Council Housing Energy Action Plan

2023 - 2028

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Energy Action Plan for Council Housing Stock (2023/24 to 2027/28)

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Executive Summary

The Council Housing Energy Action Plan (HEAP) sets out the Council's approach for retrofitting[1] its housing stock, with detailed targets and outcomes for the period 2023 to 2028.

This Action Plan will deliver the Council's Affordable Energy Strategy (2019) target to retrofit as many fuel poor homes 'as is reasonably practicable' Energy Performance Certificate (EPC) rating of C by 2030. It also sets out how the Council will deliver Haringey's Climate Change Action Plan (2021) that sets an objective to retrofit Council owned homes to an average EPC rating of B by 2035 and EPC A, where technically feasible, by 2041.

The Council's approach to the retrofit of its council owned housing stock will be to firstly improve the fabric of property, secondly to incorporate low and zero carbon heat and power, and then renewables.

To achieve EPC B, nearly all of the Council's 15,453 homes will require some sort of energy efficiency interventions. Circa 1,500 homes per year will need retrofitting to achieve the 2035 target.

Some of the retrofit will be covered by works that are already required to maintain our stock over the next 19 years. These works include components such as windows, boilers, walls and roofs.

Alongside this in February 2021 Cabinet agreed a 10-year HRA Business Plan which included capital of £101m to fund retrofit works to council stock, in addition to the major works programme. Of the £101m, £34m has been approved for spend by 2028.

To ensure maximum impact and value for money, energy works will also be delivered in conjunction with the Council's planned maintenance programme of works.

This agreed HRA funding can be used to leverage additional funding, including the Government's £800m Social Housing Decarbonisation Fund (SHDF) which opened for bids in August 2022 for funding for 2023 to 2025 with the objective of raising properties to EPC C.

In the development of the Action Plan a number of scenarios were modelled and a road map for decarbonising the Council's housing stock was developed. The Action Plan makes several recommendations including adopting minimum heat demand (kWh/m2) standards for all homes and a dedicated single approach for deep retrofit, to ensure that technical risk is managed. For some properties, where funding can be secured a higher retrofit standard e.g. Energiesprong[2] or Enerphit[3], may be more appropriate.

The objectives of this action plan are:-

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[1] 'Retrofitting' refers to the fitting of new systems designed for high energy efficiency and low energy consumption to buildings previously built without them. This can range from small activities such as fitting energy-efficient light bulbs to installing state of the art heating systems

[2] Energiesprong. Homes are fully insulated using offsite manufactured wall and roof panels in conjunction with pre-assembled 'energy pods' The works are guaranteed and tenants can be charged a comfort charge to offset the retrofit costs.

[3] Enerphit looks to meet high levels of energy efficiency when retrofitting an existing property. The core focus is to dramatically reduce the requirement for space heating and cooling, whilst also creating excellent indoor comfort levels.

1) To reduce the carbon emissions from the Council's housing stock and meet Haringey Climate Change Action Plan targets

2) To minimise the impact of rising energy costs on Council tenants and meet the objectives of Haringey's Affordable Energy Strategy to reduce fuel poverty

The key principles of the Council Housing Energy Action Plan are:-

- When delivering a Whole House Retrofit Plan we will promote a Fabric first approach
- To target the worst energy performing homes first, and where we can incorporating these works into the major works programme
- Alignment with the relevant borough wide strategic objectives to deliver maximum impact – eg best value, fuel poverty, the DEN programme, air quality improvements
- To phase out gas boilers from 2026
- To ensure compliance with government retrofit standards (PAS2035 and PAS30) and Trustmark
- To work in partnership with residents on co-design and successful delivery
- Continue to support innovation in reducing energy costs
- To use existing budgets to leverage additional external funding to maximise delivery

The action plan will be delivered by:

- Actively managing and maintaining the quality and accuracy of our data
- Actively engaging and consulting residents
- Supporting a professional team to deliver the strategy
- Continuous learning and improvement

The key risks to the strategy being achieved are:

- Availability of future funding and uncertainty around future material costs given the current volatility of the market and the increasing demands on the HRA eg building safety requirements
- Unintended consequences of retrofit e.g., mould, condensation, overheating
- Inability to secure conservation and planning approvals
- Failure to engage residents effectively

Progress against the programme of works will be monitored by:

- A cross departmental Retrofit Working Group
- Highlight reports will report into the senior officer boards
- Performance will be published in the Annual Carbon Report and the Home Energy Conservation Act (HECA) reports on the Council's webpages.

Finally, the success of any retrofit programme is dependent on buy-in from tenants and leaseholders. As such a separate retrofit engagement plan has been developed which follows the retrofit customer journey. A subgroup of the Retrofit Working Group will be set up to work with residents in planning the Council's engagement programme.

An effective retrofit strategy is also dependent on having good quality data. The Council is in the process of procuring a new Asset Management system, conducting a comprehensive stock condition survey and has acquired energy modelling software which enables us to scenario plan.

The retrofit programme represents significant additional investment for the Council which will require a specialist cross – disciplinary team to deliver. Delivery will be overseen by Retrofit Co-ordinators in line with PAS2035 requirements.

1. Introduction

This document sets out the Council's approach for retrofitting its housing stock. This includes key principles, costs, and a delivery plan for retrofitting the housing stock to meet the following:

1.1 Aims and Objectives of the Council's Housing Energy Action Plan

1) **To reduce the carbon emissions from the Council's housing stock and meet Haringey Climate Change Action Plan targets**

Haringey's Climate Change Action Plan sets a target for the Council's housing stock to reach an average EPC Band of B by 2035 and EPC Band A by 2041, where this is technically feasible.

A reduction in the housing carbon emissions could be achieved by replacing fossil fuelled heating with electric heating, such as heat pumps, on the assumption that by 2050 the grid will have been decarbonised through renewable energy generation. However, insulating the properties first will reduce overall energy demand mitigating against expensive upgrades to local electricity networks and reducing the size and capital cost of the heating system itself.

2) **To minimise the impact of rising energy costs on Council tenants and meet the objectives of Haringey's Affordable Energy Strategy to reduce fuel poverty.**

Haringey's Affordable Energy Strategy sets a target to retrofit as many fuel poor homes 'as is reasonably practicable' to achieve a minimum EPC Band C by 2030.

The retrofits will be designed to avoid increasing tenants energy costs. Electricity costs more per unit than gas. Converting properties to electric heating could therefore increase energy bills. The focus will therefore be to reduce energy demand to ensure that annual fuel bills do not increase due to the retrofit. Insulating properties to a good standard will retain heat for longer, reducing energy use and could enable tenants to benefit from time of use tariffs. This will provide tenants with some protection from the current energy price crisis.

To support delivery of these objectives, the Council procured an energy and sustainability consultancy (Turner and Townsend) to prepare:

- An EPC B and decarbonisation action plan that establishes the strategic principles, methodology, resources and costs required to decarbonise the Council's housing stock,
- A resident retrofit engagement plan to support delivering of retrofit, and
- A Phase 1 retrofit delivery plan for the period 2023 to 2025.

1.2. Key Principles

The key principles of the Council Housing Energy Action Plan are:-

- *Whole House Retrofit Plans with a fabric first approach*
  This involves upgrading the fabric of the property (walls, roofs, windows, floors, doors), thereby reducing heat demand in the first instance, followed by decarbonising heating systems and installing onsite renewables.

- *Worst first – alongside integration with major works programmes*

While the vast majority of the retrofit works will be channelled into the mainstream programme, separate arrangements will be put in place to deliver out of sequence works to the poorest performing stock which cannot wait for the mainstream cycle.

- *To align with borough wider strategic objectives to deliver maximum impact*
  This involves looking at significant infrastructure projects, such as the Decentralised Energy Network (DEN) programme and ensuring that positive opportunities are taken.

- *To phase out the installation of new gas boilers after 2026*
  These will be replaced with decarbonised heating systems, with air source heat pumps (ASHPs) being the most likely alternative over the next 10 years. ASHPs will require the Council to ensure that the houses have high levels of insulation before fitting. While ASHPs are low carbon, due to their low temperature heat output, they are expensive to run in badly performing buildings.

  Compliance with Government retrofit standards (PAS2035/2030) and Trustmark.
  This will ensure that projects are eligible for current government funding streams and reduce the risk of introducing unintended consequences such as damp, mould and overheating. Following PAS2035 will result in each home being assessed to confirm the package of works to be installed and phased as appropriate with cost reviews and options included as part of the process. . PAS2035 includes a monitoring and evaluation process to ensure the quality of works and that properties perform as expected post installation. This will be required at the end of all works on our homes, and will be embedded in all projects through the Councils procurement process.

- *Working in partnership with tenants on co-design*
  This to ensure effective tenant engagement before, during and after works.

- *Support innovation in reducing energy costs.*
  The Council will continue to review emerging technologies and innovation, such as Energiesprong and Enerphit. However, these will need to demonstrate local business cases or increased external funding.

- *Use of HRA budget to leverage additional external funding*
  We will use the agreed funding in the Capital programme to lever in other funding streams. e.g., bid for Social Housing Decarbonisation Fund.

The strategy will be delivered by:

- Actively managing and maintaining the quality and accuracy of our data
- Actively engaging and consulting residents
- Supporting a professional team to deliver the strategy
- Continuous learning, cross departmental working and improvement

1.3 Strategic Context and Links to National Policy, Corporate Plans and Strategies

1.3.1 Haringey

The Action Plan sets out how we plan to improve the energy performance of Haringey's housing stock in support of the Council's Climate Change Action Plan (2021) and Affordable Energy Strategy (2020). It is also aligned with the Asset Management Strategy (2021), the draft Housing Strategy (2022) and the 2022/5 - Year Mid Term Financial Strategy. It supports Borough Plan (2019 to 2023) outcome 3 – to drive up the quality of housing for everyone.

1.3.2 National policy context

In 2019, the UK government set out a target to achieve net zero greenhouse gas emissions across the whole UK by 2050. In 2021 the Government made a further commitment to reducing UK emissions by 78% by 2035. Home heating is responsible for about **14%** of the UK's carbon emissions, and is a key area for the government to tackle if it is to meet its carbon reduction targets.

- The Clean Growth Strategy (2018), the UK government has set a target for social housing providers to upgrade as many homes as possible to a minimum rating of EPC Band C by 2030.
- In England, a fuel poverty target has been set to improve as many fuel poor homes as is reasonably practicable to a minimum energy efficiency rating of Band C by the end of 2030. The Building and Heat Strategy 2021 sets out an ambition to phase out natural gas boilers and other fossil fuels for heating by 2035.

The UK government has committed £3.8bn to the Social Housing Decarbonisation Fund (SHDF) over a 10-year period to improve the energy performance of social rented homes, on the pathway to Net Zero 2050. This funding is being released in phases. The current phase will see the delivery of retrofits in the UK to the value of £800m from 2023 to 2025. The SHDF aims to deliver warm, energy-efficient homes, reduce carbon emissions and fuel bills, tackle fuel poverty, and support green jobs.

1.3.3 Retrofit Hierarchy- Best practice

In line with best practice the retrofit hierarchy, of improving building fabric before incorporating low and zero carbon heat and power, then renewables, has been used to determine the approach of this action plan.

In principle this means that only when the fabric has been driven to the highest possible performance, that low and zero carbon heat and power is considered. Reducing energy demands first means that subsequent improvements like replacement of gas boilers with heat pumps will have a lower capital cost and operational energy costs will be kept as low as possible. Finally, generating energy through technologies such as solar PV panels can be considered. Integration of a demand-side response with or without energy storage could further reduce energy costs. This approach enables us to phase works to properties and spread the cost of our retrofit investment. For most of the stock this will bring them as close as possible to net zero carbon and bring the overall borough average up to EPC B.

1.3.4 PAS2035 and PAS2030 standards

The strategy has also been designed to ensure compliance with British Standards Institute (BSI) PAS 2035 which is the new over-arching document in the retrofit standards framework introduced following the recommendations of the government commissioned Each Home Counts review. PAS 2035 essentially provides a specification and guidance for the energy retrofit of domestic buildings, and details best practice guidance for domestic retrofit projects. PAS 2035 pertains to retrofit quality standards and is designed to clarify the responsibilities of those in retrofit roles and the qualifications they must hold prior to the commencement of any physical retrofitting installation. We will also ensure that our installers are PAS 2030 accredited. This standard sets out the requirements for installing energy efficiency measures in domestic retrofit projects.

The above standards are currently required for eligibility to secure government funding streams, and should any new standards be required in the future we will adapt and adopt accordingly.

1.3.5 London Context

The Mayor of London, has set a target for London to be net zero carbon by 2030. To achieve this the Accelerated Green pathway has been adopted. Amongst other things, achieving this will require:

- Nearly 40 per cent reduction in the total heat demand of our buildings, requiring over 2 million homes and a quarter of a million non-domestic buildings to become properly insulated
- 2.2 million heat pumps in operation in London by 2030
- 460,000 buildings connected to district heating networks by 2030

Programmes supporting these targets include:-

1.3.6. London Councils – Retrofit London Housing Action Plan

The Retrofit London Housing Action Plan was launched by London Councils in October 2021. It provides a cross-tenure, approach to retrofitting London's 3.7 million homes so they are an average of EPC B or equivalent by 2030. It sets out a number of collaborative actions that can be taken forward in London along with proposed metrics – including overall carbon emissions, space heating demand and energy use – that can be adopted to ensure the average EPC B target is achieved in a way that fully realises London's ambitions to address climate change and fuel poverty. The average SAP rating for social housing stock in London is 66.52 (Band D[4]).

The Retrofit London Housing Action plan suggests the adoption of an average space heating demand target of 65 kWhr/m2/yr. This target is for both private and social housing stock. The Council Housing Energy Action Plan recommends a more demanding target for the Council's own stock to ensure suitable fabric improvements are undertaken to reduce tenants' exposure to higher fuel bills.

1.3.7 GLA Retrofit Accelerator - Homes | London City Hall

[4] Source: London Councils Pathway Report 2021

This programme currently provides London boroughs with the technical expertise to kick-start 'whole-house' retrofit projects across the capital. It also helps build a network of suppliers and opportunities to accelerate the much-needed retrofitting of private homes.

1.3.8 Retrofit Accelerator - Innovation Partnership

The Mayor's Innovation Partnership moves the work of the Retrofit Accelerator - Homes one step further.

The Partnership aims to drive innovation throughout the nationwide supply chain and reduce costs. Haringey along with 6 other London Boroughs is a member of this partnership. The intention is that by 2024 a framework for delivering retrofit projects will be launched. This framework has a potential value of £10 billion, equivalent to up to 190,000 retrofitted homes, which would create around 150,000 jobs over a decade.

2. Council Housing Portfolio and current Energy Performance

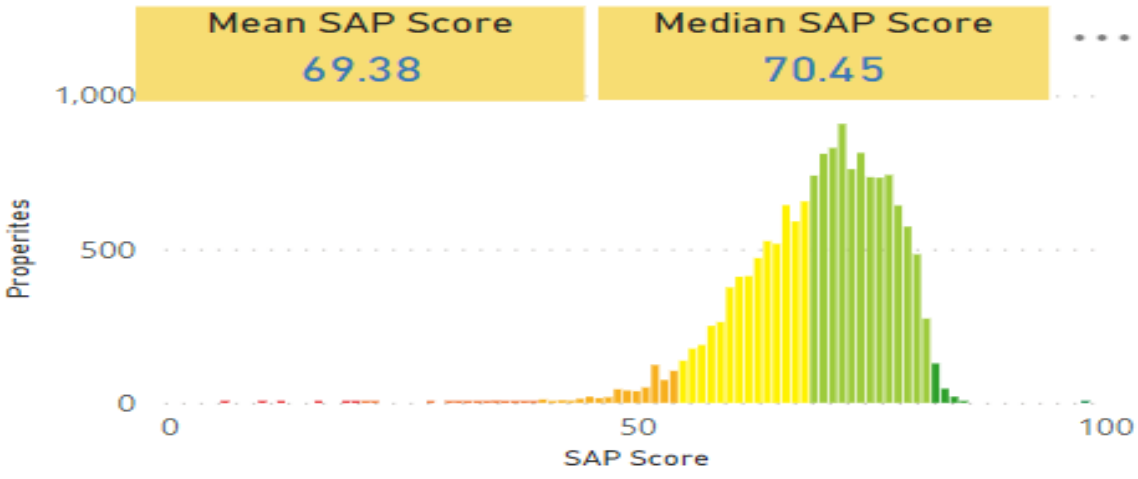
2.1 EPC Performance

The Council manages a total of 20,259 dwellings, comprising 15,325 tenanted and 4,934 leasehold homes. This includes high rise blocks, flatted estates, and a portfolio of scattered houses and house conversion. The average EPC rating is Band C, with the lowest performing stock comprised largely of pre - 1918 solid wall houses. There are currently 6,232 homes below an EPC Band C. Table 1, provides a breakdown of the EPC bands in the Council's housing portfolio. This list excludes new build properties which will comply with our Local Plan and be built to zero-carbon standards.

EPC Band	Nos of properties
A	2
B	473
C	8766
D	5607
E	572
F	27
G	6

Table 1 -EPC band profile of Haringey Council housing stock

EPC Bands are calculated using Standard Assessment Procedure (SAP) scores. Figure 1 shows how Haringey's portfolio currently performs in relation to SAP. The stock performs relatively well, with an **average SAP score of 69.38**, compared to a national average for



social housing stock of 69. The average SAP rating for social housing stock in London is 66.52.

Figure 1 -SAP score profile of Haringey Council housing stock

2.2 Current Carbon performance

For CO2, the average emissions per home are 2.60ltC02, below the national average of 2.7tCO2 per home. This gives the Council a housing carbon baseline of 40.193.25tCO2.

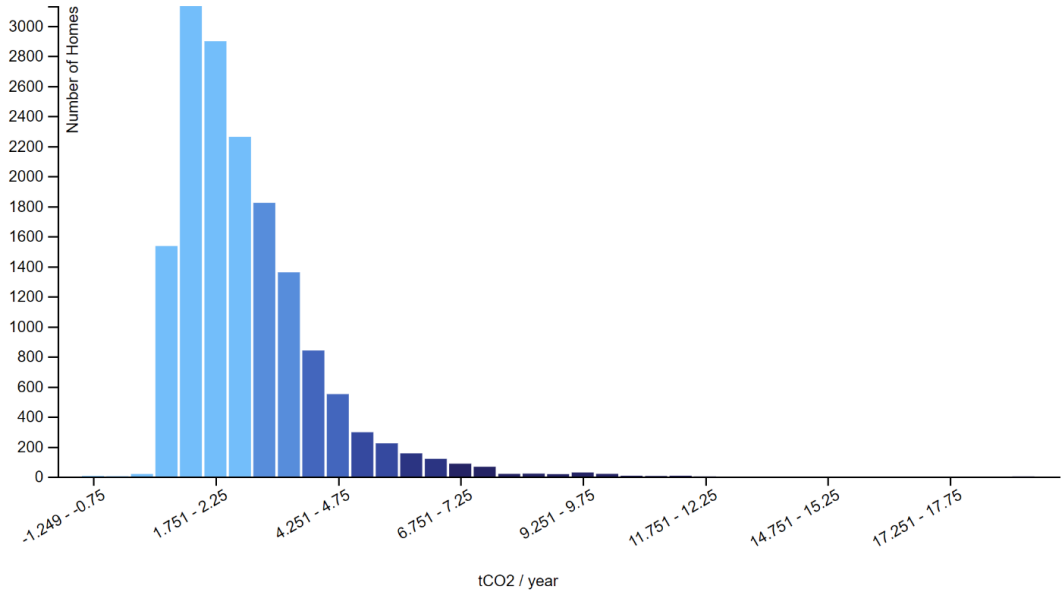


Figure 2 – Carbon Dioxide emissions from Haringey Council housing stock

2.3 Energy bills -

Figure 3 provides an illustration of the fuel bill profile of the Council's housing stock. Calculations are based on the price cap increase of October 2022 and include energy used for heating, cooling, water heating, lights, fans, and pumps. The use of appliances, cooking facilities, electric vehicle chargers and non-fixed lighting, are excluded.

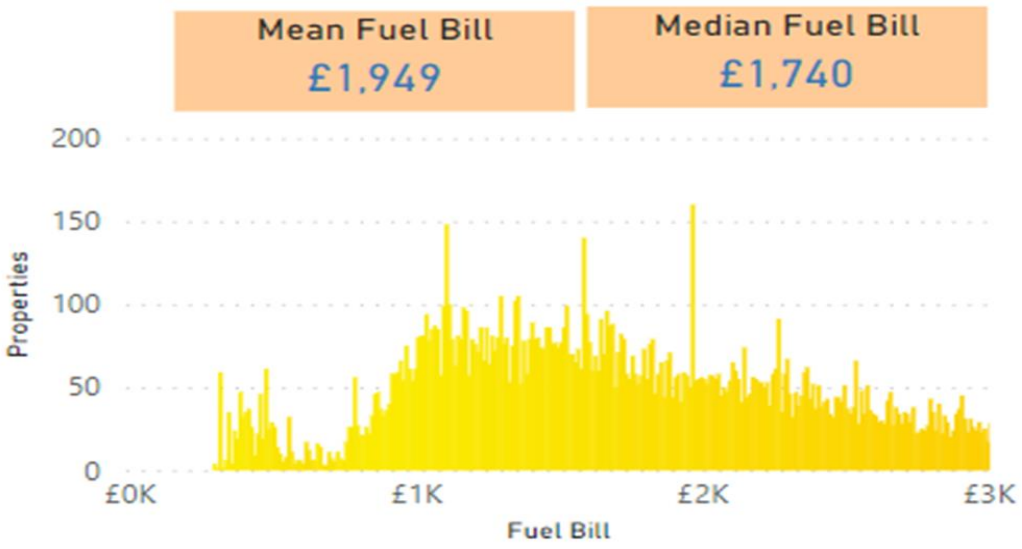


Figure 3 – Fuel bill profile for Haringey Council housing stock

2.4 Key Characteristics of Council housing stock

- The average heating demand is 84 kwh/m2
- 93% of all the properties in Haringey's stock are fuelled by gas. This is a combination of individual and communal gas boilers. Significant investment will be required to convert these to low carbon heating as gas is phased out.
- 35% of the stock has uninsulated solid walls
- The vast majority of homes have double glazing but 1,176 properties are single glazed and are located in conservation areas.
- 22% of the housing stock is in conservation areas
- Flats are the most common property type with houses second. Terraces make up the vast majority of houses.

3. Funding the Retrofit Programme

3.1 Housing Revenue Account

Meeting the EPC B target and adopting the heat demand metrics set out in paragraph 4.1 will require investment which is currently not fully scoped. This includes installation costs to cover project management, enabling works and some scope for price increases It is recognised that this funding gap is beyond the current budget in place, however this will kept under review and officers will continue identify opportunities to find alternative sources of funding (including from the government).

A large amount of the funding gap has been identified as works that are already required to maintain our stock over the next 19 years and will be subject to MTFS approval in relevant years. These works include components such as windows, boilers, walls and roofs.

The Housing Revenue Account (HRA) Business Plan defines the capital resources available for investing in the Council's housing stock. The major works programme includes provision of energy efficient boilers, double glazing, and insulation, which provide some contribution to improving energy performance. However, in recognition that this alone would not be enough to meet the Council's carbon reduction targets, an additional budget of £101m was agreed by February 2021 Cabinet as part of the then 10 Year HRA Business Plan, to fund energy retrofit measures, over and above the mainstream major works programme. Of the £101m, £34m has been approved for spend by 2028.

The budgets will be integrated as far as is practicable with the major works programme so that works can be delivered at the same time which will not only be less disruptive for residents but provide better value for money.

The intention is to maximise use of this Council budget as leverage for drawing in additional external funding from national government (such as the Social Housing Decarbonisation Fund), energy companies (such as Energy Company Obligation ECO funding) and regional funding (such as the Mayor's Energy Efficiency Fund). This will help to reduce the retrofit budget gap. If this external funding cannot be secured the programme will be adjusted accordingly.

3.2 Social Housing Decarbonisation Fund (SHDF) Phase 2

The Council has made an application to the second wave of funding (£800m) from the Social Housing Decarbonisation Fund (SHDF) This government scheme is focused on improving the energy performance of social rented homes, with the objective of raising properties to EPC Band C, on the pathway to net zero. Higher grants are available for the poorest

performing solid wall properties so this is the stock we have targeted as part of our bid. We can also include an element of leasehold properties (up to 10%) in the bid. There is a two-year delivery period from March 2023 to March 2025.

405 Band D,E,F,G properties have been included in the bid that currently meet the criteria and fall within the major works delivery programme. This includes a mix of archetypes – excluding high and medium rise flats.

3.3 Energy Company Obligation (ECO) Phase 4

ECO4 is the fourth and final phase of the Government's Energy Company Obligation which was launched in April 2022 and is due to continue until 31 March 2026. The ECO4 scheme can fund new heating systems, loft or cavity wall installation and other measures designed primarily to increase energy efficiency and reduce fuel poverty and energy costs. Only stock with EPC Band rating D to G are eligible.

3.4 Regional Funding opportunities

The Mayor of London's Energy Efficiency Fund (MEEF) The MEEF is a £500m investment fund established in 2018 by the GLA with funding from the European Commission, which looks at providing flexible and competitive finance for low carbon projects across London.

3.5 Leaseholders

The impact of any energy saving works on leaseholders will be managed in accordance with agreed council policies. Leaseholders will be engaged in decisions to ensure that costs are manageable and that energy bills are more sustainable. For some properties, the energy efficiency upgrades required will be significant. We will investigate options from funding streams for the private sector which can support leaseholders with buying into any new technologies planned for tenanted stock or fabric improvements which are rechargeable. Where leaseholders wish to install energy saving measures outside of the Council retrofit programme, the Council will promote and encourage leaseholders to upgrade their properties in alignment with the Council's retrofit plan.

4. Delivering our Objectives - actions

Action 1:- Adopt a base Energy Metric and Retrofit Standard

In developing the Action Plan, Turner and Townsend modelled investment scenarios for three 'branded' standards for low carbon retrofit: Zero Carbon Hub, EnerPhit and Energiesprong. They also developed their own archetype specific scenario. Common to all approaches is a focus on heat demand i.e., kwh/m2 over SAP/EPC targets. It is recommended that the Council adopts heat demand target ranges for our common archetypes (46 kwh/m2 for semi/detached homes, 39 kwh/m2 for other dwellings). It is also recommended to establish the tipping point between reducing heating demand and delivery cost, and when this occurs to use higher standards like EnerPhit and Energiesprong for particular archetypes e.g., where structural issues with a property required a deeper level of retrofit with remedial works cost exceeding £30,000.

Our approach therefore will be to adopt a base technical standard but to consider deeper retrofit for particular stock archetypes, in certain circumstances, based on funding available, and local circumstances.

Although the deeper retrofit standards enable one hit futureproofing for the lifetime of a property, reducing bills and providing greater health benefits. They are still an emerging

technology and therefore can be costly, technically complex and more disruptive for residents.

Action 2: Manage Overheating and Ventilation Risks

To deliver best practice we will address building performance as a whole including overheating risks and ventilation requirements.

In some instances, energy efficiency measures can exacerbate overheating. However, this is usually only a problem if the dwelling is already overheating perhaps due to excessive solar gains or insufficient ventilation. Retrofit projects can offer opportunities to improve conditions through better ventilation, control of solar gains, and the reduction of uncontrolled heat gains from inefficient heating and hot water systems. Following PAS2035 standards will ensure that overheating risks are considered and assessed.

Insulating properties to reduce heat loss and draughts by improving air tightness means that properties must have a ventilation strategy to refresh the indoor air to remove pollutants (eg water vapour from cooking), supply fresh air for the occupants and provide a means of cooling in summer. Enhanced ventilation such as Mechanical Ventilation with Heat Recovery (MVHR) may be needed to deliver the required amount of fresh air in a controlled fashion while recovering heat from the exhaust air before expelling it. Heating demand is therefore reduced by pre-heating the fresh air supply with the heat from the stale warm air. This also provides added health benefits resulting from the improvement in air quality.

Interaction between different retrofit measures needs to be identified in advance at design stage, to understand where risk management actions need to be put in place, in line with the PAS2035 process. This ensures we improve the indoor air quality as part of the retrofit and helps deal with mould and condensation problems.

Action 3: Deliver Wider Social Value

It is anticipated that, in order to achieve the EPC B target, nearly all of the Council's housing stock will require some form of intervention to a varying degree. Given the scale of investment required, the intention is to integrate energy measures with the mainstream major works programme, as far as is practical.

The Council is currently developing proposals for long-term partnering contracts to deliver capital investment. This will include the retrofit works. This contracting model will enable smoother delivery of integrated and long-term investment in the stock and critically will be less disruptive for residents. This is expected to be in place by November 2023.

Compliance with PAS2035 will be built into our delivery model and all contractors will be required to be PAS2035 compliant. This includes having a 25 year improvement plan in place for every property.

The Council will work with skills and training providers (such as CONEL) to support them in developing a Retrofit syllabus, that our local workforce can access. This will ensure that our borough's work force have the right skills and qualifications to undertake this work, either directly with the Council or as an employee of our contracting partners.

Social Value and local job opportunities criteria will be applied in the long term partner selection process which includes involvement of the local supply chain, employment and training initiatives. We will also seek out other opportunities for local people in support of developing retrofitting skills.

Action 4: Reduce Embodied Carbon

The primary objective of this action plan is to reduce operational energy use. However, embodied carbon[5] is rising up the retrofit agenda and regulators could introduce measures in the future. The Council will consider the following when designing retrofit schemes:-

- review materials used in the retrofit. For example, the embodied carbon associated with heat pumps varies according to the refrigerants used.
- consider product durability to reduce the number of times a system requires replacement
- carefully time component replacements to reduce unnecessary waste and maximise the lifespan of components
- monitor and report to review against overall performance of the programme.
- review our approach as we learn from the retrofit programme

Action 5: Programme the retrofit works

We have developed the first phase of the retrofit programme modelled around the current window replacement programme. A summary of the projects included is attached at Appendix 1. We will be delivering this phase of the programme over the next two years of the retrofit programme in line with the SHDF funding deadlines. It is proposed to undertake fabric improvements to these properties. Where properties are scheduled for a boiler replacement in the near future, or already have electric heating, a heat pump may be considered. Where heat pumps are installed the properties can be considered a pilot project and their performance evaluated for future roll-outs.

Further phases will be scheduled once future planned maintenance schedules are determined. The number of retrofits will increase in subsequent phases and following the appointment of a delivery partner.

In line with the Government funding requirements, and the Council objectives, the criteria for selecting stock for inclusion in the phases of the retrofit programme are:

- Targeting the worst performing stock, to prioritise those in fuel poverty
- Alignment with the planned major works or boiler replacement programmes to reduce enabling costs (e.g., for scaffolding) and disruption for residents and maximise match funding
- Utilising void periods to undertake retrofit measures alongside remedial works
- To complement regeneration, new build projects and any external wall works programme resulting from the Fire Risk Appraisal of external walls (FRAEW)

[5] Embodied carbon is defined by LETI and the UK Green Building Council as the carbon emissions of a building created by its materials: their extraction, transportation, construction, maintenance, replacement, and end of life treatment.

Action 6: Procure an interim contractor

While the vast majority of the retrofit works will be channelled into the mainstream programme to be delivered by the new partnering contractors, which will be operational from November 2023, we will, in the interim procure a contract to deliver out of sequence works to the poorest performing stock, which cannot wait for the mainstream cycle or the new contracting arrangements to be in place. Typically, this will include elements of the stock rated EPC D and below. Procurement is underway to appoint a multi-disciplinary design consultant to complete retrofit plans, with technical designs and cost plans for the stock included in the SHDF bid.

Action 7: Retrofit major voids

We will also add value to the void process by taking the opportunity to carry out deep retrofit to some of the void properties requiring extensive works. The planned retrofit measures will be determined from a whole house retrofit assessment. The necessary remedial and retrofit work will be undertaken at the same time by competent contractors with PAS 2030 accreditation. The focus of this programme will be on the lowest performing houses EPC D and below, which are in the greatest need of improvement. This will provide invaluable learning from piloting deep retrofit measures but which also can be used as demonstration projects for residents.

Action 8 - Phase out gas from individual homes.

Currently there are 14,327 dwellings with gas-fired boilers. Collectively they emit 31,000 tonnes of carbon per annum burning gas. In order to meet the Council's net zero target, we will need to have removed all individual gas boilers by 2041 and replaced with decarbonised heating. Turner and Townsend has recommended that we phase out the installation of new gas boilers after 2026 and instead substitute with an all – electric system.

In most cases this is likely to involve replacement with a heat pump either individual air source or ground source heat pumps, or communal heat pumps. However, emerging technologies such as infra-red radiant heating will be considered and piloted where appropriate as the Council's retrofit approach is consolidated and for properties were there is not space to install the heat pump or associated hot water tanks. Heat pump installations will be more difficult in blocks of flats, particularly if they have limited open spaces and Victorian terraced houses which have been converted into flats. Hybrid heating or direct electric heating may be more suitable in these situations.

Hydrogen is unlikely to be a viable option in the short to medium term due to the cost of upgrading the gas grid network, production methods[6] and safety concerns. Basing the Council's approach on the future availability of hydrogen technologies could prove to be flawed when it is too late to switch to an alternative.

Substantial upgrading of the thermal performance of the fabric would be prerequisite to de-carbonising heat. This work would be in line with PAS 2035 government guidelines for deep retrofit. Where possible, the installation of Solar PV and thermal will be required to reduce

[6] Blue Hydrogen is produced using fossil fuels. Carbon capture and storage is therefore required. Economically viable carbon storage is unproven.
Green Hydrogen can be produced from renewable energy however using renewables to power heat pumps is 5 times more efficient and safer.

dependence on the grid. The inclusion of batteries and smart controls will be considered to enable residents to benefit from electricity generated through the day.

Tenants will require behavioural support and information to help them transition to using the new technology in their homes.

The overall effect of this proposal would be to not only raise the property portfolio to a better average EPC Band rating, but also to reduce carbon emissions as the electricity supply grid is decarbonising and moves to non-fossil fuel generation.

If gas is removed completely from properties this would generate savings from the Annual Gas Safety Checks that are required in rented properties. However, to achieve this, cookers will also be required to be switched over to electric from gas.

The analysis undertaken by Turner and Townsend did not cover plant room operations for communal heating. Further analysis is required. This will include carrying out energy efficiency surveys on each plantroom to determine retrofit and low carbon heat opportunities.

Action 9: Consider Decentralised Energy Network opportunities/requirements

Haringey is initially focussing on installing Decentralised Energy Networks in three neighbourhoods in North Tottenham, Tottenham Hale and Wood Green as identified in the existing masterplan, and the Council's newly expanded DEN at Broadwater Farm estate. The DENs will use low carbon waste heat to heat homes.

While new build properties are the focus of connections to the DENs, there may be opportunities to connect existing properties where blocks are situated in the vicinity of a new build that is connecting to the supply. Where this is identified an options assessment will be undertaken to consider the business case and affordability of connecting to the DEN. Connections are highly unlikely for individual street properties.

Action 10: Monitor and verify retrofits

Retrofits will need to be verified to ensure the planned performance is matched by in-use performance. Any difference is classed the 'performance gap'. This is a significant issue for retrofits, especially complex ones where different energy efficiency measures might interact with each other in unexpected ways. In part, use of PAS2035 will help to close the performance gap by identifying and mitigating issues during the planning and retrofit stage. However, to ensure that retrofit design requirements are met monitoring and verification will be required.

There are two aspects to monitoring that need consideration.

i. Resident-side monitoring

Following installation of additional insulation, ventilation and air tightness works, monitoring will be needed in a sample number of homes to track:

- Indoor air temperature
- Humidity levels
- Carbon dioxide
- Comfort levels

For a full retrofit with heat and power technologies, residents should have the option of being able to monitor their status. For example:

- In-home displays that allow the resident to monitor how much energy they are using, linking to a smart meter;

- Any internet-connected device that gathers information on the status of the component or relies on a signal from the internet for its normal operation. Residents should have the ability to see any performance information collected from their home and should be alerted if a component cannot function properly due to any temporary disconnection to the internet.

ii Council monitoring

Further consideration will be required to consider whether to establish a central hub to remotely collect performance information. This would facilitate proactive repairs and maintenance for example, solar PV generation can be monitored in real time and fed to a central dashboard, which tracks electricity generation and also raises alerts when inverters fail.

Monitoring devices can also be placed in a sample of homes to track changes to indoor quality, temperature, humidity and CO_2 to help verify retrofit outcomes.

Verification

Using the PAS2035 approach will ensure that energy performance post-retrofit is verified by the installer. This will mean that any deviation from the target performance will need to be made good. This will require contractual provisions and determination of a post-retrofit quality assurance process.

5. Implementation

5.1 Staff resources

The retrofit programme represents significant additional investment for the Council which will require a specialist cross-disciplinary team to deliver. The team will need dedicated resources to fulfil the following functions: contract and programme management, data management, resident liaison and communications. It will be located within the Housing Property Services Asset Management team where existing roles include a Senior Energy Project Manager, Energy Project Manager and Community Energy Liaison officer. These postholders will work alongside the Asset Management programme, contract management and delivery teams with a view to integrating retrofit delivery into the major works programme. Delivery will be overseen by Retrofit Co-ordinators in line with PAS2035 requirements. Retrofit coordination training will be provided to ensure staff are equipped with the correct skills to deliver these functions.

5.2 Governance

Overall responsibility for the strategy will sit with the Director of Placemaking and Housing reporting into the relevant Cabinet Members with respective portfolios for housing and climate action. The Assistant Director of Property Services (Housing) will have responsibility for delivering the retrofit programme through the Housing Asset Management Team. The Council's Carbon Management service will be responsible for strategy oversight, budget management, external bid submissions and reporting.

A Retrofit Working Group will oversee the implementation of the Action Plan. This cross departmental group will meet regularly to review progress against delivery of the strategic milestones (as set out in Appendix 3) and programme KPIs shown below. Highlight reports will report into the senior officer boards. These will feed into the Annual Carbon Report and the Home Energy Conservation Act (HECA) reports which are published on the Council's webpages.

	KPI	Period
Stock energy efficiency	Average SAP Score Number of Properties retrofitted Number of measures installed Number of properties programmed for works Number of properties below EPC C	Quarterly
Data Management	Increase in Portfolio data confidence score	Quarterly
Carbon Emissions	Tonnes / CO2e	Annually
Retrofit Strategy progress	Delivery of milestones shown in Appendix 3	Quarterly

5.3 Key Risks

In drawing up the Action Plan, we have identified risks and considered corrective measures to minimise risk as far as is practical. A risk register is set out at Appendix 2. The risk register covers a number of areas including finance, technical risk, communications, time resources, performance and resident engagement.

5.4 Delivering effective resident engagement

Critically, the success of any retrofit programme is dependent on buy-in from residents, which has been found to be a significant factor in the sector. Given the level of potential intrusive and disruptive works, as well as introduction of new and unfamiliar technologies, raising awareness and proactive resident engagement planning will be key. We will therefore work in partnership with tenants on co-design and ensure effective resident engagement before, during and after works. Energy advice and support will be provided to tenants throughout the process, including post retrofit. To facilitate resident engagement during each project a retrofit project engagement template has been designed which covers all stages of the process and is included in Appendix 4.

We will establish a subgroup of the Retrofit Working Group to plan and further develop the engagement programme. Stakeholders will comprise representatives from Asset Management, Carbon Management, Resident Engagement, as required. Residents, as with all stakeholders, will be made aware that the move to a low carbon economy will produce much better outcomes and a healthier environment that then provides real economic benefit.

5.5 Asset Management Systems and software

All stock modelling and investment decisions depend on good quality data. The Asset Management database forms the cornerstone of the Asset Management Strategy and, in turn will be used to produce data for the retrofit programme. We are in the process of procuring a new system which will better meet our needs in terms of capturing energy data, as well as developing integrated capital work programmes. This is expected to be in place in spring 2023.

We have also acquired energy investment modelling software (Portfolio) which alongside our own stock data, has been used to inform the strategy. We are able to analyse stock data using Portfolio software which includes SAP scores, carbon emissions and modelling fuel bills.

A new comprehensive internal/external stock condition survey is currently underway. The results will be used to update our Asset Management and Portfolio database and will therefore help ensure that our stock modelling and investment decisions are based on good quality data.

Appendix 1 – Phase 1 Retrofit

Please note, the sites listed below are subject to more detailed analysis and may change.

The number of retrofits will increase in subsequent phases.

Houses

Estate Name	Total Nos of properties	Nos eligible for funding	Year of Installation
Coldfall, N10	218	158	23/24
Scattered	26	26	24/25
White Hart Lane N17	39	39	24/25
Antill/Hanover, N15	4	4	24/25
Quernmore Rd, N4	2	2	24/25
TOTALS	**289**	**229**	

Flats To be installed 2024/25

Area	Total Nos Properties	Nos of properties eligible for funding	Nos of tenanted properties	Nos of Leaseholder properties
Broadwater Farm – Marthlesham and Rochford	176	176	142	34

Appendix 2 – Risk Register

Category	Risk	Potential Impact	Mitigation
Resident engagement	Low tenant acceptance of retrofit	Failure to deliver targets Reputational damage due to failure to delivery BEIS funding programmes Delays in gaining access to properties	• Well planned engagement programme • Dedicated Community Energy Liaison officer • Advice and guidance before, during and post installation of measures • Appreciation of tenant characteristics • Feedback and involvement in design Publicising tenant experiences of retrofit schemes and benefits
	Energy bill / carbon savings are not realised following retrofit works	Failure to engage tenants in future programmes Failure to reduce fuel poverty	• Monitoring equipment installed to enable diagnostics • Households should be given advice and guidance before, during and post installation of measures
Fuel Poverty	Energy bills rise for fuel poor households due to change in heating system	Inadequate comfort levels Health impacts from inability to heat the home appropriately	• Maximise fabric / insulation measures to offset the higher costs of electrified heating within property
Data Management	Energy efficiency data for some properties is not correct	Difficulty in identifying suitable / eligible households and therefore delivering against commitments in funding bids Programming and sequencing of works is wrong	• Updating of Portfolio system with stock condition data • Regular update of Portfolio system with completed maintenance data • Retrofit assessments carried out in advance
Technical	The introduction of unintended consequences following the retrofit e.g., mould, condensation, overheating	Increased funding required for remedial works Potential health impacts for tenants	• Ensure assessors, designers, installers and co-ordinators are fully PAS 2035 and Trustmark compliant • Monitoring of properties post installation. • Evaluation of retrofit projects.
	Insulation / heating works cause overheating of property		

	Retrofit works use materials which lead to greater risk of fire		• Ensure assessors, designers, installers and co-ordinators are fully PAS 2035 and Trustmark compliant and materials meet all relevant British standards • Appoint Haringey Building Control for all projects
Resource and Funding	Shortage of materials cause delays Supply chain capacity for both installation and on-going maintenance Increase in costs Failure to secure funding	Overspend Inability to deliver carbon reduction targets Inequality across the housing portfolio with some households receiving inferior retrofits to others	• Becoming bid ready • Staging retrofits alongside the planned maintenance schedule • Scaling retrofits for economy of scale
Local Economy	Failure to deliver wider economic and social benefits	Opportunity for local economic growth will be missed	• Engagement with supply chain partners • Monitoring delivery of contract obligations
Capacity of grid	The transfer to electric heating will have demand implications for the supply grid	Expensive upgrades to the local supply infrastructure may be required Electricity supply issues	• Early engagement with Distribution Network Operators (DNO)

Appendix 3: Haringey Council implementation/milestone schedule 2023-28

Activity	Task/Milestone	Responsibility	Achieve by:
Programme management	Establish the Retrofit Working Group	Carbon Management (CM) Housing Property Services (HPS) Housing Services (HS) Planning	2023 (Q1)
Data Management	Update Portfolio energy stock database with stock condition data	HPS	2023 (Q1)
Data Management	Establish a programme and dedicated resource to improve data quality in the long term. This will include feedback from retrofit assessments, gas safety checks	HPS	2023
Programme Management – resources and skills	Conduct Housing Property Services energy retrofit training sessions with Major works, repairs and maintenance and resident liaison teams	CM and HPS	2023 (Q1-Q2)
Programme Management – resources and skills	Provide Retrofit Advisor, Assessor and Co-ordinator training for relevant HPS project managers and RLOs	HPS	2023
Programme Management/Procurement	Requirements for new gas and heating contract to be collated for future procurement. To include ongoing maintenance, staff training requirements and possible savings from cessation of annual gas safety checks.	HPS	2023
Procurement	Procure and award contract to design and install retrofit solutions to cover period before delivery partner procurement is finalised.	HPS	2023 (Q1)
Programme Management	Develop policy for retrofit of leaseholder properties	CM and HPS	2023
Programme Management	Undertake energy surveys on communal heat plant rooms	HPS	2023

Activity	Task/Milestone	Responsibility	Achieve by:
Resident engagement	Prepare Phase 1 retrofit resident engagement materials including post works energy advice	CM and HPS	2023 (Q1-Q2)
Resident engagement	Prepare and launch early resident engagement campaign to promote energy retrofit programme and raise awareness of Haringey Council's ambitions generally	CM and HPS	2023 (Q3-Q4)
Delivery	Deliver retrofit on Phase 1 properties. Commence Phase 1 resident engagement activities	HPS	2023 – 2025
Procurement	Develop specification and tender documentation for gas maintenance contract with an alternative gas boiler replacement programme.	HPS	2023-2024
Programme Management	Identify Phase 2 retrofit projects alongside planned maintenance and boiler replacement schedules for 2025 until 2028.	HPS	2023-2024
Programme Management	Review lesson learnt from delivery of Phase 1 retrofit installations and engagement activities. Revise plans as appropriate	HPS/CM and Retrofit working group	Q4 2023 and 2024
Procurement	Procure and award contract to heating contractor	HPS	2024
Delivery	Commence phase out of new gas boiler installations	HPS	2026
Delivery	Deliver retrofit on Phase 2 properties. Commence Phase 2 resident engagement activities	HPS	2025-2028
Programme Management	Review lessons learnt from delivery of Phase 2 retrofit installations and engagement activities.	HPS/CM and Retrofit working group	Q4 2025/26/27
Programme Management	Devise Council Housing Energy Action Plan for 2028-2035	HPS/CM and Retrofit working group	Commence Q4 2026

Appendix 4: Template retrofit project resident engagement plan

Resident engagement	Outcomes	Tasks	Action plans	Owner	Timelines/ Milestones
1. Awareness	Undertaken pre-project				
2. Buy-in	Residents support the planned retrofit project, as it affects them	• Present the retrofit project plan to the affected tenants, leaseholders and right-to-buy owners and other stakeholders. • Project monitoring and evaluation activities identified to and discussed with residents. • Invite residents to raise questions and have their concerns addressed to their satisfaction. • Identify residents with vulnerabilities and/or any additional needs and support those residents throughout the programme. • This process will meet Council standards for s105 consultation of the secure tenants involved	Communication plan • Key messages • Communications channels Events • Meetings • Social events PR materials • Example homes • Endorsements • Publications	Retrofit Coordinator Project Manager Resident Liaison Officer Communications team	
3. Design	Residents allow access to their homes for retrofit	• Request access to the residents' homes. • Find out from them how they live in their homes.	Resident contact plan • EPC survey • Structural survey • Retrofit assessment	Retrofit Coordinator Resident Liaison Officer Retrofit assessor	

	assessment surveys	• Address any concerns they raise. • Identify any vulnerabilities and special needs. • Comply with PAS 2035, PAS 2030 and MCS standards. • Undertake s105 consultation • Undertake s20 consultation with leaseholders as required	• Retrofit design inspection Information gathering • How the home is lived in • Residents' concerns • S105 consultation	Retrofit designer EPC surveyor Structural engineer Energy Project Manager	
4. Installation	Residents cooperate during the installation in their home of retrofit measures and systems	• Put plans in place to minimise the disruption to the residents. • Monitor resident satisfaction. • Always show courtesy and respect for the residents. • Comply with PAS 2035, PAS 2030 and MCS standards. • Ensure that safe working practices relating to working safely are always followed. • Undertake s20 consultation with leaseholders as required	Installation works plan • Roles and responsibilities • Resident satisfaction KPIs • Complaints protocols	Retrofit Coordinator Project Manager Resident Liaison Officer Installation contractors	
5. Handover	Residents are receptive to receiving instruction on how to use the new systems	• Ensure that the residents can use and take care of the retrofit measures correctly. • Provide clearly understood instruction materials. • Comply with PAS 2035, PAS 2030 and MCS standards.	Resident contact plan • Key messages • Roles and responsibilities • Instruction materials	Retrofit Coordinator Project Manager Resident Liaison Officer Retrofit Advisor Installation contractors	

6. Post works	Residents participate in checks to ensure they are using the systems correctly	• Encourage the residents to participate in the monitoring & evaluation of the project as per the initial buy-in stage discussions.	Post works resident contact plan • Key messages • Roles and responsibilities • Monitoring and verification plan	Retrofit Coordinator Retrofit Advisor Resident Liaison Officer	