

Heat Planning and Delivery Team
Scottish Government
5 Atlantic Quay
Glasgow, G2 8LU

10 March 2021

Consultation response: New Build Heat Standard Scoping Consultation

Scottish Renewables is the voice of Scotland's renewable energy industry. Our vision is for Scotland leading the world in renewable energy. We work to grow Scotland's renewable energy sector and sustain its position at the forefront of the global clean energy industry. We represent over 260 organisations that deliver investment, jobs, social benefits and reduce the carbon emissions which cause climate change.

Our members work across all renewable energy technologies, in Scotland, the UK, Europe and around the world. In representing them, we aim to lead and inform the debate on how the growth of renewable energy can help sustainably heat and power Scotland's homes and businesses.

Scottish Renewables welcomes the opportunity to provide our views on The Scottish Government's current thinking on the proposed New Build Heat Standard, as set out in the consultation document.

In responding, we would like to highlight the following points:

Overall, we welcome The Scottish Government's ambitions, particularly the vision of ensuring that, from 2024, new buildings must use heating systems which produce zero direct emissions at the point of use. We look forward to working collaboratively with Government further on this issue.

However, we are concerned over the cut-off date of 2024, and we recommend setting an additional earlier deadline whereby no new planning consents or planning applications can be submitted for new homes with heating systems based on the combustion of fossil fuel after 2021.

We have concerns over some of the wording used such as "point of use" and "emissions generated within the curtilage of the building", which imply that heating emissions can be produced elsewhere but not at the point of use.

We recommend a list of acceptable technology solutions and exclusions to make compliance with the Standard much easier.

Scottish Renewables would be keen to engage further with this agenda and would be happy to discuss our response in more detail.

Yours sincerely

Helen Melone

Senior Policy Manager | Heat and Small-scale Renewables

Scottish Renewables

Consultation Questions

1. Do you agree with the above key outcomes? Please explain your view.

Regarding Outcome 1 “Our new buildings no longer contribute to climate change”: The concern was expressed that when legislating for a target year of 2024, that this was not ambitious enough to meet the challenge of climate change, due to the lack of clarity over what 2024 meant, and when in 2024 the trigger point is. Does this mean no new planning applications after 2024 can include fossil fuel-based heating systems? Or is this a target date for a different stage in the process starting with land acquisition, then plot sales, then house building and finally house sale? If so, what is the trigger activity? Our concern is that if it is a date for planning consent or building regulation, then depending on the exact stage (outline planning / detailed planning) then buildings will still be being built three years after 2024, which then is not sufficiently ambitious given the need for urgent action.

We strongly agree with outcome 2 “reduced demand for heating and cooling” and would add that this should go hand-in-hand with heating technology improvements. There was concern about what “high standards of energy efficiency” would look like. For example, this could encourage new homes to be built based on direct electric heating, which is significantly more expensive to operate long-term. Developers must not be encouraged to provide heating solutions that incur excessive on-going heating bills. They need to clearly state expected annual energy bills (heating and electric / space and water heating) for typical types of home buyers.

The feeling amongst Scottish Renewables’ members was that the proposed Standard has sought to be agnostic in terms of the technology mix and it needs greater clarity of definition to ensure that solutions such as installing direct electric heat are excluded. All technologies which are allowed under the Standard need to be more than 105% efficient.

Members agreed that before planning what technologies are going to be installed in a building, there is a need to employ “fabric first” thinking. The Standard needs to not just focus on alternative heating/cooling systems - land and housing developers need to consider sustainability in a broader sense, including plot design, building layouts, building orientation, building materials, building fabric standards, building design (more open plan layout, underfloor heating etc), ventilation, heating controls, and user comfort and reliability.

There are concerns around reducing heating costs from a fabric-first perspective leading to an increase in cooling requirements and cooling costs. This is already evident in a number of more recent public sector buildings, like hospitals, where these buildings simply are not capable of the cooling levels that are required over summer and are significantly overheating.

We noted that outcome 3 mentions “affordable” and it was felt that this was going to be difficult, as affordability is difficult to define and specify as to whom it applies; the consumer or the land or housing developer or both? If the latter, then ideally costs are not passed on to the consumer, although that may be unrealistic. Also does The Scottish Government mean affordable compared to gas? The current cost of gas does not reflect its externalities (for instance air pollution and climate change), making it artificially cheap as a heating fuel. As such the definition of ‘affordable’ needs clarity as it means different things to different segments, for instance social housing. It would be helpful to have some parameters here: what mechanisms could be brought to bear? Could affordability be based on operational costs over a longer length of time or over the lifetime of a building? It would perhaps then be sensible to add in “affordable over the lifetime of operation”. One of the ways to make heating bills affordable is to reduce demand for heating by utilising energy-efficient products such as insulation or draught-proofing. Also, the reference to “we can minimise any cost increases by using the evidence available to us to determine the most cost-effective systems in different areas of Scotland” is vague. We accept that price reductions in scheme development are possible through the application of optimal technology solutions based on local conditions. Land developers and house builders need to be aware that “a national approach” to all properties based on a standard model may not provide homeowners with best value. If regional variations are being considered, how would these be implemented, and would these imply that different policies would be brought in for different areas? We would be wary of different policy levers being brought in on a localised basis as commercial companies are looking for a clear and level playing field, ideally based on typical construction models that work at a national scale. Ideally, we would like to encourage developers to create models that are sufficiently flexible to allow them to localise their heating solutions based on specific site conditions.

Regarding outcome 4, there was concern over this explanatory sentence that “We will work with the energy networks to make use of Scotland’s existing and reliable infrastructure, wherever possible”. Members agreed that, depending on the nature of the proposed heating solution, there may be issues around reliability and capacity of the power grid at a local level given the current constraints in parts of the national power network. Grid connection costs for the additional power capacity may be significantly higher than developers are currently anticipating, and the situation is further exacerbated by the need for EV charge points to be provided.

Outcome 5: We agree with outcome 5; that there are huge opportunities for the Standard to lead to the retraining and upskilling of the workforce across Scotland.

Clarity of direction is key to give business owners the confidence to invest in this emerging area.

Outcome 6: Although “informed, educated consumers” is a key outcome, members felt that there is scope for this to be accelerated. Currently a significant proportion of the public are unaware of the issues around heat and the need for its decarbonisation. Citizens need to be brought on-board with the decarbonisation of heat. Concrete actions need to be set out now on how this can be achieved. We do feel there is an awareness of issues around the importance of clean air, but the link to fossil fuel heating systems is largely ignored (in comparison to the effects of vehicle exhausts). This could be a key area on which to base a public campaign.

Outcome 7: The importance of clean air both indoor and outdoor spaces is an area which has traditionally been undervalued and, as a result, has led to a wide range of direct and indirect health problems causing significant stress on our health system. This needs to change. Improved thermal efficiency of buildings needs to go hand-in-hand with improvements to ventilation systems so these need to be actively considered by house builders as part of a wider model that changes the way that houses (and house plots) are designed and built to be more sustainable. This outcome also links to outcome 6 about informed, educated consumers, especially around the issue of air quality and fossil fuel heating.

Outcome 8: We agree any new heating and ventilation systems need to be more intelligent and responsive to national and local loads especially in terms of ‘shaving peaks’. We need to support load shifting, smart controls and time of use tariffs. The market is also likely to introduce many more innovative digital solutions in this area, including at the consumer level. We see a likelihood, at least in the short to medium term, that we have to rely on efficient utilisation of electricity to support our heat requirements. There could be significant merit in the use of large scale solar thermal and heat storage to support these heat requirements as this may not necessarily have a high impact on power demand.

Outcome 9: This states that there is a continued supply of high-quality homes and non-residential buildings in line with identified requirements. It also needs to say that this is equally balanced in each geographical area - this outcome needs to apply universally.

2. Are there any additional outcomes which should be embedded here?

There needs to be consideration of the different archetypes of building. The new build standards could work well for individual family homes but might not be as effective in high-density buildings or student accommodation – one-size-does-not-fit-all.

We have a concern that by focusing primarily on moving to alternative, greener heating solutions we are separating heating from factors such as building usage, building design and plot design. This Standard recognises that low-carbon heating systems need to go hand-in-hand with improvements in thermal efficiency and there

are implications on indoor air quality including the need for appropriate ventilation systems. However, there are many other new-build processes that are not covered here but are linked to building sustainable homes including:

- Maximising the benefits of solar gain, which directly impacts masterplan plot layouts.
- Designing-in adequate open space, both communal and private, to support underground infrastructure for more space-hungry alternative heat solutions like heat pumps and district heat networks (this could include water bodies to act as heat sources and thermal stores).
- Additional small-scale renewable electricity generation solutions (e.g., roof-mounted solar PV and home battery storage) to offset increased power demands.
- Design and alignment of roof space to maximise the opportunity for solar thermal and solar PV.
- Implications of connections to nearby heat networks in terms of housing design.
- Design of houses/buildings to include glass surfaces for solar gain, more open-plan space and underfloor heating to better support low-grade heat dispersal and internal space for thermal stores and, potentially, heat pumps and heat interfaces.
- Design of buildings to address cooling requirements, particularly in cities where higher temperatures caused by climate change will be more severe.
- Use of appropriate building materials to reduce embodied carbon.

Heating systems cannot be treated in isolation from other functional aspects of a building. We believe there should be an additional outcome, focused on the broader changes required to the process of new house-building to deliver ‘carbon neutral homes’ that includes consideration of plot and building design according to function and local conditions to maximise sustainability benefits and complement changes to heating systems. The way a building is designed and built is closely linked to the optimal way it should be heated. We need to avoid unintended consequences where new buildings may have more sustainable heating systems, but their design means they are less energy efficient and the materials they use for insulation have high levels of embodied carbon. See <https://www.leti.london/one-pager> for more on standards for carbon-neutral building design.

3. Do you agree with limiting this Standard to ‘new buildings’ as defined within section 2.2?

We agree that “new buildings” should be included in this Standard (and “conversions” when this means change of use) although, in general, there was a view that this is not the optimal route to drive the conversion of existing buildings to low-carbon solutions.

We are aware that this Standard is intended to cover domestic buildings, and that non-domestic legislation will be brought in at the same time. We think, however, that this Standard should cover all new buildings: domestic and non-domestic.

There are questions around whether heavy renovations that are not related to a change of use will be captured by this Standard. We would argue that renovations should be more clearly defined, and may not necessarily always involve a 'change of use' as we would like to see as wide a remit here as is possible to enforce. If this was linked to whatever needs a planning consent, then this would be covered. There are also concerns about whether the work carried out is large enough to be defined as a conversion.

4. Do you agree with: (a) our approach taken to require future installed heating systems to be zero direct emissions only, and (b) our approach taken to focus on direct/ point of use emissions that a building owner has responsibility over only?

There was some concern that almost all heating systems emit greenhouse gases, whether directly or indirectly. For example, there is an historic issue with some older larger heat pumps, that they may leak refrigerant gases, however these are being phased down / out under EU F Gas regulations.

There are also emissions relating to energy from waste and hydrogen solutions. As such they are generally termed 'low-carbon heat solutions'. Some solutions with zero emissions directly at point of use have high carbon emissions.

There also needs to be some clarity over what "emissions" means here: emissions from what? There were calls for clarity around whether this Standard was allowing space for hydrogen to be used for heating at a later date; many members were heavily in favour of heat pumps and heat networks over hydrogen for heating new homes. A potential suggestion here is the insertion of "greenhouse gas" so "zero direct greenhouse gas emissions" which would be clearer. These would need to be defined in the Standard. There were questions about whether this precluded hybrid boilers; our feeling is that hybrid boilers are more suitable as a retrofit solution rather than for new build.

The other concern with the wording of the Standard was around "point of use" and "emissions generated within the curtilage of the building". This implies that heating emissions can be produced elsewhere but not at the point of use. As such a large gas or biomass boiler or gas CHP solution, located separately but producing heat to a building or cluster of buildings through a district heat network, could be considered 'acceptable' because there are no emissions at the point of use. This would be a significant concern for members if this was the case. These solutions should not be acceptable.

There were concerns too about new-build homes being connected to a heat network with an energy from waste fuel source.

We believe the optimal way to address these issues within the Standard is to include a clear list of acceptable technology solutions, plus a set of exemptions where

heating systems are not 'low-carbon' but are considered acceptable. This would include heat supplied through district heat networks from energy from waste. Also included would be 'connections to existing heat networks irrespective of heat source where they are already operational in the locality'.

Using the wording "people with the agency to do so" is not sufficiently firm; this does not discourage central solutions using inappropriate solutions. We need to ensure that this does not give agency to those looking to circumvent the regulations and the policy.

5. What evidence can you offer on ways of ensuring zero direct emissions from heating that could be compliant with this Standard?

As stated above, the best way would be to include a list of acceptable technology solutions and exclusions for compliance.

As stated in our answer to Question 4, we have concerns with the way the Standard is worded and the potential that this could pave the way to allowing brown hydrogen (produced from coal)/grey hydrogen (produced from natural gas) to be created elsewhere (producing significant emissions at that point) and houses being allowed to burn it because its carbon emissions would not be classed as "direct".

6. What are your views on section 2.6, specifically regarding what mechanism The Scottish Government could use to ensure compliance with the Standard?

There was consensus that the second option (b) was preferable – to design a new list.

We recommend the following technologies at all scales of implementation from single building to sources of heat for district heat networks should be considered acceptable through this Standard:

- Air Source Heat Pumps
- Ground Source Heat Pumps (horizontal/vertical, open/closed)
- Water Source Heat Ps (including surface water bodies, marine and sub-surface)
- Geothermal (including mine water sources)
- Heat pumps using industrial heat sources
- Heat from energy from waste – waste incinerators etc.
- Hydrogen boilers (green hydrogen only)
- Solar thermal
- Heat networks supplied by any of the above technologies.
- Thermal storage technologies – domestic to large scale
- Direct electric / infra-red inc. phase change battery storage
- Biomass boilers

We believe there is no logical reason to support hybrid gas/heat pump solutions in new build as this will encourage a continued dependency on natural gas to provide heat.

SAP needs to be revised so that it does not penalise heat pumps, we do not have the confidence that it would be easily adaptable to this landscape of changing policies and technologies. If policy is to be changed, then we need to ensure that all levers are in place for setting out a new regime. Option b) seems to suggest a list of technologies that are approved, rather than a compliance methodology. We feel that if the Standard specified technologies that are acceptable then this would be much clearer.

Industry would have concerns that the Standard could be circumvented if a methodology approach is used.

Energy Performance Certificates (EPCs) need to be linked to the Standard so existing and future buildings are assessed in the same way. Reforming EPCs and making them a tool to engage with households and businesses on their role and their options in the transition to net-zero is key.

7. What steps can The Scottish Government take to support industry to deliver this Standard, and how could we make compliance with this Standard easier?

A list of acceptable technology solutions and exclusions would make compliance with the Standard much easier.

A dedicated website hub similar to <https://www.districtheatingscotland.com/> with relevant information for developers, including UK and international case studies of new sustainable development together with suppliers working in this space, would be useful.

The current reliance on SAP is well known to be unfavourable to heat pump solutions and needs to be updated. Members raised the ongoing issue of the inequitable tax status of low-carbon electricity versus high-carbon gas. We welcome the recent Scottish Government announcement on the district heating relief on non-domestic rates, however most of these heat projects will run over 20 years and, although the relief is welcome, it will not provide the support required.

A financial support scheme could be offered to house builders for a limited period (and perhaps sliding over 3 years) to ease the transition based on the number and type of homes being built. Funding criteria could then be clearly set in terms of applicable solutions. These could be a refinement of those included in the Standard, for example in terms of building fabric thermal efficiency. This could also offer a direct encouragement for homes built to higher standards.

Some have suggested varying the rate of stamp duty on new homes depending on their thermal efficiency rating and heating system. This approach could offer more flexibility to provide the highest benefits to carbon-neutral or energy-positive homes and a sliding scale down to homes that connect to a district heat network that utilises a high-carbon-emission source (for instance most energy from waste plants).

To encourage the widespread adoption of district heat networks, in particular fifth-generation ambient heat networks, as the optimal low-carbon solution for new development, The Scottish Government needs to legislate to ensure offtaker surety. The new development needs to be defined as a heat network concession zone. This is likely to be the single most effective approach to encourage private sector heat network developers to invest in projects of this nature. Land developers will then need to negotiate with heat network utility providers to design and install their infrastructure in advance of the sale of 'serviced plots' to house builders. This is the common approach currently. The heat network is then run by the heat network utility provider.

8. How do we ensure that consumers are protected from increased energy bills, while giving developers flexibility to comply with the Standard?

This is a complicated issue, as doing the 'right thing' may be more costly to implement and result in rising energy bills. As noted above, the externality costs of burning gas are currently being ignored. The principle of retaining energy bills at their current levels based on a system that relies on externality costs of emissions outputs being ignored is false – somewhere, someone will have to cover these additional costs. The big question is 'who'? Housing developers will try hard to protect their current margins. As such, unless they are compensated through other means, it is likely that, at least in the short-term, housing costs would rise. The other issue is the measurement of "increased energy bills" as cited in the question above: from what baseline? If consumers are moving from a gas-based heating system to an electric one, even with significant energy efficiency improvements, an electric-powered system is likely to be more expensive. If the question is more about how to ensure that consumers are protected from higher energy bills in the future, then the answer is electricity regulation, heat regulation, additional benefits to the fuel poor, although some of these areas are clearly outwith The Scottish Government's powers.

This may need to be assessed on a case-by-case basis as some heat pumps are cheaper than gas, some compete with gas and others are more expensive than gas. One suggestion would be to introduce a requirement to define the heating system efficiency and what the expected heating system cost per unit is to the end user and have that stated in the planning application, so it is reviewed at the planning stage. In addition, the exemption for new house sellers to provide Home Reports could be deleted so that house sellers have to provide information to all potential buyers on the details of the energy efficiency of the building and its heating system.

There could be the potential to introduce a heat benefit payment to those in extreme fuel poverty to overcome, at least in the short term, the extra burden that this may have on them. This could be paid for by some of the carbon tax that is raised on gas, for those who continue to use it.

9. What are your views on new buildings connecting to an existing heat network, where development takes place within a heat network zone? Do you envisage any unintended consequences as a result of this proposal?

Members responded that the answer to this question depended on the fuel source of the heat network identified. There needs to be an overarching exclusion of mains gas, LPG, oil, and direct electric.

However, our members feel that any building connecting to a heat network is a positive step. Ideally The Scottish Government should introduce other new policy incentives to ensure that high-carbon heat sources are replaced in existing heat networks from 2024 onwards. All existing heat networks need to fully decarbonise by 2030-35.

Much of this appears to be linked to LHEES and zoning requirements, as different building requirements make sense in different locations. Where possible, buildings should be district-heating-ready in heat zones, for example. Making this link between the Standard and LHEES possibly needs more thought, and it is important that local authorities should not be expected to do this on their own.

10. Do you agree with The Scottish Government's proposal to introduce this Standard in 2024? What are your views on this Standard being brought into force for new buildings consented earlier than 2024?

As we stated in answer to Q1, there needs to be clarification over what 2024 means: whether it is 'no new planning applications after 2024' or whether 2024 is the final date when plots are handed over. Other thoughts raised by members were that the 2024 date was the final date that applications for building warrants could be made, in which case this is a matter of concern as it would be difficult to change standards halfway through a build and expect compliance. There are questions too about the method in which this target will be implemented, and we hope that further detail is available soon. There is the need to consider that many developers are making decisions now about the business case for buying land and this policy has the potential to have a significant impact on this. Companies in the market need clarity soon to allow for advance planning.

So, in view of the lag time for developers and the potential delay between securing planning consent and building homes, **we recommend setting an additional earlier deadline whereby no new planning consents or planning applications can be submitted for new homes with heating systems based on the combustion of fossil fuel after 2021**. This is to avoid the situation where developers see new rules coming in in a few years and submit pre-applications using fossil fuel heating systems (e.g., houses are still being built today with out-of-date insulation systems from standards set years ago).

It is important that The Scottish Government makes funding available (such as the Green Economic Recovery Fund) to pay for the electricity infrastructure to allow for the volume of connections that will be needed so that heat pump connections to the network are not a deployment barrier.

11. How can opportunities be maximised for the supply chain involved in the delivery of new homes (ranging from product suppliers to on-site operatives), including skills?

To build the supply chain, having a Standard that sets out support for a specific set of technologies is extremely useful. In times of economic challenge it is vital that the Standard sets a clear and unambiguous target so that supply chain companies can build business confidence based on a specific growth direction. As a result, those companies will then be able to expand and allocate time for retraining existing staff and employing/training new staff. New companies will also enter this space if they see it expanding and that confidence is growing.

Additional policy levers like financial incentives for a number of years to employ and train new staff to a defined professional standard would also help stimulate this green growth. Supporting colleges to run suitable courses across Scotland would also be worthwhile – we understand this has started.

12. What do you envisage the key challenges would be for developers, and wider-building industry, in meeting this proposed Standard? How could this sector be supported to address those challenges?

One of the principal challenges is that housing developers are concerned about the significant change this is likely to bring to their existing business processes and, ultimately, the potential impact to their profit margins. To maintain their margins, they believe it is likely to be necessary to increase the value of their homes, which means homes will become more expensive. Housing developers are worried that homes subject to these conditions may not be as competitively priced in relation to homes in other areas built to lower specifications. This is why a national 'level playing field' is essential and must be brought in so that developers with existing planning consents from several years ago cannot expect to build these homes to the previous standard and then price them more competitively. We need a fair and equitable transition and to allow new build to continue to address the housing crisis.

There are also concerns about the attractiveness of homes. Developers are thought to fear consumers may be worried about their home being heated by non-fossil sources. This is part of a larger 'perception issue' around awareness and education that has been raised above and which we believe needs to be tackled through a public awareness raising campaign.

From the developers' side there appears to be a stronger interest in individual building solutions, perhaps due to the need to create a replicable model that can be installed anywhere. There appears to be less interest in installing heat networks. Land and housing developers are less knowledgeable about heat networks: how they are designed, who delivers and owns them, and what the long-term dependencies on those are. This awareness gap needs to be filled given they should make a significant contribution to the decarbonisation of new homes.

To address their financial concerns, developers could be offered some form of subsidy in situations where the grid connection costs have been increased due to the higher demand for heat pumps and their developments. We understand that the developer gets the gas connection for free but pays for the electricity upgrade. This could be changed so that there is NO gas subsidy however there is a subsidy for the

electric connection, over and above the normal payment for the electricity connection.

13. What are the key challenges for the energy networks regarding the deployment of zero emissions heating in new developments? How could this sector be supported to address those challenges?

We would hope that discussions are taking place with the energy network companies on this issue. Obvious issues for electricity companies are power capacity and grid resilience.

Many companies supporting energy networks also provide heat network solutions, so their challenge is to find a way to make decarbonised heat networks commercially viable and price competitive for end customers within the obligational parameters set by regulators. It is likely they will need a scheme like the RHI to make these solutions commercially viable unless prices are allowed to increase significantly.

14. How do you see this Standard interacting with wider-energy system changes, and what role do you see for flexibility and smart technologies?

The adoption of smart, flexible technologies by both scheme operators and consumers needs to go hand-in-hand with changes encouraged by the Standard. This will be key to address grid capacity constraints and 'peak shaving' alongside variable rate tariffs from energy suppliers to encourage users to shift behaviour patterns.

Many of these technologies already exist such as smart monitoring and control systems to optimise the running of heat networks.

15. What can be done to encourage greater consumer awareness and understanding?

A switch away from current 'known' technologies (principally gas boilers) will require a wide range of carefully-planned measures, including a public information campaign about the benefits of moving away from fossil fuel based heat to alternative, greener solutions (that have been around for many years i.e. not new). Homeowners of new homes may need to adopt a more pro-active role in managing their heat in terms of matching supply with demand, selecting the most appropriate tariff etc. This will be new to many. It would be wise to ensure all new home owners are given an information report by the seller about their heating system with an emergency phone number and details of a national advice line to answer questions about how to optimise their system.

A clear 'stop date' on allowing fossil fuel combustion systems for heat is key to this shift so there is clarity of expectation amongst consumers. The public needs to know that mains-gas-based boilers are no longer acceptable for new homes and how this process is going to be rolled out. There are many previous examples of similar campaigns, such as moving to lead-free fuel. We suggest that Scotland should be proud to be the first nation in the UK to take this leading action.

16. What approach should be taken when considering new non-domestic buildings, and what are the specific challenges and opportunities relating to new non-domestic buildings?

As with domestic buildings, the different building types of new non-domestic buildings need to be considered, as there are nuances in the rules. Also, non-domestic buildings have very different energy usage patterns to domestic homes so designing suitable systems will be more on a case-by-case basis. Ownership of non-domestic buildings is also much more complex with, potentially, multiple chain links between the owner and the building occupier. Many buildings typically have multiple owners and multiple occupants.

Timeframes and infrastructure replacement cycles are likely to be different for non-domestic building owners.

New (or converted) non-domestic buildings should be aware of what is happening in the area, so, for example, if in a city centre, buildings may need to be designed to be district-heating ready. In the case of new non-domestic buildings located in heat network zones, we would like to see owners comply with a Standard to connect to the heat network when or where it is available.

17. By introducing this Standard, what challenges or opportunities might result for households on low incomes (for example, around affordability or access), and how can The Scottish Government best take account of these?

Given this policy is predominantly aimed at new owner-occupier households, we do not see it directly addressing the needs of those households with the lowest incomes. This requires policies targeting owners of social housing, some of which exist already.

Lower income home owners should benefit directly from more energy efficient, comfortable homes, although overall energy bills may not be lower unless they are moving from properties with high energy costs, like those reliant on electricity, oil or LPG for heat.

Those seeking to own a new home on lower incomes could be negatively impacted by this policy if housebuilders move to recoup their additional build costs through increasing house prices. This might increase mortgage borrowing requirements. This may, to some extent, be addressed by the shorter-term 'transition measures' we have suggested previously to support land developers / housebuilders. We would expect that as the new Standard becomes the 'norm' in terms of the design and build of new homes, efficiency savings from materials and new processes would enable a reduction in house prices. The importance of a level playing field for all land developers and house builders is key so that the market can operate effectively to ensure new houses are priced across an appropriate range.

One way to keep house prices down would be new policy and legislation to support heat network owners and operators, in particular by offering off-taker surety. This would allow land developers to pass on the cost of servicing new properties with

heat to heat network utility providers. They would then install the necessary infrastructure for a new development as part of the plot development process and homes could then simply be connected to this as they are built in a manner not dissimilar to the current process with mains gas. This would also offer 'spill-over' benefits for wider heat decarbonisation, as these heat networks could be extended to surrounding areas in future phases. Accompanying this policy there needs to be revision of existing regulations in terms of acceptable pricing of such heat services, although it is understood these are being considered at a UK level.

It would be good to see new heating technologies being incentivised / subsidised with costs recovered from savings over the first 10 years, for example, interest free loans. Low-budget households could share in the savings and benefit from the higher quality build.