

LONDON BOROUGH OF HAMMERSMITH & FULHAM

Report to: Housing and Homelessness PAC

Date: 14/11/2023

Subject: Greening of the housing stock

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SUMMARY

Hammersmith and Fulham's council housing accounts for 83% of the organisation's operational emissions and 8% of total borough emissions. It is essential to reduce this by driving energy efficiency, decarbonising people's homes, and building energy efficient homes. Whilst reducing emissions is vital, H&F residents are also facing other challenges, such as fuel poverty and hotter more frequent heat waves. Greening the housing stock is therefore important to address these areas and a 'Retrofit Strategy' is currently being developed that will outline the approach to achieve this. The aim of this paper is to explain how the strategy will influence council policy in 4 key areas:

1. Increasing the energy efficiency of H&F homes
 2. Transitioning to low carbon heat
 3. Supporting fuel poverty
 4. Adapting the council's stock
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RECOMMENDATIONS

Members are requested to comment on the report and its policy implications and provide feedback to officers.

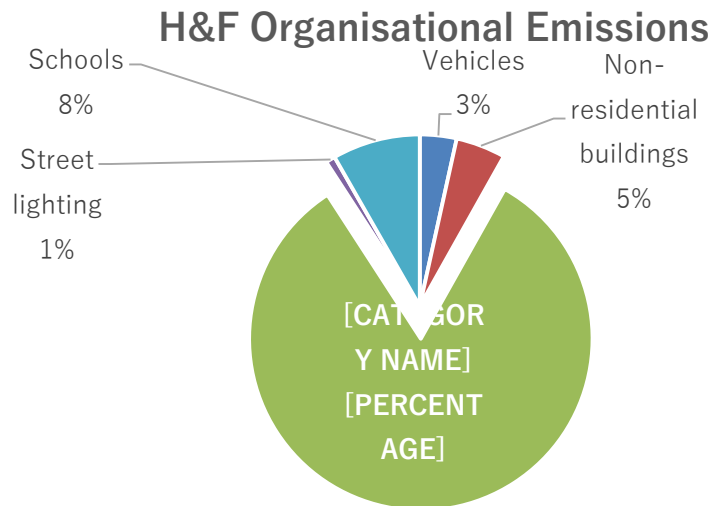
Background Papers Used in Preparing This Report

H&F Climate and Ecology Strategy - [H&F 2030 Climate and Ecology Strategy \(lbhf.gov.uk\)](#)

H&F Fuel poverty strategy - [A - HF Fuel Poverty Strategy Final.pdf \(lbhf.gov.uk\)](#)

BACKGROUND

H&F Council declared a climate and ecological emergency in 2019, pledging to reduce its carbon emissions and meet Net Zero Carbon by 2030. As shown below, the largest proportion of H&F’s organisational carbon emissions are a result of the council-owned housing stock. Thus, a key pathway to achieving net zero will be to retrofit council-owned homes to be more energy-efficient and rely on clean, low-carbon energy.



Whilst reducing carbon is essential, H&F Council and its residents are also facing an unprecedented number of challenges, from fuel poverty, to experiencing more severe impacts of climate change such as hotter and more frequent heat waves. Examples such as the Hammersmith Bridge structural issues during 2022 and the 1,500 homes that flooded in 2021 show the urgency of this situation. If no action is taken, heat-related deaths in the UK are expected to increase to 12,000 deaths per year this century, a 500% increase from current levels.

The picture is clear: H&F Council needs to act now to protect our residents and borough, and ‘retrofitting’ council-owned homes is a major part of the answer.





Retrofit

The definition of retrofit is to ‘*add (a component or accessory) to something that did not have it when manufactured.*’ Traditionally in the environmental industry this is largely focussed on decarbonisation. However, H&F buildings also need to be adapted for a changing climate and therefore retrofit should include measures to address this. Whilst these measures are largely focussed on mitigating impacts of, for example overheating and flooding, they can also support with making buildings more attractive, increase biodiversity and provide more green space for people to enjoy.

Progress so far

As the formal approach for retrofit is being developed through the strategy, progress is still being made on reducing emissions from the housing stock as shown below.

- Retrofit is built into the councils Capital works improvement programme with opportunities to increase the energy efficiency considered on a project-by-project basis.
- An innovative deep retrofit project, EnergieSprong is currently onsite at the West Kensington Estate.
- Proposals to install a full air source heat pump (ASHP) system at a housing block is being put forward.
- Success with multiple grants, including over £5million from the Social Housing Decarbonisation Fund and over £200,000 from the London Energy Accelerator.

 <p>Energy efficiency Increasing the energy efficiency of H&F buildings can reduce carbon and energy bills.</p>	 <p>Low Carbon Heat Transitioning the stock to a heating source that is low carbon is essential to fully decarbonising the stock.</p>	 <p>Fuel Poverty Fuel poverty is increasing. H&F has recently embedded a fuel poverty strategy for which retrofit is a key part.</p>	 <p>Adaptation The climate is changing, and H&Fs housing stock needs to be adapted to make it more resilient.</p>
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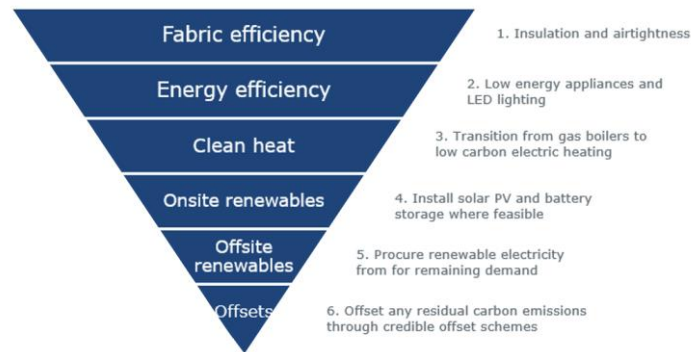
Retrofit Strategy

At the end of 2022 it was agreed that the Asset Management team would develop a 'Retrofit Strategy' that would agree the best approach to decarbonise the councils housing stock. Given the unsettled government policy and challenging financial landscape the strategy will be a live document that can be updated if necessary. The final strategy is still being developed; however, this paper will look at how it is likely to influence council policy in 4 key areas relating to H&Fs housing and tenants.

ENERGY EFFICIENCY AND LOW CARBON HEATING

Fabric first

To decarbonise a building, the most common approach is to increase the energy efficiency, before introducing low carbon heat (clean heat) and renewable energy. The energy hierarchy provides an overview on a home's journey to net zero carbon:



This is referred to as a 'Fabric First' approach and is accepted as best practice to decarbonise buildings. Upgrading the fabric increases energy efficiency and reduces demand for energy and carbon emissions. It also prepares the building for the transition to low carbon heat, and often reduces the cost of installation through reduced systems sizes and future electricity consumption.

The benefits of focussing on the fabric are:

- It reduces tenant energy bills, supports with fuel poverty, and ensures bills remain the same when low carbon heating is installed.
- It future proofs the stock against future government regulation. The current government target is for all social housing to be EPC C by 2030.
- It will allow more time for the low carbon heat market to mature and costs to come down (see below for more detail).
- It will allow more time for 'district heating' to be embedded in the borough (see below for more detail).
- It is more akin to the central government strategy and therefore more grant funding is available for fabric now.
- It reduces financial pressure on the council as most of the cost of decarbonisation is in low carbon heating.
- It ensures that new heating systems are sized for the post retrofit heat demand, which usually enables smaller and cheaper systems to be purchased.

Given this the approach of fabric first is likely to be proposed as part of the retrofit strategy.

Low carbon heating

Whilst low carbon heating is a critical part of decarbonising H&Fs homes, transitioning the stock in the short term would provide 4 key challenges.

1. **Current stock** – over 70% of H&Fs boilers are not due to come to end of life until 2028. In most circumstances boilers will also continue to work beyond

this timeline. Starting the transition to low carbon heat now would mean removing these boilers. Not only would this mean H&F would lose the value of removing the boiler before it has fully depreciated, but there would also be an 'embodied carbon' cost.

2. **Capital cost** – 75% of the cost of decarbonising the stock comes when changing the heating source. Currently the preferred technology is 'heat pumps' as they are the most efficient energy solution (if a building is well insulated); however, they are currently three times more expensive than gas boilers as well as being about two times more expensive to maintain.
3. **Technology and energy bills** – in many cases electrifying heat will result in increased energy bills if not considered alongside the buildings energy efficiency. Air source and ground source heat pumps whilst very efficient can still lead to an increase in bills unless the building is insulated. Solutions such as electric boilers can result in bills that double if not triple in cost. This could increase the amount of people in fuel poverty as well as increasing the financial pressure on those already in it. Given this upgrading the heating should never be done without ensuring the building is as well insulated first. District heating, where heat is shared across buildings through underground pipework, is a potential solution and likely cheaper than individual heat pumps across large parts of H&F. However, implementing these can only be done in the medium term due to the complexity and required planning. See 'Clean heat masterplan' for more details on this.
4. **Grid capacity** – the grid is currently experiencing capacity issues due to high demand. Issues are already materialising in the outer West London area where larger developments along the A40 corridor are struggling to secure connections. As a result, only efficient solutions such as ASHP or ground source heat pumps can currently be considered. 'District heat networks' are an option for the medium term.

Clean heat masterplan

Whilst focussing on energy efficiency is the proposed first step, continuing to look at ways to decarbonise heat should also be considered. A good example of this is the 'Clean heat masterplan' which is looking at the viability of 'district heat networks' in H&F.

Heat networks, also known as district heating, supply heat from one or more central sources to consumers through a network of underground pipes, usually carrying water, which deliver space heating and hot water to individual buildings. This avoids the need for individual heating systems installed in every building. The central heat source can be one of many technologies. Common low carbon examples are very large heat pumps, geothermal sources, or waste heat from data centres. Heat networks present a cost-effective way to reduce carbon emissions from space and water heating in many urban areas, and modelling undertaken by the Centre for Sustainable Energy for H&F in 2023 shows that heat networks are likely cheaper (based on whole life cost) than individual heat pumps across the vast majority of H&F, including almost all of the HRA housing estates.

However, heat networks require greater upfront capital investment and take many years to develop, usually requiring detailed feasibility studies, detailed project development (DPD) and complex procurement exercises to fully establish. It is likely that smaller heat networks would be developed initially, and then these would expand and interconnect over time, following the model of countries like Denmark which now heat most large urban buildings using heat networks.

RETROFIT AND FUEL POVERTY

Decarbonising H&F's housing stock by focussing on a fabric first approach will also support with Fuel Poverty and align closely with H&F's Fuel Poverty strategy. This has been developed by the Climate Team, in collaboration with the Public Health team, and focuses on support provided to residents who are struggling with energy bills and/or living in a cold home. There are two key avenues to addressing fuel poverty:

- **Maximising household income** – this includes ensuring residents are accessing all benefits and financial support they are eligible for, as well as supporting people into work where this is possible.
- **Improving energy efficiency** – this means retrofitting housing to ensure that residential buildings are efficient, reducing energy demand and thus both reducing bills for residents and reducing energy waste and carbon emissions related to heating and powering a home.

The Fuel Poverty strategy looks at a range of interventions to support residents in accessing energy efficiency improvements, particularly for residents living in private rented or owner-occupied properties. This works hand in hand with the Retrofit Strategy which looks at equivalent energy efficiency pathways for our Council-owned stock. In England, 17.3% of households living in social housing were fuel poor, compared to 13.4% across all tenures, so retrofitting council housing and reducing energy usage is critical to addressing fuel poverty, with strong alignment to H&F's Fuel Poverty strategy. It should be noted that when the transition to low carbon heating begins it will be vital to ensure that there is no risk of increasing the amount of people in fuel poverty if electricity prices remain as high as they are.

ADAPTATION

Globally and locally, we are beginning to feel the impacts of climate change. More intense rainfall events are occurring in the UK, increasing the risk of flooding. Summer temperatures are also rising, in which London has already seen a mean summer temperature increase of 1.9C since 1960. Heatwave events will also become more common, increasing risk to residents in terms of overheating and drought. Locally, in H&F, we've seen these impacts through instances such as the Hammersmith Bridge structural issues during heatwave days and the 1,500 homes that flooded in 2021. Most of H&F is considered to face some level of surface flooding risk.

Urban areas such as London experience an especially high risk to the effects of climate change due to various factors such as the Urban Heat Island effect, increased soil impermeability and lower levels of biodiversity and ecosystem

services. Additionally, urban areas face challenges such as air pollution, water and energy provision, food security, and habitat fragmentation. This greatly increases residents' risk to heat-related illnesses and deaths, disproportionately impacting vulnerable residents.

The retrofit industry has mainly focussed on decarbonisation in the past and only in recent times is adaptation beginning to be focussed on in more detail. It is however clear about ensuring our residents and buildings will be able to withstand the effects of climate change. To combat this within our housing stock there are several solutions, such as:

- green (biodiversity, flood resistance and cooling), blue (flood resistance), and white roofs (cooling)
- external shutters
- solar shading (shading built into new glazing of new windows)
- water butts

The housing sector has not yet defined performance metrics to strategically manage flooding and overheating risk in homes. There is also limited data to baseline and measure performance. As part of the Retrofit Strategy the first step is to ensure adaptation measures are considered on a case-by-case basis within our capital improvement programme. Alongside this establishing better data and metrics and having an agreed approach will then form key actions in the strategies action plan.

New developments and adaptation

A good example of where adaptation principles are being applied can be seen in the council's development programme.

The direct delivery programme is on track to deliver 1,134 new homes across 17 sites, with a minimum of 65% of the homes being affordable. In addition, the development programme will renew key community facilities including community/tenants' halls, schools, nurseries, and civic spaces. The first two projects, Springvale completed in May 2022, and delivered 10 social rent homes, while the first phase of Ed City is due to see the completion of the first 24 genuinely affordable homes within the next month. This will be followed by the Youth Zone, new Ark school and office building shortly thereafter.

The next three projects in the direct delivery programme are Hartopp and Lannoy, where our appointed contractors are on-site having concluded planning pre-commencement conditions, while the Lillie Road and Farm Lane projects have been given planning permission and we are currently procuring construction partners for each scheme.

Like Hartopp and Lannoy, both Farm Lane and Lillie Road sites are designed to a Passivhaus standard, which will deliver significant reduction in on-site carbon, and result in significant savings to energy bills. However, alongside this the buildings are also designed to prepare for a changing climate. With increasing temperatures, it is

important to mitigate the risk of overheating. External elements like balconies provide shading to the flats below, whilst a lower level of glazing will be installed to reduce the amount of solar gain. Due to the high levels of insulation, mechanical ventilation will be used to keep the air fresh. This system incorporates a 'summer bypass' where cooler air from the outside is allowed to pass into the building on hotter days.

When considering water, the schemes will incorporate monitoring and control measures, with mains water meter for the entire building and sub-meters per home. The sustainable urban drainage (SUD) strategy will include an underground attenuation tank which will accommodate 1 in 100 year rainfall event, plus a 40% allowance for climate change. In addition, there will also be permeable paving to provide surface water treatment and significantly improve existing runoff rate. At Farm Lane, a 'blue roof' will be created on the main building, which will also assist with the interception and retention of precipitation, thus, helping reduce the flow rate and volume of surface water runoff.

These are but a few of the measures that are being incorporated into H&F's new developments. Whilst we cannot expect to retrofit the councils' older buildings to this level, many of the solutions are possible and will continue to be investigated as the retrofit strategy is delivered.

LIST OF APPENDICES

None