Written evidence submitted by the Royal Institute of British Architects (RIBA)

The Royal Institute of British Architects champions better buildings, stronger communities and higher environmental standards through the practice of architecture and our 40,000 members. We provide the standards, training, support and recognition that put our members – in the UK and overseas – at the peak of their profession. With government and our partners, we work to improve the design quality of public buildings, new homes and new communities.

The Royal Institute of British Architects (RIBA) welcomes the opportunity to respond to this inquiry. Our response builds upon our submission to the Environmental Audit Committee's inquiry on energy efficiency in existing homes.

Around 40% of global carbon emissions stem from buildings and architects have a significant role to play in reducing UK greenhouse gas emissions. The RIBA joined the global declaration calling an environment and climate emergency on 29 June 2019; just two days after the UK government passed a law stipulating the UK end its contribution to global warming by 2050, by bringing all greenhouse gas emissions to net zero.

In October 2019, the RIBA launched the 2030 Climate Challenge. The Challenge asks architects meet net zero (or better) whole life carbon for new buildings by 2030 by reducing operational energy, embodied carbon and potable water usage.

The built environment has a key role in supporting an environmentally friendly recovery from the coronavirus pandemic. Improving the energy efficiency of our existing housing stock and ensuring new buildings do not negatively impact the environment are key to stimulating investment and consumer spending, improving the nation's health and wellbeing and meeting our net zero targets.

Improving the energy efficiency of existing homes

The RIBA's response to the inquiry on energy efficiency in existing homes highlighted that upgrading energy inefficient homes can stimulate the economy, create jobs, upskill workers, and alleviate demand on the NHS whilst mitigating climate risks.

To realise these benefits, improving the energy efficiency of homes must become a national infrastructure priority. The Government must set more ambitious retrofit targets and set out a National Retrofit Strategy which includes clear governance arrangements, targets, and a long-term action plan which identifies incentives and ringfences funding.

The RIBA welcomes the £2 billion announced by the Chancellor in the summer economic statement; however, this must be just the beginning. The Conservative Party earmarked £9.2 billion in their election manifesto for three energy efficiency programmes – the Social Housing Decarbonisation Fund, Home Upgrade Grants and Public Sector Decarbonisation Scheme. These must be confirmed in full and implemented as soon as possible.

As part of the National Retrofit Strategy, the Government should support training and education through ringfenced funding. In their response to COVID-19, New Zealand allocated NZ$1.1 billion (£0.55 billion) as part of an environmental jobs package, and a further NZ$1.6 billion (£0.8 billion) over four years for trades and apprenticeship training.[1] Investment in energy efficiency and related training and education will help "level up" opportunities across the UK.

In the past, the cross-departmental nature of energy efficiency has meant that crucial elements of its policy have been lost between departmental remits, allowing departments to shift accountability amongst one another. Coordination of the Strategy across departments could be more effective through a HM Treasury led infrastructure approach.

Recommendations:

- Improving the energy efficiency of homes must become a national infrastructure priority and Government must set more ambitious retrofit targets.
- The Government must set out clear retrofitting policies as part of a National Retrofit Strategy, including incentives to stimulate private capital and funding for training and education.
- The £9.2 billion earmarked in the Conservative Party's election manifesto must be confirmed in full and implemented as soon as possible.
- Coordination of the National Retrofit Strategy should be through a HM Treasury led infrastructure approach.

New homes must not negatively impact the environment

The Government has pledged to build at least a million new homes over this Parliament[2]; building these homes should be a priority to help stimulate the economy and address the housing crisis. However, the Government must ensure these new homes do not negatively impact the environment.

The Government's recent White Paper "Planning for the Future" sets out proposals to reform the planning system to help 'get Britain building'. However, the proposals do almost nothing to guarantee the delivery of affordable, well-designed and sustainable homes.

The White Paper proposes that the Government will "facilitate ambitious improvements in the energy efficiency standards for buildings." The paper goes on to say that from 2025, the Government will expect new homes to produce 75-80 per cent lower CO_2 emissions compared to current levels. It suggests that new homes will be "zero carbon ready", with the ability to become fully zero carbon homes over time as the electricity grid decarbonises.

The RIBA welcomes the ambition to reduce CO_2 emissions by 75-80 per cent by 2025; however, comparing emissions to current levels inherently benefits energy inefficient buildings. Instead,

[1] EEIG, *Rebuilding for Resilience*, pg. 17
[2] Conservative Manifesto 2019, https://www.conservatives.com/our-plan, pg. 31

the RIBA suggests that Government create specific targets for carbon emissions with an absolute scale of $kgCO_2/m^2$.

It is unacceptable that new homes built today must rely on the decarbonisation of the electricity grid to reach net zero. There are fantastic examples of high quality, low cost, sustainable developments across the UK, including the 2019 Stirling Prize winning Goldsmith Street. The Government should ensure all new homes are net zero by 2030.

The White Paper supports "net gains for biodiversity and the wider environment" and aims to "actively address the challenges of climate change". This ambition must be reflected in the Government's response to the Future Homes Standard, being released in the autumn.

The Future Homes Standard is the Government's opportunity to demonstrate that it is a world-leader in improving the energy efficiency of the built environment. However, the direction of travel signified in the White Paper lacks ambition and will impact the UK's ability to reach its climate targets.

Operational energy must be the primary metric for measuring energy efficiency

The current calculations for measuring energy efficiency do not reflect the actual energy used by a building. Energy use is predicted, rather than measured at the meter, which creates vast inaccuracies when compared to actual energy usage. Measuring energy at the meter, known as operational energy, should be the principal metric for energy efficiency.

In addition to setting carbon emission targets, the Government must set performance-based targets for operational energy in line with the RIBA 2030 Climate Challenge. This would encourage architects, developers and homeowners to be innovative and reward good design based on form, orientation and fabric performance.

Setting specific operational energy targets will help demonstrate that the UK is a leader in green building design and architecture. This can support export opportunities in these areas. Energy efficient homes save owners hundreds of pounds on energy bills annually; this increases a households' disposable income, generating consumer spending in other areas of the economy.

New homes must also consider whole life carbon

Whole life carbon includes all carbon emissions that are directly related to the type and quantity of the resources used to create, maintain and use a building. A key element of this is embodied carbon.
Embodied carbon refers to the carbon emitted from the processes associated with sourcing materials, fabricating them into products and systems, transporting them to site and assembling them into a building. It also includes the emissions due to maintenance, repair and replacement, as well as final demolition and disposal.

The choice of materials used in construction can significantly impact the amount of carbon emitted during a project. Concrete, for example, is one of the most widely used building materials in the world. It is durable and strong, and when combined with suitable insulation it can make buildings incredibly energy efficient. Despite these positive qualities, concrete is also one of the biggest emitters of carbon, accounting for 8% of CO_2 emissions, globally.[3]

To help address the levels of embodied carbon in new homes, the UK should introduce embodied targets, in line with the RIBA 2030 Climate Challenge. Setting embodied carbon targets will increase the demand for low carbon materials – stimulating growth in low-emission manufacturing of traditional materials and promote new low carbon materials. Actively considering embodied carbon will also encourage the use of local materials, driving the built environment to source products from the UK where possible.

It was disappointing to see no mention of embodied carbon in the "Planning for the Future" White Paper.

The loopholes in the Building Regulations must be closed

Currently, there are loopholes in the Building Regulations which allow housing developments to be built to energy efficiency requirements that have been superseded more than twice. These loopholes must be closed, and more stringent transitional measures must be implemented to ensure new homes are meeting the current targets.

Recommendations:

- The Government must set actual carbon emission targets for new homes in the Future Homes Standard.
- The Government should use operational energy consumption as the principal metric for measuring energy efficiency of buildings.
- The Government should introduce operational energy and embodied carbon targets for buildings which are in line with the RIBA 2030 Climate Challenge.
- The Government must close loopholes in the Building Regulations which allow homes to be built to energy efficiency requirements that have been superseded more than twice.

Verifying buildings are energy efficient through Post Occupancy Evaluation

It is vital that building owners and users gain a better understanding of how their building performs compared to the design intention. Even when a building's design has energy efficiency at its heart, the promised energy efficiency standards are not always met.

Undertaking Post Occupancy Evaluation (POE) is key to ensuring that a building is as energy efficient as intended. POE is the process of obtaining feedback on a building's performance in use after it has been built and occupied. POE accurately measures factors such as energy consumption, water usage, maintenance costs and user satisfaction.

[3] Chatham House, Making Concrete Change: Innovation in Low-carbon Cement and Concrete, https://reader.chathamhouse.org/making-concrete-change-innovation-low-carbon-cement-and-concrete#

If POE is not carried out, the building user is unaware of the energy efficiency improvements that could be made. POE also highlights where a building can be improved, allowing for a process of continuous improvement, and lessons learnt, in the construction industry.

The Government should not only promote and endorse POE but require POE as a condition of procurement of public funding for building projects. This is essential for the transparency of how public money is spent, but also provides data that can be shared and learnt from, allowing for continuous improvement on energy efficiency within the built environment.

As POE is a service, there is a cost associated. Whilst this cost is very small to the building user, research shows as a proportion of a project's cost POE costs an additional 0.1% - 0.25%[4], POE requires a professional to undertake the work, providing employment opportunities. At the same time, the cost of undertaking the POE is injecting capital into the economy, whilst any issues discovered during the evaluation provide further opportunities for capital to be invested to make a building more energy efficient.

The construction industry is one of the few sectors where a large sum of money is spent, yet there is no assurance that the is building performing as intended. Measuring building performance confirms that a building is not negatively impacting the environment and providing value for money for the owner.

Recommendations:

- The Government must endorse and promote that all buildings undertake POE.
- The Government should require POE as a condition of procurement of public funding for building projects.

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[4] This figure includes the cost of post-occupancy surveys as well as the extra time required to address any identified issues in the post-handover stage (Building, 17 June 2011).