

Achieving net zero in social housing



The Zero Emissions Social Housing Taskforce Report

Foreword

While COVID-19 has been uppermost in our minds and lives for well over a year, climate change has not gone away. Indeed, it has continued apace, becoming ever more visible as our attention has been focused on fighting something much less visible and, in the long-run, potentially less threatening. Even though it may not feel like that now.

The scale of the crisis and the challenge is formidable, more so than anything else we have had to deal with in our lifetimes. And such that the Scottish Government has formally declared a climate emergency and has committed to a range of world-leading targets.

In March 2021, the Zero Emissions Social Housing Taskforce (ZEST) was convened by the then Minister for Local Government, Housing and Planning. Our task could not be more timely or challenging. As Co-Chairs, we were asked to look at the opportunities, barriers and solutions required of social housing to maximise its contribution to the Scottish Government's ambitious climate change targets. Where there is reference to social housing/social landlords in this report it includes housing associations, co-operatives and local authorities.

The Scottish Government's recently published twenty-year vision for housing, *Housing to 2040*, sets out the commitment to adapt and retrofit existing homes to improve their energy efficiency and decarbonise their heating, highlighting housing's contribution to ending climate change emissions. The draft *Heat in Buildings Strategy* also set out a consistent vision for zero emissions homes and near-term actions that can be taken to help drive forward progress. And not least it sets out the need to decarbonise one million homes by 2030, highlighting the scale of our collective ambition. This needs to be achieved alongside our continuing efforts to tackle fuel poverty, keeping rents affordable and promoting equality.

At the same time, social landlords have been making huge strides in planning for, designing and delivering homes that are more energy efficient as well as those that are net zero carbon. This is providing valuable, real-time learning about what works, what doesn't, and how we can do better.

The role of ZEST has been to take the various plans and strategies, learn from what's happening on the ground, anticipate what's needed and turn it all into a programme of coherent, realistic and achievable actions. Our work has been fast-paced, energetic and focused, made possible by the commitment, knowledge and experience of every member of the group, which included policy, technical, practitioner and academic expertise (and who are duly credited at the back of the report). And with the added value of further experts contributing to the discussions on particular issues.

Social housing is a sector built on shared values of fairness and equality. This, together with enthusiasm, passion and a 'can do' attitude, means this report is rooted in a desire to provide the very best outcomes for social housing tenants and their communities. It is predicated on no one being left behind, with costs they can't afford, heating systems that don't work for them or are not as good as for others. We are committed to a just economic, social and technical transition.

The recommendations are intended to provide the next steps for the sector, in partnership with local and national government, the private and third sectors, wider civic society and, most importantly, those who live in social housing now and those yet to come. No single organisation, profession or community has, or ever can have, all the answers; the way forward has to be finding those answers together.

Climate change is perhaps the defining issue of our generation and those to come. This report is an initial calling card from the social housing sector demonstrating the scale and scope of its dedication to tackling climate change through a shared commitment to tackling the technical, financial, social and environmental challenges.

We commend this report and the actions to Scottish Ministers and look forward to working together to bring about the changes needed to secure a world free from the negative effects of climate change.

It's always impossible, until it's done.

Sally Thomas and **Aubrey Fawcett**

Co-Chairs, Zero Emissions Social Housing Taskforce

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Summary of the ZEST recommendations

Recommendation 1: The Scottish Government and social landlords should develop a collective commitment to a just transition in the social housing sector with clear metrics and sufficient budgetary investment to ensure this is successfully realised.

Recommendation 2: The Scottish Government should promote a Fabric First approach as an essential first step towards decarbonisation, prioritising investment accordingly, and ensure that the promotion of a Fabric First approach is reflected appropriately in its review of EESSH2.

Recommendation 3: The Scottish Government should work with social landlords to ensure capital investment for social housing is adequate, structured and designed in line with the needs of the sector, and supports the social housing sector's aim for a Fabric First approach.

Recommendation 4: Social landlords and the Scottish Government must work together to plan ahead with certainty, including to work with new partners to access and maximise funding opportunities.

Recommendation 5: Social landlords and the Scottish Government should commit to working together in partnership to understand the current condition and investment needs of the existing social housing stock and develop appropriate collaborative solutions.

Recommendation 6: Social landlords and both local and national government should work in partnership to ensure individuals and communities are fully engaged and supported in the net zero transition.

Recommendation 7: All partners must work together to ensure there is sufficient workforce capacity in Scotland to deliver high-quality retrofit works in the social housing sector.

Recommendation 8: Social housing providers should continue to evaluate their wider impacts and ongoing contribution to tackling the climate emergency, through systematic monitoring and measurement.

Background and Context

Introduction

The Scottish Parliament has committed to Scotland becoming a net zero emissions country, society and economy by 2045. This will mean achieving a balance between the amount of greenhouse gas emissions produced and the amount removed from the atmosphere. Scotland has world-leading statutory targets to ensure it plays its part in meeting our climate change obligations.

The Scottish Government's Climate Change Plan Update ([Securing a Green Recovery on a Path to Net Zero](#)) notes that heat in buildings accounts for around 20% of Scotland's greenhouse gas emissions. The transition to zero emissions heat will involve changing the type of heating used in over two million homes by 2045, moving from high emissions heating systems, reliant on fossil fuels, to low and zero emissions systems such as heat pumps, heat networks and other technologies.

The draft [Heat in Buildings Strategy](#) published in February 2021 sets out the need to take action now in order to accelerate decarbonisation of homes and buildings and to reduce our demand for heat. It includes a commitment to regulate to ensure that all homes across all tenures achieve a good level (equivalent to at least EPC C) of energy efficiency by 2035 and use zero emissions heating by 2045.

The Scottish Government's [Housing to 2040 Route Map](#), published in March 2021, sets out as a guiding principle (principle 10) that decisions around the quality, location and use of existing stock and new build should be consistent with the target for Scotland's emissions to be net zero carbon by 2045. This sets a challenge for existing homes to be updated to improve their energy efficiency and decarbonise their heating, ending their contribution to climate change.

As a society we are increasingly grappling with the reality that moving towards a net zero society and economy will not be easy, but it is absolutely essential. This is becoming more evident every day, as we see and feel the effects of climate change through increasing average temperatures and more extreme weather events. We estimate that around 50% of homes, or over one million households, will need to convert to a

low or zero emissions heating system by 2030. We will need innovative technological solutions; investment from public, private and individual sources; and significant behaviour change and support from individuals and communities if we are to meet our ambitions on decarbonisation.

Central to these ambitions is the principle of securing a just transition. This puts people, communities and places at the heart of our approach to climate change action. It aims to ensure we work together in order to meet the targets while anticipating and mitigating the risks to those worst impacted by the changes, so no one is left behind. As the pace of the transformation increases, the need for a collaborative and just transition becomes ever more important. This approach is at the heart of Scotland's ambitions to move to a wellbeing economy that prioritises society's wellbeing as the core aim of our economy.

Ensuring a just transition means we must meet these challenges while keeping rents and heating bills affordable – including, and most especially, for people on low incomes – as well as maximising the economic opportunities from the transition for communities across Scotland. The need to find ways to fund significant capital investment sustainably, while ensuring the switch to new heating systems does not exacerbate fuel poverty through increased utility bills, are crucial challenges to navigate. In the context of our long-standing and central aim of providing affordable homes for those who most need them, social housing providers have these considerations at the heart of plans to tackle climate change.

We are working in the context of considerable ongoing uncertainty too: some new technologies remain insufficiently tested, and there are questions about costs and benefits, and how those can be shared equitably. The future potential for, and costs of, hydrogen are unknown and there are gaps between the modelled and actual performance of some measures.

Finally, we recognise there are also factors such as energy costs, along with substantive economic levers, like energy market and regulations, that are out with the Scottish Government's control. In developing recommendations for an

approach to achieving net zero ambitions across social housing, a central priority is the need for flexibility so that changing, and potentially unforeseen, pressures can be successfully dealt with in the future. There is also considerable uncertainty in the economic position of the public sector, including local authorities, and significant demands on resources. This was true before the pandemic and is even more acute now.

The role of social housing

The social housing sector has for many years focused on delivering affordable, high quality, energy efficient homes. As a consequence, homes in the sector perform relatively better than other tenures in terms of energy efficiency standards. There is, however, still huge investment needed to get to zero emissions in the social housing sector. Reducing demand for heat and improving the conditions of our housing stock is a crucial first step in readying homes for zero emissions heat. We know we face a significant challenge in upgrading all our stock to the necessary level of energy efficiency.

The sector is committed to playing its part, while recognising decarbonising heating in social homes is only one part of the urgent challenge we face. Building on its social purpose, along with its strengths, skills and experience, social housing is already on a strategic pathway to the decarbonisation of its housing stock. This comes with continued problems, obstacles and barriers – not least the equally important commitment to driving down poverty and inequality, including preventing homelessness. We are aware of the challenge and commitment needed from the social housing sector to achieve this, and the financial support that will be required. This means that the programme of change must ensure that housing costs remain affordable as a core principle.

The importance of engaging with tenants in all of this cannot be over-stated and existing platforms such as the Regional Networks already enable tenants and residents to engage with the Scottish Government on development of national housing policy. Going forward, a variety of methods will be needed to ensure tenants have a strong and equal voice in the journey to net zero, in decisions, design, development and delivery. It is essential to ensure the changes are well understood, well tested and work for households across Scotland.

Securing a shift from gas to electric heating

Decarbonising the current homes in the social housing sector to meet net zero means moving from our current reliance on fossil fuels, such as natural gas, to zero emissions alternatives. In tandem, the aim must also be to reduce fuel bills and drive down fuel poverty.

The maturity of the renewable industry in Scotland provides potential opportunities to build on its achievements to date and to help with decarbonisation. Provisional figures indicate that in 2020, the equivalent of 97.4% of Scotland's gross electricity consumption was from renewable sources, falling just short of the 100% by 2020 renewable electricity target.

Switching to zero emissions heating at this scale and pace presents three major challenges. First, it requires meeting a much larger share of heat demand from renewable electricity, in addition to other demands on the electricity grid such as charging of electric vehicles. However, and second, electricity is more expensive for end consumers than gas in the current market. Third, the sheer scale of the infrastructure works required to homes and the challenge of funding it, while again keeping rents affordable, cannot be over-stated.

Any programme of change must balance these three challenges, ensuring that social housing remains affordable, in all household costs, for those who most need it. In practice, we are firmly of the view that this means taking a Fabric First approach to achieving net zero emissions. This would involve charting a transition from gas and other fossil fuel heating to zero emissions heating while also significantly increasing energy efficiency to reduce energy demand and, at the same time, avoiding increasing the running costs for households.

We know the UK Government is considering how the costs of the net zero transition can be borne equitably, including through its forthcoming Call for Evidence on affordability and fairness in the energy market. It appears likely that high carbon heating will become more expensive in future. This would mean those in fuel poverty still using fossil fuel heating systems would face increased heating bills, resulting in even deeper levels of fuel poverty.

The Scottish Government's role is to set standards for housing and give clear direction to the sector. The Scottish Government has responsibility for developing funding packages that meet the needs of the sector to support the scale and ambition of its climate change targets. The UK Government must also support investment, make the necessary changes to energy markets, and put in place safeguards to protect consumers.

It is clear that in order to fully address the challenges in the shift from gas to electric heating, partnership working between the Scottish and UK Governments, and with the housing sector, will be essential. It will be important to work across other parts of the public sector to ensure technological innovations are effectively scaled up and deployed.

The challenge facing social housing

Energy efficiency has been a priority in social housing for many years, reflected by substantial investment to meet, initially, the Scottish Housing Quality Standard (SHQS), and more recently the first milestone of the Energy Efficiency Standard for Social Housing (ESSH). Many tenants now have homes that are warmer and cheaper to heat, providing a solid baseline for progress on the Energy Efficient Scotland Route Map and the second milestone of the Energy Efficiency Standard for Social Housing (ESSH2). However, as outlined in recent research,¹ these ambitions do not come without notable financial and technical challenges. Landlords in remote rural and island communities face particular challenges, where geographical and other factors further add to the pressure.

We know that many zero emission heating systems are expensive to install. In some cases, new heating systems also mean higher running and maintenance costs. New systems may involve other significant changes to homes such as the need for space to install hot water storage. Social landlords need support to plan how to manage the scale of the investment needed to improve homes. Because landlords' income ultimately comes from their tenants' rents,

additional investment needs to be carefully planned and assessed for impact on rent pressure. Any additional costs such as increased energy bills or rents would undermine the benefits to tenants of more efficient heating systems, potentially leaving them worse off. This means that the impact on households needs to be carefully modelled. Social landlords bring experience and knowledge that can inform the net zero pathway and delivery solutions that come forward to ensure they address these key factors and support local planning to mitigate these risks and secure an effective transition.

Over a third of tenants in social homes are in fuel poverty, with households in the lowest income bands having the highest rates of fuel poverty. Ensuring housing remains affordable in the round for social tenants requires a focus on addressing high energy costs, and ensuring that decarbonisation objectives do not cut across this critical social wellbeing agenda.

A further challenge is the amount of social housing that lies within mixed tenure blocks, in which many owners – some of whom will be private landlords – may be unable or unwilling to find their share of the costs of energy efficiency and associated improvement works.

At the same time, there are significant opportunities which the social housing sector is well placed to build on. Over half of social housing is already in EPC band C or better, compared to two-fifths in the private rented and owner-occupied sectors. Landlords have extensive experience of delivering projects to improve the energy performance of buildings as well as innovative solutions that work for tenants.

Social landlords can work together with government to attract investment, create good quality local jobs in the green economy, and improve the warmth and comfort of social homes to tackle both climate change and fuel poverty together. However, this requires the combined resources and capacity of national and local government, along with other partners, to realise the opportunities and ensure the costs and risks don't fall disproportionately on social housing providers, their tenants and communities.

1 Changeworks & SFHA (2021). Energy Efficiency Standard for Social Housing 2032 (ESSH2) <https://www.sfha.co.uk/news/news-category/sfha-news/news-article/energy-efficiency-target-would-only-reduce-fuel-poverty-by-24-but-cost-2bn>

Finding a way forward

The recommendations of ZEST aim to find a collaborative way forward through these many and significant challenges. They set out specific, realistic and practical proposals for how social landlords, local authorities and the Scottish Government can act in partnership to address the double challenge of getting to net zero in social housing while driving down poverty. These recommendations provide a foundation for effective planning by all partners, setting out the next actions necessary to manage a just transition to net zero housing.

Two other points have emerged from our work with equal force. The first is the necessity to reduce the demand for heat, allowing homes to consume less energy for heat by ensuring that what is used is not wasted. This is reflected in the emphasis on Fabric First in the recommendations. Energy efficiency measures that reduce heat loss from our buildings will not, on their own, get us to net zero. They can, however, pave the way to installing zero emissions heating systems that work well at a manageable cost, making them viable for social housing providers and tenants.

The second point is that this report should also be viewed as the starting point of a longer term workstream, acknowledging further work will be needed to make sure the proposals work in practice and can be delivered fairly and effectively. The lived experience of tenants and communities must be embedded throughout, and all of the proposed actions should be viewed from an equalities perspective to ensure the recommendations do not create or perpetuate inequality in society. This will require robust Equalities Impact Assessments and considerations of intersectionality as part of any further development. Although the proposed recommendations are specific to social housing, they offer alignment with other key policy areas, including public health, energy, transport and employment, and will require working across ministerial portfolios in addition to a cross-tenure approach to delivery. It is also clear that while some of the proposed actions will require funding, these are yet to be fully costed and will require further work to identify the budget requirements.

The Principles

National leadership and locally empowered delivery

Any overhaul of an existing system carries with it considerable risk. The context in which we are working is evolving quickly with the statutory targets for climate change and fuel poverty existing alongside other, long-standing, obligations and ambitions to reduce and lift people out of poverty, so that we can create a more equal and fairer Scotland. Recognising the changing context, we wish to preserve the strengths inherent in our current approach which enable landlords to harness personal enthusiasm, commitment, and voluntary effort to excellent effect, and at the same time achieve outcomes that best meet the needs of their tenants while contributing to national priorities. Going forwards, it is important to retain as a fundamental principle the concept of local planning and empowerment, complemented by a clear national framework that enables locally led change.

We noted the SNP Manifesto commitment to develop a new dedicated national public energy agency and recommend social landlords are engaged in the design and delivery of this national project to maximise the benefits to social housing and tenants.

At the heart of this is an aspiration to see our housing stock managed in a manner that optimises the benefit to tenants as we seek the transition to zero emissions social housing.

Collaboration

Scotland benefits from a diverse social housing sector, from small to large, rural to urban and specialist to generalist. Some will have more capacity and resource for the journey to net zero than others. It is therefore important that landlords within a local area are able to come together and form strategic partnerships in order to design and deliver solutions that best meet the needs of their tenants and housing stock. Combining their efforts can also increase their power and influence in the market. We will be looking to national and local government to support, enable and, where appropriate, participate in such arrangements.

Empowerment should not be taken for granted. We depend on bringing together a wide range of individual interests and motivations to deliver a social benefit. Success comes from careful design and governance, combined with sensitive relationship management. A decentralised and locally empowered housing improvement delivery mechanism can work well in Scotland only if social landlords and partners – including local and national government – come together to co-design a system that operates within a wider strategic framework and keeps the public interest at the forefront of thinking. This must be underpinned by a funding platform which is supported by the Scottish Government.

A Just Transition

ZEST took the view that in order to achieve a just transition, it would need to achieve both a successful economic transition alongside a socially just one.

The issues of both climate change and fuel poverty traverse local, regional and national borders. While there are some regional variations in the characteristics of social housing stock in Scotland, common archetypes can be found.

A central concern is to ensure that social tenants do not face the double jeopardy of increased energy bills and increased rents as a result of decarbonising their homes. To support decarbonisation and ensure it is a fair and just transition, landlords are already coming together to determine and develop open-source solutions that work both financially and practically – so that those least able to pay are not disadvantaged by unaffordable rent or energy bills. This work should continue and inform the development of the strategic pathway to change at scale in Scotland, with support from local and national government.

Modern standards of energy efficiency require upgrading of existing houses with materials or technology that were either unavailable or not normally used when they were built and has created a retrofit market to provide solutions that landlords can draw on. The work that the social housing sector can undertake over the next decade has the potential to change how

this retrofit market works for everyone, and for the better, but it cannot lead this change without the private sector and other parts of society alongside it.

Individual consumers of retrofit works are unlikely to change the offer from the market. However, social landlords with their combined power as a bulk consumer of products and services have an opportunity to change the dynamic through the design, specification and delivery of high standard retrofit works. This is likely to help support market innovation and achieve better outcomes for everyone.

Working with people, especially tenants, will be critical in ensuring they are part of driving the change rather than having change imposed on them. Many of the emerging technical solutions for zero emissions heat are complex technologies and it is important that the end user is able to operate them to optimal effect, to achieve the intended benefits.

Focus on outcomes and manage the risk

Few people will argue with the idea that our approach to improving the condition of our housing stock and zero emission heating should be based on the best available technological solutions. Difficulties can arise, however, when technical understanding is incomplete, and where some knowledge is held by practitioners on the ground who do not normally regard themselves as policy experts. The importance of taking a risk-based approach to retrofitting while recognising the uncertainty that exists is a necessary part of the solutions. The place of technical solutions as the enabler of good management rather than as an end in itself should be the guiding principle over the next decade. Given the scale of the challenge, doing nothing or a 'wait and see' approach is not an option if we are to successfully reduce emissions by 2045.

Regional sensitivity

We must recognise that different solutions will be required in different areas, and it is particularly important to ensure the effects on rural, remote and island communities are considered. In particular, when considering the types of technical solutions available it is clear that some of the products, services and approaches may not work as well in our rural, remote and island communities. These areas already face disadvantages, including generally higher living costs, limited fuel options and a high proportion of hard-to-treat stock. There is also a disparity in electricity prices with the North of Scotland paying higher unit costs than the rest of the country while also experiencing colder temperatures and a longer heating season. It is important there is not a one size fits all approach taken and the distinct needs of rural, remote and island communities are integral to all stages of planning, design, and delivery. Innovative solutions will be needed.

Challenges and Recommendations

Members of ZEST identified key questions that need to be addressed in the work required to get to net zero emissions in the social housing sector.

- 1. What barriers exist to driving forwards a just transition to net zero in the social housing sector and what is required from all partners to address these barriers?**
- 2. How can all partners come together to ensure funding and finance incentivise and enable a just and fair transition to net zero for the social sector at the pace and scale required?**
- 3. What is required to ensure we continue to make progress on tackling fuel poverty while achieving zero emission homes in the social sector?**
- 4. How do we maximise the social and economic opportunities in the transition?**

Supporting a just transition

ZEST recognised the central role of social housing in meeting the challenge of the global climate emergency. Central to our discussions was how social landlords can tackle climate change while continuing to provide more homes overall, to an increasingly high quality, and manage the risk to tenants of new technology and future costs.

It is understood and agreed by Scottish Government and social landlords that any increased running costs of decarbonised heating must not exacerbate fuel poverty nor result in rent poverty. Without a scaling up of existing grant funding for social landlords, there is a real risk the financial impact of meeting net zero targets may result in some costs having to be passed onto tenants.

Recommendation 1: The Scottish Government and social landlords should develop a collective commitment to a just transition in the social housing sector with clear metrics and sufficient budgetary investment to ensure this is successfully realised.

Actions

1. Social landlords and Scottish Government should work together to set out clear metrics on how we will collectively evidence a just transition for social housing in Scotland. Metrics should align with existing targets around fuel poverty as well as linking directly with the National Performance Framework.
2. The Scottish Government, social landlords and partners should make a clear commitment to a just transition, ensuring policy and plans recognise and mitigate against potential negative impacts for social tenants and maximise potential opportunities such as jobs and economic opportunities for local areas.
3. The Scottish Government has already made a commitment to regular and ongoing engagement with the sector on the Social Housing Net Zero Heat Fund, facilitated through sector membership bodies. The Scottish Government should increase the funding available through this Fund, and work with social landlords to build partnership approaches to enable long-term, adequate funding building on core landlord investments already being made.
4. While recognising the Scottish Government has limited devolved powers in this area, consideration should be given to the need for a systemic change in tax rates and VAT for refurbishment works, in order that the cost of meeting zero emissions targets is linked to ability to pay, as recommended by the Just Transition Commission. The Scottish Government should continue to lobby the UK Government for changes.

Box 1: Green Neighbourhoods as a Service – Bankers without Boundaries

Bankers without Boundaries (BWB) is a not-for-profit, finance innovation organisation which aims to support high impact projects which offer environmental and social benefits, including those which may not otherwise be pursued by the financial sector. As part of the Healthy, Clean Cities programme run by the European Institute of Technology Climate – Knowledge and Innovation Community in partnership with Tomorrows Cities Partners, Dark Matter Labs and The Democratic Society, they are currently exploring Green Neighbourhoods as a Service (GNaaS), a new model whereby a central entity, on a city or regional basis, oversees an area based retrofit programme. Works are funded through a long-term (30 year+) comfort and maintenance contract with the residents with anticipated reductions in energy demand and efficient use of local heat and electricity generation then offsetting the proposed comfort and maintenance fee. Community benefits can also be increased through this neighbourhood approach to regeneration and investment. Pilot projects are currently underway in Milan and Zagreb with plans to extend to other cities, including Edinburgh.

Source: <https://www.bwbuk.org/post/green-neighbourhoods-as-a-service>

Structuring and design of capital investment

ZEST agreed that the way forward needs to be on the basis of a Fabric First approach, which means ensuring that buildings are as efficient as possible (where cost effective) so that the energy we currently use is not wasted. This will reduce energy consumption and, if demand is reduced, then heating systems will be less expensive to run, which also helps to address fuel poverty.

The collective investment required to deliver the net zero vision is considerable. Social landlords are already experiencing a number of financial challenges due to cumulative impacts of other regulatory requirements and the rising costs of materials and labour, exacerbated by Brexit and COVID.

Ensuring homes are safe and compliant with new regulations comes at a cost, as does building new stock to meet the outstanding need for affordable social homes in Scotland, including supporting the Scottish Government's ambition to deliver an additional 100,000 affordable homes by 2032. It is increasingly difficult for social landlords to meet these costs while limiting rent increases and yet the wider impacts of austerity, delays in processing and rollout of Universal Credit, and the ongoing pandemic are also putting pressure on tenants and rental income. Social landlords therefore have little capacity to put the capital costs of net zero projects onto rents if costs are to remain affordable for tenants. The challenging financial position of local government, and the many competing demands on resources, will also have an impact on capacity to deliver on this.

Previous grant programmes for decarbonisation have been competitive in nature with short application windows and complex application processes. Many social landlords have not been in a position to make applications to this type of scheme despite the need for financial support. A consistent multi-year fund, allocated based on need, would enable social landlords to plan more effectively and access the support required.

While further work is needed to explore how non-competitive funding would work in practice, in the more immediate term social landlords will be working with the Scottish Government to maximise the impact of the existing five-year Social Housing Net Zero Heat Fund (to ensure it offers greater flexibility, is simpler to access and offers realistic timescales to allow alignment with social landlords' capital programmes). We welcome the £10m additional funding being made available to projects seeking to carry out energy efficiency only projects that demonstrate they are taking a Fabric First approach with the intention of installing zero emission heating systems technologies in following years.

To maximise the opportunities and support available, social landlords need to be planning for the transition, as many already are doing. Supporting social landlords to work alongside industry and the Scottish Government to support innovation and investment, and be ready to take up any new opportunities, will ensure a more effective transition. As part of the drive towards the tenure-neutral approach outlined in Housing to 2040, engagement needs to be facilitated with private rented sector landlords and owner-occupiers.

Opportunities arising from Local Heat and Energy Efficiency Strategies (LHEES) should also be encouraged and supported, particularly as LHEES is likely to become central to the planning of decarbonisation. Local government engagement with Registered Social Landlords (RSLs) and Scottish Government will be critical to maximise the impact of LHEES and the potential financial savings resulting from area-based delivery including increased economies of scale and bulk purchasing.

Recommendation 2: The Scottish Government should promote a Fabric First approach as an essential first step towards decarbonisation, prioritising investment accordingly, and ensure that the promotion of a Fabric First approach is reflected appropriately in its review of ESSH2.

Actions

1. As part of its overall aim to decarbonise housing, the Scottish Government should strengthen the commitment in its draft Heat in Buildings Strategy to promote a Fabric First approach, with a particular focus on further thermal upgrades and addressing airtightness and cold bridging. This would help to reduce overall energy demand and therefore help to make the installation of some zero emissions heating systems more technically viable and cost effective for tenants and landlords. Importantly, this will make significant progress in addressing the fuel poverty agenda and reduce demand on energy networks.
2. Building on the experiences of social landlords, the Scottish Government should continue to allocate specific funding and dedicated support for fabric improvement measures to reduce heat demand.

Box 2: Deep Retrofit Guidelines

Renfrewshire Council, in partnership with John Gilbert Architects and the University of Strathclyde, has undertaken a pilot project involving the deep retrofit of a 'four-in-block' archetype. The aim was to demonstrate how a local authority can deliver best value from all aspects of its procurement and maintenance budgets: maximising energy efficiency, whilst also addressing a range of national and local outcomes; in particular the comfort and health of tenants and the durability of the building stock. Phase 1 of the project involved the development of an initial template for 'Deep Retrofit Guidelines' while phase 2 will explore how this approach could be developed for other housing archetypes.



(Credit: Renfrewshire Council)

Recommendation 3: The Scottish Government should work with social landlords to ensure capital investment for social housing is adequate, structured and designed in line with the needs of the sector, and supports the social housing sector's aim for a Fabric First approach.

Actions

1. Social landlords should work with the Scottish Government to commission a sector capacity assessment to determine the net cost increase of the transition above current investment cost profile. This would support social landlords to progress more accurate plans for the transition, offer a baseline for levels of investment required to support consistency across Scotland (while recognising regional variation), and inform ongoing grant and loan funding investment from national government and other sources in annual budgetary processes.
2. Following the completion of the proposed sector capacity assessment, the Scottish Government and partners should explore options for a long-term, non-competitive grant fund for social landlords which can be distributed fairly across the sector based on need. Any grant funds should incorporate realistic timescales for design and delivery, so that proper planning and alignment with social landlords' confirmed capital programmes, or other local opportunities (e.g. area based schemes and LHEES), can take place. Grant funds should ensure social landlords are able to carry out works to mixed tenure blocks in which owners may be unable to fund their share of the cost of works.
3. The Scottish and UK Governments should consider new low-cost funding sources, e.g. European Investment Bank style funding for specific societal benefit projects (i.e. very low cost).
4. A coalition formed across the social housing sector and local and national government should advance discussions with private sector funders and their regulators on core principles of lending to the social housing sector to identify where changes could be made to improve the cost efficiency of the funding while ensuring an appropriate risk profile and rate of return for the lenders.

Box 3: Southside Housing Association EnerPHit project

Southside Housing Association, with financial support from Glasgow City Council, has been working alongside John Gilbert Architects to refurbish a typical Glasgow tenement to the EnerPHit standard. This is a modified version of the Passivhaus standard which can be applied to retrofit scenarios while still demanding high levels of energy efficiency and a fabric first approach. As a demonstration project, a detailed evaluation of the building performance will be included while the UK Collaborative Centre for Housing Evidence (CaCHE) will lead on assessing the scalability and replicability of the lessons learned for Scotland's tenement stock. This project is funded by the Scottish Funding Council (SFC), as part of its recent Climate Emergency Collaboration Challenge, with other partners including Glasgow City Council, CCG Ltd, University of Strathclyde and the University of Glasgow.

Source: http://www.johngilbert.co.uk/?portfolio_page=niddrie-road-retrofit



(Credit: John Gilbert Architects)

Providing social landlords with certainty

While recognising the need for early action to move from gas and other fossil fuels to zero emissions heating through a range of near-term available technologies, some landlords have concerns about whether heat pumps will perform as modelled, having had operational problems with older technologies. There are also remaining concerns about the higher unit cost of electricity compared to gas, which can undermine the financial benefits of more efficient systems for tenants.

These concerns must be addressed if heat pumps (and potentially other forms of electric heating), are to play the crucial and significant role currently proposed in the draft Heat in Building Strategy. These near-term technologies and heat networks that can be deployed at scale provide a route to making progress, which needs to be made over the next decade in order to ensure at least one million of our homes are decarbonised by 2030 to achieve Scotland's very ambitious statutory 2030 75% target.² Even though the co-efficiency of performance for heat pumps reduces the overall demand for energy, that energy is currently still four or five times the unit price of gas.

ZEST discussed the future potential of hydrogen for heating. ZEST members felt it important that social landlords have access in the future to hydrogen heating options, should those materialise, and that at energy-system level, the option of deploying hydrogen is kept open, fully explored, evidenced, and developed. However, given that the potential for decarbonised hydrogen for heat will not be realised until the 2030s at the earliest, we cannot wait for this. Significant constraints in the near-term availability of hydrogen and uncertainties around future costs to consumers, coupled with a need to establish the standards and safe systems for hydrogen gas use, repurposing of the gas network and replacing household appliances, means that decarbonised gas is unlikely to play a large part in meeting our heating needs before the 2030s.

ZEST noted the Scottish Government's intention to bring forward the review of EESSH2 to 2023. However, it was felt that given that the context has shifted significantly since EESSH and EESSH2 targets were proposed, there is a strong case for bringing the review further forward still to consider progress made and identify where social landlords efforts should be focused now. A holistic approach is needed to support positive outcomes for tenants and ensure alignment of fuel poverty, energy efficiency and zero emissions objectives.

This review needs to reflect on wider concerns about EPCs as a tool to evaluate performance, and the Scottish Government's proposal to review EPCs was welcomed. UK-wide assessment methodologies like SAP (Standard Assessment Procedure), on which EPCs are based, need to be appropriate for the Scottish context. As a cost-based indicator, the current Energy Efficiency Rating used to measure progress against EESSH2 does not incentivise some zero emissions technologies and also penalises other interventions such as mechanical ventilation and heat recovery systems. It was suggested that rather than basing EESSH2 compliance on an inaccurate RdSAP (Reduced Data Standard Assessment Procedure) score, it should be based on the energy use of the property, i.e. kWh/m²/year, aligning with Fabric First and avoiding the addition of unsuitable or unnecessary technology. Members also considered that the current approach fails to recognise the difference between modelled and actual performance and does not take account of wider factors such as airtightness, Indoor Air Quality (IAQ) and embodied energy/CO₂ emissions.

² Transparent arrangements for the sale of heat and energy through district heating and perhaps CHP networks should be in place through licensed network operators, as encouraged through the Heat Networks (Scotland) Act 2021, which will ensure that heat and energy sales to households are at an affordable price. This may involve support for social housing providers in accessing connections to or developing heat networks.

Recommendation 4: Social landlords and the Scottish Government must work together to plan ahead with certainty, including working with new partners to access and maximise funding opportunities.

Actions

1. In the live development and review of a range of interconnected policies, the Scottish Government should aim to provide clarity on the connections and tensions between different strategies and targets relating to net zero, primarily the Heat in Buildings Strategy, Fuel Poverty Strategy, rent affordability and EESSH2.
2. The proposed review of EESSH2 should be brought forward to commence immediately with a final decision on the revised approach and implementation no later than 2023. This should include a period of reflection and further research while also allowing the outcomes of the recently published consultation on EPC assessments to be considered.
3. In order that time is not wasted planning for the requirements as they currently stand, if it is now likely the goalposts will shift, the Scottish Government and Scottish Housing Regulator should issue interim guidance on what measures should be prioritised during the review period.
4. A new Housing Net Zero Technical Steering Group, with representatives from the social housing sector, should be established to provide guidance and clarity on technical solutions and to continually review progress and refresh existing strategies as new energy and zero emissions heating systems are evaluated and developed (see [Appendix D](#)).
5. The Scottish Government should engage with the UK Government to determine the availability, timing and risk of alternative energy sources (e.g. low carbon or green hydrogen) and the future role of the gas network to enable the social housing sector to prepare short, medium and long-term investment plans.
6. The Scottish Government's proposed analysis in the draft Heat in Buildings Strategy on the strategic areas most and least likely to have access to low carbon or green hydrogen in the future should be progressed as a matter of priority. This should also incorporate cost appraisals in order to consider the overall affordability of, and appetite for, hydrogen and whether this is a viable option for social landlords and their tenants.
7. A central repository of funding opportunities, in one strategic package, for social landlords should be created, bringing together opportunities from government and other strategic bodies, and social landlords, local authorities and national governments should continue to work together to ensure funding opportunities are maximised to match the scale of the challenge.

Box 4: Integrated energy system and zero emissions heating in Orkney

Orkney Housing Association (OHAL) is exploring innovative ways in which it can reduce fuel poverty whilst delivering zero-emissions heating. It is exploring using solar photovoltaics (PV) and battery storage linked to fabric upgrades and high heat retention storage heating. They are also investigating a similar option with the ReFLEX project. ReFLEX (Responsive Flexibility) Orkney is a £28.5 million project, funded by UKRI through the Industrial Strategy Challenge Fund, which aims to develop an integrated energy system in Orkney. The project is led by the European Marine Energy Centre (EMEC) with cross-sector partners including Aquatera, SMS (Smart Metering Systems), Community Energy Scotland, Heriot-Watt University and Orkney Islands Council. Local electricity, transport and heat networks will be interlinked through a 'FlexiGrid' control platform with flexibility supported through the use of battery storage and smart technology. A new local energy tariff for those living in Orkney has also been introduced as part of the system.



(Credit: Colin Keldie)

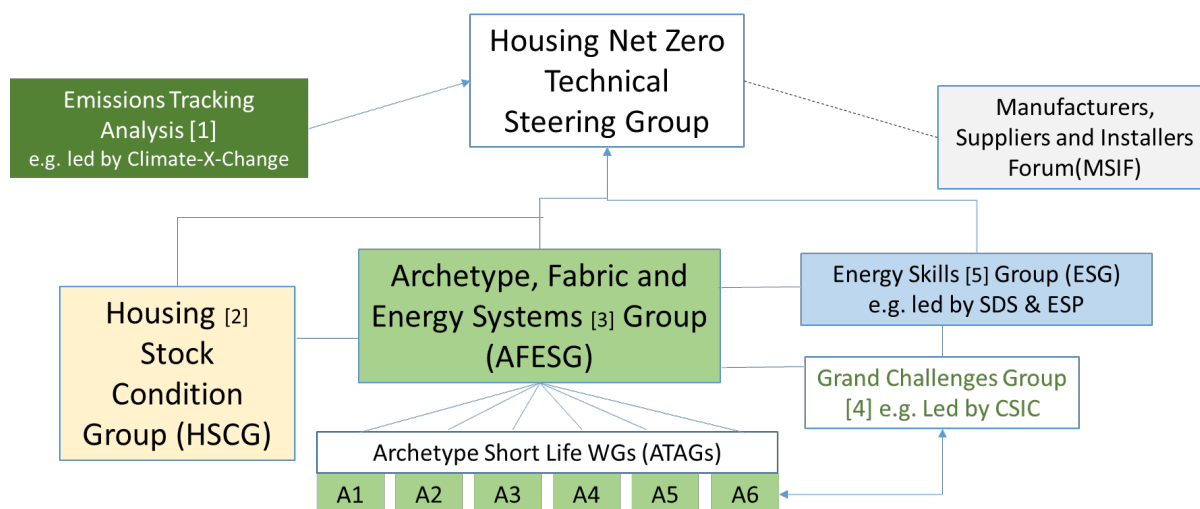
Understanding the existing stock

ZEST recognised that the Scottish social housing has a limited number of building types for most of its housing stock, and therefore there is an opportunity to develop standard approaches by type, e.g. tenements, four-in-a-block, no-fines, timber frame, which would support a Fabric First approach. Social landlords already have a responsibility to monitor the condition of their housing stock, although the approach to collecting this information is not always consistent. There is, therefore, an opportunity to develop a standardised approach which will in turn help establish investment needs and priorities across the sector.

There is also an opportunity to collect robust data to inform the development of archetype-based guidance, but data has to come from independent sources such as universities or consultants, rather than the product suppliers or companies carrying out the retrofit work, to ensure no conflict of interest.

There were general concerns about how the market operates to supply technical solutions for housing. It was felt that landlords rather than market suppliers need to be in control of projects and have greater control of what solutions are available so they are the most appropriate for their stock. Critical to this will be the development of a structured programme to identify, design, develop and install retrofit solutions for given property archetypes and ensure a consistent approach across Scotland. A further supporting paper outlines a suggested structure for this process (see [Appendix D](#)).

Fig 1: Suggested structure for further working groups
(See supporting paper by Professor Sean Smith - [Developing Net Zero Technical Solutions for Scotland's Future Mass Retrofit Housing Programme - gov.scot \(www.gov.scot\)](#))



1. Emissions Analysis – to map the macro emissions outcomes for various retrofit scenarios (fabric & energy)
2. Home Condition Analysis – (RSLs / LAs) existing and new survey data enhances condition knowledge
3. AFESG – Co-ordinate and assess data capture on previous fabric case studies, new retrofit pilots and solutions (SRPe & ETP) and energy systems. ATAGs short life working groups for key major archetypes report to AFESG.
4. Grand Challenges – e.g. CSIC (e.g. Timber frame housing solutions and non standard archetypes)
5. Skills group to map upskilling, new skills and sector macro training needs and delivery with SDS and trade bodies

Recommendation 5: Social landlords and the Scottish Government should commit to working together in partnership to understand the current condition and investment needs of the existing social housing stock and develop appropriate collaborative solutions.

Actions

1. Social landlords should undertake an in-depth and updated stock condition survey to assist in mapping the existing stock, including details of new builds, adaptations and previous retrofit measures. A standardised approach should be adopted to feed into the proposed Housing Stock Condition Group (see Appendix D) which will assist in tracking and working with the future mass rollout of key retrofit archetype solutions.
2. The proposed Housing Net Zero Technical Steering Group, supported by Scottish Government, should compile existing data through the Archetype, Fabric and Energy Systems Group (AFESG), including existing evaluations and case studies of previous retrofit programmes, in a central online repository, to provide shared learning outcomes for social landlords and other tenures. Development of key archetype solutions, based on specific new pilot data gathering projects should be undertaken for Scotland's six largest housing archetypes, representing 80% of the stock. Further details of proposals to deliver this are set out in Appendix D.
3. Where complex solutions or innovation grand challenge solutions are required for particular property archetypes, the Construction Scotland Innovation Centre (CS-IC) should lead research and early pilots for heating prototypes, including research into lesser-known technologies which may offer effective and efficient heating replacements for more challenging archetypes.
4. The Housing Net Zero Technical Steering Group should work with the Scottish Futures Trust to explore options for regional delivery vehicles/energy service companies (ESCOs) to support energy efficiency and decarbonisation works in the social housing sector. This should include an investigation into whether not-for-profit entities could manage works on behalf of a local authority and RSL, or a group of local authorities and RSLs.

Box 5: River Clyde Homes

In 2018, River Clyde Homes completed the installation of one of the first Air Source Heat Pumps (ASHPs) to serve a social rented tower block in Scotland. Kilblain Court in Greenock comprises 61 flats and is in a popular town centre location. River Clyde Homes decided to remove gas boilers from its tower blocks in 2016 and replace these with low carbon communal systems to improve safety, reduce emissions and achieve the Energy Efficiency Standard for Social Housing (EESH). The ASHP was chosen following an options appraisal that included customer involvement. The replacement of mains gas with renewable technology provided a small energy efficiency gain and the Environmental Impact Rating improved significantly from 81 to 95 (out of a maximum potential of 96). Feedback from customers has been positive with residents now enjoying warmer homes and lower energy costs.



(Credit: River Clyde Homes)

Shared learning and communication to support technological solutions

A theme that emerged strongly during the meetings was the need to engage with tenants. Unless tenants support and understand change, the wellbeing benefits will not be realised. If we do not take seriously concerns about the cost of alternative heating systems, tenants will have justifiable concerns about future fuel price rises. New technologies will mean new ways of heating our homes, and the key to this is simplicity for the user.

It was also emphasised that engagement needs to include owner occupiers and private landlords, as improvement in social housing cannot be delivered in isolation from area-based solutions, in order to address the wider impact of climate change and the quality of communities in which we all live.

Recommendation 6: Social landlords and both local and national government should work in partnership to ensure individuals and communities are fully engaged and supported in the net zero transition.

Actions

1. The Scottish Government should publish its delayed Fuel Poverty Strategy by the end of 2021, as it has committed to do, and ensure it includes a coherent programme tailored to the needs of individual households that addresses the four drivers of fuel poverty, reflecting the rapidly evolving context of decarbonisation of heating.
2. The Scottish Government should publish as a priority its final 'Net Zero Nation' public engagement strategy, to which social landlords should respond with local tenant engagement plans, sharing experiences with the Scottish Government to facilitate ongoing learning.
3. As part of its public engagement strategy, the Scottish Government should develop tailored communication materials to support the rollout of unfamiliar technologies alongside a national winter education campaign to promote home energy efficiency, including heating and ventilation practices.³ This should include clear routes to ongoing advice and support to minimise any potential negative impacts (e.g. disruption, increased fuel bills or rent, or operational issues).
4. National and local government should work together to ensure early and meaningful engagement with social landlords and their tenants as part of the development of LHEES and community climate action initiatives, in order that social tenants are included in and consulted on decisions on heat decarbonisation in their community. The development of LHEES should take cognisance of social landlord investment plans and include them as a consultee in the development of LHEES Delivery Plans.
5. The Scottish Government should increase investment in local advice services, including those provided by social landlords, in addition to that in government-funded services such as Home Energy Scotland.
6. Emergency redress funds should be made available to social landlords and their tenants, providing an additional safety net which protects those on low incomes from being negatively impacted by the rollout of new technologies.
7. The Scottish Government should progress planned work to achieve a cross tenure quality standard that will underpin the transition to decarbonised housing, per its commitment in Housing to 2040.

³ Some advice and information materials development and support is already funded by Scottish Government and delivered by EST, particularly around electric heating.

Box 6: City of Edinburgh Council – Solar PV and battery storage

As part of the commitment to achieve net zero carbon emissions in Edinburgh by 2030, the City of Edinburgh Council has been working in partnership with Changeworks to deliver renewable energy systems to local authority tenants as part of an area-based retrofit programme. Over 100 council owned homes have been fitted with solar PV and battery storage, with Changeworks' Affordable Warmth Team then providing individual advice and support to ensure tenants can maximise the benefits of the system.

Source: <https://www.changeworks.org.uk/news-and-events/news-archive/free-solar-panels-and-battery-storage-to-light-up-kirkliston>



(Credit: Changeworks)

Quality control and skills

There was an overall recognition that the social housing sector, through its collective influence and approach, could play a significant role as an anchor for growth and investment in the supply chain for energy efficiency and zero emissions heat deployment at significant scale. It is vital that opportunities to drive quality standards while creating new green jobs and upskilling the existing workforce are maximised in this process. The Scottish Government has already made various commitments on improving skills in the construction industry.

The ongoing work by Skills Development Scotland and the Energy Skills Partnership to understand the future skills needed in the transition to net zero will be critical and the proposal for a National Construction Skills Academy is also welcome. ZEST also discussed the need for training to be easily accessible and offer flexible learning opportunities and the recent creation of nine Renewable and Energy Efficiency Training Centres is a positive first step in this process.

However, further investment will be required to improve local supply chain capacity and ensure social housing providers are able to access suitably qualified and experienced contractors. ZEST had particular concerns about the availability of tradespeople with the necessary skills and qualifications, particularly in island and rural areas. Issues were raised about the costs and timescales for training which are required for particular accreditations, such as PAS2035. There was concern that changes to current funding routes could require specific accreditations (e.g. PAS2035) in order to access particular grants, and this would make it more difficult to source local suppliers, especially in these areas. It was also noted that training for electricians, which takes longer in Scotland when compared to the rest of the UK, may constrain the ability to meet the need for electrification of heating and of transport.

There was, however, a recognition that the social housing sector, through its collective influence and approach, could play a significant role as an anchor for growth and investment in the supply chain.

Recommendation 7: All partners must work together to ensure there is sufficient workforce capacity in Scotland to deliver high-quality retrofit works in the social housing sector.

Actions

1. As part of the proposed Housing Net Zero Technical Steering Group, work should be taken forward to conduct an ongoing audit of skills and qualification processes based on the identified measures for property archetypes and as new technological solutions develop. This should be in conjunction with Skills Development Scotland and the [No One Left Behind](#) delivery plan for employability, and include representatives from rural, remote and island communities as well as feed into the Scottish Government's proposed supply chain action plan.
2. Social landlords should incorporate supply chain considerations in their forward planning to support the transition and ensure demand for new skills and workforce is well understood to inform Scottish Government action on workforce investment.
3. Increased support for Scottish colleges should be progressed as a priority, and targeted grant funding provided for training and upskilling in line with proposed accreditation requirements (e.g. PAS 2035). This should include a specific funding stream to support small and rural contractors and their staff alongside funding for online retrofit co-ordinator training for those with appropriate construction expertise. This should be considered in conjunction with the Scottish Government's work on upskilling EPC assessors.
4. The Scottish Government should ensure the development of a flexible approach to the introduction of PAS2035 in Scotland, allowing temporary exemptions or extensions in areas with limited access to accredited installers, and providing additional support packages to remote, rural and island communities (e.g. interim provision of gap funding where ECO funding cannot be accessed). The Scottish Government should also allow accredited retrofit co-ordinators to sign-off works to ensure locally-based smaller contractors in rural, remote and island communities can continue to participate in retrofit programmes.

Box 7: Warmer Homes Scotland

The Scottish Government's Warmer Homes Scotland scheme offers funding and support to households struggling to stay warm and keep on top of energy bills. Warmworks is the Managing Agent for the programme and has developed a network of local suppliers to deliver retrofit works across Scotland, working with 24 SMEs (6 of which are located in island communities). To date, the scheme has sustained more than 130 apprenticeships across the wider supply chain of installers and manufacturers in addition to supporting 600 local jobs and around 2,000 new training opportunities.

Source: <https://www.warmworks.co.uk/warmer-homes-scotland/>

Understanding the wider impacts

Understanding the impact of the required changes on tenants and wider communities is critical. In addition to ensuring they are fully engaged from the outset, there needs to be an outcomes-focused approach to evaluation which is based on measured data and feedback from the occupiers. This should recognise the broader impacts of retrofitting homes with an evaluation process which captures aspects such as comfort, satisfaction, and wellbeing. Housing has been identified as a key social determinant of health and improving the quality of homes should be viewed as an important public health measure.

The difference between modelled and actual performance in both new and existing social homes also needs to be better understood. While this performance gap can be minimised through improved technical guidance, better support for the end-user and improved skills and quality control, further action is needed to ensure the assumed benefits of investment are realised and maximised where possible. However, this operational energy use is only one element of achieving net zero ambitions. While this is outwith ZEST's immediate scope, an approach to Life Cycle Analysis and whole-life costing needs to be developed over the longer-term to ensure this is addressed and that the wider impacts are understood.

The group's discussions primarily focused on the actions needed to achieve zero emissions from heat in the existing social sector stock. However, it was acknowledged there are many other factors to consider if Scotland is to become a truly net zero nation. Social landlords, and indeed all organisations, will need to review their broader operations and ESG (Environmental, Social, and Governance) obligations if they wish to reduce their overall impact on the environment and support the transition to net zero. ZEST noted the work of the Infrastructure Commission for Scotland, Scotland's Climate Assembly, Zero Waste Scotland and the recommendations of a number of other groups on the wider actions needed in the Scottish Government's response to climate change, including consideration of embodied greenhouse gas emissions. Members felt that ZEST should continue in some form to inform social housing's contribution to these actions.

Recommendation 8: Social housing providers should continue to evaluate their wider impacts and ongoing contribution to tackling the climate emergency, through systematic monitoring and measurement.

Actions

1. Social landlords, with the support of sector representative bodies, may wish to develop broader sustainability or ESG strategies to assess the impact of their organisation as a whole and ongoing action required to tackle the climate emergency.
2. A monitoring and evaluation framework should be developed for future energy efficiency and heat decarbonisation programmes to ensure consistent methodologies and comparable data. This should have an outcomes-based approach based on actual performance data and feedback from the occupiers. Evaluation should recognise the impact of the rebound effect (e.g. where potential energy savings are absorbed through comfort increases) and the other positive outcomes for tenants (e.g. improved health and wellbeing, increased satisfaction) as well as unintended negative outcomes. Tenants should be part of the design process in terms of evaluation. This activity should be funded by the Scottish Government, and reviewed on an ongoing basis by the Housing Net Zero Technical Steering Group.
3. In line with recommendations by the Infrastructure Commission for Scotland and Scotland's Climate Assembly, the Scottish Government should explore a whole life cycle approach to assessing costs and environmental impacts, which includes not only direct (Scope 1) greenhouse gas emissions but also indirect (Scope 2 and 3) emissions.⁴ This should build on Zero Waste Scotland's previous research ([Embodied carbon: status quo and suggested roadmap](#)) and involve input from the proposed Housing Net Zero Technical Steering Group as new technologies and retrofit solutions emerge.

Box 8: Hab-Lab

The Hab-Lab service provides detailed building performance monitoring and evaluation to help improve the energy efficiency and durability of buildings as well as the health and comfort of residents. Led by John Gilbert Architects, and delivered in partnership with the Mackintosh Environmental Architecture Research Unit (MEARU) at Glasgow School of Art, the approach supports social landlords to benchmark, measure and improve the performance of their building stock. This also includes assessing the performance gap, occupant behaviour and ensuring tenants are supported with new technology. Initial social landlord partners included Govanhill Housing Association, Clyde Valley Housing Association, Ayrshire Housing, Reidvale Housing Association and Renfrewshire Council and several others, including private landlords, have now taken advantage of the service.

Source: <http://www.johngilbert.co.uk>



(Credit: John Gilbert Architects)

⁴ Scope 1 includes direct emissions from owned or controlled sources such as fuel combustion appliances (e.g. gas boiler). Scope 2 covers indirect emissions which arise from the generation of purchased electricity and heat. Scope 3 includes all other indirect emissions that occur in the wider supply chain.

Finally, we note there are a few areas set out in the initial framing questions that the group did not have an opportunity to consider in detail, such as delivering net zero in mixed tenure buildings, heat networks and energy storage. These are matters that merit further discussion and should be taken forward by the proposed Housing Net Zero Technical Steering Group (see [Appendix D](#)).

Appendix A: Existing and forthcoming Scottish Government policy and strategy

This appendix summaries some of the existing policies and strategies considered by ZEST.

Climate Change

Housing to 2040 affirms the Scottish Government's commitment to take action to adapt and retrofit existing homes to improve their energy efficiency and decarbonise their heating, ending their contribution to climate change.

Rapid change is required by all sectors of Scottish society to meet Scotland's response to the global climate emergency. Legislation sets a target date for net zero emissions of all greenhouse gases by 2045, and sets interim targets requiring emissions reduction of 75% by 2030 and 90% by 2040. Housing has an important contribution to make to this and social housing can act as a catalyst for wider change in other tenures. There are plans to introduce a regulatory framework across all tenures, and a general push to cross-tenure housing standards in Housing to 2040.

The Scottish Government estimates that around 50% of homes, or over one million households, will need to convert to a low carbon heating system by 2030 to ensure the interim statutory targets are met. There is a challenge to ensure that works to the fabric of the building and new zero emissions heating systems also serve to increase comfort and affordability for fuel poor households.

EESHS

The Energy Efficiency Standard for Social Housing (EESHS) is a non-statutory target set out in guidance developed by the Scottish Government through consultation with landlords.

The first EESHS milestone (EESHS1) set a target for social housing by house and fuel type (equivalent to high D or low C EPC band depending on property) by 31 December 2020. A second milestone (EESHS2) sets a target for all social housing to meet, or be treated as meeting, EPC Band B, or be as energy efficient as practically possible within the limits of cost, technology, and consent, by the end of December 2032.

As set out in the Housing to 2040 document, the Scottish Government will bring forward the review of EESHS2 to 2023. It is clear, though, that EESHS will need some fundamental changes to align with the wider net zero agenda. Key considerations are how this wider agenda impacts what social landlords are being asked to do.

Social Housing Net Zero Heat Fund

In August 2020 the Scottish Government launched the [Social Housing Net Zero Heat Fund](#), to support social housing landlords across Scotland to take forward projects to deploy zero emissions heat, improve energy efficiency, and reduce fuel poverty. The Scottish Government has committed to extending the fund over the next five years with a £20 million annual budget. The fund has also received an enhanced budget of £10 million for financial year 2021/2022 for projects seeking to carry out energy efficiency only projects which demonstrate they are taking a Fabric First approach with the intention of installing zero emissions heating systems in the following years.

The Social Housing Net Zero Heat Fund is a capital grant fund that has been designed to accelerate the delivery of energy efficient, zero emissions heat provision to social housing projects across Scotland and to support projects that can effectively contribute towards the achievement of the Scottish Government's ambitions for Scotland to achieve net zero emissions by 2045. The fund supports projects that can accelerate the deployment of zero emissions heat in existing social housing. In the first year of the fund, grant support has been offered to 10 social housing zero emissions heat projects across Scotland.

Low Carbon Infrastructure Transition Programme (LCITP)

Launched in 2015, the [Low Carbon Infrastructure Transition Programme](#) (LCITP) is a collaborative partnership led by the Scottish Government, working with Scottish Enterprise, Highlands and Islands Enterprise, Scottish Futures Trust and Zero Waste Scotland. The programme aims to stimulate commercial interest and investment and maximize Scotland's vast potential in the low carbon sector while contributing to the positive progress of the Scottish Government in reducing Scotland's greenhouse gas emissions. Since its launch, the Scottish Government has used the LCITP to make technical expertise and financial support available to innovative low carbon infrastructure projects which have potential for replication. This approach has led to the successful delivery of a number of renewable heat projects including the Queens Quay heat network in Clydebank, which utilises heat from the River Clyde and a new heat network in Stirling, harnesses energy from wastewater and supplies heat to nearby public buildings and businesses.

As the current LCITP programme draws to a close in 2021, there must now be consideration of how its successor can become the primary mechanism for deploying zero emissions heat at scale, co-ordinating support for the rollout of heat networks and heat decarbonisation infrastructure. To achieve this, the Scottish Government must make a financial commitment to the successor programme which matches the ambitions we need it to deliver. LCITP and its successor programme will invest £400 million over the next five years in large-scale heat decarbonisation infrastructure.

Targets in Other Sectors

The Scottish Government will require new buildings, starting with new homes consented from 2024, to use zero direct emissions heating, and also feature high levels of fabric energy efficiency to reduce overall heat demand so that they do not need to be retrofitted in the future. It will introduce a requirement through the 2024 New Build Heat Standard for new buildings being constructed to connect to existing heat networks, when they are located within a Heat Network Zone.

There will be regulations for minimum energy efficiency standards for all owner-occupied private housing, expected to be set at a level equivalent to EPC C where it is technically feasible and cost-effective to do so. All domestic owner-occupied buildings should meet this standard by 2035. There will also be regulations requiring private rented sector properties to meet a minimum standard equivalent to EPC C, where technically feasible and cost-effective, by 2028.

The Scottish Government will also consult on a regulatory approach for mixed-tenure buildings which would see them required to reach a good level of energy efficiency, equivalent to EPC C rating, where technically feasible and cost effective, and install a zero emissions heating supply by 2045.

Green Heat Finance Task Force

The Draft Heat in Buildings Strategy includes a commitment to establish a Green Heat Finance Task Force to provide recommendations to Scottish Government on potential new financing models and routes to market for low and zero carbon heat by May 2023.

Public sector funding from the Scottish Government, UK Government, local authorities, or investment from new institutions like the Scottish National Investment Bank, will be a part of the solution to deliver the scale of transformation needed by 2045. However, private investment will also play a role – whether that be from homeowners, landlords or business paying for their own properties or from the institutional investment community providing financing for large scale infrastructure.

The Scottish Government will establish a Green Heat Finance Taskforce to forge a new partnership approach between the Scottish public sector, heat decarbonisation experts and the financial sector, working with organisations including the Scottish Futures Trust and the Green Finance Institute, to explore potential new and value for money innovative financing mechanisms for both at-scale and individual level investment. The Green Heat Finance Taskforce will make recommendations on the range of approaches that the Scottish Government, in collaboration with the private sector, should bring forward to support the scaled growth in private capital needed and, where possible, pilot innovative solutions to attract investment.

Other relevant groups/recommendations

As part of the ZEST group discussions, the work of other related organisations was discussed, and additional stakeholder meetings were held with Skills Development Scotland, the Scottish Qualifications Authority, the Scottish Funding Council and the Scottish Government Low Carbon Support Unit. Other organisations including the Scottish National Investment Bank and the Royal Incorporation of Architects in Scotland (RIAS) were also invited to present at the ZEST meetings to stimulate further discussion.

It is clear that addressing the climate emergency is both an active and urgent topic, and this is also evidenced by the ongoing work and emerging recommendations of other key groups such as the [Just Transition Commission](#), [Scotland's Climate Assembly](#), the [Existing Homes Alliance](#) and the [Environmental Justice Commission](#). While the focus of this particular group has been achieving net zero heat in social housing, there is alignment with many of the recommendations already proposed by other organisations regarding the importance of a just transition and ensuring the costs of meeting wider climate change targets are not borne by those least able to afford it.

Appendix B: ZEST remit and approach

Remit

The terms of reference for this work, set by the Scottish Government, are replicated in [Appendix C](#). They make clear that the independent short life working group, Zero Emissions Social Housing Taskforce (ZEST), was tasked to consider and provide practical recommendations on what is required to achieve our ambitious climate change targets, taking account of the various interdependencies that exist.

ZEST had been asked to consider the blueprint for the ideal system that promotes the economic and environmental aspirations for Scotland in the short, medium, and long-term of the actions required by all parts of the social housing sector in achieving zero emissions homes while maximising the wider social and economic opportunities relating to green jobs and warm, quality, sustainable homes. The work of ZEST was ambitious and there was a particularly strong emphasis in the remit on the importance of understanding barriers that exist, how those could be overcome, recognising the need for strong partnership approach where the social and economic benefits could be realised while ensuring a just and fair transition. The remit offered ZEST a relatively blank canvas on which to develop its practical recommendations, which will have a lasting impact in a positive manner.

The remit underlined the importance of evidence-based management in a complex and continually evolving context. Defining the information and skills required to ensure this can happen was integral to the work of ZEST, as was ensuring that sufficient resources and access to funding would be available to support social landlords.

ZEST Membership

Ministers invited Sally Thomas from the Scottish Federation of Housing Associations (SFHA) and Aubrey Fawcett from the Society of Local Authority Chief Executives (SOLACE) to co-chair a Zero Emissions Social Housing Taskforce (ZEST). Membership consisted of invited strategic leaders in key stakeholder organisations, including the Glasgow and West of Scotland Forum of Housing Associations (GWSF), the Association of Local Authority Chief Housing officers (ALACHO), the independent Scottish Housing Regulator (SHR), and the Convention of Scottish Local Authorities (COSLA). ZEST also included practitioners from housing associations and industry, architects and academics who are actively involved in delivering decarbonisation projects in social housing, leading innovative projects, knowledgeable on the challenges of financing decarbonisation projects, and aware of the particular challenges of extending projects into rural and island areas. Co-chairs exercised a delegated power to invite additional members as they felt necessary.

A full list of the members of ZEST and its subgroups is provided at [Appendix E](#).

Civil servants from within the Scottish Government's Housing and Social Justice Directorate provided support throughout the process.

Approach

The work of ZEST focused on how to accelerate change for existing stock in the social housing sector with the aim of identifying how to decarbonise homes in a fair and equitable manner, while ensuring that fuel poverty ambitions are also achieved. This was in recognition that new build housing already provides an opportunity to build homes that will be net zero ready and do not need to be retrofitted in the future, to reduce overall heat demand through high levels of fabric energy efficiency, and to greatly scale up the installation of zero direct emissions heating systems. Separate work is taking place to ensure that all new homes delivered by Registered Social Landlords and local authorities will be zero emissions by 2026.

In addition to the meetings of the full group, two subgroups were set up to specifically examine and recommend practical solutions for the:

1. challenges and opportunities around technical solutions to meet net zero heating in social housing; and
2. cost and affordability of the work needed.

The group also convened a financial roundtable to seek financial expertise on potential financial systems and sources to address the challenging net zero target.

Notes of meetings are published on the Scottish Government website [Zero Emission Social Housing Taskforce - gov.scot \(www.gov.scot\)](https://www.gov.scot/resources/consultations-petitions/zero-emission-social-housing-taskforce/)

From the beginning, ZEST decided to adopt an open and collaborative process designed to maximise input from those with an interest in the outcome. One result of this was that ZEST members held full meetings of the group and in parallel meetings of the sub-groups which progressed at significant pace. Members of ZEST also contributed additional discussion papers and their expertise for consideration of the wider group. The most important consequence was a process that was participative, well informed and (at times) challenging – all vital ingredients in the production of this report. ZEST is indebted to all who contributed.

Timescale

ZEST commenced in April 2021. The full group met every fortnight with sub-groups meetings taking in between full group meetings. This was to review progress and agree priorities for the period ahead. A great deal of work was undertaken by all involved in the periods between formal meetings so that systematic progress was made throughout the three-month period. Contributions and feedback from members were considered and discussed with updates provided from previous meetings so that the collaborative nature of the group's work was maintained. The combined strength of all of ZEST members, their collective expertise and experience, as well as the energy and enthusiasm they brought, ensured ZEST moved quickly and effectively within the short timescales it was set for its work.

Appendix C: ZEST Terms of Reference

The Zero Emissions Social Housing Taskforce (ZEST) is an independent short life working group convened between April and June 2021, which will look to provide recommendations from the perspective of the social housing sector to the incoming administration after the parliamentary elections. It will also look ahead to the next Programme for Government, COP26 and finalisation of both the Heat in Buildings Strategy and the Fuel Poverty Strategy later in 2021.

ZEST is asked to consider the blueprint for the ideal system that promotes the economic and environmental aspirations for Scotland in the short, medium, and long-term of the actions required by all parts of the social housing sector in achieving zero emissions homes while maximising the wider social and economic opportunities relating to green jobs and warm, quality, sustainable homes.

Given that new build housing provides an opportunity to build homes that will be net zero ready and do not need to be retrofitted in the future, to reduce overall heat demand through high levels of fabric energy efficiency, and to greatly scale up the installation of zero direct emissions heating systems, this work will therefore need to focus on how to accelerate change for existing homes. In particular, this needs to recognise the specific challenges around decarbonisation of tenements and older stock, and the challenges for those who are in or at risk of fuel poverty.

The work of ZEST is to be guided by the following principles:

- a. ZEST must produce clear messages and there must be a commitment to dialogue where unknown factors persist.
- b. ZEST must support the principles of a just transition to net zero, including but not limited to tackling fuel poverty and achieving zero emissions targets, and recognising the links with housing affordability.

- c. All parts of the housing system will be affected in reaching the statutory net zero targets. Although ZEST's work is focused primarily on the role of social landlords for their existing housing stock, it should be assumed that over time all tenures will be impacted.
- d. Practical practitioner input is fundamental.
- e. Solutions should be cost-effective, and the costs of the transition should not fall disproportionately on those least able to pay.
- f. The purpose of ZEST is to help ensure social landlords are appropriately informed in their thinking and investment planning, and that lessons can be replicated at scale across tenures.

Work by social landlords can be a catalyst for stimulating the supply chain as well as creating and protecting jobs and supporting innovations in technologies needed to achieve low and zero emission systems to be deployed at scale. To ensure focused, solutions-oriented work is undertaken, ZEST needs to consider the following framing questions to guide its deliberations and engagement

1. What barriers exist to driving forwards a just transition to net zero in the social rented sector and what is required from all partners to address these barriers?

- As a number of stakeholders will be impacted differently, it is important that consideration is given to what is required from (a) social landlords, (b) tenants, (c) local and national government, (d) the private sector, and (e) the wider public.
- How can we make it as easy as possible for social landlords to know what to do and to make it happen, and how could specific advice be provided as complex decision making will be required where there remain currently significant unknowns?
- What technical and specific guidance is needed for social housing to complement existing sources of information and advice?

- What practical support is needed and how could this be facilitated, such as collaborative procurement, pooling of funding and resources?
- What existing research and experience can we draw on?
- How can we identify technical paths to heat decarbonisation that will meet the needs of areas and take account of existing work underway such as LHEES?
- What technical elements need exploration? For example, cavity wall insulation; heat networks; heat pumps and how these can meet the objectives of landlords' overall plans for decarbonisation for their stock and tenants.
- Workforce planning – what skills, re-training and staff resources are needed to make the zero emissions heat transition in the social housing sector?
- How can we address particular challenges around tenements and older stock (and do we know enough about what those challenges are and whether bespoke approaches are needed or if standard solutions can be made to work)?
- How can we address the particular challenges and opportunities around island and rural housing (and do we know enough about what those challenges are and whether bespoke approaches are needed or if standard solutions can be made to work)?

2. How can all partners come together to ensure funding and finance incentivise and enable a just and fair transition to net zero for the social sector at the pace and scale required?

- How can Scottish Government investment support the transition alongside investment from social landlords?
- What are the options for how this can be financed? Existing/mainstream and new/novel ideas?
- What other financial levers are required to support all of these through the transition and what partnerships are needed?
- How can we create incentives for fabric upgrades alongside the move towards regulating emissions from buildings?

3. What is required to ensure we continue to make progress on tackling fuel poverty while achieving zero emissions homes in the social housing sector?

- How can we ensure a just transition, managing to alleviate fuel poverty as we go?
- Which combinations of technologies should be deployed in support of addressing fuel poverty and zero emissions objectives?
- How can innovation support attainment of both objectives?
- What is required beyond fabric improvement and technology deployment in recognition that some of the decisions for the gas network are yet to be made by the UK Government?
- How can the costs and benefits of the transition be shared equitably?
- What wider changes might be required across the non-fabric drivers of fuel poverty and how can these be progressed?

4. How do we maximise the social and economic opportunities in the transition?

- How can social housing stimulate the supply chain?
- What is the bigger picture, e.g. what is the role of social landlords in 20 minute neighbourhoods, active travel, etc.?
- How can we create lots of good new jobs? How can we protect existing ones?
- What do tenants need from the transition?
- How does the transition support local community wealth-building, retaining value locally and increasing local incomes (which in turn supports alleviation of poverty)?

Outputs

ZEST will produce a qualitative report, with recommended actions for the Scottish Government to consider and inform its broader strategies, and where it will respond to the recommendations made by ZEST. The report will also be used as sectoral evidence to inform the broader finalisation of the Heat in Buildings Strategy. ZEST has the scope to decide who else it will provide its recommendations.

Appendix D: Proposal for a Housing Net Zero Technical Steering Group

Recommendations 4 and 5 propose a new Housing Net Zero Technical Steering Group. This appendix sets out more detail of this proposal as a model. The recommendation is that Scottish Government should convene a group using this model or adopt an alternative model with similar scope and aims.

1. The aim of a Housing Net Zero Technical Steering Group would be to continually review progress and refresh existing strategies as new energy and zero emissions heating systems are evaluated and developed.
2. The Steering Group would be linked with the proposed Heat Electrification Partnership and be supported by regional working groups which bring together investment planners and network designers to understand grid constraints and the additional capacity requirements of the social housing sector.
3. The Scottish Government and the proposed Housing Net Zero Technical Steering Group would liaise with industry to support the development of user-friendly products and ensure solutions and their controls/manuals are easy for the end user to operate, to maximise the benefits. The creation of a Manufacturers, Suppliers, and Installers Forum (MISF) would help to support this activity.
4. The Steering Group, would include an Archetype, Fabric and Energy Systems Group (AFESG), supported by further short life Archetype Technical Advisory Groups (ATAGs). These groups would explore solutions for particular housing archetypes with a focus on fabric, construction, design detailing, fabric performance, supply chains and skills and training, and include energy systems experts to review and assess a range of non-gas and heating products (existing and future) coming to market. Solutions should also address fire resistance performance for health and safety of building occupants and circular economy outcomes to support overall net zero outcomes.
5. The ATAGs would develop standardised specifications and design guides for given property archetypes, building on the principles of the Scottish Ecological Design Association (SEDA) [Sustainable Renovation guide](#) and the ongoing project on Deep Retrofit Guidelines (partnership project with University of Strathclyde, John Gilbert Architects and Renfrewshire Council). A support system, led by the AFESG, would also be established for ongoing technical queries.
6. The ATAGs would gather evidence of fabric performance based on in-situ measured U-value changes and airtightness testing evaluations. The Housing Net Zero Technical Steering Group would review evidence and develop further recommendations on fabric performance, ventilation strategies, air tightness and Indoor Air Quality (IAQ), building on the existing SEDA Design Guide, [Design and Detailing for Airtightness](#).
7. The development of standardised specifications would include accurate cost models for each archetype, outlining the overall capital and operational costs for different scenarios (e.g. achieving Enerphit standards, AECB Carbonlite, specific EPC ratings or a particular energy reduction target). This would include an accurate reflection of regional cost differences and also allow social landlords to explore the whole-life costs, including ongoing fuel and maintenance costs, of different technologies and scenarios.
8. The outputs of the proposed the Archetype Technical Advisory Groups (ATAGs) would also be used to develop client driven solutions and collaborative procurement models for the social housing sector, allowing social landlords to retain design ownership and work with local partners to act as an intelligent client, and maximise the potential for economies of scale and bulk purchasing.
9. Paper on [Developing Net Zero Technical Solutions for Scotland's Future Mass Retrofit Housing Programme – gov.scot \(www.gov.scot\)](#) Developed by Professor Sean Smith.

Appendix E: Members of ZEST

List of Members who participated in ZEST meetings

Sally Thomas – Chief Executive, SFHA (Co-Chair)
Aubrey Fawcett – Chief Executive, Inverclyde Council and SOLACE (Co-Chair)
Ross Anderson – ALACHO
David Bookbinder – GWSF
Tony Cain – ALACHO
Michael Cameron – SHR
Laura Caven – COSLA
Bruce Cuthbertson – Tenant Representation (Chair East Ayrshire Tenants and Residents Federation)
Stacey Dingwall – SFHA
Cassandra Dove – SFHA
Roddy Hamilton – Changeworks
Stephen Kemp – Orkney Builders
Barbara Lantschner – John Gilbert Architects
Bryan Leask – Hjaltland HA and Rural and Islands Housing Association Forum
Paul Leask – Hjaltland HA and Rural and Islands Housing Association Forum
Mark McArthur – Energy Saving Trust
Patrick McGrath – Southside Housing Association
Chris Morgan – John Gilbert Architects
Colin Reid – Wheatley Group
Duncan Smith – Renfrewshire Council
Sean Smith – Edinburgh University
Craig Spence – Orkney Housing Association
Chris Stewart – Collective Architecture
Paul Thom – Changeworks
Jon Turner – Link Housing Association

Cost and Affordability Sub-Group

Sally Thomas – Chief Executive, SFHA (Chair)
Dion Alexander – Chair of Highlands and Islands Housing Associations Affordable Warmth Group
David Bookbinder – GWSF
Tony Cain – ALACHO
Michael Cameron – SHR
Bruce Cuthbertson – Tenant Representation (Chair East Ayrshire Tenants and Residents Federation)
Stacey Dingwall – SFHA
Roddy Hamilton – Changeworks
Bryan Leask – Hjaltland Housing Association and Rural and Islands Housing Association Forum
Mark McArthur – Energy Saving Trust
Patrick McGrath – Southside Housing Association
Shona Mitchell – SFHA
Ian Smith – Changeworks
Craig Spence – Orkney Housing Association
Jon Turner – Link Housing Association

Technical Sub-Group

Aubrey Fawcett – Chief Executive, Inverclyde Council and SOLACE (Chair)
Graeme Bruce – West Highland Housing Association
Roger Curtis – Historic Environment Scotland
Bruce Cuthbertson – Tenant Representation (Chair East Ayrshire Tenants and Residents Federation)
Cassandra Dove – SFHA
Roddy Hamilton – Changeworks
Graeme Hannah – Robertson Group
Stephen Kemp – Orkney Builders
Barbara Lantschner – John Gilbert Architects
Paul Leask – Hjalmland Housing Association and Rural and Islands Housing Association Forum
Mark McArthur – Energy Saving Trust
Chris Morgan – John Gilbert Architects
Colin Reid – Wheatley Group
Duncan Smith – Renfrewshire Council
Sean Smith – Edinburgh University

Financial Roundtable

Sally Thomas – Chief Executive, SFHA (chair)
Tony Cain – ALACHO
Laura Caven – COSLA
Gary Fairley – Midlothian Council
Peter Freer – Allia City and Continental Ltd
Mike Gibson – Viewpoint HA
Rufus Grantham – Bankers without Boundaries
Philip Griffith – Bankers without Boundaries
Steven Henderson – Wheatley Group
Shona Mitchell – SFHA
Paula Oliver – East Lothian Housing Association
Henrietta Podd – Allia City and Continental Ltd
Paula Rice – Bield Housing Association



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