

28<sup>th</sup> February 2020

Housing to 2040 Team,  
Scottish Government,  
2J North Victoria Quay,  
Edinburgh,  
EH6 6QQ

Dear Housing to 2040 Team

### **Consultation Response: Housing to 2040**

The Institution of Civil Engineers (ICE) is the independent voice on infrastructure and the leading source of expertise in infrastructure and engineering policy. ICE is a global body with 92,000 members. ICE Scotland represents over 8,500 members, who are drawn from across the public, private and academic sectors. Our members design, build and maintain Scotland's critical transport, water, flooding, energy and waste infrastructure as well as educating the next generation of engineers. However, we are not a trade body. Our Royal Charter requires that we act in the public interest and the following comments have been developed in this way.

Civil engineering exists to improve our quality of life – and the role of our homes in our quality of life cannot be disputed. In 2019, we issued our State of the Nation Report “Connecting Infrastructure With Housing” ([ICE SoN2019](#))<sup>1</sup>. The provision of housing, as part of creating high-quality, productive places, is one of the UK's most pressing problems, so the decision to focus our key policy report on the need for a more integrated approach to the way in which it's delivered alongside infrastructure is entirely intentional.

We cannot afford to have new developments served by poor infrastructure connections and public services, nor do we want to see a lack of strategic or local infrastructure preventing quality sites from being brought forward given the housing shortage we are currently experiencing. ICE Scotland members are well positioned to be part of the creation of strong, productive and sustainable places for the people who live in them for generations to come. In addition, the new homes we build need to address affordability and sustainability as does the upgrading of our existing housing stock.

This report, State of the Nation 2019: Connecting Infrastructure with Housing report identifies that more of the same will not suffice.



In order to develop housing that is sustainable, affordable, accessible and future-proofed, ICE Scotland recommends the following:

- That Scottish Government develops a National Needs Assessment for all aspects of Infrastructure, ensuring that Housing requirements are not taken in isolation from additional infrastructure requirements. The already visible impacts of a changing climate, such as increased flooding risk, must be taken into account in needs assessments
- Scottish Government should embark on a wholesale review of building standards to ensuring that industry is required to act in accordance with regulatory measures to ensure sustainable, accessible and future-proofed housing.
- In line with the Infrastructure Commission for Scotland's Key Findings report, Whole life cost approaches must be taken to investment, to account for increased CAPEX to deliver housing that is fit for modern challenges

The Institution of Civil Engineers has an unparalleled breadth & depth of independent expertise within its membership and is able to provide a valuable knowledge resource. ICE Scotland would be happy to contribute further to this consultation as it develops.

Yours sincerely,



**James Young BSc, FICE, CEng**

Chair, Public Voice Sub Committee

**ICE Scotland**

1. [https://www.ice.org.uk/getattachment/news-and-insight/policy/state-of-the-nation-2019/ice-state-of-the-nation-2019.pdf.aspx#\\_ga=2.1468849.1022394631.1568276180-2027898735.1536748453](https://www.ice.org.uk/getattachment/news-and-insight/policy/state-of-the-nation-2019/ice-state-of-the-nation-2019.pdf.aspx#_ga=2.1468849.1022394631.1568276180-2027898735.1536748453)



## RESPONDENT INFORMATION FORM



**Please Note** this form **must** be completed and returned with your response.

Are you responding as an individual or an organisation?

- Individual  
 Organisation

Full name or organisation's name

The Institution of Civil Engineers, Scotland

Phone number

0141 221 5276

Address

105 West George Street, Glasgow

Postcode

G2 1QL

Email

scotland@ice.org.uk

The Scottish Government would like your permission to publish your consultation response. Please indicate your publishing preference:

- Publish response with name  
 Publish response only (without name)  
 Do not publish response

### Information for organisations:

The option 'Publish response only (without name)' is available for individual respondents only. If this option is selected, the organisation name will still be published.

If you choose the option 'Do not publish response', your organisation name may still be listed as having responded to the consultation in, for example, the analysis report.

We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?

- Yes  
 No

## GUIDELINE QUESTIONS

<b>Q1</b>	<p>Earlier this year we published our draft vision and principles. A short and longer version are available here: <a href="http://www.gov.scot/housing2040">www.gov.scot/housing2040</a>. Do you have any comments on the draft vision and principles?</p> <p><b>A vision to provide housing that is of high quality, is set within a sense of place, meets the needs of modern living and performs with minimal impact upon the global climate and local environment is one which ICE Scotland would support. The draft vision &amp; principles set out in Housing to 2040 clearly demonstrate these aims. However, the challenges in achieving these aims in terms of timescale and costs, as well as the diverse nature of Scottish Communities cannot be underestimated. There will be no one answer to any individual challenge and wide range of expertise and knowledge will require to be drawn upon to assess, plan and deliver such a plan. Such a systems approach requires expertise across a range of areas: many of the fields of expertise are out with the remit of our membership, but our comments in the following questions will refer where applicable.</b></p>
<b>Q2</b>	<p>Do you have any comments on the scenarios and resilience of the route map or constraints?</p> <p><b>A comprehensive set of issues for consideration in a route map is set out in Housing to 2040. To create a resilient plan, a definitive set of needs will be required. In the recently published <a href="#">Phase 1:Key Findings Report</a> by the Infrastructure Commission for Scotland (ICS), eight Core Recommendations are set out, all of which are relevant and should be considered within Housing 2040. Within this is the recommendation to carry out a full National Needs Assessment for all aspects of Infrastructure. Housing is part of this infrastructure and, to set out a detailed and resilient plan, an accurate and robust assessment of housing needs is required.</b></p> <p><b>Many aspects of daily living are changing at both work and in homes as digital and other technologies rapidly develop and change. How we travel and how we communicate are changing. We will continue to need power, water and drainage, but these will be influenced by digital change. Digital connectivity, transport, vehicle power source and the like should be considered in in any needs analysis. ICE Scotland welcomes policy ambition from the Scottish Government to decarbonise. While embedded low-carbon options into new housing development will contribute, it must also be recognised that impacts of climate change will continue to be felt. Infrastructure, including our housing stock, must be able to deal with new risks such as warmer ambient temperatures and increased flood risk. The impact of climate change must be taken into account in needs assessments.</b></p>

For questions 3 to 7 below, when making proposals, please be as specific as you can about:

- Who needs to make it happen and what type of action is required? E.g. facilitation, regulatory, financial, infrastructure, training etc.
- How much it costs and who will pay?
- Who is needed to do the work (workforce)?
- How long the proposal would take to implement and whether it is a temporary or permanent measure?
- When in the period 2021 to 2040 should it begin and does anything need to be done first?
- Who will benefit (who is it for)? And who might lose out and how could this be mitigated? (Think about equality groups and different types of organisation and geography and the impact on the wider community.)
- How does it help deliver the draft vision? Does it align with the draft principles?

We recognise you may not be able to answer all of these questions – please do not let that put you off responding to us with your proposals.

**Q3**

Do you have any proposals that would increase the **affordability** of housing in the future?

**The cost of housing comprises two main elements; Land Cost and Build Cost. Whilst the matter of land cost is not within the remit of ICE Scotland consideration, it should be within the scope of the financial assessment within Housing 2040. With regard to construction cost, it is an inescapable fact that to deliver good quality, energy efficient homes will cost more. For example, to simply increase the thermal performance of any building will incur a cost premium. It is therefore essential that in financial assessments, whether for new housing and infrastructure, or for upgrading existing stock, a Whole Life Costing approach is taken to investment. This is a matter referred to in many other reports and is referred to in the ICS Key Findings report. If quality homes are built to be adaptable with a long lifespan and perform with low energy requirements, there will be long term operational savings to offset the increase in initial build cost.**

**In terms of construction build cost, within materials specification, cost, performance, lifespan, carbon footprint, re-usability, recyclability and adaptability all need to be taken in to consideration. Currently, a huge range of house styles, types and sizes exist in Scotland. Within the housing market, there is clearly a demand for variety, however there is much scope for**

	<p>standardisation of elements and within the public sector, there is also scope for standardisation of house types and designs, all of which can help to lower build cost. Modular and off-site construction methods are areas where there is much scope for more efficient construction, but unless investment is made into development and production, long term savings will not be achieved. This is one of many technological advancements already being capitalised on in Scotland such as through the work of the Construction Scotland Innovation Centre. There is a relay opportunity here for Scotland to grow a market lead in these areas.</p>
<p><b>Q4</b></p>	<p>Do you have any proposals that would increase the <b>accessibility and/or functionality</b> of existing and new housing (for example, for older and disabled people)?</p> <p>Creating an accessible and adaptable home, whether a new building or re-purposing an existing building requires the correct requirements to be defined and set out at the commencement of the design process and for the design to fully incorporate these requirements. There already exists a huge base of knowledge within the wider construction industry which can be accessed. However, within the assessment of our future housing needs, the long-term requirements of what a home has to provide in terms of space, energy efficiency, digital and transport connectivity etc all need to be determined, and current standards and specifications adapted and updated. Many aspects of this are already set out in the Scottish Building Standards, such as room sizes, door widths, level access and adaptable ground floor provision, but thorough assessment will determine what standards revision is required.</p>
<p><b>Q5</b></p>	<p>Do you have any proposals that would help us respond to the global climate emergency by <b>increasing the energy efficiency and warmth and lowering the carbon emissions</b> of existing and new housing?</p> <p>The energy efficiency of any building is primarily determined by the thermal performance of the building envelope. The more insulated a building is, the less energy it will take to heat it. The technology currently exists today which allows a building to be constructed which requires minimal carbon sourced energy to perform; for example, the Passivhaus standard. High thermal value walls and windows, heat recovery ventilation systems, airtight construction, air source heating, photovoltaics etc are all technologies which are well advanced and are available now. However, current Building Standards do not</p>

	<p>require compliance to the full availability of what is achievable. Building Standards have introduced increased energy efficiency standards over the years, but they are still some way short. It will be building standards which are a key driver to making housing, and all buildings, more energy efficient. However, as already noted, this will require investment in terms of build cost which requires a whole life cost model to be used. This applies equally to stock upgrading as well as new build, although the practicality of such extensive upgrading may determine the need to replace.</p> <p>Other areas in the build process which have scope for adding to low carbon construction have already been referred to such as material from renewable and sustainable sources, using recycled and repurposed materials and materials which can be recycled.</p> <p>In terms of the infrastructure supporting communities, many of these same principles apply. There will still be a need for electricity generation, but although this is a subject for a separate consideration, district heating systems, micro generation, heat source systems etc may all have a part to play.</p>
<p><b>Q6</b></p>	<p>Do you have any proposals that would improve the <b>quality, standards and state of repair</b> of existing and new housing?</p> <p>The commentary in previous responses has already referred to how many aspects of building construction and upgrading are currently set by Scottish Building Standards and this will continue. New housing will be built to the Building Standards applicable at the time of construction. However, existing housing stock, both public and private, will perform only to the standards applicable at the time they were built or had a significant alteration. Dealing with existing housing in terms of energy efficiency will be one of the major challenges facing the Housing 2040 aims. Homeowners will require support in assessing their choices and making decisions on what is achievable in terms of upgrading properties. Support needs to be provided for thermal performance upgrades such as insulation and windows. There needs to be choice and availability of systems for replacing current gas, oil and other carbon based heating systems. We would welcome further discussion with Scottish Government as to how to take forward programmes to 'retro-fit' existing housing stock in line with current performance requirement.</p>
<p><b>Q7</b></p>	<p>Do you have any proposals that would improve the <b>space around our homes and promote connected places and vibrant communities?</b></p> <p>The space around an individual home and the space within a community are important in making a house a home and in making a house work within a</p>

	<p>community. How a community is laid out and designed will require a number of factors to be considered. However, the provision of supporting infrastructure, connectivity etc are all contribute to making a community work and this integration of housing and infrastructure is covered in detail in our <a href="#">SoN2019</a>.</p> <p>The location, layout, density, shopping provision, school &amp; community assets etc for a housing development will be part of the planning process and Scottish Planning Guidance, which is currently under review, will play a fundamental role in setting standards for residential development. As set out in the ICE SoN 2019 report, all aspects of infrastructure need to be considered in the Planning process.</p> <p>ICE Scotland welcomes the Infrastructure Commission for Scotland’s recent comments on ‘green infrastructure’. Along with creating positive outcomes in terms of placemaking and wellbeing, green infrastructure can play a critical role in infrastructure resilience, such as through the provision of flood prevention measures.</p>
<p><b>Q8</b></p>	<p>Any other comments?</p> <p>ICE Scotland recognises the vital importance of the future provision of housing and its associated infrastructure. Planning Guidance and Building Standards will play a vital role in how housing and infrastructure are created. There will be challenges to the visions and principles of Housing 2040</p> <p>Cost – Better quality, energy efficient homes will cost more for both new construction and existing upgrading. Whole life costing needs to be adopted. Procurement strategies need to be developed to give certainty to the construction supply chain and eliminate risk costs. Procurement strategies are evolving with sustainability metrics increasingly embedded into regulated procurement. More enterprise-like procurement strategies should be adopted to increase the scope for embedding circular economy principles in to industry practices. Ensuring whole life costing approaches to the construction, upgrading and maintenance of housing and associated infrastructure will require considerable technical expertise (for example, in determining the appropriate use of new or recycled materials and caging and adapting industry standards and principles.</p> <p>Finance – The ICE SoN2019 report refers to funding mechanisms. Scottish Government already has in place funding support for housing and this needs to be maintained in the future. Support for Housing Associations and other RSL’s needs to be maintained. A role for the Scottish National Investment Bank within this sphere should be fully investigated. Mechanisms need to be developed to facilitate and encourage investment form the private sector. Developer led initiatives for social, affordable and local authority housing</p>

should be supported.

**Workforce and Skills** – It is recognised across most employment sectors, that current demographics are creating issues in terms of skills and labour resource. ICE produced a [Professional Skills Report](#) in 2018 which set out the changes required to meet future challenges. CITB produced a [Construction Skills Network Report for 2019-23](#) setting out the general skills issues within the construction industry. For Scotland in particular it is predicted that almost [14000](#) new workers alone are required in the assessment period with housing being a key sector. The Construction Industry is already taking steps to deal with the promotion of Construction as a career with a huge and exciting range of job opportunities and is developing recruitment and training initiatives. This demand requires a diverse workforce and that across the sector there is a recognition of the need for the construction industry to be an open and attractive employment sector. Full Scottish Government support is required for this through schools, colleges and universities and recognising the need to promote at all levels covering unskilled, semi-skilled, skilled, technical and professional roles.

**Timescales** –As referred to in other commentaries, existing technology already exists and can be adopted quickly (Passivhaus etc). Ranges of existing sustainable construction materials are also ready. There are Zero & Low Carbon power sources which are available now and some will require continuing research and development. District heating systems, micro generation ground source and air source technologies are also currently available. Scotland now hosts one of the two UK Geoenery Observatories in the east end of Glasgow (UKGEOS, £9M investment from BEIS), focussed on minewater geothermal: a promising source of sustainable heating, cooling and interseasonal heat storage. Given the scale of the urgency of dealing with Climate Change, ways of utilising what is currently available should be adopted and investment made in continuing research and development for emerging technologies.