

Active House Alliance: [Response to Proposed Domestic Building Environmental Standards \(Scotland\) Bill](#)

Founded in 2011, the Active House Alliance is a non-profit partnership of public, private, industry and consumer bodies which have come together in order to push for a greater understanding of how sustainable buildings work, are created and delivered. They have a holistic view of sustainable buildings based on three key principles: comfort, energy, and the environment. That view is based on an open methodology, that enables them to use a variety of tools and methods collaboratively in order to meet those three key principles. Located in Glenrothes, Fife at VELUX GB & Ireland HQ, the Active House Alliance (UK Chapter) Ltd was formed in 2022 to promote the Active House principles in the UK.

With this in mind the Active House Alliance would like to submit the following response to Alex Rowley MSP's Proposed Domestic Building Environmental Standards (Scotland) Bill.

Consultation Response

Aim and approach

1. Which of the following best expresses your view of the proposed Bill? (please note that this question is compulsory)

Partially supportive

Reasons:

The Active House Alliance is a non-profit partnership of public, private, industry and consumers bodies which have come together in order to push for a greater understanding of how sustainable buildings work, are created and delivered. The alliance has a holistic view of sustainable buildings based on three key principles: comfort, energy, and the environment. When designing a building, the Active House principles therefore calculate:

- Daylight
- Thermal environment
- Indoor air quality
- Acoustic Quality
- Energy Demand
- Primary energy performance
- Energy Source
- Sustainable construction [embodied carbon]
- Freshwater consumption

With this in mind, we recognise the importance and the need to improve energy efficiency and thermal performance in Scotland's housing stock, which will play a huge part in Scotland achieving net zero greenhouse gas emissions by 2045, and welcome legislative proposals in pursuit of this goal, but it is important that a holistic approach is taken to improving and decarbonising Scotland's housing stock.

While elements of the Passivhaus standard have potential in net-zero housing, a Bill that seeks to introduce a Passivhaus standard or 'Scottish equivalent' would a) be restrictive when it comes to building design and regulation b) risk not considering elements, other than energy efficiency, which

play a huge role in promoting healthy and comfortable lives and c) hold potential future financial and environmental costs.

The Scottish Government recognises that action is needed for new build housing stock to contribute to climate change targets. Action is being considered through proposed changes to building regulations that have been consulted on in 2021¹. Zero emissions heating and cooling systems will also be put in place for any building warrant applied for from 2024². This raises the question of whether the introduction of a new Member's Bill, and subsequent change in legislation, is required or whether energy efficiency measures can be implemented by means already available to the Scottish Government.

What the proposed Bill omits, is the issue of tackling Scotland's existing housing stock in relation to climate change targets. Existing housing stock has the potential to contribute considerably to climate change targets. That has previously been acknowledged in the Sullivan Report published in 2007. The Report 'A Low Carbon Building Standards Strategy for Scotland' set out a road map to achieve 'zero-carbon new buildings' in Scotland by 2030, but alongside this recommended action in regard to existing housing stock. This included the development of practical performance standards for existing buildings, aligned with the energy performance certificates.

Buildings contribute significantly to carbon emissions³, there is a serious need to tackle this issue if the current 2040 housing targets are going to be met. Indeed, a recent Mott McDonald report has highlighted that retrofitting of existing stock needs to be tackled as a matter of urgency⁴.

We believe that concerns over the quality of existing stock are justified given the rate at which the housing stock is replaced, which sits at roughly 1% annually throughout the UK, meaning that roughly 81% of current stock will still be in existence by the zero target of 2045⁵.

Also, due to years of stagnant house building initiatives, Scotland has an aging housing stock with 72% of occupied housing built before 1982⁶. We believe that a far greater emphasis needs to be placed on retrofitting and renovating current stock. Particularly given the potential of this existing stock – new and existing stock combined has global potential for energy savings of 50-90%⁷.

In conclusion, Active House is supportive of the proposed Bill's overall aim which is to push forward the agenda of hitting Scotland's climate change and fuel poverty targets and improving new build housing stock to ensure energy efficiency, but we believe it should be broadened. The adoption of the Passivhaus standard (or Scottish equivalent) in its entirety, without consideration for the wider issue of health and wellbeing within our homes, would not be in the best interests of either the sector or the people that it serves.

Research finds that people spend up to 90% of our time indoors in urban areas⁸. It's also worth bearing in mind the Scottish Government's own report Housing to 2040 states, "Homes have never been simply bricks and mortar – good housing and homes support our health, our wellbeing, our life

¹<https://consult.gov.scot/local-government-and-communities/building-regulations-energy-standards-review/>

²[https://www.gov.scot/publications/heat-buildings-strategy-achieving-net-zero-emissions-scotlands-buildings/pages/9/#:~:text=To%20ensure%20that%20new%20buildings,emissions%20heating%20\(and%20cooling\).](https://www.gov.scot/publications/heat-buildings-strategy-achieving-net-zero-emissions-scotlands-buildings/pages/9/#:~:text=To%20ensure%20that%20new%20buildings,emissions%20heating%20(and%20cooling).)

³<https://www.gov.scot/binaries/content/documents/govscot/publications/corporate-report/2009/09/a-low-carbon-strategy-scotland-sullivan-report/documents/sullivan-report-pdf/sullivan-report-pdf/govscot%3Adocument/the%2Bsullivan%2Breport.pdf#page=27>

⁴<https://www.ice.org.uk/media/sp5pegl3/ice-scotland-report.pdf>

⁵<https://existinghomesalliancescotland.co.uk/>

⁶<https://www.gov.scot/binaries/content/documents/govscot/publications/statistics/2020/01/scottish-house-condition-survey-2018-key-findings/documents/scottish-house-condition-survey-2018-key-findings/scottish-house-condition-survey-2018-key-findings/govscot%3Adocument/scottish-house-condition-survey-2018-key-findings.pdf#page=21>

⁷<https://www.activehouse.info/active-house-alliance-formulates-strategy-3-0/>

⁸<https://op.europa.eu/en/publication-detail/-/publication/4beb6973-83f8-49a9-a6c8-d31a6d75a247>

chances and our job prospects. Everyone should have a home that brings them those chances and opportunities".⁹

Considering how indoor air quality, daylight and the thermal environment affect productivity, health and well-being, it is essential to design buildings that facilitate comfort as well as sustainability if we are truly to provide housing that protects both people and the planet. Buildings that follow Active House principals will do exactly that; create a healthier and more comfortable home for their occupants with a minimal climate impact¹⁰.

2. Do you think legislation is required, or are there other ways in which the proposed Bill's aims could be achieved more effectively? Please explain the reasons for your response.

We believe that there is a need to act now to ensure that we improve people's lives through the built environment, with a particular focus on healthy housing and energy efficiency. Legislation is the most appropriate way to do this, any changes should be set out through the building regulations and technical handbooks, which will ensure that the construction industry has all the tools and guidance it needs.

As we mentioned briefly in response to question 1, current and proposed changes to building regulations in Scotland show that the aims of the proposed Bill regarding fuel poverty and energy efficiency are to some extent already being actioned at a government level¹¹. This includes both the private and public sector with the creation and targets associated with the Scottish Government's *Zero Emission Social Housing Taskforce (ZEST)*¹². We believe that there is scope within the current landscape for some of the aims of the proposed Bill to be accommodated and taken forward. The scope of the *Scottish Building Regulations: Proposed Changes to Energy Standards Including Ventilation, Overheating and Electric Vehicle Charging Provision* looks to cover a number of elements and targets linked to Passivhaus without adopting the specific standard. For example, the Scottish Government have committed to amending guidance on domestic ventilation and introduce the proposed new standard for overheating assessment in new homes and similar residential buildings¹³.

3. Which of the following best expresses your view on setting the Passivhaus standard or a Scottish equivalent as the most appropriate new build housing standards to contribute to eradicating fuel poverty?

Neutral

Reasons:

⁹<https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2021/03/housing-2040-2/documents/housing-2040/housing-2040/govscot%3Adocument/housing-2040.pdf#page=4>

¹⁰<https://www.activehouse.info/active-house-alliance-formulates-strategy-3-0/>

¹¹<https://www.gov.scot/binaries/content/documents/govscot/publications/consultation-analysis/2022/06/scottish-building-regulations-proposed-changes-energy-standards-etc-consultation-analysis-report2/documents/scottish-building-regulations-proposed-changes-energy-standards-including-ventilation-overheating-electric-vehicle-charging-provision-consultation-analysis-report/scottish-building-regulations-proposed-changes-energy-standards-including-ventilation-overheating-electric-vehicle-charging-provision-consultation-analysis-report/govscot%3Adocument/scottish-building-regulations-proposed-changes-energy-standards-including-ventilation-overheating-electric-vehicle-charging-provision-consultation-analysis-report.pdf>

¹²<https://www.gov.scot/groups/zero-emission-social-housing-taskforce>

¹³<https://consult.gov.scot/local-government-and-communities/building-regulations-energy-standards-review/>

We believe that fuel poverty is an extremely pressing issue in Scotland, with 24% of Scottish households experiencing fuel poverty in 2021¹⁴. Given the age and quality of much of Scotland's housing stock, energy efficiency measures are key to ensuring the future of Scotland's public health and buildings.

While the standards set within Passivhaus undoubtedly improve energy efficiency overall compared with current standards, the adoption of the Passivhaus standard exclusively may limit Scotland's ability to use different approaches to energy efficiency where these are required. Housebuilders would in effect be locked into a very specific design and build and certification method, when energy and fuel efficiency targets can be met through a range of approaches which can be tailored to the needs of the household and local area.

Examples of varying methods can be found across the UK. The SOLCER house for instance is an example where the adoption of specific strategies can have a hugely positive impact on energy efficiency.¹⁵ There is a need for a holistic approach whereby, "reduced energy demand [is combined] with renewable energy supply and storage, and the use of building integrated renewable energy systems."¹⁶

Active House recognises that both energy and fuel efficiency are of significant importance. They are key motivators not only in new builds but also for those seeking to renovate their homes with 75% of Europeans who do renovate saying saving energy is vitally important.¹⁷

The overall aims of the standard are laudable but combating and eradicating issues like fuel poverty do not require the adoption of the very specific Passivhaus standard exclusively. Variation should be required and encouraged given the complex housing needs of Scotland's homeowners and local authorities.

4. Which of the following best expresses your view on setting the Passivhaus standard or a Scottish equivalent as the most appropriate new build housing standards to contribute to a reduction in emissions?

Partially oppose

Reasons:

The proposed Bill talks about a reduction in emissions, we believe that any discussion around reduced emissions must take into account the carbon intensity of the whole construction process. It is important that any proposed legislation takes levels of embodied carbon into consideration.

We very much support the Bill's proposals around addressing the "performance gap", the gap between the design of the building and the energy efficiency and thermal performance of the completed build, and acknowledge the Passivhaus standard's potential in this area, but one of the main problems when we currently talk about net-zero buildings is there is little consideration given to the emissions linked to the creation of those buildings.¹⁸

¹⁴https://www.eas.org.uk/en/scottish-fuel-poverty-map_59455/#~:text=The%20worst%20areas%20for%20fuel%20poverty%20in%20Scotland%20revealed_&text=Figures%20mapped%20out%20by%20fuel,was%2024%25%20of%20all%20households.

¹⁵<https://orca.cardiff.ac.uk/id/eprint/93301/7/Preparation%20for%20an%20energy%20positive%20community%20in%20the%20UK.pdf>

¹⁶<https://orca.cardiff.ac.uk/id/eprint/95142/1/SB13Dubai2013.pdf>

¹⁷<https://www.activehouse.info/active-house-alliance-formulates-strategy-3-0/>

¹⁸<https://www.sciencedirect.com/science/article/pii/S0378778813004143>

We need to look at a range of best practice examples in the sector as a whole that take account of emissions, including embodied carbon. A number of innovative methods and practices will achieve a reduction in emissions, it is important that any legislation recognises the range of potential across the sector.

5. Which of the following best expresses your view of the process set out to ensure that the new standards are met in all new build housing? (see pages 14 to 16 above)

Neutral (neither support nor oppose)

7. Any new law can have a financial impact that would affect individuals, businesses, the public sector, or others. What financial impact do you think this proposal could have if it became law?

Some increase in costs

Please explain the reasons for your answer, including whom you would expect to feel the financial impact of the proposal, and if there are any ways you think the proposal could be delivered more cost-effectively

Reasons:

Active House believes there would be financial implications in adopting Passivhaus both for individuals and possibly for the those involved in processes for ensuring standards are met. One of the key concerns is return on investment.

It is well known that Passivhaus is designed to be as energy efficient as possible and that this can have a positive impact on fuel consumption and the associated bills for individuals if the build functions as it should. However, there are potential costs associated with the build that are meant to be offset by the reduction in associated running costs over the lifetime of that build.¹⁹As the Passivhaus Trust states, it is still difficult to get a clear picture of the costs associated with Passivhaus, but claims range from 0% to 30% above standard building regulations²⁰.

This has implications when it comes to the upfront cost of social and affordable housing. This could be an impediment to the adoption of the standard, particularly in the context of a cost-of-living crisis and rising costs of materials.

As we have set out previously, we do not believe that the adoption of Passivhaus or a Scottish equivalent exclusively is a requirement for meeting the targets set by the Scottish Government in relation to fuel, energy and emissions. We have shown that there are alternative design-led routes that can achieve the same desired outcomes while holistically incorporating other key elements of building design which incorporate health.

¹⁹<https://www.passivhaustrust.org.uk/UserFiles/File/Technical%20Papers/150128%20PH%20Capital%20Costs.pdf>

²⁰<https://www.passivhaustrust.org.uk/UserFiles/File/Technical%20Papers/150128%20PH%20Capital%20Costs.pdf>

Sustainability

9. Any new law can impact on work to protect and enhance the environment, achieve a sustainable economy, and create a strong, healthy, and just society for future generations. Do you think the proposal could impact in any of these areas?

If you do not have a view then skip to next question. Please explain the reasons for your answer, including what you think the impact of the proposal could be, and if there are any ways you think the proposal could avoid negative impacts?

We believe that a great emphasis should be placed on health, both in relation to the buildings themselves but also the necessary measures that ensure the health of the households (and future households) living in buildings. In keeping with the aim of raising standards, the construction of any new build should take a holistic approach to building design, for example considering how indoor air quality and daylight alongside the environment affect productivity, health and well-being.

There are a range of practices, methods and standards that could form part of the Bill or could play a part in shaping the Bill's progress. By broadening the issues the Bill seeks to address, there is potential to legislate for wider issues like healthy buildings which will, alongside energy efficiency, support a strong, healthy and just society for future generations.

General

10. Do you have any other additional comments or suggestions on the proposed Bill (which have not already been covered in any of your responses to earlier questions)?

Published responses (other than anonymous responses) will include the name of the respondent, but other personal data sent with the response (including signatures, addresses and contact details) will not be published.

The Active House Alliance is a non-profit partnership of public, private, industry and consumers bodies which have come together to push for a greater understanding of how sustainable buildings work, are created and delivered. The alliance has a holistic view of sustainable buildings based on three key principles: comfort, energy, and the environment. We believe that the proposed Bill should consider these key principles as opportunities.

More than 1½ times as many Europeans have poor health when living in an unhealthy building²¹. Considering how indoor air quality, daylight and the thermal environment affect productivity, health and well-being, it is essential to design buildings that facilitates comfort as well as sustainability. Buildings that follow Active House principals will do exactly that; create a healthier and more comfortable home for their occupants with a minimal climate impact.²²

Since Active House's conception in 2011, the principles and specifications have been applied to numerous building types: single-family and multi-family residential, social housing, offices, schools and more. Projects have been undertaken in various climate zones and encompass new constructions as well as retrofits.

²¹https://velcdn.azureedge.net/-/media/com/what-we-do/healthy-buildings-focus/healthy-homes-barometer/velux_hhb_2017.pdf

²²<https://www.activehouse.info/active-house-alliance-formulates-strategy-3-0/>

The Active House was designed to be flexible to the needs of varying climates, individual needs and location, meaning that it has the potential to adapt to the varied housing need across the UK and Scotland.