

HOMES & COMMUNITIES COMMITTEE

14 MARCH 2022

DECARBONISATION OF SOCIAL HOUSING STOCK – BRIEFING

1.0 Purpose of Report

- 1.1 This report outlines some of the key issues facing NSDC in retrofitting the councils social homes to meet Net Zero by 2050.
- 1.2 It identifies some fundamental key questions that need to be answered to shape the objectives, timeline and deliverable of the decarbonisation strategy going forward.

2.0 Background Information

- 2.1 The overall aim of the UK government's Clean Growth Strategy is for homes to hit zero carbon emissions (net) by 2050 a considerable undertaking. However, the government is also pushing for all social housing to achieve C-rated Energy Performance Certificates by 2035.

It is likely that when the new Decent Homes standards is finally agreed and published it will include some zero carbon elements.

- 2.2 In August 2020, the Carbon Trust calculate carbon emission for the Council at 20,484 tCO₂e of which 17,130 tCO₂e is social housing. Of this 67% is associated with gas consumption. It estimated that an eye watering £55m would be required to retrofit the councils housing stock.

NSDC has committed by 2035 for its operations to be carbon neutral and whilst housing is not quantified in the Council's carbon reduction target, Newark and Sherwood District Council will explore options for reducing carbon emissions from existing council housing that also provide benefits to tenants.

- 2.3 Currently, NSDC carbon reduction action plan focuses on a series of projects from 2025 to 2040 that relies heavily ground/air source heat pumps that require significant investment to adequately work for retrofit properties. Additionally, ground source in practise may not be feasible in most areas due to the land space required. Further feasibility studies would need to be completed to check assumptions made in practise and obtain more in-depth costs for individual recommendations.

The investment identified has not been allocated in the HRA Business Plan and does not follow the criteria or timelines for recent government grant funding.

- 2.4 Any heating source must contribute to a reduction in fuel costs. This is not only essential for reducing fuel poverty (average energy bill reduction needed to move household out of fuel poverty = £335 (BRE)) but also necessary if we are to win support and engagement for these changes from our tenants.

2.5 We currently have 89 properties fitted with air source heat pumps and have experienced significant number of break downs, difficulty of tenants using them, and elderly residents feeling cold still (wanting temperatures above 21 degrees ceiling the systems operate on).

2.6 Stock Profile:

EPC/SAP Data for Properties

	No.	%
A	3	0.05%
B	3	0.05%
C	4011	68.03%
D	1669	28.31%
E	8	0.14%
Un-surveyed	202	3.43%

TOTAL **5896** 100.00%

The good news, 69% of our stock is already EPC C or above, but that still leaves 1,879 properties that aren't. Also, EPC C or above does not equate to carbon neutral.

Heating Types:

Type	Number	Note
Gas	5234	
Solid Fuel	23	
Oil	205	
LPG	3	
Heat Pumps	89	New build & retrofit
Electric	18	Will these meet future requirements?

Other factors:

Ground floor flats – require under floor insulation?

Number of properties require internal/external wall insulation?

3.0 Elements for Net Zero in Housing

3.1 The four key elements of net zero buildings are:

1. Energy efficiency (insulation, draught proofing air tightness, ventilation) 2. Low carbon heating (heat pumps) 3. Renewable energy generation (solar)	Net zero carbon in operation
4. Embodied carbon	Carbon emitted as a consequence of material extraction, manufacture, transport and installation of products

The focus for housing will be on the first 3 elements, but also mindful of the 4th element in the table above.

3.2 What are our strategic aims:

- Improve the energy efficiency of our homes
- Reduce fuel poverty amongst our tenant population
- Reduce carbon emissions arising from our activities
- Improve business efficiency and reduce waste
- Purchase responsibly
- Anything Else?

What if they are competing? I.e. energy efficiency vs cost of heating for tenant? Which takes priority?

3.3 Fuel Poverty – what is in it for our areas/tenants? Previous information collected some years ago is likely to be out of date and is incomplete.

Driven by a number of factors:

1. Type of heating – predominately gas, which is still the least expensive
2. Heating costs – electricity costs still much higher than gas
3. Water heating costs
4. Lighting, cooking and other running costs
5. Low incomes – inflation and cuts in benefits
6. Inefficient construction of homes

We can only control items 1. & 6. Above.

3.4 Current sources of funding:

- Green Homes Grant Local Authority Delivery (LAD) – both social housing and private sector. Emphasis on properties fabric and low carbon heating and EPC E and below and NSDC have very few of these. Social housing cases contribution of 33% and limit on costs (£5,000 for EPC's rated D). Very limited on social housing applications.
- The Home Upgrade Grant - upgrading the most energy inefficient off gas grid homes in England with low carbon heating and energy efficiency measures. Contribution of 33% of costs from landlords. Cost sealing dependant on current EPC rating and very limited on social housing applications.
- Social Housing Decarbonisation Fund – retrofit solutions to stock to bring to EPC C or above, bidding process and emphasis on EPC E and below, but can do some D's. Cost ceilings implied and 33% contribution required. Must look at fabric first.
- Energy Company Obligation - energy efficiency for low income and vulnerable households up to March 2026.
- HRA Business Plan – which doesn't yet account for major decarbonisation spending.

Apart for the Energy Company Obligations scheme, the rest of the government schemes only have committed funding year on year with very tight timescale for completions. Local authorities and registered providers are seeking longer term funding from the government.

Whilst chasing government grants is not a strategy to recommend, it would be prudent to take advantage of those that fit into or can contribute to delivery of the strategy.

3.5 To assist in the discussion and scoping of the strategy a list of key questions for consideration has been compiled below:

- ❖ Is it economically viable for investing in all our stock if spending £40-£50k to retrofit? Maybe a % is sold, but what would the criteria be?
- ❖ Could rents be a mechanism to pay for this work – a policy that is known as ‘warm rents’? Homes that are retrofitted would be much cheaper to run. But increasing rents could exacerbate poverty and be unpopular with tenants.
- ❖ Increases in cost of living for most people, not matched by income rises and is the new decarbonised heating system affordable for tenants in the long run?
- ❖ Voids- opportunity to retrofit at this stage, but will lead to longer void times for major works category and increased loss rent.
- ❖ Funding sources – problem government sources are currently limiting numbers with EPC’s below D and funding annually with tight deliverable timescales. Resources to cope with the work need to apply for grants is currently limited.
- ❖ Immaturity of the market place and supply chain issues (air-source heat pumps, lack of suitable installers), lack of alternatives (hydrogen heating not currently viable), cost of electrical heating systems etc.
- ❖ Key elements to consider in the design:
 - Fabric efficiency & airtightness – difficult to achieve airtightness on retrofits and controversy on PAS 2035 and DPCs.
 - Low carbon heating source – current lack of options
 - Renewable energy generation (i.e. solar PVs) – will this be sufficient to reduce electrical costs?
- ❖ Need for PAS 2035 qualified energy/retrofit consultant to steer design, carryout modelling. Also requirement for sign-off for government (BEIS) funding. Such skills are in short supply at present. Do we resource and train our own in-house?
- ❖ Fabric 1st and if yes what approach? Whole House Approach or Phased Improvements – ad hoc or as part of whole house plan? If we want to access grant funding, total costs are severely limited for whole house approach.
- ❖ Control moisture – no insulation without ventilation, which increases costs further as mechanical ventilation needs to be fitted. Is this cost effective if total

costs for new zero carbon systems are 3-4 times more expensive than fitting gas?

- ❖ Properties in Conservation Areas – include now or at end; as these are more costly and complicated?
- ❖ Difficult to achieve airtightness in retrofit for new heating system without stripping back to the basic structure (can't do that with tenant in the home). This goes back to the void question again.

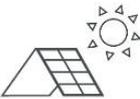
3.6 For each home we need to consider:

- ❖ What heating system to use?
Replacing gas, oil or coal heating systems with air source heat pumps (difficult to get right in retrofit), electrical wet systems (expensive to run) or wait for more alternatives likely to come later?
- ❖ Triple glazed windows – big cost with small payback if double glazed already.
- ❖ Upgrading the existing external/internal fabric of the existing building (including both insulation and airtightness). Can include wall, floor and roof insulation, reducing thermal bridging, improved insulated external doors.
- ❖ Installing Mechanical Ventilation with Heat Recovery (MVHR)
- ❖ Installing solar PV panels with battery to generate electricity and reduce costs where feasible
- ❖ Reduction in energy use overall as increase capacity in the electrical grid is minimal in many areas.
- ❖ What grant funding is available and what are the criteria and cost ceilings associated with it?
- ❖ HRA capacity to fund works?
- ❖ Timeline – when, tackle worst first or by area?

4.0 Performance

4.1 Best practice KPIs for retrofit housing are listed in the table below and all KPIs must be met for a home to be Net Zero carbon.

KPI's Retrofit housing

 Ultralow energy homes	Space heating demand 65 kWh/m²/yr
 Energy use and efficient heating	Energy Use Intensity 60 kWh/m²/yr
 Renewable energy	Electricity generation intensity 120 kWh/m²_f/yr



PAS 2035
Retrofit guidance



TM59
Overheating modelling
for compliance



AECB
Good practice
water standard



KPIs in use
Collect data for
the first 5 years

PAS 2035 guidance should be followed on publicly funded retrofit projects.

***[Republished from the Net Zero Carbon Toolkit Levitt Bernstein, Elementa, Passivhaus Trust and Etude commissioned by West Oxfordshire , Cotswold and Forest of Dean District Councils, funded by the LGA Housing Advisers Programme**

5.0 **Financial Implications**

5.1 Estimated cost to bring the council’s housing stock to zero carbon is estimated at **£55m**.

5.2 **Indicative Costs of Retrofit Per Property (Republished from the Net Zero Carbon Toolkit July 2021)**

Measure	Shallow	Deep
Fit 100% low energy lighting	£20	£20
Increase hot water tank insulation by 50mm	£50	£50
Loft Insulation -add 400mm	£500	£500
Fit new time and temperature control on heating system	£150	£150
Improved draught proofing	£150	
100% draught proofing -improve airtightness		£2,000
Cavity Wall Insulation -50mm	£600	£600
Floor Insulation -between & below suspended timber		£1,500
Insulate all heating and hot water pipework		£500
Fit Mechanical Ventilation and Heat Recovery (MVHR)		£7,000
Main Heating -High Efficiency Condensing Gas Boiler	£3,800	
Main Heating -Air Source Heat Pump and new HW tank		£9,000
Half Glazed Doors -Double Glazed (16mm argon)	£1,500	
Half Glazed Doors -Triple Glazed, High Performance		£2,000
External Wall Insulation -160mm Expanded Polystyrene		£11,000
Double Glazing (16mm Argon Filled, Low E)	£7,000	
Triple Glazing (16mm Argon Filled, Low E)		£8,400
Photovoltaic Panels, 3kWp array, (21m2area)		£6,500
Miscellaneous and enabling works	£1,000	£5,000
TOTALS	£14,770	£54,220

5.3 There are a range of resources required to successfully implement any decarbonisation projects, especially those reliant on government funding.

Resource for tenant engagement to reduce the number of refusals, withdrawals mid-projects and ensure any new technologies installed are understood and operable from the tenant’s perspective. This requires tenant liaison before, during and after works are completed.

All government funding projects are required to meet PAS 2035 standards. There are five new roles that are fundamental to this standard: retrofit advisor, retrofit assessor, retrofit coordinator, retrofit designer and retrofit evaluator. These roles can be encompassed in one trained individual, but currently no one within the Council has the necessary skills or ability to take on these extra duties. There are very few people in the market place at present who are qualified. This means we will either need to co-ordinate with other local authorities to share a resources or fund a new post or provide the appropriate training.

New partnerships with qualified installers will also be needed to carry out any programmes and there are not enough to meet current demand.

6.0 Digital Implications

6.1 There are no digital implications arising from this report.

7.0 Equalities Implications

7.1 There are no equalities implications arising from this report.

8.0 Recommendation(s)

- a. Members to consider and note the Decarbonisation Briefing

Background Papers

None

For further information, please contact Caroline Wagstaff on Ext 55xx

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