the Hackitt Review). The Hackitt Review, which was published in May 2018, concluded that current building regulations for fire safety are *"not fit for purpose and that a culture change is required to support the delivery of buildings that are safe, both now and in the future"*¹.

The report sets out a number of points that should be considered in the construction and maintenance of all buildings. There are clear flaws in the current system; for example, there is often no audit trail of building works, fire doors regularly fail to meet the 30-minute fire protection test, and there are many examples of ill-considered building design, such as the use of wooden balconies, that can increase the risk of fire spreading. Further, under the current system, it is unclear who is ultimately responsible for safety, and guidance is often ambiguous. In addition, the review also found that residents' voices often go unheard.

The report outlines a new regulatory framework to ensure that residents are safe and feel secure in their homes. The new framework will prioritise safety across the building life cycle, so that all those who procure, design, construct and maintain buildings are responsible for ensuring safety at every stage. Government must set out clear conditions for safety that are simple to follow. The Regulator will have greater powers to hold people to account, and action will be taken against those who fail to comply. Residents must be at the centre of all safety work, with their views taken seriously. There must be a single, known and responsible point of control for every block.

To ensure safety the duty holder must take a whole building approach and consider how an aspect may affect the safety of the building overall. There must be a digital record of any changes made to the building structure. There must also be escape plans, and regular inspections of lifts, ventilation, fire doors and fire alarms. These are some of the most fundamental requirements².

¹ Dame Judith Hackitt (2018) *Building a Safer Future: Independent Review of Building Regulations and Fire Safety: Final Report*. UK Govt; London:
<https://www.gov.uk/government/publications/independent-review-of-building-regulations-and-fire-safety-final-report>

² <https://blogs.lse.ac.uk/politicsandpolicy/ten-lessons-from-grenfell/>

The Grenfell Inquiry Phase 1

Phase 1 of the Grenfell Inquiry Phase 1 highlighted serious failings in how the fire service performed on the night of the fire, whilst also uncovering major errors in how Grenfell Tower was managed. The Inquiry Report provided recommendations of how landlords can work to improve the safety of multi-storey buildings.

The evidence in the inquiry found that the speed at which the fire spread was due to the ACM cladding that had been added to the building during the refurbishment of Grenfell Tower between 2012-2016.

“It is clear that the use of combustible materials in the external wall of Grenfell Tower, principally in the form of the ACM rainscreen cladding, but also in the form of combustible insulation, was the reason why the fire spread so quickly to the whole of the building”³

The Inquiry recommended that all ACM cladding is removed from all multi-storey buildings where it is present, an estimated 400 high rise residential buildings at the time of the Inquiry Report.

Compartmentation, defined as “a building or part of a building comprising one or more rooms, spaces or storeys constructed to prevent the spread of fire to or from another part of the same building or an adjoining building”⁴ is key to preventing the spread of a fire in buildings. Evidence in the Inquiry found that compartmentation in Grenfell Tower failed and allowed the fire to spread rapidly through the building in several ways:

- The heat created by the burning ACM cladding damaged the windows and allowed the fire to enter adjacent flats.
- The extractor fan units in the kitchens became deformed and dislodged and allowed the fire to spread from room to room.
- Many of the fire doors in the tower failed as the self-close mechanisms had been broken or removed.

The inquiry recommended that all fire doors and closers should be inspected at least every three months in all buildings. It is also essential that any future building or upgrading work carried out in properties does not compromise compartmentation.

Evidence from the Inquiry found that different floors in the tower were not properly marked, which created confusion for the firefighters. The report recommended that every floor in all high-rise blocks should be clearly marked, and each flat clearly numbered with signs visible in low light and smoky conditions. The Inquiry also found that the fire safety information in the corridors was unclear and only available in English despite residents in the tower speaking a diverse range of languages, leading to the recommendation that fire safety information should be presented in a variety of ways that meet the needs of tenants.

In the case of the Grenfell Fire the firefighters were unable to use the mechanisms which allow them to take control of the lifts. This meant they could not use the lifts for their search and rescue operation. All lifts therefore must be regularly inspected to ensure they are working correctly.

³ Grenfell Tower Inquiry (2019), *Grenfell Tower Inquiry Phase 1: Report Overview*. UK Govt; London: <https://www.grenfelltowerinquiry.org.uk/phase-1-report>

⁴ <https://www.thefpa.co.uk/news/fire-safety-advice-and-guidance/what-is-fire-compartmentation->

In addition to the structural issues with the building, the Inquiry found that the London Fire Brigade did not have the correct information about the Tower to help them tackle the fire. The Inquiry found that the owners and managers of high-rise blocks should be required by law to provide the fire service with the design of the building, details about the materials used, and a list of all residents living in the building. Vulnerable residents should have personalised evacuation plans. All of this information should then be safely held in a box at the entrance of the building, accessible to the emergency services.

A further recommendation was that all high-rise blocks should have a specific evacuation plan and be fitted with a recognisable and fully audible evacuation siren. The Inquiry found this was not the case in most high-rise buildings at the time of the fire at Grenfell.

The report from Phase 1 of the Grenfell Inquiry therefore set out a number of recommendations for social landlords to follow in all upgrading and building work, as well as for the ongoing management of all social housing⁵.

The Grenfell Inquiry Phase 2

The Grenfell Inquiry Phase 2 is still ongoing, but has already produced important findings that should influence how multi-storey buildings are managed to ensure they are safe.

Evidence from the Inquiry has found that the Royal Borough of Kensington and Chelsea (RBKC) made the decision not to inspect fire doors in the months leading up to the fire despite requests from the London Fire Brigade (LFB). Minutes from a meeting explain that this decision was made due to the cost of carrying out inspections and RBKC not wanting to be liable if faults were found⁶. It is essential that all fire doors are properly fitted and regularly inspected by certified skilled inspectors.

The Inquiry also found that the smoke ventilation system was “broken beyond repair” and the KCTMO, which was responsible for the management of the building, failed to tell residents about this. The system had previously failed during a 2010 fire where three residents were injured. In 2014, the LFB gave KCTMO a six week deadline to fix the system but it was not replaced until 2015/16. This meant that the smoke ventilation system was broken for over five years before it was replaced. Despite the new system being fitted, the Inquiry found that the system failed on the night of the fire in 2017⁷. Ventilation systems require specialist fitting and need to be regularly inspected to ensure they work as required.

A year after the fire, Christopher Mort, Technical Officer for Fire at cavity barrier manufacturer Siderise, which was used on Grenfell Tower, was asked to inspect the remains of the tower, and found major errors in how the insulation had been fitted. He found that the vertical barriers were installed incorrectly and would have allowed “fire, flame and smoke to travel behind the cladding.” He observed that there were gaps of up to 140mm between the cavity barriers so they would be unable to stop the spread of smoke and flames. He also found areas where cavity barriers should have been installed with no drill holes, suggesting

⁵ <https://blogs.lse.ac.uk/politicsandpolicy/ten-lessons-from-grenfell/>

⁶ <https://www.insidehousing.co.uk/news/rbkc-decided-against-fire-door-inspection-programme-months-before-grenfell-fire-70552>

⁷ <https://www.insidehousing.co.uk/news/kctmo-failed-to-tell-grenfell-residents-smoke-ventilation-system-broken-beyond-repair-70526>

the cavity had never been installed⁸. Any installation of insulating materials must be done so by trained professionals who know how the technology works, and be inspected by certified inspectors to ensure it has been fitted correctly.

Evidence from the Inquiry found that Laura Johnson, the Head of Housing at RBKC, did not implement recommendations from the coroners' report of the Lakanal House fire in 2009, despite being provided with a briefing of the recommendations which stated that all landlords should consider retrofitting sprinklers in high rise blocks, that evacuation strategies should be in place, and that all staff members involved in upgrading work were trained in understanding the fire protection qualities of building materials⁹. Moving forward, the recommendations from the Grenfell Inquiry and the Lakanal fire must be implemented without exception.

Statements from two caretakers who worked at Grenfell Tower at the time of the fire said they were overworked and not given enough time to complete everything that needed doing, which meant "*corners were often cut*" and repairs left either unrecorded or not completed. Part of the caretaker's role was carrying out weekly health and safety checks which included inspecting fire doors and lifts. The caretakers said over time, the number of homes they were responsible for got larger, and caretakers who left were not replaced, leaving them unable to complete all the inspections¹⁰. It is important that the number of staff on the ground correspond to numbers of homes in their 'patch', as they play a crucial role in overseeing conditions. In addition, their work must be regularly checked.

The lifts in Grenfell Tower presented a fundamental flaw in the fire safety performance of the building on the night of the fire. The lift control switch failed, which should have allowed the fire service to take control the lifts to transport equipment, and to prevent residents from using the lifts. Evidence from the Inquiry suggested that an incorrect sized key was the most likely reason the control switch failed. In addition, the lifts lacked key safety features including a secondary power source and an escape hatch. Butler & Young Lift Consultants claimed they were instructed by KCTMO not to bring the lifts to full firefighting standards during a 2004 modernisation project, due to an additional cost of up to £100,000. Expert evidence from Roger Anthony, an employee of specialist lift contractor Apex, stated in the Inquiry "*I've never seen a fully compliant firefighting lift in any local authority building to this day*"¹¹. Lifts need to be fitted to high safety standards and be regularly inspected.

The Grenfell Inquiry Phase 1 found that virtually no personal emergency evacuation plans (PEEPs) were prepared for disabled and vulnerable residents in Grenfell Tower. 41% of residents caught in the fire were disabled¹². The Inquiry found that the Local Government Association (LGA) was warned in 2011 that its guidance from the same year, which stated

⁸ <https://www.insidehousing.co.uk/news/fire-barrier-installation-on-grenfell-some-of-the-worst-ive-seen-says-supplier-69928>

⁹ <https://www.insidehousing.co.uk/news/grenfell-council-housing-head-ignored-recommendations-from-lakanal-fire-coroners-report-70704>

¹⁰ <https://www.insidehousing.co.uk/news/grenfell-caretakers-forced-to-cut-corners-due-to-time-pressures-inquiry-hears-71202>

¹¹ <https://www.insidehousing.co.uk/insight/grenfell-tower-inquiry-diary-week-44-ive-never-seen-a-fully-compliant-firefighting-lift-in-any-local-authority-building-to-this-day-actually-71813>

¹² <https://www.insidehousing.co.uk/news/news/failure-to-identify-disabled-grenfell-tower-residents-before-fire-not-acceptable-inquiry-hears-72464>

that PEEPs were “usually unrealistic”, could lead to “unnecessary tragedy”¹³. Elspeth Grant, director of specialist fire safety consultancy firm TripleAconsult, argued that the guidance was “*highly discriminatory and not in line with UK legislation relating to equality or fire safety*”¹⁴. However, the policy of not mandating PEEPs for vulnerable residents in general needs housing remained in place at Grenfell Tower. The Inquiry heard evidence that a reluctance to establish PEEPs across social and private high-rise housing remains due to landlords’ practical concerns about the “significant burden” of updating PEEPs¹⁵. Moving forward, PEEPs must be in place for vulnerable residents in all high-rise residential buildings across the UK.

The Inquiry also highlighted the fact that there are no longer any statutory requirements to determine the competence of fire risk assessors in the UK. Carl Stokes, who conducted the fire risk assessment for Grenfell Tower after the 2015/16 refurbishment, worked in the Fire Service before completing a short training course to become a fire risk assessor. Stokes’ assessment of Grenfell Tower failed to include a detailed assessment of the external cladding system. During the Inquiry, experts have disagreed on whether the external façade fell within the scope of fire risk assessments at the time¹⁶. Stokes described the external materials used as “fire-rated”, a term without specific meaning in UK regulations¹⁷ and removed the external cladding from a list of potential hazards.

The Inquiry has also heard criticism levelled at the culture of “buck-passing” by organisations involved in the management and refurbishment of Grenfell Tower¹⁸. In closing statements, two groups of bereaved, survivors and residents were highly critical of the refurbishment team for failing to notice that unsafe materials were being used, and for each assuming that other organisations were responsible for fire safety. It was also argued that the “web of subcontractors” used in the project facilitated the culture of buck-passing¹⁹. There were 50 subcontractors involved in the refurbishment.

A new aspect of the Inquiry for Phase 2 focuses on the London Fire Brigade’s actions in the years preceding the fire. This relates to the preparation, training and inspections carried out at Grenfell Tower prior to the fire. Lawyers argued that the LFB was aware of the risk of a large cladding fire, yet failed to prepare for such an event at the policy level, or on the frontline²⁰. Expert evidence suggested that the LFB had failed to update their practices and

¹³ <https://www.insidehousing.co.uk/news/warning-government-endorsed-fire-safety-guide-could-lead-to-unnecessary-tragedy-issued-in-2011-71883>

¹⁴ <https://www.insidehousing.co.uk/news/news/bereaved-grenfell-family-issues-legal-proceedings-against-home-office-over-republished-guidance-71931>

¹⁵ <https://www.insidehousing.co.uk/news/warning-government-endorsed-fire-safety-guide-could-lead-to-unnecessary-tragedy-issued-in-2011-71883>

¹⁶ <https://www.insidehousing.co.uk/insight/insight/grenfell-tower-inquiry-diary-week-46-i-think-ive-been-very-very-clear-that-is-completely-wrong-72479>

¹⁷ <https://www.insidehousing.co.uk/news/news/government-set-no-standard-for-competence-of-fire-risk-assessors-to-reduce-burdens-on-business-71847>

¹⁸ <https://www.insidehousing.co.uk/insight/insight/grenfell-tower-inquiry-diary-week-47-an-unedifying-spectacle-72547>

¹⁹ <https://www.insidehousing.co.uk/insight/insight/grenfell-tower-inquiry-diary-week-47-an-unedifying-spectacle-72547>

²⁰ <https://www.insidehousing.co.uk/insight/insight/grenfell-tower-inquiry-diary-week-48-they-knew-and-lives-could-and-should-have-been-saved-72652>

training following the Lakanal House fire in 2009, that similarly failed the compartmentation requirement which underpins a stay-put strategy²¹. Further, the LFB failed to learn from cladding fires outside of the UK, on the assumption that the UK had strong building regulation controlling the use of such materials. The risk of rapid external fire spread and compartmentation failure in high-rise buildings had not been properly taken into account, reflected in the LFB's reluctance to lift the stay-put policy at Grenfell Tower until 2.47am, when the fire had been burning for almost two hours²².

The Inquiry learned that the LFB's 'Operational Risk Database' for high-rise buildings, which includes useful information about a building in the case of fighting a fire, only held data for 1,700 of 6,900 high rises in London in October 2017²³. In addition, although Grenfell Tower was included in the database, entries were inadequate. They included no building plans, only one aerial image, the wrong number of storeys, and left the 'tactical plan' section empty. Expert evidence concluded that there was incompetence in all levels of the LFB at the time of the fire.

This summary reflects the status of the Grenfell Tower Inquiry Phase 2 in November 2021. The Inquiry's next stages will focus on the government, experts, and evidence relating to the deceased.

The impact of the Grenfell Inquiry findings

Social landlords across the country are acting on the Grenfell Inquiry Phase 1 and 2 recommendations to improve the safety of the homes they manage. This comes at a huge cost. The Regulator of Social Housing (RSH) found that spending on building safety increased by 15% between 2017 and 2020²⁴ in response to the Grenfell disaster and subsequent building safety crisis.

Despite major steps to improve the safety of homes, several recent events have highlighted that there are still serious issues. During a fire at the New Providence Wharf development in London in May 2021, the smoke detection system failed, which meant the fire doors failed to close and allowed communal areas to fill with smoke²⁵. The building was clad in ACM, Grenfell-style, cladding, one of a number of privately developments with this type of cladding that had not yet undergone remedial works. Another fire, at Samuel Garside House in Barking, London, in May 2019 also raised serious safety issues. The fire spread quickly over wooden balconies which were made from Thermowood, a Class D fire-rated timber material which was not treated with any fire-resistant covering. As the building was under 18 metres, there were no restrictions on the combustibility of cladding used. In addition, the building's smoke ventilation system failed, and the magnetic doors that tenants needed to use to exit jammed.

²¹ <https://www.insidehousing.co.uk/insight/insight/grenfell-tower-inquiry-diary-week-49-im-not-sure-weve-always-taken-every-opportunity-to-learn-as-an-organisation-72734>

²² <https://www.insidehousing.co.uk/insight/insight/grenfell-tower-inquiry-diary-week-49-im-not-sure-weve-always-taken-every-opportunity-to-learn-as-an-organisation-72734>

²³ <https://www.insidehousing.co.uk/insight/insight/grenfell-tower-inquiry-diary-week-50-there-is-a-culture-in-lfb-that-is-very-conservative-i-think-there-is-great-comfort-in-what-is-familiar-72801>

²⁴ <https://www.insidehousing.co.uk/news/news/building-safety-crisis-sees-15-rise-in-social-landlord-maintenance-spend-70688>

²⁵ <https://www.insidehousing.co.uk/news/new-providence-wharf-fire-smoke-detection-system-in-block-failed-during-fire-70676>

ThermoWood was also used on Limehouse Lodge in Clapton, which caught fire in September 2019. It was reported that after the Grenfell Tower fire, Limehouse residents raised concerns about the cladding used and had been told it had been treated to make it more fire-resistant²⁶. In November 2019, a fire broke out at The Cube, a student accommodation block in Bolton. The building was clad in high-pressure laminate panels, which experts warned could cause “the next Grenfell”²⁷. The Cube is less than 18 metres, the cut off for many regulations, and therefore did not face restrictions on the combustibility of cladding.

Three of the fires occurred in buildings under 18 metres, which meant there was little restrictions on the type of cladding and materials that could be used on buildings. The government’s remediation fund, to cover the cost of replacing flammable cladding, is only eligible for buildings over 18 metres. This has meant that the responsibility for costs of fire safety remediation works for buildings below 18 metres is unclear, leading to a backlog of buildings with fire safety issues whilst arguments play out over who will pay for the works.

Fortunately, these four fires did not lead to any casualties, but they reveal the scale of ongoing building safety issues, and the need for urgent action to ensure the safety of multi-storey buildings.

The New Building Safety Bill

The New Building Safety Bill, published in July 2021, set out to overhaul building regulation and improve safety and accountability. Some of the key elements include:

- **Golden thread** - All buildings must have a “golden thread” of information to ensure that all the relevant people have the correct information at all points in a building lifecycle and are aware of safety issues so they can be remedied. This information will be stored digitally.
- **A new building safety regulator** which will be responsible for overseeing safety in all new and existing buildings of 18m or more. This will include inspecting the building at certain stages in the lifecycle and ensuring that the “golden thread” of information is stored digitally, covering any work that is carried out. The regulator will also establish a register of approved building inspectors whose responsibility it is to inspect buildings and ensure they are safe.
- **Duty holders** - Those involved in designing, constructing or refurbishing a building will have a formal responsibility to ensure it is safe and meets building regulations.
- **Gateways** - The aim of the gateways is to ensure building safety risks are considered at every stage of the new build process.
- **Accountable person** - Once a building is complete there must be a designated person or body to ensure the building is safe at all times. They must be registered with the building safety regulator and apply for the Building Assessment Certificate, which will be issued when the Building Safety Regulator is satisfied that they are meeting their duties under the Bill²⁸.

²⁶ <https://www.insidehousing.co.uk/news/news/revealed-type-of-cladding-present-on-hackney-fire-block-63218>

²⁷ <https://www.insidehousing.co.uk/insight/insight/warning-signs-a-timeline-of-major-residential-fires-post-grenfell-64191>

²⁸ <https://www.gov.uk/government/collections/building-safety-bill>

2. The Climate Change Emergency

Running alongside the building safety challenges we have described is the growing climate crisis and the need to take urgent action if we are to meet the ambitious target of achieving net zero in all areas of the UK economy by 2050. Running our housing contributes 18% of the UK's annual carbon emissions and 80% of existing homes will still be standing in 2050²⁹. In order to reach net zero, social landlords must retrofit their existing stock to improve its energy efficiency. The alternative of demolition and rebuilding is extremely damaging to the environment. Even replacing the existing stock with the highest energy-efficient new build, will not replace the embodied carbon lost for up to 40 years³⁰. Replacing stock is expensive and often leads to the loss of social homes. Therefore, social landlords need to retrofit the existing stock to both meet net zero targets and protect the supply of low-cost social units and the communities they house.

Research by the National Housing Federation (NHF)³¹ suggests that housing associations are already rising to this challenge. In a survey of 66 associations, the NHF found that 75% had started to draw up plans for how they will achieve net zero by 2050, and many already had plans in place. However, the research found a number of barriers to housing associations achieving their net zero targets. 74% of those surveyed said funding posed a key barrier. Research by Inside Housing estimates that the cost of retrofitting all social housing in the UK to net zero standards over 30 years will be £104bn³². Housing associations also had worries about a lack of capacity and capability in the supply chain, concerns over the technology used, and the shortfall of skilled builders³³.

Funding Net Zero

There have been several government initiatives to support housing associations in meeting net zero in recent years.

i. The Green Homes Grant

The Green Homes Grant, announced in July 2020, was a £3 billion fund aimed at boosting the energy efficiency of homes. £50 million was set aside to retrofit social housing. The plan was to retrofit 2,200 homes with an EPC rating of D or below. Local authorities had to apply for the funding and distribute to housing associations, who could not apply directly. The rest of the funding was targeted at private homeowners and landlords who could apply for up to £5000 per property towards making their homes more energy efficient.

Research by Inside Housing found that the structure of the Green Homes Grant scheme meant that landlords did not have enough time to put their stock forward for the plans; when the scheme first opened in August 2020, councils were only given one month to submit their bids. For this tranche of funding, known as Phase 1a, BEIS allocated £74 million across 55

²⁹ <https://kb.goodhomes.org.uk/guidance/climate-emergency-retrofit-guide/>

³⁰ <https://www.netzerocarbonguide.co.uk/guide/early-decisions/retrofit-or-new-build/summary>

³¹ <https://www.housing.org.uk/globalassets/files/climate-and-sustainability/where-are-housing-associations-on-the-path-to-net-zero--a-survey-of-housing-associations-in-england-10-december-2020.docx.pdf>

³² <https://www.insidehousing.co.uk/news/cost-of-retrofitting-all-social-homes-in-the-uk-to-zero-carbon-to-top-100bn-exclusive-research-reveals-68674>

³³ <https://www.housing.org.uk/globalassets/files/climate-and-sustainability/where-are-housing-associations-on-the-path-to-net-zero--a-survey-of-housing-associations-in-england-10-december-2020.docx.pdf>

projects to upgrade 10,000 homes across 100 local authority areas. However, by January 2021 only 5% of the budget has been spent. In March 2021, the government scrapped the grant scheme for homeowners and allocated an additional £300m for local authorities.

BEIS then reopened the scheme in October 2021, known as Phase 1b, after allocating less than 50% of funding in the first round³⁴. Phase 1b allocated £126 million for 81 projects across 200 local authority areas. This money will upgrade 15,000 homes.

Phase 2 of the funding allocated £300 million to five Local Energy Hubs which would work with local authorities in their region to deliver the upgrading of around 30,000 homes by December 2021³⁵. The deadline has since extended to March 2022.

ii. The Social Housing Decarbonisation Fund

The Conservatives announced the £3.8bn Social Housing Decarbonisation Fund in their 2019 manifesto. The first £62 million has been awarded to 17 local authorities for 19 demonstrator projects. The aim of the demonstrator projects is to showcase innovative examples of whole house retrofitting of social housing and highlight key lessons learnt. The projects were expected to be completed by December 2021. The initial funding will bring around 2300 homes to EPC C or above³⁶.

The government announced a further allocation of £800 million to the Social Housing Decarbonisation Fund in October 2021, to be allocated over three years. In February 2022, 69 projects were awarded funding from the SHDF, to a total of £179 million³⁷. All the winning bids were led by local authorities, due to housing associations being prevented from bidding directly under the first phase of the SHDF. Housing associations will work in partnership with the councils allocated funding from this first round. Phase two, expected to launch in 2022-23, will allow for direct bids from housing associations.

In June 2021, the Mayor of London announced the 'Retrofit Centre of Excellence', which will offer social housing providers technical support and guidance on retrofitting their stock, using £3.45m funding from the Department for Business, Energy and Industrial Strategy. The establishment of the Centre has been arranged to enable social housing providers sufficient opportunity to develop retrofit plans in time for the next wave of the Social Housing Decarbonisation Fund³⁸.

³⁴ <https://www.insidehousing.co.uk/news/councils-struggling-to-meet-unrealistic-deadlines-for-flawed-green-homes-grant-programme-70750>

³⁵ <https://www.insidehousing.co.uk/news/councils-struggling-to-meet-unrealistic-deadlines-for-flawed-green-homes-grant-programme-70750>

³⁶ <https://www.gov.uk/government/publications/social-housing-decarbonisation-fund-demonstrator-successful-bids>

³⁷ <https://www.insidehousing.co.uk/news/social-housing-decarbonisation-fund-winning-bids-revealed-74173>

³⁸ <https://labmonline.co.uk/news/energiesprong-and-mayor-of-london-declare-a-retrofit-revolution-for-uks-social-housing-sector/>

iii. The Green Jobs Taskforce

The shortage of green skills is a major barrier to social housing providers reaching net zero targets³⁹. In November 2020, the government announced the Green Jobs Taskforce as part of the Ten Point Plan to reach net zero. One aim of the Ten Point Plan is to create 50,000 jobs in greening UK homes and public buildings by 2030, as well as to support the installation of 600,000 heat pumps every year by 2028⁴⁰. The Green Jobs Taskforce report, published in July 2021, assesses how the jobs market and skills sector must adapt to support these targets⁴¹.

The key recommendations of the Green Jobs Taskforce are as follows: create policy to promote green jobs, skills, and competitive supply chains; build pathways to green careers through industry and the education sector; and support a transition for workers in high carbon industries to the green economy.

The Taskforce highlights that developing skills is crucial to reaching net zero. This would include “retrofit, building new energy-efficient homes, heat pumps, smart devices and controls, heat networks and hydrogen boilers”. The Taskforce’s promotion of green skills and jobs informed the government’s detailed net zero strategy ahead of COP26 in October to November 2021.

iv. Retrofit Academy Greater Manchester PAS 2035 Training

PAS 2035 is a new standard for delivering domestic retrofit, providing a framework for specification for energy efficient retrofit of domestic buildings, characterised by a whole-house approach, appropriate monitoring after completion, and an in-depth assessment of the property by a Retrofit Assessor. PAS 2035 works alongside the previous PAS 2030:2019 framework, which set out an installation standard for domestic retrofits, and all energy efficiency retrofits must now comply with both PAS 2035 and PAS 2030 standard.

The Retrofit Academy will offer government-funded training for up to 600 people relating to the key roles required for the PAS 2035 standard⁴².

The training will offer the Level 2 Award in Understanding Domestic Retrofit, Level 3 Award in PAS 2035 Retrofit Advice, Level 4 Award in PAS 2035 Retrofit Assessment, and Level 5 Diploma in Retrofit Coordination and Risk Management.

The training is open to residents of Greater Manchester, or any employee of a company with premises or a construction site in Greater Manchester. The training programme will run between November 2021 to July 2022.

³⁹ <https://www.insidehousing.co.uk/comment/comment/the-housing-sector-must-play-its-part-in-the-green-industrial-revolution-69287>

⁴⁰ <https://www.gov.uk/government/news/pm-outlines-his-ten-point-plan-for-a-green-industrial-revolution-for-250000-jobs>

⁴¹ <https://www.gov.uk/government/publications/green-jobs-taskforce-report>

⁴² <https://www.retrofitacademy.org/greater-manchester-funding-now-available-for-pas-2035-training/>

v. Mayor of London's 'The Innovation Partnership'

In June 2021, the Mayor of London Sadiq Khan announced 'The Innovation Partnership' which will provide up to £10bn funding for deep whole-house retrofit in the UK's social housing stock⁴³. The funding is open to all social housing providers in the UK, however £5bn will be spent on homes in London. The partnership will support collaboration between social housing providers and expert low energy building firms. The aim of the partnership is to increase the pace, scale and quality of retrofit projects; enable knowledge sharing; promote innovation; and create new jobs. It is estimated that the partnership will create 150,000 green jobs over the next decade⁴⁴. The scheme aims to bring up to 180,000 homes in the country to ultra-low carbon performance standards⁴⁵.

The Northern Consortium Social Housing Tenants' Climate Jury Report

The Social Housing Tenants' Climate Jury was commissioned by the Northern Consortium between July to September 2021 to explore how climate change could be tackled at the home and neighbourhood level⁴⁶. The issue of retrofitting social homes with energy-efficiency measures featured prominently within the discussions. The report emphasises social housing tenants' perceptions and/or experiences of retrofitting their homes, which provides a useful guide for future retrofit programmes.

Thirty social housing tenants were randomly selected who reflected the diversity of tenants living in Housing Association properties in the North of England. Over ten sessions, the group addressed the overarching question: "How can tenants, social housing providers and others work together to tackle climate change in our homes and neighbourhoods?".

The following is a summary of the Jury's recommendations which relate to retrofitting social homes. These are categorised by (a) retrofit technology, (b) cost and managing disruption to tenants, and (c) education, raising awareness and housing association collaboration.

A) Recommendations on retrofit technology

1. There is a need to take into account the urgency of the issue of climate change and installation programmes need to be quicker. Protocols need to change to speed things up. (Whilst also taking the greatest of care that mistakes are not made which would have to be undone later on).
2. The best quality of technology should be used. There should be monitors to see that it is working to the highest standard and efficiency. The EnerPHit (the Passive House certificate for retrofits) and/or the AECB Retrofit Standard should be the standard(s) for Housing Associations.

⁴³ <https://labmonline.co.uk/news/energiesprong-and-mayor-of-london-declare-a-retrofit-revolution-for-uks-social-housing-sector/>

⁴⁴ <https://www.london.gov.uk/press-releases/mayoral/mayor-declares-a-retrofit-revolution>

⁴⁵ <https://energiesprong.org/energiesprong-uk-deep-retrofit-innovation-partnership-is-live-and-open-to-bids/>

⁴⁶ <https://www.northern-consortium.org.uk/wp-content/uploads/2021/11/Tenants-Climate-Jury-Report.pdf>

3. The Housing Associations should be proactive in training and employing their own skilled workforce necessary to complete the work within timescales by 2050 and to allow for any repairs and replacements.
4. Part of the school curriculum on 'community and environment' should encompass how society is changing to adapt to climate change with examples from the tenants 'case studies'. Schools should create engaging & innovative ideas for projects and tasks for pupils to involve them in the discussion (e.g. mini jury processes, extra-curricular activities, climate change champions).
5. The retrofit should be carried out in one go rather than two visits, firstly because there is a lack of time to deal with climate change and secondly to ensure the correct materials for the standard of equipment are installed.
6. Housing Associations should not be too fixed minded regarding which type of technologies they will use for retrofitting. Start with a 5-10-year plan initially but keep an open mind. Technology can change quickly (e.g. Hydrogen could be feasible as soon as 2030.) Housing Associations should build a review point into their plans to review and consider new and emerging technologies.

B) Recommendations on cost and managing disruption to tenants

1. Housing associations need to work with contractors to ensure work is completed to the highest standard. An independent person or body to be appointed as a point of contact for tenants, to provide oversight to work, to hold parties to account & mediate any issues.

We recommend when a job is considered complete, we want an independent inspection to sign it off and agreed by all parties. It would be good if some independent inspectors could be tenants so that tenants have a voice. (Some inspectors don't have a clue what the tenant wants. Housing Associations could work together to train tenant inspectors and these could inspect partner Housing Associations to keep the independence).

2. The potential for disruption is huge. Tenants need to have clear and timely information about:
 - Timescales and duration of work exactly what will happen
 - Expectation of tenants input i.e. Can't take time off work etc, preparation for access.
 - Costs-with regard to energy bills, rents, and any cost that arises as a result of the planned works including re-decoration.
 - We think retrofitting is key to meeting our climate targets, but disruption is a very real concern for people. Tenants need to feel supported and have a trusted contact. Particular attention needs to be allocated to elderly, those with children, those with additional needs.

The Housing Association needs to work with tenants to decide what timely and appropriate is and offer information in a range of ways, in a way that is understandable by all e.g. in comic strip style.

All homes are different and all tenants are different, it needs to be the Housing Associations responsibility to communicate well.

We need a named person who we can ask questions about the work and who will get back to us.

A dedicated 24hr phone number and a tenants representation group who can work together to advocate for people and build trust. We want a regular team rather than a new tradesperson every day.

Housing Association could set up a pot of money to help people who may experience fuel poverty as they adjust to new technologies

3. More time should be spent with the elderly who are not technologically minded to make it simpler for them and help them to understand what is happening in their homes. People in care homes, the elderly and the vulnerable should be made aware of what is happening. Good, clear information should be provided in a format they can understand.
4. We are concerned about costs to tenants (bills, potential rent increase, damages, emotional) and want tenants to feel better off from the work completed.
 - Housing Associations need to work with others to safeguard tenants from energy price increases (e.g. lobbying).
 - Need specifics about what level of compensation to expect for planned and unplanned damages. Claims to be managed by an independent person i.e. a loss adjuster so people are not left out of pocket or claiming for more than it's worth. Compensation needs to be offered if anything in the home is damaged without going through the complaints process, these can be long difficult and exhausting.
 - Housing associations need to explain to tenants how they are paying for retrofitting programmes (e.g. grant applications or other sources) and the impact on rents. Housing Association's need to be accountable for these measures.

We are concerned about wasted money. Problems need to be anticipated and thought through ahead of time – material availability, staffing and competence, order of jobs.

5. People need to be given options to get away from the mess and noise of work being carried out on their homes. Accessible places for all (e.g pet owners, families, mobility) that can offer respite from the work, where you can make a meal or drink like a community centre. In some special circumstances (for example health conditions, mobility etc) tenants should be offered alternative accommodation.
6. There need to be mock-ups of a retrofitted house which people can visit (in person or virtual tours) and learn how to use the new technologies through training, have choices (about equipment, controllers, fixtures, storage options etc) and conversations to explore these choices.

There should be 'how to' videos on using the new technologies on each Housing Associations website. Maybe a scheme where completed houses can be compensated for giving tours to their neighbours (tenants need to be supported to do this and not made to feel like they need all the answers, that would go back to the helpline/websites).

We need a named liaison person who can deal with queries regarding equipment education and support etc. These should be a mix of tenants and officers and retrofit champions.

C) Education, Raising Awareness and Housing Association Collaboration

1. Housing associations need to ensure good communication with tenants before, throughout and after any work carried out. Ensuring tenants are fully informed of work to be carried out beforehand and a good level of aftercare support and training provided for a period of time when completed.

Communications and relationships between tenants' forums and landlords' groups need to be established in order to help tenants understand the benefits of adopting new technologies and the changes they may need to make to adapt to them.

As part of this partnership, there needs to be an explanation of the newly developed framework known as the PAS2035 documentation being introduced to accompany the 'retrofit' work.

2. Housing Associations should collaborate with each other and Local Authorities and agencies. They should share their progress in implementing carbon reduction measures, update each other on any delays and problems and share information on how they are solving them.
3. Raise awareness with everyone in our communities about how we can tackle climate change through a range of communication channels. E.g. websites, social media, local community champions, offline activities & Housing Association magazines/publications. Communication must use clear, accessible language at all times. Communications should be provided in a range of formats and languages to ensure they are accessible to all. Case studies (videos, etc.) should be developed, along with a mechanism for tenants to communicate across geographical areas e.g., a range of managed forums, to share stories.

3. The Cladding Scandal

Following the Grenfell fire Government banned the use of ACM cladding on all buildings over 18m, and set aside £400m to remove cladding from all blocks over 18m owned or managed by a council or housing association. This was followed by £200m for the removal of cladding on privately owned blocks over 18m⁴⁷. In March 2020 they set aside an additional £100bn for non-ACM cladding that is known to be flammable such as HPL (High Pressure Laminate) panels on all high-rise buildings over 18m. In February 2021 they Government announced an additional £3.5bn to fund the removal of cladding on buildings over 18m. The government estimates that there are 462 high rise residential buildings with unsafe cladding, and cladding has been removed on 200 of these. Buildings under 18m are not covered by the fund, there are an estimated 88,000 buildings with unsafe cladding which are not covered by the government funding. "The end our classing scandal" campaign estimated 3 million people are living in homes with unsafe cladding⁴⁸.

While the cost of removing the cladding should fall on the owner of the whole building, in reality it often falls on the individual leaseholders of the flats. On top of cladding removal, other work has to be covered such as sprinkler and fire door work and paying for walking watches. Many are facing remediation bills of more than £100,000. The properties are also impossible to sell as mortgage providers will not provide mortgages for these properties

⁴⁷ <https://www.insidehousing.co.uk/news/government-creates-200m-fund-to-remove-grenfell-style-cladding-from-private-blocks-61350>

⁴⁸ <https://endourcladdingscandal.org/>

until the work has been carried out⁴⁹. Research by the UK Collaborative Centre for Housing Evidence found that leaseholders being affected by these issues were experiencing a negative impact on their mental health ranging from “constantly worrying and being unable to concentrate on other things, to anxiety, depression, and suicidal feelings”⁵⁰.

Cladding is generally added to a building to improve thermal efficiency, therefore reducing the environmental impact of the building. Removing this cladding will mean buildings will require more energy for people to heat their homes.

⁴⁹ https://www.insidehousing.co.uk/news/leaseholders-suffering-suicidal-thoughts-as-a-result-of-cladding-crisis-new-report-reveals-73427?utm_source=Ocean%20Media%20Group&utm_medium=email&utm_campaign=12814230_IH-DAILY-19-11-2021-GR&dm_i=1HH2,7MNIU,41SN13,V2M8K,1

⁵⁰ <https://housingevidence.ac.uk/publications/living-through-the-building-safety-crisis/>

4. LSE Housing's Research

Landlords face the major challenge; of improving the safety of their high-rise buildings and improving their energy efficiency to meet the net-zero target and protect the environment. These priorities have a significant impact on resources – financial, staffing, contractors, knowledge. This research project aims to explore how, and if, these two challenges can be tackled together.

To do this, we set out to identify 20 case study projects that tackle both building safety and improve the energy performance of the buildings. We want to showcase good examples so the methods used, and lessons learned can be applied by other organisations. From our interviews and site visits, we set out to:

- Demonstrate how retrofitting multistorey buildings can improve energy efficiency, safety requirements, and social conditions together;
- Investigate funding options for combining investment in safety, energy-saving, and upgrading measures;
- Assess the role and value of on-site supervision in multi-storey blocks;
- Assess the community benefits of retrofitting multi-storey blocks.

5. Examples of projects

Through desk-based research and interviews with staff from housing associations, councils, architects, and housing developers we identified 23 examples where existing housing has been upgraded to create homes that are more energy efficient, and safer. We explored why the work was carried out, what was achieved, how residents were involved, and how the works were managed. We hope these case studies provide useful lessons for future upgrading projects.

The 23 examples outlined in the following charts summarise how social housing can be upgraded to improve safety and energy performance, without the need for demolition (see Table 1 below).

Table 1: Project Summaries

Name	Problem	Work carried out
1. "25,000-home retrofit programme" Sanctuary Housing, Worcester	Cold homes with poor thermal efficiency and high energy bills	Whole house retrofit programme to bring 25,000 properties up to EPC band C. Work began in May 2021 and will involve new insulation, window and door replacement and heating system upgrades
2. "Core 364", Gentoo, Sunderland	Energy inefficient old gas boilers, high energy bills, need to maximise fire safety	Replacement of gas boilers with ground source heat pumps. Installation of smart meters and new radiators. Upgrades to fire alarm and smoke detection system and installation of sprinkler system.
3. "Council Sprinkler Project" Tamworth	In light of the Grenfell fire Tamworth Council decided to install sprinklers in all high rise blocks	Sprinklers installed in all the units. Extra checks were taken to ensure compartmentation was not compromised in the process.
4. "Energisprong Project" Nottingham	Thermally inefficient design - lots of heat lost through the garage. Concrete walls cold and structurally unsound.	All 10 homes fitted to the "Energisprong" standard- new external wall insulation, windows, roof and solar.
5. "Home Energy and Affordable Warmth Strategy" Solihull ALMO	Poor thermal efficiency due to the concrete panel systems	External wall insulation added to high rise blocks. Rockwool used on all buildings and staff attended a fire testing unit to test materials. All cladding inspected post Grenfell.
6. "Tower block investment programme" Birmingham City Council	Cold homes with poor thermal efficiency and high energy usage	Double glazed UPVC windows, external wall insulation, communal central heating systems, new roofs.
7. Bourneville estate, Alliance Homes, Birmingham	Cold homes with poor thermal efficiency and high energy bills	External wall insulation, cavity wall insulation, window replacements and low energy lighting. This is expected to save 6,461 tonnes of carbon over the buildings' lifetime.
8. Callow Mount, Sheffield	Buildings were badly maintained and blocks suffered with poor energy performance.	Blocks clad with insulated aluminium and windows replaced with double glazing. Balconies were internalised. Electric and coal boilers replaced with biomass system. Fire detection and alarm system upgraded. Cladding tested after Grenfell. Following a fire in a nearby block, the sheltered accommodation block had sprinklers fitted in all 48 units- to be used a model for future sprinkler work.
9. Coatbridge, North Lankashire	Cold homes with poor thermal inefficiency and high energy bills	External cladding, energy efficient windows and lighting, roof repairs, sprinklers in individual flats and new fire doors, installation of electric vehicle charging points
10. Denning Point, EastendHomes, Tower Hamlets	Combustible ACM cladding discovered after Grenfell Tower fire, need to ensure building is warm and energy efficient	Safe removal of combustible cladding, replaced with non-combustible solid aluminium cladding, mineral wool insulation, cavity barriers
11. Great Arthur House, Golden Lane Estate, London	Grade 2 listed buildings with problems of thermal efficiency and repairs needed to the structure of building.	Insulation added and windows replaced, in a way that maintained the original appearance of the building. Wooden balconies repaired. All materials fire tested after Grenfell.
12. Hanover Tower, Sheffield	Cold homes with poor thermal efficiency and high heating costs. Combustible ACM cladding discovered after Grenfell Tower fire, need to maintain thermally efficient homes.	Double glazed windows, mineral wool insulation. Combustible ACM cladding replaced with non-combustible solid aluminium cladding, Rockwool mineral wool insulation added.
13. Hornby Flats Estate, Liverpool	Buildings have problems of cold bridging and high levels of fuel poverty. It was important the brick facades of the buildings were maintained.	Rockwool cladding was used to externally clad the building, which included a brick outer layer to fit with the local buildings. Windows and doors replaced with triple glazing.

14. Ladywell Green and Barton Village, Eccles	Poor thermal performance and concerns about rising fuel bills.	New insulation and windows added, as well as an “EcoPods” heating system which is highly efficient and partly powered by Solar energy. Asbestos was removed in the process. A new smoke ventilation system was added that automatically opens windows in the case of a fire.
15. Manor Farm, Coventry	“Vic Halam” style properties built as temporary accommodation after WW2 were difficult to heat, with problems of damp, mould and condensation. The area has high levels of deprivation and poverty.	Structural repairs carried out to ensure homes were safe. External wall insulation, new windows and doors added. Front gardens and pavements upgraded. “Tool hub” set up so people can borrow gardening tools. Job skills and CV writing classes.
16. Rotheley House, Hackney	Low levels of thermal insulation	Building stripped to concrete frame and refitted using external wall insulation, double glazed windows and condensing gas boilers.
17. Shakespeare Towers, Leeds	Poor energy performance and high levels of deprivation and fuel poverty	External wall insulation, new roofing and structural repairs. First stage of a bigger piece of work to retrofit all of Leeds 126 high rise blocks.
18. Tamworth Towers, Manchester	Blocks had been poorly maintained with several structural problems.	External wall insulation added, and windows replaced, and a weather protection system. External balconies enclosed.
19. TCosy2: Kings Street retrofit, Great Yarmouth	Create a new retrofit solution that can reduce energy use by 80% and offers a safe fireproof solution.	A continuous structure, like a tea cosy, added over the top of the building going down to the building's foundations on both sides. The cladding included an internal sprinkler system which can be activated by the fire brigade in the case of a fire. All materials A1 fire tested and compartmentation created between each of the units, internally and externally.
20. The Crofts, Sandwell	Draughty windows, leaking roofs, poor thermal performance and high energy bills	External cladding, energy efficient windows, flat-to-pitched roof conversions, solar panels, energy efficient Windoor balcony enclosures.
21. Wilmcote House, Portsmouth	Poor energy performance causing damp, mould and condensation. Residents concerned about lack of security doors.	Retrofit to EnerGPhit standard (insulation, new roof doors and windows, external walkways enclosed). New security doors and fob system added. Rockwool fireproof cladding used on whole building, smoke alarm system and fire doors upgraded.
22. Winwood Heights, Nottingham	Cold homes with poor thermal inefficiency	External wall insulation, new windows, upgrades to the heating systems and new Windoor balconies. Sprinkler systems fitted in all flats and communal areas.
23. Worcester Park, Coulsdon and St Helier estates, Sutton Housing Partnership, London	Cold homes with poor thermal inefficiency and high energy bills	Deep whole-house retrofit using the Energiesprong model. Insulated walls and roofs, energy efficient glazed windows, high performance doors, solar panels and renewable heating system.

Table 2: Project details- number of units of each case study and funding source

Name	Units	Funding
1. "25,000-home retrofit programme" Sanctuary Housing, Worcester	25,000 units	Funded by Sanctuary Housing
2. "Core 364", Gentoo, Sunderland	364 units (7 tower blocks)	£9 million self funded
3. "Council Sprinkler Project" Tamworth	400 units (7 high rise blocks)	Funded by the council, including leasehold properties
4. "Energisprong Project" Nottingham	10 homes	European funding, cost calculated cheaper than demolition and rebuild. The Energisprong model uses the money saved on repairs and bills to fund the work while guaranteeing a fixed cost for residents.
5. "Home Energy and Affordable Warmth Strategy" Solihull	37 high rise blocks	All funded by British Gas
6. "Tower block investment programme" Birmingham	961 units (26 tower blocks)	Self funded through Birmingham City Council's "Tower block investment programme"
7. Bourneville estate, Alliance Homes, Birmingham	265 units	£650k funded by the Energy Saving Trust's Ready for Retrofit fund. Alliance Homes invested almost £2m
8. Callow Mount, Sheffield	296 units (6 13 storey tower blocks)	The original work was funded by Decent Homes Funding from the government. The sprinkler insulation work came to £55,134 in total and £1148 per flat. This work was funded by BAFSA
9. Coatbridge, North Lancashire	4 16-storey tower blocks	£18.5 million self funded by North Lancashire Council
10. Denning Point, EastendHomes, London	82 units (1 23-storey tower block)	Self funded by EastendHomes
11. Great Arthur House, Golden Lane Estate, London	120 units (1 17 storey tower block)	Self funded by City of London
12. Hanover Tower, Sheffield	118 units (1 15-storey tower block)	£4 million funded by the Social Sector ACM Cladding Remediation Fund
13. Hornby Flats Estate, Liverpool	96 units (8 3 storey blocks)	£2.4 million funded by the European Regional Development Fund
14. Ladywell Green and Barton Village, Eccles	12 tower blocks	Self funded by City West Housing
15. Manor Farm, Coventry	300 units	£7 million self funded by Coventry City Council
16. Rotheley House, Hackney	12 units (1 5-storey block)	£2.5m self funded by Hackney Council
17. Shakespeare Towers, Leeds	297 units (3 17storey blocks)	European Regional Development Fund (£0.7 million) and the council's housing revenue account (£3.8 million)
18. Tamworth Towers, Manchester	90 units (3 15 storey tower blocks)	£8.5 million self funded by Trafford Housing Trust
19. TCosy2: Kings Street retrofit, Great Yarmouth	6 units	80% came directly from BEIS, the other 20% was provided by Beattie Passive.
20. The Crofts, Sandwell Metropolitan Borough Council	270 units (3 tower blocks)	£11 million funded through Decent Homes programme
21. Wilmcote House, Portsmouth	107 units (3 linked 11 storey blocks)	Funded by Portsmouth City Council
22. Winwood Heights, Nottingham City Council	224 units (2 15-storey tower blocks)	£12.6 million self funded through 'Building a Better Nottingham' programme
23. Worcester Park, Coulsdon and St Helier estates, Sutton Housing Partnership, London	100 units (8 pilot units, 92 additional units by end of 2022)	Funded by the Mayor of London's 'Retrofit Accelerator' (European Regional Development Fund) and the Department for Business, Energy and Industrial Strategy's 'Energy Innovation Programme'

6. Lessons Learnt from the Retrofit Projects

The 23 retrofit projects above represent different approaches to improving safety and energy efficiency in social housing. While the projects vary in scale and approach, they highlight some important lessons in how safety and energy can be tackled together.

Tackling climate change through social housing

- We know from our research that there is growing pressure on social landlords to increase the energy efficiency of their stock to meet net-zero targets and mitigate against climate change. The case studies above set out various examples of how this can be done.
- Fabric First: the majority of the projects we uncovered took a fabric first approach to improve energy efficiency, through increased insulation and replacing windows and doors.
- Some organisations took steps to produce power from green energy sources through ground source heat pumps and solar power. To meet net-zero going forward organisations will need to combine several methods of renewable energy operation and generation.

Ensuring safety in all upgrading work

- While improving safety was not the primary reason for many of the upgrading works to be carried out, ensuring homes were safe was at the centre of all works.
- We know from Grenfell that the choice of materials in insulation work is vital to ensure homes are safe. The case studies in this report all thought carefully about the choice of materials. Several used Rockwool, fireproof insulation made from spun rock. One organisation attended a fire safety testing centre to ensure the materials they were using are safe. The T-cosy 2, King Street retrofit, which incorporates sprinklers into the void space within the cladding, demonstrates an innovative way to ensure that cladding is safe. While researching the case studies we came across several cases where cladding fitted to improve energy efficiency had to be removed post-Grenfell as it was found not to be fireproof. In a number of the case studies included in this report, cladding was inspected post-Grenfell to ensure it was safe. It is important use of materials is constantly reviewed in light of new knowledge.
- In a number of the case studies, checks and repairs were carried out to ensure homes were structurally sound and safe to be in before the main upgrading work began. Organisations took the opportunity of undergoing the main works to carry out these checks.
- As mentioned above, to ensure homes are safe and make the most efficient use of funding, works can be carried out alongside each other, for example at Wilmcote House, Portsmouth they took the opportunity of the energy saving retrofit to upgrade all the fire doors within the building and ensure the alarm systems were working properly.

Working with residents

- It is clear from the case studies that resident engagement throughout any retrofit project is vital. Resident engagement was central to all the projects we explored. For upgrading work to be successful it is important residents understand why the work is taking place in the first instance. They must be kept updated throughout the process, for example through meetings and newsletters. A resident liaison officer should have a clear onsite presence and be available to talk to residents about any concerns that they might have. The resident liaison officer also helps build trust with residents and organise access to properties. In more difficult projects such as Manor Farm, it can take time to build trust with residents, and staff need to take the time to meet residents in different settings such as schools and community groups, and show they are committed to helping the neighbourhood.
- When informing residents about the work taking place and collecting their views, it is important to use a range of methods that meet the needs of the residents. For example, Portsmouth City Council found open days were much more effective than traditional resident meetings, whilst in the Tamworth sprinkler project they found it was valuable to have informal face to face discussions over tea and cake as opposed to online engagement.
- Show flats were a useful tool in a number of the projects, giving residents a clear idea of how their homes will change, and can help reassure them about a project. They are also a good opportunity for residents to suggest any tweaks, for example at Wilmcote House residents requested a smaller boiler, which allowed them more storage space to suit their needs.
- It is important staff have an onsite presence and get to know residents. Residents must be able to feel they can easily find someone to talk to if they have any problems with the works. It is important this continues event after the works are complete. For example, the concierge service at Edwards Woods was cut after the works had been completed, and residents missed this service as it made them feel less safe in the buildings.
- In this style of upgrading projects, new technologies are often installed in residents' homes which are very unfamiliar. It is crucial engagement continues after the work is complete to ensure all residents understand how to work the new technology in order to maximise the thermal performance of the building and get the best results.

Managing the works

- Energy saving and fire safety retrofit projects are complicated and need careful management. Most of the projects we looked at had a clerk of works or an onsite supervisor who oversaw all the work throughout the building process. This provides a single point of contact for building safety issues, ensures any problems were dealt with quickly, as well as certifying that works are carried out to a high standard, without any unintended safety issues.

- The process should constantly be reviewed to take into account the lessons being learnt, for example in the Callow Mount sprinkler project, they changed the process for installing sprinklers following feedback from the first four installations so it was less disruptive for residents. At Wilmcote House, the process of upgrading the flats became quicker as they moved along in the process and the communication with residents improved. A process of ongoing, internal review is important to ensure that learning and feedback from the works is implemented throughout.
- In all the case studies we have highlighted, the residents remained in situ throughout the works. This had the benefit of allowing residents to stay in their homes and the communities that they knew, minimising disruption to their day to day lives. In situ retrofit also reduces the cost of the upgrading as there is no need to find alternative accommodation, which can be difficult, especially in areas of housing shortages such as London. However, it does create challenges as works on the properties need to be carefully managed to fit with resident's lives. It also can create complications in carrying out works around the residents belongings and make living in the properties difficult due to the noise and dust. It is important that work is kept to timetable where possible in order to minimise disruption to residents, and that any vulnerable residents are identified early in the process. Respite spaces, where residents can go to escape the disruption, can play a key role.

Funding

- The case studies examples use a variety of funding methods to cover the costs of the work. 11 had received funding from external sources such as BEIS and British Gas. While this funding can be useful, several interviewees stated that external funding, particularly government funding, can have very short time scales. By the time works have been planned and contractors are procured, the funding opportunity may be over. Leeds City Council felt they were able to make use of a lot of external funding opportunities as they already had a lot of the planning stages complete and have a fast and responsive team. They also had the capital available for the match funding, which is often required. It is hoped the new Social Housing Decarbonisation Fund will offer longer term funding opportunities going forward.
- The organisations who could not access external funding self-funded the works. In the case of Portsmouth City Council this cost was justified as cheaper and less disruptive than the alternative of demolition and rebuild. Leeds City Council took the decision to incorporate energy upgrading into everyday repairs and maintenance, for example fitting external wall insulation while you have the scaffolding up to deal with an outside repair. For safety and energy upgrading to be financially viable for social landlords, they must make the most of every opportunity and ensure every piece of work incorporates both safety and energy saving.
- There are also other creative ways to help social landlords fund works. The Energisprong "thermal comfort plan" sets a fixed cost for residents that is cheaper than the bills they were paying previously, but brings in funds for the landlord to cover the costs of the work, while guaranteeing thermal comfort of 21c in all homes. In the case of Edwards

Woods, 12 penthouse flats, for private sale, were added to the top of the blocks to help fund some of the works.

Maintaining the character of buildings

- A common challenge in external retrofit projects can often be maintaining the appearance of the building and keeping with the local character. The retrofits of Hornby Flats and Great Arthur Tower, show it can be done in a way that ensures that it maintains local character. At Hornby an external brick façade was used, in keeping with local buildings. At Great Arthur Tower, a listed building, the iconic coloured glass panes were replaced like for like but with added insulation.

Wider benefits of upgrading works

- Work to improve the safety and energy performance of homes and buildings bring about a number of other benefits. Refurbishment works extend the lifecycle of a building and reduce the need for regular repairs. They also help residents take pride in their homes and change the perception of an area. Works to improve energy efficiency not only help tackle climate change, they also improve the thermal comfort of homes and help tackle fuel poverty by lowering energy bills, greatly improving resident's quality of life. Improving the energy efficiency of homes can also tackle public health issues caused by damp, mouldy and cold homes.
- In the case of Manor Farm, Coventry City Council took the opportunity to add social value, working with the residents through CV workshops and job skills classes. Greater community engagement, and providing a platform for further resident involvement can help build trust with residents.

7. Conclusion

Social landlords are facing huge pressures; they must respond to the recommendations from the Hackitt review and Grenfell inquiry to ensure homes are safe; whilst improving the energy performance of their existing stock to meet net-zero and protect the supply of existing social housing.

The case studies outlined in this report showcase how social landlords can begin to take steps to meet these two critical aims. Social landlords need to think creatively about how they fund work, ensuring safety and energy efficiency are being addressed at the same time. The safety of a building needs to be regularly reviewed throughout the build process, for example checking compartmentation has not been compromised and the right materials are being used. Works need to be carefully managed throughout the process to ensure they are being carried out to a high standard. Residents need to be involved and informed at every stage of the process and given a platform to express any concerns. It is crucial to have a designated person in charge of resident engagement who can build a relationship with residents.

While the social landlords outlined in the case studies are still facing huge challenges in meeting the energy and safety pressures, and work still needs to be done to ensure all social

housing stock is safe and energy-efficient, we believe these case studies act as a useful example of how this work can be carried out and we hope they can be used as a useful resource for future upgrading projects.

Part 2: Detailed Case Studies

We selected 10 of the 24 projects to explore in more detail here. We hope they act as useful examples of how upgrading work combining both energy and safety can be carried out.

1. Wilmcote House, Portsmouth City Council

Background to the project

Wilmcote House is a large bison REEMA concrete panel building in the Somerston area of Portsmouth. The building is made up of three linked 11 storey blocks with a total of 107 units. The majority are three-bedroom maisonettes, with seven one-bedroom flats on the ground floor. The block mainly houses families and is located close to the city centre in an area with high levels of deprivation.

Prior to the works being carried out the council were regularly receiving reports of people unable to heat their homes. When they investigated the building further, they found issues of damp, condensation, and mould. They also discovered that the roof needed replacing. The energy performance of the building was very poor. The residents also had concerns about the security of the building as a lot of the security doors had broken and the concierge had been removed.



Source: LSE Housing and Communities



Source: ECD Architects

What work was carried out:

Portsmouth City Council wanted to address these problems of energy efficiency and security and future proof the building. They decided to carry out a deep retrofit of the blocks to EnerPhit standard. This included adding external insulation and cladding, replacing all windows, and doors, enclosing external walkways and balconies and adding a mechanical ventilation system. They also added security fob doors on all corridors.

Alongside improving energy efficiency fire safety was central to the project. They used Rockwool, stone-wool fireproof external insulation, on the whole building. All the external walkways were enclosed which meant removing the opening windows from the kitchen and replacing them with fire-proof windows. They also replaced all the fire doors and upgraded the alarm system. Portsmouth City council also checked that all the fire exits were fit for purpose and could be accessed by all residents.

Funding:

The work was completely funded by Portsmouth City Council. They calculated the total cost as less than demolition and rebuild would have cost. Early in the project they looked at the option of external funding, but they found that the deadlines for the work to be carried out in were too short and external funds only covered one aspect of the upgrading work, such as the insulation.

Resident Engagement:

Tenants were central to the work. They were kept in situ for the whole refurbishment process which allowed them to influence the project. However, the council spoke to all tenants before the work took place which allowed them to identify some residents who were in unsuitable homes. These residents were moved out to more suitable properties and the units remained void until the building was complete. This allowed for some tenants to move within the block when the roof leaked, and more extensive work was needed on their homes.

The council decided to move away from traditional resident engagement meetings as they did not think they were “helpful or productive”. They organised open days which they actively encouraged residents to attend. This allowed them to have one-to-one discussions with lots of residents many of whom would not have attended formal meetings. All the key stakeholders (the architects, contractors and the council) attended the open days. One of the changes that came from the discussions at the open days was turning the enclosed balconies into clothes drying rooms after residents commented they wouldn’t have anywhere to dry clothes after the external walkways were enclosed.

Portsmouth City Council continued giving residents influence over the design of the project even once work had started. They used a show flat to show residents what things would look like once the works were complete. After viewing the show flat residents commented that there would be quite limited storage, so the council found a smaller water cylinder which took up less room, and created additional storage space.

The council employed a designated resident engagement officer who was there from the start of the project. She was a vital support to residents throughout, as residents trusted her and felt like she was on “their side”. She was crucial to making the project work and delivering information to tenants. Portsmouth found it was crucial to have a designated resident officer involved in a project such as this. The contractors also provided a resident engagement officer but they only had very limited contact with tenants and changed regularly so could not build a relationship with residents.

The council also sent regular newsletters and letters to keep residents up to date with the project.

Project management

The building works were carried out by external contractors and the project management was provided by the sister company of the architect. At the start of the works they also provided the Clerk of Works, however, due to the complexity of the works early on Portsmouth decided to provide their own Clerk of Works who would be on-site at all times.

Outcomes

The works have greatly improved the energy performance of the building, with tenants reporting warmer homes, and reduced heating bills. Residents have used their heating less and when they do need to use it, it works effectively. The council no longer receives any complaints linked to heating, damp, mould or condensation. Researchers from Southampton University are carrying out research measuring the performance of the flats, and the results are due to be published in the next few months.

2. TCosy2: Kings Street Retrofit, Great Yarmouth

Background to the project

In 2018 Beattie Passive received funding from BEIS to create a new retrofit solution that would be fast, efficient and cost-effective, reaching Enerphit standard while also ensuring it is a safe fireproof solution. They hope the scheme will lead to an 80% reduction in energy use. They selected Kings Street in Great Yarmouth as it has a history of poor thermal efficiency and was a 1950s terrace block, so the system and lessons learnt from the project could easily be rolled out to other buildings across the country.



Source: Construction21

The Kings Street building comprises of six units over three storeys, and is owned and managed by Great Yarmouth Borough Council. It is part of the Middles Gate Estate which is undergoing a regeneration programme. Originally the council had planned to demolish the building and others around it, but they decided to use this retrofit project as a case study, to assess if this will be a better option for other buildings on the estate.

What work was carried out:

The building work started in August 2019 and was completed by January 2021. All work took place with tenants in situ. A continuous structure, like a tea cosy, was added over the top of the building going down to the building's foundations on both sides. A fire proof plastic bracket was fitted to the outside of the building, followed by an airtight layer and an aluminium frame to which the insulation is fitted to. This is then followed by the external cladding. This style of retrofitting ensures there is no thermal bridging at any point in the building. Triple glazed windows and doors were also added, as well as a ventilation systems in all the flats.

Fire safety was central to the retrofit project. All the materials were A1 fire tested and fire stopping was added between each unit in the retrofit to ensure compartmentation between the units. Beattie Passive also trialled a new system of adding sprinklers into the void space within the cladding that can be turned on by the fire brigade in the unlikely case there was a fire within the cladding. Because of this they made the decision not to use a stone wool insulation such as Rockwool because this would be damaged by the water and the whole system would have to be replaced. They opted for E.P.S. Beads cavity wall insulation, which is flammable but does not burn in the same way as the insulation used on Grenfell Tower, as it would allow the water to drain away.

Funding:

80% of the funding came directly from BEIS, the other 20% was provided by Beattie Passive. The council did not provide any funding.

Resident Engagement:

Beattie Passive worked hard at the start of the process to bring residents on side, including talking them through how the building process would work and what benefits it would bring. Beattie Passive said this was one of the most challenging parts of the process as the residents had not signed up for the scheme or made the decision to be involved in the works, so had to be brought on side.

Once the building works had started, they kept the residents in the loop at every stage, letting them know about any delays or problems that occurred. In March 2020, due to the coronavirus lockdown, the building works were brought to a temporary halt and the residents had to live on an unfinished building site for a couple of months before builders were allowed back on site. Throughout the build process the site manager was responsible for communicating with residents and the residents came to them with any issues they had. In the future, Beattie Passive would like to work directly with a resident's representative who could be given detailed information about what is happening on site and how things are going to work, who could then communicate this to other residents.

Project management

The project was closely managed by the Beattie Passive team who ensured they had an onsite presence at all time to ensure quality.

Outcomes:

The building performance is being closely monitored by Oxford Brooks University who started monitoring the building six months before the building started and will continue for a year and half after completion. The results from this have not yet been released but they know from talking to residents that the building has been improved, there is no longer any damp or mould issues and residents report being warmer in their homes, using their heating less, and it being more effective when in use. One resident was even contacted by his energy supplier because he wasn't using any gas.

Beattie Passive hope this model of retrofit and the lessons learned can help inform future projects. Moving forward they are going to adapt the system, and they want to use a combination of onsite and offsite construction

3. Solihull ALMO “Home Energy and Affordable Warmth Strategy”, Solihull

Background to the project

Solihull ALMO is responsible for 37 high rise blocks. Before the works detailed here were carried out, they all had problems of poor thermal efficiency due to the concrete panel systems used in the construction. Solihull have committed to bring all their stock to EPC C level by 2021/22 and to reach net-zero by 2041.

What work was carried out:

To improve the energy performance of their stock, Solihull applied for funding from British Gas to fit external wall insulation to all their high-rise stock. Rockwool insulation was fitted to the external panels of all the blocks. Before the insulation was fitted a team from Solihull went to a fire testing unit in Oxford to check the flammability of the cladding. After the Grenfell fire all the buildings were inspected to ensure they were safe, and all the materials used in the works were found to be safe, and there were also no void spaces in which fire could spread like on Grenfell Tower. All the work took place with the residents in situ, and no work was carried out inside the properties. Solihull have also installed sprinklers in all their high-rise buildings.

Alongside the wall insulation work, Solihull have installed biomass boilers in 13 of their high-rise blocks. This was a very complicated installation process and the systems require regular upkeep. The ALMO feel like they have learnt a lot from the process which will be useful for future work. All the residents are now on a pre-payment meter so they can monitor how much energy they are using. In the process of installing the biomass boilers a lot of fire stopping work had to be completed to ensure the compartmentation of the building was not compromised.

Funding:

All the work was funded by British Gas, apart from the council led project management team, which was funded by the council. They felt this was important to ensure the programme was properly delivered and resident engagement was carried out to a high standard. Without this British Gas funding Solihull say they would never have been able to carry out works at this scale.

Resident Engagement:

Before the installation of the biomass boilers and the external insulation work, Solihull ran consultation events to let residents know about the works. There was originally some push back from residents in a few of the blocks but after talking through the benefits of the works, all the residents agreed and the works carried out. They also ran events in the foyers of the blocks to keep residents updated throughout the process, including placing notice boards in the foyers of each of the blocks where information about the insulation work was posted and the materials being used were displayed.

Solihull also had a designated person in charge of resident liaison, who the residents could talk to if they had any issues or questions throughout the process.

Project management

British Gas provided a Project Management Team, but Solihull also had their own team as they felt it was important to carefully manage the works. The team consisted of a Clerk of Works, a project manager and a customer liaison officer.

Outcomes:

Both the biomass boilers and the external wall insulation have improved the energy performance of the buildings. Residents have reported lower bills and their homes being warm and comfortable. However, Solihull regret not doing more formal monitoring of the impacts of the work to fully understand the impacts of the retrofit.

4. Leeds City Council

Background to the project:

In 2018 Leeds City Council declared a climate emergency and made a commitment to decarbonise all their stock. They plan to do this through retrofitting and adding ground source heat pumps to their 126 high rise buildings. They have prioritised stock based on condition and level of deprivation. Leeds started the retrofit project with the Shakespeare Towers, three 17 storey tower blocks, each of which has 99 units.

What work was carried out:

The Shakespeare Project, Leeds first retrofit project, included adding external wall insulation, new roofing and structural repairs. The project was carried out with the residents in situ.

Since 2019 Leeds City Council have made a fundamental shift in how they manage their investment programme so they work in the most cost-effective way to improve the thermal efficiency and safety of their stock. They have committed to spending £100 million on their retrofit programme over the next five years. If a building requires repairs to its external concrete cladding, they will now take the opportunity of scaffolding being up on the building to retrofit the building with external wall insulation and replace the roof if needed. This minimises disruption to residents and helps ensure repairs and upgrades are carried out in a more cost-effective way. They are taking a fabric first approach to improve thermal performance. All the wall insulation Leeds Council uses is fire retardant and has none of the properties associated with the Grenfell cladding.

Alongside work to improve the thermal efficiency of the high rise buildings, Leeds are also in the process of installing biomass boilers across all their high rise stock. Several of the buildings already have gas systems in place, which leaves 104 buildings that need to be upgraded. They have grouped the buildings into mini clusters, with three clusters having had work carried out so far. In cases where they discover a ground source heat pump will not be suitable, they will use an alternative green energy source.

Leeds views the decarbonisation strategy as equally important to residents' health and their safety, and they have an equal commitment to both. Before Grenfell they had a sprinkler installation programme in all their high rise blocks, with the ranking system based on the number of vulnerable people living in each building. Furthermore, wherever the Council is carrying out a rewiring programme in any of their buildings, they take the opportunity to install a sprinkler system where possible. They want to optimise every piece of work that is carried out.

Funding:



Source: Flickr.com



Source: Leeds.gov.uk

The funding for the £100 million of retrofit works is a combination of funding provided directly by the Leeds City Housing Revenue account, which has then been topped up by central government funding (find out which funds). The initial Shakespeare upgrading project was funded by the European Regional Development Fund (£0.7 million) and the council's housing revenue account (£3.8 million). The funding for the new ground source heat pumps is a partnership between Leeds City Council and Vital Energi with some funding from the West Yorkshire Combined Authority and the European Regional Development Fund.

Leeds have been able to utilise several government and other external funding streams as they have already carried out a lot of the planning and procurement work, and they have an experienced delivery team who can deliver bids at speed. Leeds also have funding available in order to match fund bids, which is often required.

All the sprinkler work has been directly funded by the housing revenue account. The council feel this area of work is limited by funding constraints as the Government has not made any funding available to support them with this work.

Resident Engagement:

Leeds City Council has made an active effort to engage residents throughout the process and keep them informed and up to date. They began by sharing successful examples of ground source heat pump and insulation projects across the country so residents understood what benefits the works would bring. In all projects, they have had a designated person in charge of resident engagement who communicates with residents throughout the works and can pick up on any issues. For the ground source heat pumps, they have used show flats to show residents what the new systems will look like, and "Green Doctors" have helped explain to residents how the new heating systems will work.

Project management

Leeds City Council have a dedicated team of technical officers, surveyors and project managers to lead on all the works. They use external contractors to deliver the building work but these are carefully managed by the in house team, who also carry out regular quality checks.

Outcomes:

The feedback from residents on both the retrofit works and the ground source heat pumps has been extremely positive. They have much higher levels of thermal comfort with more affordable energy.

5. Tamworth Borough Council Sprinkler Project, Tamworth

Background to the project:

In light of the Grenfell Fire, Tamworth Borough Council made the decision to install sprinklers across their seven high rise blocks, a total of 400 units. The council employed an external organisation, Lovell, to carry out the work.

What work was carried out:

Sprinklers were fitted in all 400 units across the seven blocks, to ensure safety was not compromised the council agreed to fund the sprinklers in leasehold properties on top of their own stock. As well as installing the



Source: Tamworth.gov.uk

sprinklers, the builders had to ensure compartmentation was not compromised as a result of the work. All the work took place with the residents in situ and took a year to complete.

There were various technical challenges involved in the work, such as selecting the right sprinklers so they didn't impede on peoples properties; ensuring the water pressure was high enough for the water to reach the sprinklers; and installing pumps in cases where the water pressure wasn't high enough. They hope the learning from this project can be used on other sprinkler installation schemes.

Funding:

The work was fully funded by the council, including the sprinklers for the leasehold properties.

Resident Engagement:

Resident engagement was central to the project. Before the work began there were a lot of concerns amongst residents about the sprinklers taking up lots of room in the flat and going off if "someone burnt toast". They began by sending a letter to all residents explaining the works, followed with open days where people could come and ask questions, and leaflets were produced that dispelled some of the myths around sprinklers. These events were organised by BASFA, the British Automatic Fire Sprinkler Association, as Tamworth Borough Council felt it was important to have an impartial and independent organisation to answer residents' questions. The demographic of the residents is mainly elderly people who prefer a face-to-face event as opposed to an online webinar, so they prioritised this in all their engagement events. They used a void property as a show flat so people could come and see what the sprinkler system would look like and how it would work.

Lovell provided a residents liaison officer who was regularly in touch with residents and worked closely with the Tamworth Borough Council Housing Officer, who helped the builders organise access to the properties. One of the biggest challenges was access to the properties. It was important the housing officer and resident liaison officer worked closely together to ensure more vulnerable tenants understood why the work was happening and ensuring they felt comfortable with the works taking place in their homes.

Project management:

The project was closely managed by an onsite manager, and after the installation on each flat, the works were inspected before they were signed off.

Outcomes:

Despite some initial resistance from a few residents all agreed to have the sprinklers installed in their properties. All residents are happy with the works and feel safer in their homes. There has not been any instances of the sprinklers going off accidentally since their installation.

6. Manor Farm, Coventry

Background to the project:

Manor Farm Estate is made up of “Vic Hallam” style properties built as temporary accommodation after World War II. It has one of the highest rates of poverty and deprivation in the country. Before the renovation took place there were high levels of fuel poverty, homes had problems with damp and mould and were difficult to heat. The Council had originally planned to demolish and rebuild the estate but later decided this was not financially viable. Residents were very angry as they wanted new homes and for the estate to be rebuilt. A Facebook group called “Fix Up Manor Farm” was created where people campaigned to the council about the problems on the estate.

What work was carried out:

300 properties were upgraded in the work, including structural repairs to ensure the properties were safe, and new external insulation, roofs, and windows, to improve the thermal efficiency of the buildings. The work was carried out by Coventry City Council in partnership with Lovell.

Alongside the thermal efficiency and safety upgrading, the front gardens and external walkways were also upgraded to help give people a sense of pride in the local area. A tool hub was set up, where people can borrow tools to maintain their gardens, which encouraged residents to improve their gardens and green spaces.

Funding:

£7 million, funded by Coventry City Council

Resident Engagement:

At the start of the project there was a lot of ill feeling towards the upgrading work as it wasn't the demolition and rebuild project they had been told was happening. For this reason, Coventry City Council put together a very extensive engagement strategy in order to build trust with residents. The resident liaison office was on the estate every day, visiting schools, community centres and all resident meetings. Over time they managed to build trust with the residents.

As well as the physical upgrading a big emphasis of the project was on social value, for example job skills and CV writing classes were organised for the residents of the estate. At first, no one turned up to these classes but as residents started to trust Lovell and the council, people began to attend and they became very popular.

Project management:



Source: @Lovell_UK Twitter

The project was closely managed by an onsite manager to ensure all work was carried out to a high standard. The resident liaison officer was onsite every day to ensure all the residents' needs were being met.

Outcomes:

The project has been very successful in improving the thermal efficiency of the homes and restoring a sense of pride in the neighbourhood. "Tiny tag" sensors were installed in a number of the homes, and the data collected from this monitoring shows that the homes were warmer and the air quality was better. The scheme won an award for social value, and the resident who had set up the "Fix Up Manor Farm" Facebook group came along to the awards and became an ambassador for the local neighbourhood. The Facebook group was subsequently renamed "Pride of Manor Farm".

7. Callow Mount, Sheffield

Background to the project:

The Callow Mount complex is made up of six 13 storey tower blocks totalling 296 units. It was originally built in 1963 to accommodate families who had lost their homes during WW2. Due to poor construction, lack of insulation and bad maintenance, the blocks suffered with poor energy performance⁵¹.

What work was carried out:

In 2011 it was decided the block should be upgraded under the Decent Homes Scheme. The building was over-clad with insulated aluminium and the existing windows were replaced with high-performance double glazing. The balconies were internalised and became part of the living area. The old electric floor heating and coal boilers were replaced with a biomass boiler and two gas boilers. The flats also received new kitchens and bathrooms. The Council also took the opportunity to fit and upgrade the fire detection and alarm systems.



Source: Alumet

Following the Grenfell fire in 2017, the cladding was re-tested to ensure it was safe.

After the works were completed a fire in a neighbouring block raised concerns about fire safety. BAFSA and the South Yorkshire Fire and Rescue service selected the Handbank tower in the Callow Mount complex, which is used for temporary accommodation, to act as a pilot block for retrofitting sprinklers. Sprinklers were fitted in all 48 units within the block. An empty property was used as a test to see how the systems would work and then as respite for residents while the work was taking place.

Funding:

The original work was funded by Decent Homes Funding from the government. The sprinkler insulation work came to £55,134 in total and £1148 per flat. This work was funded by BAFSA⁵².

Resident Engagement:

BAFSA ran a very extensive resident engagement strategy throughout the process. Before the work took place residents were invited to a meeting with representatives from Sheffield Homes and South Yorkshire Fire, and the project manager, to explain how the sprinklers would work and to watch a BAFSA film on sprinklers and safety. At the end of the meeting all the residents supported the sprinkler installation. Throughout the works regular meetings

⁵¹ Agkathidis, A., Urbano Gutiérrez, R. (2018). Sustainable Retrofits: Post War Residential Towers in Britain. United Kingdom: Taylor & Francis.

⁵² https://www.bre.co.uk/filelibrary/Sustainability%20through%20Planning/Callow_mount_Retrofitting_sprinkler_systems_Steve_Seaber.pdf

were held to keep residents updated with the progress. There was also a resident liaison officer who the residents could contact at any point in the process⁵³.

Project management:

The sprinkler installation process was carefully managed, and learning was taken on board at every opportunity. After the initial four flats were fitted with the sprinklers, the process was adapted to be less disruptive to residents.

Outcomes:

The upgrading works made the homes warmer, and more comfortable to be in. At the end of the sprinkler installation, the residents were all very positive as the works were far less disruptive than they expected, and they felt safer in their homes.

⁵³ https://www.bafsa.org.uk/wp-content/uploads/bsk-pdf-manager/2017/09/CALLOWMOUNT_web0407LR_lowres.pdf

8. Barton Village and Ladywell Green, Eccles

Background to the project:

Eccles, on the outskirts of Liverpool has 12 1960s concrete tower blocks, managed and owned by City West Housing. There were concerns about the buildings' poor energy performance and about the impact of rising energy prices on residents.



Source: BBC News

What work was carried out:

The upgrading programme began in 2012. All the blocks were clad with external wall insulation, and the inefficient and expensive electric storage heaters were fitted with an "EcoPod" heating system. The EcoPod uses highly efficient cascade boilers, partly powered by solar power. The system also includes a building management system which alerts the landlord when an "at risk" resident's home is not properly heated⁵⁴.

In the process of installing the EcoPods it was discovered that the original storage heaters were surrounded by asbestos panels. These were removed and replaced with fire rated boards⁵⁵.

The refurbishment completely transformed the appearance of the buildings, the colours of the blocks were selected to fit with the work of a local artist and to "form a sensitive backdrop" to Grade I listed St. Mary's Church and the Grade II listed Lamb Hotel⁵⁶.

City West also took the decision to install a smoke ventilation system in all the blocks as smoke often inhabits escape and rescues in the event of a fire. The system is linked with the fire alarm system on individual floors and will send a signal to open all the windows in the case of the fire⁵⁷.

Funding:

Resident Engagement:

Due to the number of different works being carried out various resident engagement events were carried out throughout the process.

The contractor responsible for the removal of the asbestos worked closely with the residents to arrange the appointments and to also reassure them that the removal process would be safe and how it would affect them. In order to do this they held open events with physical demonstrations to show what would happen and the materials that would be used⁵⁸.

⁵⁴ https://greenbuildingpress.co.uk/article.php?article_id=1139

⁵⁵ <https://www.northerninsulation.com/wp-content/uploads/2015/02/NIC-Ladywell-case-study.pdf>

⁵⁶ <http://www.hlpdesign.com/our-work/refurbishment-conversion/323-ladywell-green-eccles>

⁵⁷ <https://www.dyerenvironmental.co.uk/wp-content/uploads/2020/02/Barton-Village-Ladywell-Green-Case-Study.pdf>

⁵⁸ <https://www.northerninsulation.com/wp-content/uploads/2015/02/NIC-Ladywell-case-study.pdf>

As part of the refurbishment the contractor employed four local trainees as a plumber, joiner, decorator and a multi-skinner, three of which were given permanent employment with the contractor.

Outcomes:

Monitoring by the University of Cambridge found that residents in one of the blocks had reduced their average spend on heating and hot water per week, from £12 to £4⁵⁹.

⁵⁹ <https://www.insidehousing.co.uk/insight/protective-measures-32924>

9. Energisprong, Nottingham City Homes

Background to the project:

In 2017 Nottingham City Homes ran the first net-zero retrofit using the Energisprong approach⁶⁰. The selected 10 homes on the edge of the city, a combination of terrace homes and bungalows. The design of the houses was very inefficient with an unheated garage under the living room and an undercroft under the kitchen. This made the two main living rooms very cold. The tenants reported the concrete walls being very cold and they felt like the external walls moved when they leant on them.



Source: Interreg NWE

What work was carried out:

The homes were retrofitted using the Energisprong model. The energisprong model retrofits homes to the highest level of energy performance, with a comfort plan that guarantees “real life performance for both indoor comfort and energy use for up to 40 years”⁶¹. External wall insulation was added, which was manufactured off site. A new roof was also added with built in solar panels. The windows were replaced with double-glazed high-performance windows. A new ventilation system was added to all the properties. As well as the fabric improvements to the building a ground source heat pump was added with a communal energy store. The type of retrofit was designed in a way that minimises disruption to residents, with the whole process taking less than 10 days.



Source: Energiesprong UK

Funding:

Nottingham City Homes received funding from the European Union, and the project cost of £850,000 was calculated as cheaper than demolition and rebuild, and would produce higher quality homes.

The Energisprong model takes the money that residents would normally pay on bills and the money spent on repairs to fund the work. Energisprong residents will never pay more than a set amount, which will always be affordable, and they will be guaranteed thermal comfort.

Resident Engagement:

Resident engagement was central to the project. Consultation events were held throughout the process and residents were kept up to date with regular newsletters. Residents were engaged from very early on in the process and helped with the tender process and selecting

⁶⁰ <https://www.energiesprong.uk/about>

⁶¹ <https://www.energiesprong.uk/about>

the contractor and influencing the final design, for example selecting the colour scheme and adding an outside tap to the gardens. There was a designated Resident Liaison Officer who communicated with residents throughout the process⁶².

Once the works were complete engagement events took place to ensure residents understood the new technology and how to work their new homes.

Project management:

The project was carefully managed to ensure the project met the planned timescales, including close onsite management and regular communication between the different teams.

Outcomes:

Once the project was complete, the residents felt warmer and more comfortable in their homes and they were cheaper to run. Residents also liked the new and improved appearance of the houses.

⁶² <https://carboncopy.eco/initiatives/energiesprong>

10. Hanover Tower, Sheffield City Council

Background to the project

Hanover Tower is a fifteen-storey high-rise block containing 118 flats in Broomhall, Sheffield. Prior to the renovation, homes in Hanover Tower were cold, damp and expensive to heat. During 2011-12, Hanover Tower was refurbished as part of the Decent Homes scheme, with the aim of providing warm, thermally-efficient homes that reduce heating bills. The project was carried out with residents in situ. The works involved installing double glazed windows, cladding the façade of the building, and installing Rockwool mineral wool insulation. Fire break measures were installed underneath the cladding to give one-hour protection from smoke and fire. Central heating was installed using a district heating system, as prior to this, residents relied on an electric fire and a storage heater in one room. Many residents used portable heaters which are expensive to run.

However, in the wake of the Grenfell Tower fire, tests revealed that Hanover Tower was clad in combustible ACM cladding with a polyethylene core. Refurbishment works to remedy the combustible cladding began less than two weeks after the Grenfell Tower fire.

What work was carried out:

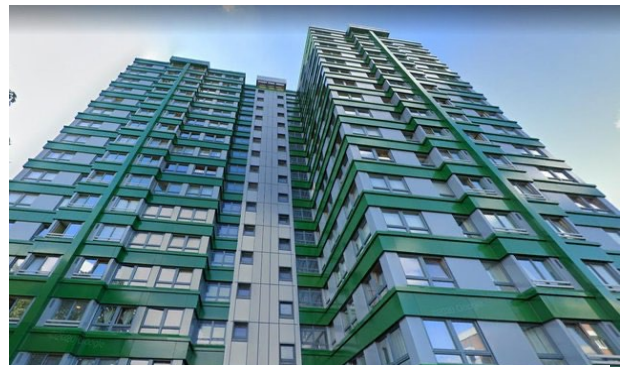
The removal and replacement of Hanover Tower's cladding occurred between 2017 to 2019. The combustible ACM cladding was replaced with non-combustible solid aluminium cladding. The Council took further steps to improve the fire safety of the building as part of the new refurbishment by installing sprinklers throughout the building and replacing fire doors in flats after tests revealed the existing doors did not withstand a thirty-minute fire test. In addition, the trim and seal surrounding the double glazed windows installed as part of the original refurbishment were altered to be more fire safe.

During the 2017-19 refurbishment, high-pressure laminate Trespa panels were added to the stairwells as part of a general upgrading. However, residents pressured the Council to test the Trespa panelling following a 2018 report which found some types of Trespa panels to be combustible. Tests revealed that the panels installed were a combustible type of Trespa panel installed on a wooden framework. The stairwell panelling was then replaced with non-combustible aluminium sheeting on a metal framework.

Funding:



Source: Towerblock.eca.ac.uk



Source: Sheffield Star

The 2011-12 works were funded by central government as part of the Decent Homes programme.

The 2017-19 refurbishment was funded by the government's Social Sector ACM Cladding Remediation Fund following the Grenfell Tower fire, at a cost of £4 million.

Resident Engagement:

The 2017-19 refurbishment consultations are unique due to the immediacy of works, which began less than two weeks after the Grenfell Tower fire. Resident engagement remained central to the project, however. Sheffield City Council set up regular meetings which were well attended by residents, including those who were not regularly engaged in similar activities. The meetings gave residents an opportunity to meet with Council leadership, councillors and the fire service to ask questions about the combustible cladding and the refurbishment. In addition, Sheffield City Council set up monthly 'Hanover Cladding Project Group' meetings, which provided an opportunity for residents to ask questions and raise issues throughout the refurbishment. Further, the Council created an on-site office which operated with an open door policy for residents three days a week.

The Council worked closely with residents on material choices; residents opted to have solid aluminium cladding and retain the Rockwool mineral wool insulation. As well, residents expressed a preference for no weekend or evening working which was adhered to.

Project management

For the 2011-12 refurbishment, Sheffield City Council appointed Lovell as the main contractor, who appointed specialist cladding designer Alumet as sub-contractor.

Alumet acted as the main contractor for the 2017-19 refurbishment.

Outcomes:

The building's energy performance has not been monitored closely following the refurbishments but residents report that after the 2011-12 refurbishment, homes felt warmer, less damp, and were significantly cheaper to heat. Residents reported identical levels of thermal comfort following the 2017-2019 refurbishment. One resident shared that his current annual heating and hot water bill was £125.

The consultations and resident engagement process, such as the Hanover Cladding Project Group, helped to improve residents' sense of distrust after the Grenfell fire and the discovery that Hanover Tower was clad in flammable materials. This demonstrates how it is possible to regain residents' trust when the landlord is perceived to act with transparency and values residents' voices.

During the 2017-19 refurbishment, residents experienced cold, drafts, water penetration and damp in flats due to the building being exposed for 18 months, which was very uncomfortable. This was felt more severely due to unusually heavy rainfall during the first month in which the roof and external cladding were stripped to concrete.