

Proposed Domestic Building Environmental Standards (Scotland) Bill

Introduction

A proposal for a Bill to introduce new minimum environmental design standards for all new-build housing to meet the Passivhaus standard or a Scottish equivalent in order to improve energy efficiency and thermal performance.

The consultation runs from 4 May 2022 to 27 July 2022

All those wishing to respond to the consultation are strongly encouraged to enter their responses electronically through this survey. This makes collation of responses much simpler and quicker. However, the option also exists of sending in a separate response (in hard copy or by other electronic means such as e-mail), and details of how to do so are included in the member's consultation document.

Questions marked with an asterisk (*) require an answer.

All responses must include a name and contact details. Names will only be published if you give us permission, and contact details are never published – but we may use them to contact you if there is a query about your response. If you do not include a name and/or contact details, we may have to disregard your response.

Please note that you must complete the survey in order for your response to be accepted. If you don't wish to complete the survey in a single session, you can choose "Save and Continue later" at any point. Whilst you have the option to skip particular questions, you must continue to the end of the survey and press "Submit" to have your response fully recorded.

Please ensure you have read the consultation document before responding to any of the questions that follow. In particular, you should read the information contained in the document about how your response will be handled. The consultation document is available here:

[Consultation Document](#)

[Privacy Notice](#)

I confirm that I have read and understood the Privacy Notice which explains how my personal data will be used.

About you

Please choose whether you are responding as an individual or on behalf of an organisation.

Note: If you choose "individual" and consent to have the response published, it will appear under your own name. If you choose "on behalf of an organisation" and consent to have the response published, it will be published under the organisation's name.

on behalf of an organisation

Which of the following best describes you? (If you are a professional or academic, but not in a subject relevant to the consultation, please choose "Member of the public".)

No Response

Please select the category which best describes your organisation

Commercial organisation (company, business)

Optional: You may wish to explain briefly what the organisation does, its experience and expertise in the subject-matter of the consultation, and how the view expressed in the response was arrived at (e.g. whether it is the view of particular office-holders or has been approved by the membership as a whole).

Our organisation has over 60 years of experience in designing and delivering commercial and residential projects.

We are aware of the significant contribution the construction industry has made and continues to make to the Climate and Biodiversity emergency and we believe we have a responsibility to improve the way buildings are designed, built, refurbished and retrofitted. To this end, we are actively seeking to raise the level of knowledge and skill of our staff and to engage with wider initiatives that drive the much-needed transformation in the built environment.

The responses were developed in house by two of our architects (both recently qualified as Passivhaus designers) and reviewed by members of the management team.

Please choose one of the following:

I am content for this response to be published and attributed to me or my organisation

Please provide your Full Name or the name of your organisation. (Only give the name of your organisation if you are submitting a response on its behalf).

(Note: the name will not be published if you have asked for the response to be anonymous or "not for publication". Otherwise this is the name that will be published with your response).

Michael Laird Architects

Please provide details of a way in which we can contact you if there are queries regarding your response. Email is preferred but you can also provide a postal address or phone number.

We will not publish these details.

Aim and approach - Note: All answers to the questions in this section may be published (unless your response is "not for publication").

Q1. Which of the following best expresses your view of the proposed Bill? Please note that this question is compulsory.

Fully supportive

Please explain the reasons for your response.

The energy targets imposed by the Passivhaus standard are more ambitious than the currently proposed changes to Section 6 Energy for both Domestic and Non-Domestic buildings. Adopting the standard will therefore lead to an accelerated reduction in energy demand and associated CO2 emissions. At the same time, the Passivhaus internal comfort criteria and the rigorous certification process are designed to ensure

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a greater level of occupant comfort and better quality of construction.

However, the Bill proposal only applies to new build housing. Meaningfully addressing fuel poverty, nationwide energy demand and carbon emissions will require similar legislation on retrofitting and improving the existing building stock.

Q2. 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.

Yes.

Ambitious voluntary energy targets already exist and some developers, housing associations and local authorities in the UK already adhere to these. Most notably is the Goldsmith Street Social Housing development in Norwich, which was built to Passivhaus standard, and has won the 2019 RIBA Stirling Prize.

However, introducing the Passivhaus standard into legislation will ensure a level playing field, an accelerated upskilling of the industry and will ultimately reduce capital costs associated with delivering low energy buildings.

Financial incentives and /or tax benefits may enable the transition until the Passivhaus standard becomes legislation.

International Implementation Example of the Passivhaus Standard: Brussels Exemplary Buildings Program

In 2004 Brussels looked to improve the energy performance of its new and refurbished buildings and took a giant leap of faith in focusing on Passivhaus Standards. Unfortunately, none of the buildings by 2007 complied with Passivhaus Standards. In response to this, the Brussel Government introduced the Exemplary Buildings Programme (BatEx - Batiments Exemplaires). The programme, which ran from 2007-2012, issued grants and subsidies to new projects in the form of Financial, Technical and Visibility assistance. Funds in the region of £5m per year were available in order to provide buildings which met the Passivhaus criteria. The funding criteria for the BatEx programme was quite strict and would be given on the basis of building type and set out criteria that must be met.

Q3. 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?

Fully supportive

Please explain the reasons for your response.

The Passivhaus standard is a tried and tested method of designing and constructing highly energy efficient buildings and therefore significantly reducing utility bills and the incidence of fuel poverty. We would urge caution when considering a Scottish equivalent. The Passivhaus standard and PHPP assessment tools have been developed and reviewed consistently over past 30 years. Introducing a Scottish equivalent will take additional time and resource to establish and implement, further prolonging the impact of energy reduction in buildings.

Q4. 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 supportive

Please explain the reasons for your response.

The Passivhaus standard is primarily focused on operational energy, whilst not setting any embodied

Q4. 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?

carbon targets.

A more impactful legislation proposal would require Whole Life Carbon Assessments to be carried out and would include limiting targets for embodied carbon.

For clarity, the "'Embodied Carbon' emissions of an asset are the total Greenhouse Gas emissions and removals associated with materials and construction processes throughout the whole life cycle of that asset." [1] These include "the processes associated with sourcing materials, fabricating them into products and systems, transporting them to site and assembling them into a building. They also include the emissions due to maintenance, repair and replacement, as well as final demolition and disposal." [2]

[1] LETI, Carbon Definitions for the Built Environment, Buildings and Infrastructure, 2021

[2] RIBA Sustainable Outcomes Guide, 2019, p. 29

Q5. 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 in the consultation document)

Partially supportive

Please explain the reasons for your response, including your views on how effective the process would be in removing the 'performance gap' and on how the proposed verification process might work in practice.

In our view, the process outlined on pages 14-16 is slightly misleading:

- In both instances, the diagram is not showing the Building Warrant stage. This stage is critical, as it evaluates compliance with wider aspects of Building Regulations, not just energy performance.
- Similarly, the diagram and description of the Passivhaus standard process does not clearly identify the evaluation of the project at design stage. Is the consultation proposing to assess whether the design satisfies the Passivhaus criteria as part of the planning application?

Performance gap:

- We agree that introducing an additional verification step, as required by current Passivhaus certification process, will improve the quality of the build and ultimately reduce the performance gap.
- In our view, the PHPP is indeed an accurate tool for assessing in-use performance of the heating, cooling, ventilation, and hot water systems. However, when calculating the predicted energy demand associated with the lighting system or small power appliances, the current PHPP (version 9) relies on nominal values that might not always reflect the dynamic of day-to-day living patterns. Version 10 of PHPP has been recently released and this might address some of these issues.

Verifiers:

Building Standards and Planning departments across several local councils are under high pressure and struggle to manage the increasing number of incoming applications. We believe it would be beneficial for the verifiers to be independent of the local authorities. The Passivhaus verifier could be treated similar to that of an airtightness tester, SER certifier or BREEAM Assessor etc whereby an independent company with the relevant qualifications / experience and resource provide an evidence-based document to the local authority demonstrating that the works comply with the as-designed calculations. This would in turn also be submitted to the Passivhaus Institute for their approval.

Q6. What could be the market effects of the introduction of this proposal?

Skills and knowledge:

Concerns around lack of necessary skills, for both designers and contractors, are real. However, we believe that the answer is to accelerate the upskilling of everyone in the industry, and not to slow down legislative measures that could meaningfully address the climate emergency, fuel poverty and the comfort standards of building users. In addition, having the skills and knowledge to deliver better homes, will most likely increase the professional satisfaction of those working in the built environment.

Q6. What could be the market effects of the introduction of this proposal?

Supply chain readiness:

Adopting the Passivhaus standard will increase the demand of building elements (eg. windows) and equipment that satisfy the Passivhaus criteria. Without careful management and sufficient notice that will allow manufacturers and suppliers to adapt, this could lead to additional supply chain challenges.

Construction programme:

Adopting the Passivhaus standard will have an initial impact on design and construction programmes - but the exact extent of this impact will depend on the implementation process. The additional time associated with a more detailed design assessment (PHPP as opposed to SAP) and the certification of the building will diminish as the industry becomes more familiar with the standard.

Financial Implications

Q7. Any new law can have a financial impact which 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.

It is generally accepted that buildings constructed to the Passivhaus standard will incur additional capital costs. Although these will vary from project to project, they were estimated to be around 8% in 2019 and expected to fall to 4% [3], as the standard becomes more widely adopted. Whilst the upfront budget is indeed very important, to evaluate the full building costs, an assessment of both the life cycle costs & life cycle value will have to be carried out. Ultimately, the market will adapt to any new legislation.

Such a holistic cost analysis will have to compare capital costs with the savings achieved through lower energy bills, maintenance costs and other benefits such as the ability to obtain lower rate green finance.

In a landscape dominated by volatile energy prices, minimising building running costs becomes very appealing.

[3] Passivhaus Trust, Passivhaus Benefits, December 2021, p. 39

Equalities

Q8. Any new law can have an impact on different individuals in society, for example as a result of their age, disability, gender re-assignment, marriage and civil partnership status, pregnancy and maternity, race, religion or belief, sex or sexual orientation.

What impact could this proposal have on particular people if it became law? If you do not have a view skip to next question.

Please explain the reasons for your answer and if there are any ways you think the proposal could avoid negative impacts on particular people.

As this bill applies to new construction only, it will positively impact those moving into new homes built to the Passivhaus standard. However, this bill will not improve the living conditions of families experiencing fuel poverty due to the poor energy efficiency of the existing housing stock.

Unless meaningful action is taken to improve the energy performance of existing buildings, there is a risk

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What impact could this proposal have on particular people if it became law? If you do not have a view skip to next question.

Please explain the reasons for your answer and if there are any ways you think the proposal could avoid negative impacts on particular people.

to create greater inequalities between those living in new Passivhaus homes and those continuing to inhabit current buildings.

Sustainability

Q9. 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?

This bill proposal applies to new-build residential projects and it is focused purely on minimising operational energy demand and the associated carbon emissions. However, as the energy demand decreases and as the production of energy is decarbonising, the emissions associated with constructing, maintaining, and disposing of a building at the end of its life become more significant. These emissions, also known as embodied carbon, can represent 40-70% of Whole Life Carbon in a new building. [4] In our view, any new legislation or iteration of the building standards will have to address the embodied carbon, in addition to limiting operational energy demand.

By only focusing on new construction, the bill ignores most of the Greenhouse Gas emissions associated with operating existing buildings. A nationwide programme targeting considerate repair, refurbishment and retrofit solutions is critical in minimising the environmental impact of the built environment.

[4] LETI, Embodied Carbon Primer, 2020, p.18

General

Q10. 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)?

Once the responses are completed and centralised, would it be possible to circulate the analytics back to the respondents?