Report to Policy Committee

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Report of:	Janet Sharpe, Director of Housing & Neighbourhood Services
Report to:	Housing Policy Committee
Date of Decision:	2023
Subject:	Council homes - carbon net zero roadmap

Has an Equality Impact Assessment (EIA) been undertaken?	Yes	x	No	
If YES, what EIA reference number has it been given? 1442				
Has appropriate consultation taken place?	Yes		No	
Has a Climate Impact Assessment (CIA) been undertaken?	Yes	x	No	
Does the report contain confidential or exempt information?	Yes		No	x

If YES, give details as to whether the exemption applies to the full report / part of the report and/or appendices and complete below:-

"The appendix is not for publication because it contains exempt information under Paragraph 3 of Schedule 12A of the Local Government Act 1972 (as amended)."

Purpose of Report:

Brief members on the commission to RLB (Rider Levett Bucknall) to develop a roadmap to carbon net zero for the Council's housing stock.

This project directly supports Sheffield's strategies and ambitions centred on net zero carbon, tackling fuel poverty and providing affordable warmth.

Recommendations:

The Housing Policy Committee is recommend to:

- Note the aspiration to integrate heat pump delivery into future housing stock activity, and the outline plans described in this report.
- Note the funding shortfall and propose any alternative options for officer examination to meet that shortfall.
- Note the ongoing retrofit retrofit delivery and build-capacity activity.

Background Papers:
(Insert details of any background papers used in the compilation of the report.)

<table>
<tr><th colspan="4">Lead Officer to complete:-</th></tr>
<tr><td rowspan="4">1</td><td rowspan="4">I have consulted the relevant departments in respect of any relevant implications indicated on the Statutory and Council Policy Checklist, and comments have been incorporated / additional forms completed / EIA completed, where required.</td><td colspan="2">Finance: Helen Damon</td></tr>
<tr><td colspan="2">Legal: Meurig Tiley</td></tr>
<tr><td colspan="2">Equalities & Consultation: Ed Sexton</td></tr>
<tr><td colspan="2">Climate: Kathryn Warrington</td></tr>
<tr><td></td><td colspan="3">Legal, financial/commercial and equalities implications must be included within the report and the name of the officer consulted must be included above.</td></tr>
<tr><td>2</td><td>SLB member who approved submission:</td><td colspan="2">Ajman Ali</td></tr>
<tr><td>3</td><td>Committee Chair consulted:</td><td colspan="2">Cllr Douglas Johnson</td></tr>
<tr><td rowspan="3">4</td><td colspan="3">I confirm that all necessary approval has been obtained in respect of the implications indicated on the Statutory and Council Policy Checklist and that the report has been approved for submission to the Committee by the SLB member indicated at 2. In addition, any additional forms have been completed and signed off as required at 1.</td></tr>
<tr><td colspan="2">Lead Officer Name:
Nathan Robinson</td><td>Job Title:
Housing Decarbonisation Manager</td></tr>
<tr><td colspan="3">Date: 17th January 2024</td></tr>
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1. Background

1.1 The climate emergency is one of the biggest challenges we will face as a city, region, country, and global community. In response, Sheffield City Council declared a climate emergency in 2019 and the following year, set an ambitious target to be a net zero city by 2030. It is acknowledged that achieving that ambition is going to be extremely challenging, but publication of the Annual Climate Progress Report in December 2023 highlighted the scale of the challenge in the public domain.

1.2 The report showed that while action is being taken and progress is being made in some areas or work, we have not reduced emissions at the pace and scale required to meet our 2030 target. It is clear that to achieve our ambition to be a net zero city by 2030, urgent action is needed at a scale not seen before, and maintaining an ambitious target is important in funding discussions and to enable robust policy frameworks to be developed.

1.3 Sheffield is not unusual amongst local authorities in the position in which we find ourselves. The 'Committee on Climate Change' reported in summer 2023 that the lack of investment and consistent policy supporting the UK's legally binding target of achieving net zero by 2050 means that UK is at risk of missing its 2050 target, and the announcement from Government in September 2023 to delay key climate change related legislation exacerbates this. We face a period of uncertainty around the policy levers that will be available in the coming years to support us to deliver our climate action at pace and at scale. Further to this, significant additional resources from central government will be required to help us to meet our ambitions and realise the opportunities that climate action brings.

1.4 We remain committed to tackling challenges that can be addressed by this council, using the opportunities and levers that are available to us. By working together with Sheffield's communities, businesses, institutions, and partner organisations to reduce our carbon emissions and adapt to our changing climate, we can minimise the impact of change, realise the widespread benefits of investing in homes and new technologies, and address issues around social justice.

1.5 Further to this, significant additional resources from central government will be required to help us to meet our ambitions and realise the opportunities that climate action brings. We will continue to work with government and the Mayoral Combined Authority to influence this.

1.6 In 2020 the council commissioned ARUP and Ricardo to develop a set of reports (sometimes referred to as the 'Pathways' or 'ARUP' reports), which outlines the city and councils carbon baselines, and the nature and scale of activity required to decarbonise the city and local authority.

1.7 Housing's contribution to the report was based on a desk top analysis of available data across all tenures, providing a spatial indication across the city.

1.8 Sheffield's net zero target is defined as a 95% reduction in greenhouse gas emission, or carbon dioxide equivalent (CO_2e) against the baseline emissions in 2017 for the city, and 2019 for the council, including social housing.

1.9 The Pathways report indicated that city emissions might potentially be reduced 80% against 2017 baseline, by implementation of their recommended measures and timescales, with the remaining 15% to be achieved by decarbonisation of the grid. It also indicated that council emissions might potentially be reduced by 80% against the 2019 baseline by 2030, with the remaining 15% offset through Land Use, Land Use Change and Forestry (LULUCF) measures.

1.10 The reports identified a series of high-level measures that the council should undertake to decarbonise social housing, and were categorised as follows:

- Improve the fabric of homes and reduce energy consumption
- Remove fossil fuels
- Generate renewable electricity

1.11 These measures did not come as a surprise; however, the report did not provide sufficient, detailed asset level information to realistically support the business planning process, or effectively communicate to customers what this means for them.

1.12 As part of the Housing Revenue Account (HRA) 2021/22 business plan report the Council resolved "(j) this Council is pleased to note the HRA Business Plan finally recognises the impact that housing can have in addressing the climate change emergency and that the Council will, this year, set a priority to develop plans to address climate change and contribute to achieving zero carbon emissions.

1.13 The 10 Point Plan for Climate Action, agreed by the Cooperative Executive in March 2022, further committed the Council to developing 'routemaps' to decarbonisation across seven areas (Our Council, The Way We Travel; Our Homes; Energy generation and storage; Our Land; Our Business and Economy and What We Buy, Eat and Throw Away).

1.14 Social housing organisations nationally are producing detailed 'roadmaps' enabling them to cost and plan for how they will reduce emissions in the housing stock they own. With limited funds it is important that the correct decisions are taken.

1.15 In 2022 the Council appointed consultants Rider Levett Bucknall (RLB) to lead on the development of a carbon net zero roadmap that effectively represents a decarbonisation strategy for works to the existing social housing stock.

1.16 In July 2023, the council published its first decarbonisation routemaps, The way we travel and Our Council, which included our social housing estate, to:

- Align strategy and policy
- Define vision and objectives
- bring together the actions and activities to be carried out by the Council 2023-

25)
- introduced actions that key partners wish to commit to part of their contribution to our transition to a net zero city.

2. Current Energy Performance of Council Homes

2.1 There are presently 38,476 Council Homes (this figure fluctuates based on Right To Buy sales, acquisitions and new-build).

2.2 Across the whole housing stock, the breakdown of EPC (Energy Performance Certificate) ratings are as follows:

EPC Band	No. of Council Homes
A	228
B	802
C	30,472
D	6,718
E	117
F	44
G	7
Unavailable	88
Total	**38,476**

2.3 In summary, 31,502 homes (82%) are within EPC bands A-C, and 6,974 (18%) homes are within the D-G band. Notably, less than 1% of the D-Gs fall within the E-G rating. 88 homes currently do not have and EPC rating which are being addressed through the stock condition and surveying programme.

2.4 Through its Clean Growth Strategy, the UK government has set a target for social housing providers to attain the minimum EPC rating of C for rented properties by 2035 (2030 for 'fuel poor' households).

2.5 Whilst EPC ratings are a widely adopted measure, they are limited and not on its own an indicator of a property's pathway to net zero carbon. An EPC A rated home does not necessarily mean it achieves the net zero standard; however, it will have many core attributes. In fact, EPCs do not measure energy efficiency. They encompass a fuel cost rating and an environmental impact rating.

2.6 Space heating demand (measured in KWh/m2/year) is a commonly used metric for thermal performance. It describes the amount of energy required to heat the inside of a building to maintain the rooms at a desired temperature (often assumed 21 degrees Celsius). The Climate Change Committee recommends a space heating demand target of 20-30 KWh/m2/year (with clean energy) to achieve net zero. In broad terms, and EPC C rated property is likely to be around 90 KWh/m2/year.

2.7 The Council's Housing Revenue Account (HRA) Business Plan commits to all its homes reaching EPC C by 2030.

2.8 It is projected that the cost of bringing all remaining homes up to a minimum EPC C rating is approximately £80m.

2.9 It is also important to establish that there are currently 2,800 Leasehold properties (former Council, Right To Buy flats and maisonettes) located across the city. Council and Leasehold homes occupy the same buildings. It is essential to consider the impact and implications for this key stakeholder group of retrofit works and the journey to net zero.

3. Developing a Roadmap to Net Zero for the Council's Housing – Methodology

3.1 The scope of RLB's commission was:

Phase One:

- Desktop data analysis of the housing stock
- Building fabric and services surveys
- Cost analysis
- Carbon and energy calculations

Phase Two:

- Implementation Strategy
- Recommendations and next steps

3.2 RLB analysed a large volume of data from the Council's asset database that it used to profile the housing stock. Properties were categorised in to 11 primary archetype groups considering age and construction with specific reference to net zero interventions.

3.3 A targeted surveying programme was enacted to validate and supplement the datasets. It was determined that the base data held a good degree of accuracy, with only minor discrepancies considered to be a result of cloned information.

3.4 The building interventions toward the achievement of carbon net zero were classified in to four areas:

- ***Improving Building Fabric*** - retain the energy consumed within the envelope of each building by increasing the insulation of walls, floors, fenestration, and roofs. Draught-proofing and airtightness form a significant part of these actions.
- **Upgrading the heating Services** - the installation of electrically powered air source heat-pumps and heating ventilation energy recovery units (HVRUs) will reduce reliance on fossil fuel-based energy. The existence, and potential extension, of a local district heating network/s could form a part of this move away from fossil-based space heating.
- ***Improving Energy Efficiency*** - other energy consuming appliances, fixtures, and fittings within properties can be replaced for more efficient options – the most obvious being the replacement of incandescent light bulbs for LEDs.
- ***Micro-generation*** – Primarily, solar PV (Photo Voltaic) panels to produce electricity, thereby reducing demands on the grid and contributing toward grid decarbonisation, particularly in peak usage periods.

3.5 RLB have produced a series of cost estimates to carry out works across the

property portfolio. This is based upon typical specifications for the interventions including published cost data and initial engagement with suppliers and contractors.

3.6 Phase one of the commission is now complete and we are now into phase two, SCC and RLB jointly working on a plan to develop an implementation strategy. The plan will identify the key stakeholder groups and how they will be consulted to help inform and inform the approach.

4. Cost of Achieving Net Zero Carbon across Council Homes

4.1 The baseline assumes all homes are at an EPC C rating.

4.2 Completion of the proposed interventions to the 38,476 Council homes has an estimated net-works cost of £1.2bn and a total project cost of £1.961bn based on current day pricing.

4.3 A programme of this scale is assumed will be delivered over a significant number of years, thus an allowance for inflation needs to be included. We have modelled an inflation assumption 12% for 5 years resulting in an additional £265m and a total project cost of approximately £2.203bn (£2.468bn adjusted for inflation). This represents an average of approx. £57k per property (or £64k adjusted for inflation).

4.4 Discussions with other Local Authorities that have undertaken a similar assessment broadly place their costs in line with ours (noting for differences in archetype profiles, age and condition).

4.5 In regard of Solar PV (Photo Voltaic) there are a series of different funding models to explore away from the Council's own, direct capital expenditure. The range of different business models can include third-party ownership (TPO), community solar, leasing, and power purchase agreement (PPA). Solar PV could represent circa £182m to 319m (depending on whether solar batteries are in scope) of additional net zero investment through the installation and ownership of the equipment. This would be lessened by the pursuit of other funded models (and any potential grant contribution). Solar PV has a strong ROI, returning in as little as 6 years, and will complement the electrification of heat helping further ensure no net increase in total energy bills for those that switch heating systems.

5. Grant/ Funding Support

5.1 The government launched its Social Housing Decarbonisation Fund (SHDF) in 2021. First promised in the Conservative Party's 2019 election manifesto, the SHDF is set to be worth £3.8bn over 10 years. The funding specifically targets registered providers of social housing and registered charities that own social housing. It is aimed at improving the energy performance of homes that fall below an EPC C rating and is not designed to achieve net zero standards.

5.2 So far, the govt has committed around £980m of SHDF through which Sheffield Council has secured £4m in support of its existing investment programmes, getting

homes to an EPC C rating.

5.3 Based on this trajectory (and an assumption of future successful bids) it is reasonable forecast the SHDF contribution toward the Council's net zero ambitions up to 2030 would be around £15-20m.

5.4 Various industry analysts and experts, including Inside Housing and Savills reported that the total cost of getting all social housing to net zero exceeds £100bn. Indeed, recent construction inflation and overall inflation over a period will escalate this figure substantially. Hence, SHDF may represent less than 1-2% of the total funding needed.

5.5 The Energy Company Obligation (ECO) which launched in 2013 is now in its fourth iteration and commits £1b per year across four years, 2022-26. There is provision within this scheme for social housing, however it is limited and focussed more on EPC E-G homes of which the Council has 168 homes.

5.6 The Council is working with its administrative partner for ECO4 Flex to identify how many of its homes and what measures could be funded via this scheme?

5.7 There is no visibility of the funding landscape post 2030, and indeed a change of government may also impact the level of funding commitment over the coming years. However, it is clear there is a major shortfall.

6. Council Housing Capital Investment Programme

6.1 The following table provides extracts from the current capital investment programme across the next five years in reference to net zero:

Area of Work	**£**
Achieving EPC C	80m
EWI to 370 non-trad homes	24m (with 4m SHDF2 contribution)
Net zero	10.7m
Total value of the 5yr prog (includes all investment works)	275m

6.2 Within the existing five-year investment plan (2023-2028) there are identified projects that will contribute toward net zero. In particular, the re-roofing programme will deliver new loft insulation, and the Gleadless Valley Masterplan will provide a range of thermal upgrades to homes across the estate.

6.3 To give context, based on the net zero programme commencing at the beginning of 2024, to meet the 2030 ambition would require an approx. additional £367m (£411m with inflation) per year across the next six years.

6.4 It will require on average 18 properties are completed every day to get all homes to the net zero standard by 2030.

6.5 Together with the funding challenge, it is likely the supply chain would be incapable of delivering such volumes at the required pace. The Govt is utilising its grant funded schemes to help stimulate the industry, developing expertise and building capacity. There have been significant shortages in both materials and labour which still exists, which has had the further effects of pushing up the costs of these works at a high rate.

7. A Brief Analysis of Potential Funding Options

7.1 **The UK Infrastructure Bank and UK Municipal Bonds Agency** was launched in 2021 backed and owned by HM Treasury with an initial investment of £22 billion pounds. They will serve several functions including local authority lending specifically for areas like retrofit and nature at rates designed to be better than those of the Public Works Loan Board. They also have a local authority advisory function that may be able to help broker multi-partner initiatives. A relevant recent example is the Local Low Carbon Accelerator (LLCA) partnership which has Leeds as one its first schemes, drawing finance from Lloyds, Octopus Energy, Shell and National Grid to support a domestic retrofit scheme. The Municipal Bonds Agency "provides loans to UK local authorities to fund capital expenditure, essential projects such as schools, care homes, housing, recycling centres, energy from waste plants and infrastructure." With 56 local authorities, the UKMBA is owned by local government for local government.

7.2 **Local Climate bonds** Green finance vehicles for robust net zero projects are emerging at pace. For example, green bond frameworks like the Climate Bonds Initiatives are setting rules related to investments linked to retrofits, in this case a 30% uplift in energy efficiency, for retrofit to be investible under their scheme. However, domestic retrofit remains a difficult case due to the length of time for traditional financial ROI, despite the enormous climate and social benefits, which are difficult to monetise. However, new models of finance for retrofit are in progress, including patient capital type bond approaches, that work with long term investors like pensions to design finance vehicles that fit the retrofit ROI timeframe. Some of these efforts are being driven at local authority level by orgs like 3CI, led by the Places Catapult.

7.3 **Other emerging green finance vehicles like Carbon Insetting** There are a range of other efforts like carbon "insetting" as opposed to offsetting. With tightening rules about use of carbon offsets for carbon neutrality claims, some private companies are looking at "insetting" or ways to finance carbon reduction projects in their local area or in their own value chains. Insetting is only one example, however, organisations like the Green Finance Institute are exploring new finance models for domestic retrofit for related areas like housing associations.

7.4 **Community Municipal Investments (CMI) and crowd funding** robust carbon reduction projects like retrofit can benefit from some types of community investment models. CMI is the leading one, where net zero projects are funded by ordinary citizens with investments as low as £5. These have a small financial return over several years. West Berkshire, Islington and Warrington have recently launched CMI using a software service called Abundance. If no financial return is

available, some councils are looking at business and citizen crowdfunding for nature and net zero fundraising as well.

7.5 **Energiesprong model** Energiesprong pioneers a new retrofit model based on two components, first a lower cost package of retrofit measures, including a whole house “wrap” that takes less time but is lower cost. It also creates a new funding model where a housing provider who funds the upfront investment agrees with the owner or tenant to take all or part of the energy savings from the retrofit in an energy plan to pay back the investment over time, structured to make sure the occupant does not pay more after the retrofit for their energy bills.

7.6 **Net Zero Joint Ventures** Pioneered by Bristol and being explored by cities like Coventry, and new type of Net Zero Joint Venture model is being developed by local authorities to fund net zero and energy transformation in infrastructure. These draw on many past elements of public private partnership models, but have some new features and are an interesting development. Domestic retrofit may not fit easily into these models due to payback periods, however, this could change in the future.

7.7 **UK Govt funding** The UK Government is the main funder of housing retrofit for social and low-income housing in England. The Social Housing Decarbonisation Fund and the related Home Upgrade Grant (and formerly Sustainable Warmth and Local Authority Delivery schemes), along with the ECO4 scheme, are the main ways the government funds domestic retrofit for social housing, council housing, and low income homes. These schemes are subject to limited funding, for example the most recent round of SHDF released £800 million pounds for the whole of England, and RLB’s analysis of the yearly investment need for Sheffield’s council stock of 38,000 houses exceeds £300million per year for the next 7 years for full net zero enablement if SCC were to achieve its 2030 net zero target. Nonetheless, councils like Sheffield have utilised this funding to successfully build their capacity to delivery compliant retrofits over time, and develop local supply chains. Because of per property cost caps as low as £10,000 for some properties, these schemes are in effect only able to fund fabric measures like insulation, which heat pumps, crucial to net zero, not affordable in the vast majority of cases.

8. Options for Phasing Net Zero Works

8.1 This will be the basis of phase two of the RLB commission. However, this section sets out an initial indication of some primary options available.

8.2 In this initial assessment led by Rider Levett Bucknall, costs and phasing options for net zero delivery and full retrofit are based on:

- Up to date accurate costs, including inflation, overheads, profits and contingency.
- Based on detailed analysis of real site survey data from each home type, plus detailed analysis of the number of homes of each type that will require each intervention type.

- Cover approx. 38,476 houses and cover types from detached houses, bungalows, flats, maisonettes. The full delivery of measures includes:
  - Major and minor fabric insulation measures
  - Draught proofing
  - Heat pumps (w/ electric hot water provision)
  - Solar PV and batteries
  - Smart energy controls
  - LED lights
  - Stove/ cooker replacement with electric model

8.3

Options	**1. Full Net Zero Retrofit Delivery**	**2. "Quick Win" Phased Full Delivery**	**3. "Net Zero Focus / Heat Pump" Rationalised Delivery**	**4. "Net Zero Ready / Fabric PV only" Delivery**
1. Description	This represents the full delivery of net zero homes across the 38,000 council stock. It includes heat pumps, major and minor fabric measures, solar PV and batteries, smart controls, electric stoves and other net zero / efficiency measures.	This represents full delivery over time, but sets three 5-year phases starting with a quick win phases that focusses on high impact, low cost loft insulation and draught proofing. In phase 2, from 2028, the aim would be to focus on major fabric measures, and from 2033, phase 3 would focus on heat pump delivery.	This option focuses on net zero delivery at the lowest cost, maximising the number of heat pumps delivered. It further rationalises the measures required and makes some assumptions—including the removal of floor insulation as an option, as well as the removal of External wall insulation for flats. It also removes stoves and LED lighting from consideration. These elements could be justified given the current EPC C rating of a large part of the housing stock. Therefore, this approach focuses on	This approach takes the same rationalisation assumptions as option 3, but leaves out heat pumps and focusses only on fabric and solar PV interventions. While this is not recommended to achieve community-level net zero, fabric only is in effect the default option for most UK councils, as retrofit funding from UK is generally only sufficient to cover fabric measures like insulation.

			most needed fabric interventions and implements heat pumps on the widest number of homes at lower cost. Detached solid wall homes may have a delay to heat pump delivery in this approach given the high cost of EWI.	
2. Positives	This is a complete net zero home with maximum fabric comfort and also addressing issues like stoves or lighting that the occupant cannot afford to address.	This would bring the number of homes helped under current funding assumptions from 159 per year to over 1800 per year in the first 5 years.	This approach lowers per house cost to about £30,000 instead of £59,000, and still delivers close to maximum decarbonisation as it is solely focused on most needed fabric efficiency and removal of fossil fuels. Retention of PV also supports lower electricity costs for homeowners. Another benefit: taking extra steps to ensure heat pump installation now will increase capacity of the council to deliver this measure in the event of an increase in available funding	This approach will make homes more efficient and sets a per property cap that complies generally with UK funding per property cost caps. Major fabric interventions will reduce fuel poverty and energy use. Retention of PV in this option also provides carbon and cost benefit for tenants.
3. Negatives	Under current funding assumptions, this only delivers 164 homes per year and would take 200 years for full delivery.	Every home would need to be revisited and undergo repeated retrofit. This would have the lowest impact on net zero.	At £30,000 per home on average, under current funding assumptions there is only 313 delivery per year. While this	At £20,000 per home on average, this options still means limited delivery at current funding. It also does not achieve net

			option does enable net zero, other net zero costs will be borne by the occupant, like electric stoves.	zero, which really needs to be enabled by fossil fuel removal and electrification. Other net zero costs will be borne by the occupant, like electric stoves.
4. Approx. cost per property or suggest cap	Approx. avg. £57,000 per home (£64,000 inflation adjusted)	First phase: approx. avg. £5000 per home, eventually, £57,000 per home total, (£64,000 inflation adjusted) plus additional overheads from repeated delivery of 20%)	Avg range £30,000 - £45,000 (up to £50k inflation adjusted) Average cap per home, some will be under this for heat pump deployment	Approx. £16,000 per property cap (£18,000 with inflation)
5. # delivered per year under £9.4m funding assumption	Ca. Approx 164 per year under current funding assumptions	Up to 1880 per year in the first 5 years, slowing down dramatically due to measure costs unless funding assumptions change	Ca. 313 per year under current assumptions	Ca. 587 per year under current funding assumptions
6. Total Delivery cost (inflation Adjusted)	£2.203bn (£2.64bn inflation adjusted)	£2.203bn (£2.64bn inflation adjusted) plus 20% increased overheads	£1.72bn (£1.94bn inflation adjusted)	£625mn (£700mn inflation adjusted)

General considerations for Phased Approaches

9.

Easiest first

9.1 There may be an argument for starting with more straightforward, less complex houses. While SCC is experienced in retrofit management through previous schemes, and has proven its supply chain delivery capability, in launching a city-wide effort, one option would be to test the concepts and processes on less difficult homes in the first instance to ensure consistent delivery and a strong business case for continuation. Focussing on difficult projects first could be an option if there is a preference to focus on the highest needs and most at risk, however, this will negatively impact total number of homes delivered in the initial stages while processes are still being refined.

Ensuring maximum heat pumps for Net Zero

9.2 Ensure funding is available to achieve the most effective carbon-reduction interventions. Switching from fossil fuel to clean electric (heat pumps) heating will entail significant cost per home (in RLB's options above ranging from averages of £30k to £59k for full net zero delivery). Under current UK Government funding, per home cost caps mean heat pumps are not being deployed, and sometimes not all fabric measures are achieved, meaning further retrofit work will be needed in the future to achieve net zero or even to achieve "net zero readiness", defined as full efficiency prior to removal of fossil fuel systems.

9.3 To ensure retrofit delivers the most benefit, supports decarbonisation, and ensures that homes don't need to be revisited in the future for further works, there is a strong case for finding a way to spend more per home to ensure switches to heat pumps as far as possible. Fabric improvements and PV deployment will help ensure there is no net increase in energy cost for occupants with heat pump deployment.

9.4 While net zero still depends on factors like grid decarbonisation by 2035 at the latest, focusing on spending enough per home to enable heat pumps and the removal of fossil fuels is essential for achieving net zero and maximising benefit. Non-monetisable benefits of heat pumps and the removal of fossil fuel sources includes improved air quality, with growing evidence that gas heat and stoves can be the cause of significant health impacts.

Lowest cost measures first

9.5 On the other hand, one phasing option to consider is to focus on phases that deliver the most impact for the lowest cost across the widest number of homes, then moving onto deeper fabric and heating changes at a later stage. This is not recommended from a net zero perspective, as it would negatively impact carbon reduction timelines. However, for illustrative purposes, it can show one route to provide faster benefits for a wider number of people. For example, in option 2 noted above, up to 1800 homes per year could be supported with simple insulation like loft insulation and draught proofing measures at the current funding assumption of £9.4mn per year, as opposed to as few as 159 homes per year if the full £59k measures avg. per home are implemented at once.

Prioritising by fuel poverty status

9.6 It is possible to prioritise retrofit by neighbourhood or by fuel poverty or income status. However, a huge number of people in council housing meet fuel poverty status, and the additional admin burden of collecting energy data to determine this can slow down delivery. Fuel Poverty or income status checks may be mandatory for some funding streams, but it is up to the Council to decide how to approach prioritisation of homes, and there may be strategic or delivery reasons to support foregoing data checks of this kind which would not necessarily limit impact on fuel poverty.

Phasing by location

9.7 Sheffield is a major urban area with a strong supply chain for retrofit in comparison with other council areas across the UK. The means SCC has wide leeway to choose the best approach to prioritise by location if it chooses to—it does not need

to however batch supply chain delivery by location due to the relative strength of the local supply chain.

“Batching” retrofit measures

9.8 As mentioned, Sheffield’s stronger than usual supply chain for retrofit lowers risk, but nonetheless it is recommended to batch measures wherever possible. This means ensuring PV, loft insulation or other interventions are instructed with at least 10 homes at the same time, even if in different locations, to ensure the contractor has enough incentive to interest supply chain partners and also interest other partners if there is an issue. This is particularly important for items like PV, and more specialised interventions like sloped roof insulation, etc. Ensuring sufficient batches of the same measure also incentives supply chain partners to focus on your initiative and to take the trouble to certify to PAS 2030 and PAS 2035 domestic retrofit quality standards.

Initial Conclusions

10.

10.1 While SCC has been successful in proving ability to deliver retrofit and built capacity in recent years, it is an underestimate to state that the funding available for retrofit does not match the estimated need for the housing stock of 38,476 homes.

10.2 Most councils are receiving £10 million or less, while in RLB’s cost assessment, over £400m per year would be required for the next 6 years to bring housing in line with SCC’s net zero target.

10.3 This is crucial because of retrofit’s relation to addressing fuel poverty and community wellbeing, but also its relation to SCC’s net zero ambitions. According to SCC’s own analysis, the council housing stock is responsible for 89% of the Council’s total emissions, or 144,777tCO2.

10.4 While current funding is very much inadequate to the challenge, every action to retrofit homes likely increases capacity for the Council to deliver. Even if all the funding were needed were available tomorrow, the capacity to deliver would not be in place without a lot of preparation, development of internal capacity and supply chain skills, as well as workforce development.

10.5 One consideration to discuss is the fact that per property cost caps from current schemes like the Social Housing Decarbonisation fund mean that retrofit programmes are often inadvertently “fabric only” and don’t cover enough funding to meet all insulation needs, and almost never cover heat pumps or the removal of fossil fuel sources.

10.6 Thus, in option 3 modelled above, the focus is on major fabric measures as well as maximum heat pump delivery—which needs to start apace in order to reach net zero, as electrification of heat is one of the single most effective decarbonisation measures.

10.7 This focus on improving building insulation and fabric as well as maximising heat pumps would be beneficial in any funding scenario. Even with the current funding assumption of only £9.4m per year, which is comparable to what many other large

authorities are receiving annually from schemes like SHDF or are able to co-fund, it is recommended that the Council consider ensuring heat pumps are delivered in order for us to be able to increase our capacity and knowledge to delivery this technology, and to make effective progress, even if small in scale, towards housing stock decarbonisation.

10.8 Focus on PV as well as building fabric will help reduce costs for occupants, and maximise the benefit of the switch to electric systems away from fossil fuels. Early focus on building our capacity to switch to heat pumps will serve the Council well if the funding landscape changes, meaning we will be well placed to work at pace towards our net zero target.

10.9 Lastly, while many routes to green finance access are now only emerging, it is likely a priority for the Council to start talking to regional private, public and third sector partners, as well as institutions like the UK Infrastructure Bank and Green Finance Institute, about how we can start planning to fill this finance gap, and also to build the regional supply chain base to deliver at the scale that would be required to reach net zero by 2030.

High Level Recommendations / Points for Discussion

11.

11.1 **Integrate Heat Pump Delivery –** Continue to build capacity to deliver more home retrofits each year through available channels, consider option 3 above or supplementary funding stream to start implementing heat pumps as well as fabric to increase the net zero impact of retrofit and increase future delivery capacity should funding change.

11.2 **Explore alternative funding and discuss the funding gap –** With 89% of Council emissions linked to council housing, this is the biggest risk for the SCC 2030 net zero target, and even a risk for 2050 net zero, given current funding levels. This gap and issue should be discussed widely with partners including in the private sector, as part of a wider exercise to explore emerging funding solutions for retrofit.

11.3 **Continue to focus on retrofit delivery to build capacity –** even if current activity funding represents a wide gap from what's needed, every action taken now builds the capacity of the council to deliver net zero as well as the local skills base and green economy.

RISK ANALYSIS AND IMPLICATIONS OF THE DECISION

12.

12.1 Equality Implications

EIA2524 completed

The EIA highlights some important areas in what is clearly a positive programme of work and likely to benefit people sharing several different protected characteristics - e.g. (older) Age or Disability - and experiencing inequality - e.g. poverty. Is it possible to cross-reference the EPC Band ratings with what is known about the people living in the properties, or the communities/areas? This would help to demonstrate that the programme, as well as being of widespread and general benefit, is also supporting SCC's duties to advance equality of

opportunity for people. The EIA would benefit from info/data (if available) on demographics of people impacted, older people, single parent households, etc. And/or by considering the EPC geographical areas and if/how these relate to areas of higher deprivation.

12.2 Financial and Commercial Implications

There are no financial and commercial implications arising directly from this report.

The potential significant future financial and commercial implications for the council housing roadmap to net zero are highlighted in this report, the required funding is not currently included in the HRA Business Plan.

This report is not seeking approval of schemes or budgets, as and when schemes are brought forward, in the usual way through the capital approval process, appropriate funding will need to be in place.

Tackling the climate emergency and responding to the national and global changes that are facing the city will require multi-billion-pound investment over many years. It was recognised in the 10 Point Plan for Climate Action published in 2022 that it will not be possible to find the necessary finance within the local authority's, or the city's, existing resources. One of the ten points in the 10 Point Plan was specifically focused on the exploration of external funding streams and this work is ongoing.

The Our Council routemap chapter commits the local authority to prioritising climate action in our budgeting, and officers will need to work with Members to commit to specific sums or projects. Whilst sourcing the up-front investment is challenging, decarbonising the Council's estate can result in savings in ongoing energy costs.

Action will also need to be taken that commits us to working to reduce the carbon emissions we are indirectly responsible for through our procurement. These may potentially have additional up-front costs but decisions will be taken on a case by case basis.

12.3 Legal Implications

There are no legal implications arising directly from this report. There may be legal implications arising from implementation of the proposals which will be subject to further reports where required.

12.4 Climate Implications

Based on 2019 data, over 80% of the Council's own emissions were from Council homes. The carbon net zero road map will provide the fundamental basis to develop an effective implementation plan to deliver carbon net zero across the whole stock. This will be a significant impact to the city's ambitions, and furthermore will help to stimulate the local market and supply chain expanding out in to the private sector.

More impacts will need to be considered in the implementation of this programme of works, around transport and product embodied carbon, as well as construction waste created. However, if implemented in full, the roadmap has the potential to create large reductions in emissions over the coming years.