House of Commons

Environmental Audit Committee

Building to net zero: costing carbon in construction: Government Response to the Committee's First Report

Third Special Report of Session 2022–23

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Environmental Audit Committee

The Environmental Audit Committee is appointed by the House of Commons to consider to what extent the policies and programmes of government departments and non-departmental public bodies contribute to environmental protection and sustainable development; to audit their performance against such targets as may be set for them by Her Majesty's Ministers; and to report thereon to the House.

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Publications

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Third Special Report

The Environmental Audit Committee published its First Report of Session 2022–23, *Building to net zero: costing carbon in construction* (HC 103) on 26 May 2022. The Government's response was received on 25 July 2022 and is appended to this report.

Appendix: Government Response

Introduction

The Government welcomes the Environmental Audit Committee's report titled 'Building to net zero: costing carbon in construction', published on 26 May 2022. We are grateful to the committee for their conclusions and recommendations, and to all those who provided evidence.

We must intensify our efforts and eliminate virtually all emissions arising from the built environment if we are to meet our legally binding target of net zero emissions by 2050. As the Committee's report rightly makes clear, reducing embodied carbon emissions is a challenge across the entire built environment, not just in buildings. We agree with the Committee that whole-life carbon assessments (WLCAs) are likely to have a significant role to play in delivering decarbonisation across the sector.

The Government has carefully considered the Committee's recommendations and key conclusions in formulating its response below. As the Committee recognised in its recommendations, the reduction of carbon emissions in the built environment requires a combined effort from various departments, arms-length bodies and industry. This response is a collective response from the Departments for Business, Energy and Industrial Strategy (BEIS), Transport (DfT), Levelling Up, Housing and Communities (DLUHC), Education (DfE), and the Environment, Food and Rural Affairs (Defra), as well as HM Treasury (HMT) and the Infrastructure and Projects Authority (IPA).

Response to the Environmental Audit Committee Recommendations

Whole-life carbon assessments

1. There is no Government policy requiring the assessment or control of embodied carbon emissions from buildings. As a result, no progress has been made in reducing these emissions within the built environment. This inaction remains despite the built environment making up 25 per cent of the UK's total greenhouse gas emissions and the UK's Nationally Determined Contribution, made at COP26, committing the UK to achieve a 68% reduction in the UK's carbon emissions by 2030. This is only eight years away. This is an extremely short time frame within which to start assessing and substantially reducing embodied carbon emissions. The first step must be a requirement to undertake whole-life carbon assessments for buildings so the industry can start measuring and then controlling for this carbon. (Paragraph 69)

The Government is committed to meeting its target of net zero carbon emissions by 2050 and we recognise that embodied carbon can account for a significant proportion of a building's whole life carbon emissions.

As the Committee notes, reducing these embodied carbon emissions is a challenge across the built environment, not just in buildings. The Government is working with industry across built environment supply chains to ensure that progress is made on reducing these emissions. The Industrial Decarbonisation Strategy and the Transport Decarbonisation Plan, for example, have set out how large sectors of the economy will decarbonise. The England Trees Action Plan looks to increase production of timber, which can be used to replace higher carbon materials in construction when safe to do so. As these policies take effect and industries that supply construction decarbonise, the embodied carbon emissions of buildings will fall in turn. This alone, however, will not be enough. Our choice of materials, and the way we design and construct buildings will also need to change to reduce their embodied carbon.

We agree with the Committee that whole life carbon assessments (WLCAs) are likely to have a significant role to play in delivering this change. WLCAs will help ensure that carbon is properly accounted for, encouraging the industry to use low carbon materials and to produce more efficient, low-carbon designs. This is why the Net Zero Strategy set out Government's ambitions to help the construction sector improve their reporting on embodied carbon in buildings and confirmed that we will explore the potential of a maximum embodied carbon level for new buildings in the future.

2. A broad cross-section of the construction industry is willing and able to undertake whole-life carbon assessments. In the absence of an approved UK national methodology, the RICS Professional Statement on WLC is used as the accepted industry methodology for WLC assessments. Alongside this, various further guidance and software tools have been developed. As a result of the lack of an approved national methodology, the variety of assessment tools and interpretations for WLC that have developed appear to have created inconsistency, have unnecessarily increased the cost of WLC assessments and have led to an uneven playing field in conducting assessments. (Paragraph 70)

The Government agrees with the Committee that to consistently assess embodied carbon at a building-level, a standardised method of calculation is required, supported by a robust evidence base and underpinned by widely adopted product standards. The Government is committed to allowing industry to innovate and find the best solutions where they have the right expertise and experience to do so. In that spirit we commend the leadership shown by industry in developing and building confidence around the BS EN 15978 standard, PAS2080 and the RICS Professional Statement for assessing whole life carbon in the built environment. We also recognise calls from stakeholders that WLCA in the built environment will benefit from the creation of a level playing-field and we will look at whether Government endorsement of specific standards, methodologies or tools for assessing whole life carbon is appropriate.

3. The Department for Business, Energy, and Industrial Strategy is currently considering the possibility of funding an update of the RICS methodology. This update is intended to make the methodology more accessible and more transparent, thus addressing the concerns

raised by Ministers to us about the RICS methodology. Once the national methodology and requirement to undertake whole-life carbon assessments is in place, the cost of undertaking assessments is likely to be minimal. (Paragraph 71)

The Government understands the importance of developing a consistent methodology for reporting whole-life carbon and welcomes plans to update and expand the RICS Professional Statement. Government officials will continue to contribute to this activity and several working groups to enable the development of a consistent national methodology to undertake whole-life carbon assessments. Several working groups and programmes across government are also investigating the different methodologies, metrics and standards of whole-life carbon assessments, with the aim to facilitate the sharing of best practice and lessons learned between industry and government.

4. The UK is slipping behind comparator countries in Europe in monitoring and controlling the embodied carbon in construction. If the UK continues to drag its feet on embodied carbon, it will not meet net zero or its carbon budgets. There is significant opportunity for the UK to learn from emerging international best practice on how to introduce whole-life and embodied carbon regulations. (Paragraph 72)

The Government acknowledges some countries in Europe have started legislating whole life carbon assessments, and setting WLC targets for new builds, as described in the EAC report. This legislation has all been implemented relatively recently. The Government will review the different methodologies employed by these countries, and monitor the impact of their implementation, to help inform our future policy-making.

5. Local authorities are mandating WLC assessments of their own accord. Evidence so far shows that the policy is achievable and is working, with few barriers to its introduction. Introducing mandatory WLC assessments for buildings could be an easy way for the Government to dramatically reduce carbon in construction. The industry has repeatedly asked for an ambitious, clear timeframe for when whole-life carbon assessments will become mandatory. This timeline should align with the introduction of the Future Homes Standard, which should itself be brought forward to 2023. This will help bring together efforts to tackle operational and embodied carbon within the same timeframe. (Paragraph 73)

The Government's Net Zero Strategy sets out our ambitions to help the construction sector improve their reporting on embodied carbon in buildings and confirms that we are exploring the potential of a maximum embodied carbon level for new buildings in the future. Following that publication, we have been engaging with a broad range of stakeholders from across industry, academia, and local government to build a robust understanding of the actions industry are already taking and the best way for Government to deliver these commitments. As part of this we are watching the outcomes of the Greater London Authority's requirements with interest – as well as looking at international policy examples and work already happening in parts of UK industry. These policies and initiatives will contribute towards a robust evidence base, which will enable Government to act appropriately on the commitments made in the Net Zero Strategy to address embodied carbon. We acknowledge, however, calls for a clearer timeline setting out our long-term plan to mainstream assessment, management and reduction of embodied carbon. We discuss our approach to this in our response to Recommendation 7.

6. We recommend that Ministers immediately assign responsibility to the relevant member of the BEIS Departmental Board to monitor international policy developments in embodied carbon, with a remit to feed observations into the development of UK policy on embodied and whole-life carbon. (Paragraph 74)

BEIS is leading the UK involvement in the Industrial Deep Decarbonisation Initiative (IDDI) to establish a common roadmap and principles for public construction whole life carbon reporting. Members of this initiative include India, Canada and Germany. Observers include US, France, Japan and the European Commission.

The IDDI is an international alliance that aims to create markets for low carbon industrial materials. In addition, BEIS are planning a roadmap on when the IDDI will issue guidance on harmonisation of product level embodied carbon disclosure and on carbon limits for steel and cement inputs into public construction.

7. We recommend that the Government introduce, not later than December 2023, regulations to mandate whole-life carbon assessments for buildings above a gross internal area of 1000m^2, or which create more than 10 dwellings. This requirement should be established in Building Regulations, and ought to be reflected in the planning system through national planning policy. Local authorities should be encouraged and supported to include this requirement within their Local Plans ahead of the introduction of national planning requirements. (Paragraph 75)

Government intends to consult in 2023 on our approach and interventions to mainstream the measurement and reduction of embodied carbon in the built environment.

As set out in the Net Zero Strategy, we will make sure that spatial planning supports our efforts to combat climate change and help bring greenhouse gas emissions to net zero by 2050. As part of our programme of changes to the planning system, we intend to review the National Planning Policy Framework to make sure it contributes to climate change mitigation and adaptation as fully as possible.

We acknowledge the recommendation from the Committee that a requirement should be established through the building regulations. We will consider through the feedback received from the above consultation and parallel stakeholder engagement what levers, including building regulations, will be needed to tackle embodied carbon. In addition, research and analysis will be carried out to understand the full practical, technical and economic impacts of potential interventions. This will be particularly important for minimising impacts on SMEs and ensuring that interventions deliver for the climate but do not undermine other objectives to level up the country and deliver more, safer homes. Our planned consultation in 2023 will therefore consider the outcomes of this analysis and research. As part of this work, we will also consider what types and sizes of homes and buildings should be included.

8. The timeline for the Future Homes Standard should be brought forward to December 2023 to align the timeframes for addressing operational and embodied carbon. This will help provide the industry with the confidence it requires to construct low carbon, energy efficient buildings. (Paragraph 76)

The Government will not look to alter the timeframe for the Future Homes Standard. The 2025 timeline delivers on our net zero commitments, while ensuring that new homes are delivered in sufficient numbers in the places that we need them; providing the good quality, warm homes that consumers expect.

The Government recognises that some home-builders are already building to fabric standards above the current Building Regulations or installing low carbon heating systems, but it is important that all parts of industry are ready to build homes that are fit for a zero carbon future.

To meet the Future Homes Standard, industry will need to develop the necessary supply chains, skills and construction practices to consistently deliver high quality homes that incorporate low-carbon heat and high levels of energy efficiency. In practice, that will mean ensuring that all developers are ready to build to higher fabric specifications and that enough heat pumps and trained installers are available, as we expect heat pumps will become the primary heating technology for new homes under the Future Homes Standard.

However, we are not waiting until 2025 to take action. In December 2021, we introduced a Part L uplift for new homes, which came into force in June 2022. This is a key stepping stone that will enable us to successfully implement the Future Homes Standard. We have also listened to calls for a swifter and more certain pathway to 2025 and our work on a full technical specification for the Future Homes Standard has been accelerated. We therefore intend to consult on this in 2023 and introduce the necessary legislation in 2024, ahead of full implementation of the Future Homes Standard in 2025.

9. We recommend that following the introduction of whole-life carbon assessments, the Government should develop progressively ratcheted carbon targets for the built environment, to match the pathway to net zero set out in periodic carbon budgets. These ratcheting targets should be reported on annually, and progress reports towards achieving these targets should be published annually as part of the Net Zero Strategy indicators. (Paragraph 77)

The Net Zero Strategy sets out Government's ambitions to help the construction sector improve their reporting on embodied carbon in buildings and confirmed we will explore the potential of a maximum embodied carbon level for new buildings in the future. To set maximum embodied carbon levels a robust evidence base of building-level whole life carbon data is needed to understand what current baseline embodied carbon emissions are from buildings and the potential for the industry to decarbonise. We believe that current targets proposed by industry are based on a small sample size and limited building typologies; to set targets across all new buildings a much greater evidence base will be needed to ensure targets are realistic, achievable, and drive all parts of the industry towards our net zero goals. We welcome work already underway by industry, such as the launch of the Built Environment Carbon Database (BECD), which will encourage greater levels of whole life carbon reporting and build our understanding of embodied carbon in the sector.

As outlined above, we will consult on our approach to embodied carbon in 2023. This consultation will be informed by the results of further research and could include proposals for "ratcheted carbon targets" but it is too soon to commit to specific proposals. While

ratcheting targets seem to be one logical approach, and there are international examples of similar practices, we can only take decisions on how targets could work once the evidence base is built. Any introduction of targets will also be subject to public consultation.

With regards to the proposal to publish annual progress reports, the Net Zero Strategy, published last year, sets out indicative 'pathways' of emissions reductions for every sector of the UK economy to keep us on track for Carbon Budgets 4, 5 and 6, our 2030 Nationally Determined Contribution, and ultimately for net zero by 2050. These pathways are not predictions or targets, due to the inherent uncertainty in modelling emissions and to ensure we that we respond to real-world changes over time. UK territorial emissions associated with the built environment are captured as part of these pathways, for example in the heat and buildings sector.

BEIS reports on progress annually, via our response to the Climate Change Committee's Progress Report to Parliament. This sets out progress we have made and the further action we are taking across all sectors of the economy to bring down emissions, meet our carbon budgets and deliver net zero.

The UK follows the agreed international approach for estimating and reporting greenhouse gas emissions under the UN Framework Convention on Climate Change, Kyoto Protocol, and Paris Agreement which is for countries to report the emissions produced within their territories. The Climate Change Committee (CCC) has also recommended that this remains the right basis for the UK's carbon targets.

The Government recognises that some of the whole-life carbon of buildings will fall outside the scope of UK territorial emissions, for example emissions associated with manufacture of imported goods. The UK therefore also reports on consumption-based emissions, which provides helpful insight and supports policy development, enabling us to keep track of our carbon footprint and informing our efforts to reduce this, for example through our work to prevent carbon leakage. We recognise there is much more to do which is why we are urging all other countries to raise ambition on tackling climate change and join the UK in setting stretching targets for reducing emissions by 2030 in their NDCs, ensuring they align with net zero by mid-century.

10. We recommend that a clear timeframe for the introduction of mandatory whole-life carbon assessments and ratcheting targets should be set by Government by the end of this year. (Paragraph 78)

We recognise calls from industry, and the Committee, to set out a clear timeframe. As described above, we plan to consult on our approach to embodied carbon in 2023. Further information about this will be provided in due course.

11. In our view, the RICS Professional Statement on whole-life carbon assessments is fit for use and already familiar to UK industry. We recommend that, as soon as possible following promulgation of the planned update of the Statement, the Government should seek to establish the RICS methodology as the UK industry standard for whole-life carbon assessments. (Paragraph 79)

As we have set out above, the Government agrees with the Committee that to consistently assess embodied carbon at a building-level, a standardised method of calculation is required, supported by a robust evidence base and underpinned by widely adopted product standards. The Government is committed to allowing industry to innovate and find the best solutions where they have the right expertise and experience to do so. In that spirit we commend the leadership shown by industry in developing and building confidence around the BS EN 15978 standard, PAS2080 and the RICS Professional Statement for assessing whole life carbon in the built environment. We also recognise calls from stakeholders that WLCA in the built environment will benefit from the creation of a level playing field. We will look at whether Government endorsement of specific standards, methodologies or tools for assessing whole life carbon is appropriate.

Building materials

12. The National Model Design Code represents a good start to the task of improving efficiency and reducing the environmental impact of materials used in construction. Regrettably, in its current form it does not provide the ambition or detailed guidance necessary if it is to make a meaningful contribution to addressing the climate and nature crises which the country faces. The code does not provide the supporting detail which design codes require to set standards related to whole-life carbon. The definition of 'embodied energy' it uses is confusing, and it offers no guidance on how to assess embodied carbon or how to mitigate these emissions. (Paragraph 90)

The National Model Design Code encourages local councils to set design standards, develop policies that consider the assessment whole life costs and implement sustainable construction. This guidance focuses on reducing embodied energy and embedding circular economy principles. The NMDC should be read as part of the National Design Guide, and alongside the planning practice guidance notes referenced in Part 3 of the National Design Guide, Manual for Streets, and other forthcoming guidance relating to the natural and environmental characteristics of development. Design codes can specify a range of different things including the environmental performance of places and buildings and their contribution to net zero targets.

13. We recommend that the Government should change the term embodied energy to embodied carbon in the National Model Design Code and provide a clear definition of embodied carbon and whole-life carbon in the NMDC based on the WLCN, LETI and RIBA definitions. The Government should provide guidance on how to assess embodied carbon by setting a national methodology for whole-life carbon assessments, as we have recommended in Chapter 2 above. (Paragraph 91)

The National Model Design Code was published in July 2021 and since then Government has been working with a number of local authorities testing and applying the guidance. We are actively reviewing all comments on the National Model Design Code and will assess these in light of reforms to the planning system through the Levelling Up and

Regeneration Bill. We are actively engaging with local authorities through the National Model Design Code Pathfinders Programme. Through this programme we are offering support on themes related to the coding process, such as those that focus on sustainability and energy addressing whole life carbon targets, energy use in construction and environmental impact.

We agree with the Committee that detailed guidance on how to assess embodied carbon should be defined separate to the NMDC and have outlined our position in the response to Recommendation 2 above.

14. We welcome the Government's investment in the development of low-carbon cements as set out in the Industrial Decarbonisation Strategy. Alongside research and development, more needs to be done to raise awareness of low-carbon cements within the industry and amongst the public, to generate demand and increased investment in these products. (Paragraph 106)

The Green Construction Board (GCB) is the net zero and sustainability work stream of the Construction Leadership Council (CLC). The CLC is co-chaired by industry and BEIS' Construction Minister. In April 2022, the GCB drew on its industry technical expertise and that of the Institution of Civil Engineers (ICE) and published its Low Carbon Concrete Routemap in April 2022. This Routemap will provide a comprehensive guide to reducing the carbon emissions associated with the construction industry, and was developed through collaboration by a wide range of independent experts from across the whole value chain involved in specifying, designing, constructing and supplying materials for buildings and infrastructure.

The Routemap sets out three decarbonisation routes to 2050 based on what action the industry takes and how fast carbon sequestration in concrete advances. Even under the most modest route, emissions are expected to fall from 10 million tonnes CO2e in 2022 to 5 million tonnes in 2035.

The report also sees a major role for carbon sequestration – both techniques of locking carbon dioxide into concrete and of capturing the carbon that arises from the production of cement. However, the report acknowledges these techniques are not yet commercially viable and calls for large-scale industry and government support for research and trials, with sequestration being seen as an end-of-pipe solution once other opportunities to cut carbon have been taken.

15. The Department for Business, Energy, and Industrial Strategy should invest in raising awareness within the industry and amongst the public on the existence and benefits of low-carbon cement and continue to encourage research and development into new low-carbon products. (Paragraph 107)

BEIS is working with the Green Construction Board, the wider membership of the Construction Leadership Council and the ICE to promote the Low Carbon Concrete Routemap to industry. Whilst the Routemap is focused on structural concrete used in the UK, the approaches to reducing carbon emissions linked to concrete that it sets out are applicable to firms across the construction industry, and would also be relevant to other countries. The recommendations for clients, designers, contractors and suppliers include:

- An industry-wide rating system to disclose the carbon embedded in different concrete mixtures, similar to the energy efficiency ratings for homes
- Options for reducing the cement content, especially by using limestone and calcined clays as fly ash and blast furnace slag become less available
- Design approaches that use less concrete or lower-carbon concrete, such as using voids, coffers, non-structural fill and smaller spans between columns
- Giving concrete suppliers maximum time and flexibility to choose a mix that meets the requirements with the minimum carbon
- Updating technical standards to reflect the priority of reducing carbon and the latest materials and techniques

A new UK Concrete Decarbonisation Taskforce, convened by the ICE, will oversee the delivery of the Routemap. This group will update the report each year and monitor progress across the industry.

16. We recommend that the Government investigate possible ways, beyond public procurement, to incentivise the use of low-carbon cement to ensure that these cement alternatives become the product type of choice by 2030. This should include an assessment of the feasibility of restricting the disposal of a range of waste products, so as to facilitate their use as clinker substitutes, as is the case in the Netherlands. (Paragraph 108)

The Industrial Decarbonisation Strategy contained an action to "work with the cement sector to explore options to decarbonise sites in dispersed locations." To advance this, the Government will work with manufacturers through the GCB to better understand the opportunities and barriers to decarbonise the manufacture of cement, as well as plans by individual manufacturers, for the purposes of supporting policy development.

17. The reuse of steel components is not yet common practice in the UK. One of the main barriers to steel reuse is the collection, storage, testing and certification of used steel components. The Department for Business, Energy and Industrial Strategy and the Infrastructure and Projects Authority are already investing in how to better promote recycling and reuse of steel, alongside long-term investment in decarbonising the primary production of steel. (Paragraph 125)

BEIS is continuing progress on providing the sector with support to decarbonise, which includes support provided through the increase of the EII compensation scheme, funding steel projects through programmes such as the Industrial Fuel Switching competition, and the Industrial Energy Transformation Fund.

Officials are working alongside the steel and scrap sectors to explore whether the industry solutions can achieve the quality and quantity of scrap which will be needed by UK steel producers as part of the drive to decarbonise steel production in the UK.

18. Mandating whole-life carbon assessments for buildings, as we have already recommended, would be a simple, material neutral way of encouraging the greater reuse and recycling of steel components. (Paragraph 126)

We agree that whole life carbon assessments can enable improved carbon management practice, as discussed in response to Recommendation 7. Further tracking of emissions through WLCAs may increase awareness of recycling or reuse rates, and we would like to increase our understanding of the potential impact through further evidence gathering.

19. The Government should work with local authorities to investigate effective and appropriate ways to store and catalogue steel components for reuse and to communicate the availability of components across local area networks of constructors prepared to reuse steel. (Paragraph 127)

Through the Steel Task Force, the Government has worked with steel producers and major customers to encourage the development and use of digital information about steel products, to support the use of 'Object Libraries' and other digital design tools that accelerate the design of projects. When combined with digital technologies such as Building Information Management (BIM), these technologies have the potential to provide a wealth of accurate data about a product, and how it has been used and maintained over its life for all organisations within the construction supply chain, their clients, and other stakeholders. The UK Government is continuing to support the use of BIM technologies through requiring their use on government-funded construction projects, as well as supporting the development of public and private sector capability to use these through the UK BIM Alliance.

20. Significant obstacles to the uptake of timber products in construction remain. These include issues regarding fire risk and insurance, price volatility, securing sustainable and local supply chains, and addressing skills gaps in the use of timber. The Government has made little progress in addressing these barriers since the Climate Change Committee's 2019 recommendation for an increase in the use of timber in construction. (Paragraph 150)

The Government committed in the England Trees Action Plan and Net Zero Strategy to increase the safe use of timber in construction, with low rise buildings the main opportunity area for growth. We have established a cross-government and cross-industry Timber in Construction Working Group to design a policy roadmap identifying key actions for the Government, the construction sector, the timber sector, and academia to safely increase timber and wood product use in construction. It will be published before the end of 2023. The group will also support implementation of other commitments set out in the England Trees Action Plan and Net Zero Strategy which relate to timber in construction, in both the public and private sector, to enable more use of structural timber in line with Climate Change Committee recommendations.

The group has identified a number of key areas to work on including:

- Timber Demand;
- Timber Supply;
- Building Safety & Design;
- Timber & Embodied Carbon;
- Lenders, insurers, and warranty providers;
- Competency & Skills.

21. The post-Grenfell prohibition on the use of combustible materials in external walls has had a disproportionate impact on the use, innovation and testing of structural timber. Material safety perceptions have also affected the availability and cost of insurance, making it near impossible for developers to use timber in high rise or medium-rise buildings. There has been a substantial delay in the Government's response to its consultation on amendments to the combustible materials ban, which closed in May 2020. This delay is unacceptable: it has left the construction industry without the guidance and confidence it needs to invest in timber structures. (Paragraph 151)

Following consultation, the Government has taken the proportionate approach of keeping the outright ban on the use of combustible materials in and on the external walls of new blocks of flats, hospitals,

and student accommodation over 18 metres. It has also introduced statutory guidance for residential buildings between 11 metres and 18 metres (to commence on 1 December 2022).

The ban limits materials in the external walls of buildings in its scope to those achieving the two highest reaction to fire classifications.

The new guidance will provide scope to build lower-risk 11-18m residential buildings with more sustainable materials, provided they are used safely. This update of the guidance builds on the update made in 2020 making provisions for sprinklers in blocks of flats more than 11m in height. In all cases, for buildings at any height, the functional requirement of Part B of the Building Regulations to adequately resist fire spread over external walls must be met.

We have committed to keep the ban, its scope and effectiveness, under close review.

22. Whilst timber is often the most appropriate material to use to lower the embodied carbon of a building project, it cannot be assumed that this will always be the case. Timber use, from appropriate sources, should be verified as the best whole-life carbon answer to a given construction project, in comparison to other alternatives. Timber use should be seen in the context of UK, European and global forestry resources. A major increase in the use of timber in UK construction will put pressure on existing timber resources. (Paragraph 152)

The Government committed in the England Trees Action Plan and Net Zero Strategy (NZS) to increase the safe use of timber in construction, to support our tree planting targets and reduce emissions within the built environment. Felled trees store carbon within them and timber has the lowest embodied carbon of any mainstream building material. There is potential to reduce embodied carbon by way of material substitution where appropriate (including through timber and wood product usage) and resource efficiency approaches, amongst others. However, government recognises the importance of whole life carbon approach when using timber in construction. Government will look at timber and other low carbon products, ensuring the right materials are used in the right context.

We agree with the EAC's perspective that the right material, such as timber when safe to do so, should be used in a construction project for the most productive whole-life carbon approach. We encourage the industry to use the most appropriate low carbon materials and to produce efficient low-carbon designs.

The UK currently imports the majority of its timber supply. The Timber in Construction Working Group will consider how to sustainably increase timber supply to meet increased demand, including how to increase production of domestic timber, as referenced in the response to recommendation 20. This cross government and cross-sector Group will set out a roadmap towards realising our ambitions.

23. The Government must develop a coherent policy, joined up across Departments, to address the need for increased tree planting to address biodiversity and climate change concerns and the need for sustainable commercial plantations using appropriate tree species to meet the demand for domestic timber in construction. Government has committed to developing a policy roadmap on use of timber in construction. This should be delivered by the end of 2022 at the latest: it must comprehensively address the afforestation commitments made in the England Tree Action Plan and the need for timber construction products. (Paragraph 153)

The England Tree Action Plan sets out our proposals to support the creation of woodlands and a thriving forest economy, helping to encourage demand for UK-grown timber to reduce our carbon footprint from imports and replace more carbon-intensive materials. The Nature for Climate Fund will spend more than £750 million by 2025 on woodland creation and management, as well as peat restoration. Through this fund, we will see an unprecedented number of trees planted and managed to deliver more for society, nature, the climate, and the economy.

We recognise the important role our commercial forests play in tackling climate change, supporting a green economic recovery and levelling up rural areas. We see timber in construction as a significant opportunity to increase demand for our home-grown timber, with timber being suitable to use in both traditional and certain modern methods of construction in a wide range of commercial and residential settings.

Defra have established a cross-government and cross-industry Timber in Construction Working Group to design the policy roadmap committed to in the ETAP. This will identify key actions to safely increase timber and wood product use in construction. It will report before the end of this Parliament. As part of this the working group will consider what impact increasing use of timber in construction will have on domestic timber supplies, as well as exploring other proposals to increase the use of timber in construction. However, further research and scoping is needed to understand safety implications and the realistic supply of domestic timber in coming years.

The group will also support and advise on the implementation of other commitments set out in the England Tree Action Plan and Net Zero Strategy which relate to the use of timber in construction. This includes providing £1.5m financial support over the next three years to develop innovative timber products through the Forestry Innovation Fund and working with Homes England and other partners to explore ways to increase timber use in the delivery of housing programmes.

24. In response to this report, Government should set out how its strategies to develop green jobs will address the need for skills in timber use in construction. (Paragraph 154)

The cross-government and industry timber in construction working group will design a policy roadmap, with education and skills within the timber in construction sector being a key element of this. The Government will work with industry to co-ordinate

and increase sharing of best practice for skills in timber in construction. In addition, through the Green Jobs Delivery Group, the Government will continue to ensure the UK is building the workforce needed to deliver a green industrial revolution.

25. The Government must invest now in further research and safety testing on the use of structural timber. The outcome of such research must inform a review of all relevant Building Regulations so as to render them properly applicable to modern timber materials and to ensure that fire safety regulations can take account of how modern timber materials behave in fire. The Government's response to the consultation on proposed amendments to the combustible materials ban must now include clarification of the Government's position of structural timber in the ban on combustible materials. The Government's response to the consultation should be issued at the latest before the House rises for the 2022 summer recess. (Paragraph 155)

The Government has committed to encouraging research into barriers to uptake of timber in construction, including looking at timber strength grades and the fire resistance of engineered timber structures. We will use the Timber in Construction Working Group to collate existing research and identify new areas of research focus. The Government has also committed to research into structural fire safety by late 2023 as part of the approved document B review, in which timber will be included.

The Government is also engaging with industry to understand what research they currently have underway, and what they may be planning to undertake in the near future, to build a more robust evidence base for timber construction, especially at height. This will include asking industry to identify where gaps in the evidence base have been identified.

Once the evidence base has been developed further, we would encourage industry to consider whether further guidance could be developed to ensure that people are and feel safe in buildings.

The Government published its response to the combustibles ban consultation in June and can be found here: https://www.gov.uk/government/consultations/review-of-the-ban-on-the-use-of-combustible-materials-in-and-on-the-external-walls-of-buildings. There are further details included in the response to recommendation 21.

26. There is a lack of Environmental Product Declaration (EPD) data for a wide range of materials, limiting the ability of developers to choose low-carbon materials. The UK is falling behind ***European counterparts*** *where EPD data is far more* ***widely available****, resulting in developers choosing European materials over locally sourced UK products. The* ***lack of EPD data*** *makes conducting whole-life carbon assessments more laborious and expensive than necessary. (Paragraph 162)*

The Industrial Decarbonisation Strategy, published in March 2021, sets out how the manufacturing sector can decarbonise in line with net zero, whilst remaining competitive and without pushing emissions abroad. Policies that help grow the market for low emissions industrial products, such as product standards and labelling ('demand-side' policies), can support the construction sector to make green procurement decisions by helping them to distinguish between low and high emissions construction products.

The Government has committed to developing policy proposals in this area, beginning with the Call for Evidence: 'Towards a market for low emissions industrial products',

which closed in February 2022. The Call for Evidence gathered evidence from a broad range of manufacturers and buyers of industrial products and other experts, to enable development of proposals that work for the whole of the UK.

We received 59 responses to the to the Call for Evidence, with several responses referencing Environmental Product Declarations (EPDs) as an example of ongoing emission reporting and product differentiation activity in industry, specifically in the construction products sector. A summary of responses to the Call for Evidence is due to be published this summer.

Building on this evidence, we are preparing to consult on a range of domestic measures, including emissions reporting, defining low emissions products, product standards, and a potential Carbon Border Adjustment Mechanism by the end of 2022.

27. The Government should encourage development of a centralised national database of EPDs and, through its own procurement practices require the collection and publication of EPDs. The EPD database should be digital, freely available to end users, and user-friendly. (Paragraph 163)

In the Industrial Decarbonisation Strategy, we committed to developing a range of policies designed to support the market for low carbon goods, including a proposal for an improved emissions reporting system for industrial products. In December 2022, we launched a Call for Evidence: 'Towards a market for low emissions industrial products', where respondents were asked to share views on how such an emissions reporting system should be designed and implemented. Environmental Product Declarations (EPDs) and EPD databases were referenced by several respondents as examples of ongoing emission reporting and product differentiation activity in industry. We are considering this evidence as we prepare to consult on a range of domestic measures, including emissions reporting and disclosure, by the end of 2022.

Meanwhile, at an international level, a coalition of governments and organisations led by the UK and India launched the Industrial Deep Decarbonisation Initiative (IDDI) under the Clean Energy Ministerial (CEM) in June 2021. At COP26 in November 2021, the IDDI launched an emissions disclosure pledge which brought together campaign members to begin requiring the disclosure of embodied carbon emissions of structural materials, such as steel, cement, concrete, used in major public construction projects, starting no later than 2025. Members of the pledge are encouraged to promote the use of consistent reporting standards. EPDs could provide a solution, if they are created and used in a standardised way.

28. To limit 'greenwashing', the Government should introduce measures requiring suppliers who wish to make an environmental claim about a construction product to produce an EPD to substantiate it. (Paragraph 164)

In the Industrial Decarbonisation Strategy, we highlighted that a key barrier to industry reaching net zero is the lack of information about the carbon intensity of industrial products, which can lead to 'greenwashing' and erode consumer trust in environmental claims. We are aware of measures in other jurisdictions that put an obligation on manufacturers to substantiate environmental claims about products and are considering this as we prepare to consult on a range of domestic measures, including emissions reporting and disclosure, by the end of 2022.

29. The Government should conduct a cost-benefit analysis of whether to provide advice or financial support to smaller manufacturers to enable them to produce EPDs for their materials. (Paragraph 165)

We recognise that there is an administrative and financial burden to emissions reporting. As set out in the Call for Evidence 'Towards a market for low emissions industrial products', we are exploring options we could take to reduce the volume and burden of new requirements, and whether any additional steps could be taken to support small and medium-sized enterprises. Building on the evidence submitted to the Call for Evidence, we are preparing to consult on a range of domestic measures, including emissions reporting and disclosure by the end of 2022.

30. There is availability of low-carbon and recycled building products to meet current demand, however there are insufficient incentives for product manufacturers to develop new low-carbon materials and for developers and designers to use these products. The Government has invested in initiatives and programmes, set out in the Industrial Decarbonisation Strategy, to encourage the development and use of low-carbon materials. This is welcome; but as there is no requirement to conduct whole-life carbon assessments of building projects, there remain limited incentives to reduce the embodied carbon of building projects and thus develop and use low carbon materials. (Paragraph 166)

As outlined in our response to Recommendation 7, after further research and stakeholder engagement, we intend to consult on our approach and interventions to mainstream the measurement of embodied carbon in the built environment in 2023. We believe, as the committee does, that widespread use of WLCAs would likely provide incentives for industry to develop and use low carbon materials. However, it is important to note that WLCAs can only be successfully implemented if done so as part of a broader effort by Government and industry to decarbonise industrial supply chains and improve product-level carbon data.

We have committed to developing new proposals to encourage the market for low emissions industrial products to grow, such as clearer labelling and standards. In December last year, we launched a Call for Evidence: 'Towards a market for low emissions industrial products.'

We have set out plans to develop policies in this area, including product standards, product labelling, and public and private procurement initiatives. The Industrial Decarbonisation Strategy sets out an indicative timeline for introducing these policies, with new policies in place by the mid-2020s.

31. In our view, the most effective way overall to encourage resource efficiency and the development and use of low-carbon materials, whether low-carbon concrete, steel, timber, or any other material, is to establish a mandatory requirement to measure whole-life carbon and introduce progressively more stringent carbon targets on buildings. (Paragraph 167)

There is already work underway that will reduce embodied carbon emissions. The Industrial Decarbonisation Strategy and the Transport Decarbonisation Plan, for example, have set out how large sectors of the economy, including construction, will decarbonise, and the England Trees Action Plan looks to increase production of timber, which can be used to replace higher carbon materials in construction when safe to do so. As these policies take effect and industries that supply construction decarbonise, the embodied carbon emissions of buildings will fall in turn.

This, though, does not mean that further interventions are not needed, and we acknowledge the important role that measuring whole-life carbon can play. This is why the Net Zero Strategy sets out Government's ambitions to help the construction sector improve their reporting on embodied carbon in buildings. The Net Zero Strategy also confirms we are exploring the potential of a maximum embodied carbon level for new buildings in the future. As set out above, we will consult on our approach and proposals to mainstream the measurement and management of embodied carbon in 2023.

The Government is supporting inter-disciplinary approaches and strengthening the evidence base on resource efficiency initiatives by collaborating with the UKRI funded National Interdisciplinary Circular Economy Research (NICER) programme, specifically Interdisciplinary Circular Economy Centre for Mineral-based Construction Materials (ICEC-MCM), which focuses on improving the way we use materials such as aggregate, cement, brick, plasterboard, stone and glass, particularly in infrastructure.

32. The Government should also issue its response to the consultation on the draft Waste Prevention Programme for England: Towards a Resource-Efficient Economy not later than the date the House rises for the 2022 summer recess. This will be over a year since the consultation closed. Industry and stakeholders require clear direction on future plans for waste prevention and resource efficiency now. (Paragraph 168)

The new Waste Prevention Programme is being revised following consultation in 2021. The document has been shortened considerably to make it easier to read and navigate but will set out priorities for action to manage resources and waste in accordance with the waste hierarchy. Publication is expected later in 2022. However, there will be further engagement on individual policies set out in the Programme, which will give an additional opportunity for stakeholders to provide input.

Government procurement

33. The Government has committed to using public procurement to drive demand for low-carbon industrial products and expects whole-life carbon assessments to be undertaken in respect of all public works projects. The extent to which this expectation is met, and the impact it has had on procurement practice, is unclear. Guidance that contracting authorities should consider environmental impacts when undertaking public procurement is little more than advisory. (Paragraph 180)

In March 2021, the UK Government published its Industrial Decarbonisation Strategy. This strategy will be used to accelerate the green transformation in industry and to increase the demand for low carbon alternatives.

The UK is working internationally through the Industrial Deep Decarbonisation Initiative (IDDI) to establish a common roadmap and principles for whole life carbon and reporting of public construction. This will further strengthen the requirements for environmental impact considerations. More detailed information can be found in the responses to recommendations 36 and 37.

34. Public procurement policy which mandates the completion of whole-life carbon assessments could kick-start the market for low-carbon construction. In time, a low carbon standard for public works projects would help to remove the data barriers to establishing

this market. The introduction of a Procurement Bill in the 2022–23 Session provides an opportunity for the Government to legislate for whole-life carbon assessments to be included in assessment of competing tenders for publicly financed building projects. This would strengthen the guidance in the Construction Playbook. (Paragraph 181)

The Procurement Bill offers a unique opportunity to reshape and reform procurement rules. The Bill does not include any specific provisions on the Government's target to achieve net zero carbon emissions by 2050, and it would not be appropriate to include such policy priorities on the face of the Bill to include in individual procurements. However, it will require contracting authorities to have regard to national and local priorities as set out in a National Procurement Policy Statement to be published by the Government, and the Wales Procurement Policy Statement, to be published by Welsh Ministers.

35. We recommend that, in its response to this report, the Government should set out the number and proportion of public works construction projects for which whole life carbon assessments have been undertaken pursuant to the provision in the 2020 Construction Playbook. For each project where an assessment has not been undertaken, we recommend that the justification be published. (Paragraph 182)

The Construction Playbook sets out best practice guidance for the Public Sector. This includes where authorities should adopt the use of whole life carbon (WLC) assessments and require that solutions put forward by potential suppliers are accompanied by a whole life carbon assessment. On major projects appropriate adoption is tested through central controls where projects meet the controls thresholds and governance within the Contracting Authorities. As a result, central testing does not cover all construction projects and there are no plans to collect and publish this information under the construction playbook.

Through the IPA's cross-Whitehall working group, we are exploring the introduction of a set of industry recognised standards and guidance for WLC assessment for, in the first instance, reporting under the IPA's Government Major Projects Portfolio (GMPP).

36. We recommend that the Infrastructure and Projects Authority establish clear guidance on the criteria for exemption from conducting whole-life carbon assessments for public works projects. We further recommend that, not later than the spring of 2023, the Government undertake a feasibility study on the introduction of a low-carbon standard for all public works projects, with a view to its swift implementation. (Paragraph 183)

As set out above, the UK is working internationally through the Industrial Deep Decarbonisation Initiative (IDDI) to establish a common roadmap and principles for whole life carbon and reporting of public construction; this includes the exemptions and reporting criteria. Through the IDDI, countries including the UK plan to make an announcement at the 13th Clean Energy Ministerial meeting in September 2022 in the US.

The methodology for the construction stage, in-use and end of life embodied carbon emissions will be the subject of the cross Whitehall working group on Government Construction Metrics run by the Infrastructure and Projects Authority (IPA). This working group is joined by various government departments and arm's length bodies, aiming to propose a consistent Whole Life Carbon Assessment (WLCA) for public projects by 2023.

Guidelines on internationally harmonised carbon metrics for the different modules in a whole life carbon assessment will be the subject for agreement during the IDDI working groups until 2024; UK industry will be invited to participate in these working groups. The IPA's work on WLC assessments in public construction and the Industrial Decarbonisation Strategy Call for Evidence will feed into these working groups as well.

In relation to the feasibility study on low-carbon standards, there are also new areas for development in other government organisations. Later this year the Government will begin a consultative process on a range of policies that aim to combat carbon leakage, grow the market for low emissions industrial materials, and identify whether measures such as product standards and labelling, and a Carbon Border Adjustment Mechanism would be appropriate tools in the UK's policy mix, to further support carbon reduction targets and improve the availability and quality of underlying data for reporting.

37. We recommend that the Government bring forward legislative proposals, by amending the Procurement Bill if necessary, so as to require a whole-life carbon assessment to be produced as a condition of participation in any tender for publicly financed building projects. (Paragraph 184)

The Procurement Bill offers a unique opportunity to reshape and reform our procurement rules. The Bill does not include any specific provisions on the Government's target to achieve net zero carbon emissions by 2050, and it would not be appropriate to include such policy priorities on the face of the Bill; however it will require contracting authorities to have regard to national and local priorities as set out in a National Procurement Policy Statement to be published by the Government, and the Wales Procurement Policy Statement, to be published by Welsh Ministers.

The conditions of participation are designed to ensure suppliers have the necessary capabilities to deliver the relevant public contract. These must be limited to that which is essential to ensure that a supplier has the legal and financial capacity, and the technical ability to fulfil the requirements of the contract.

Where it is relevant and proportionate to do so, Contracting Authorities are already able to request a whole-life carbon assessment during the procurement process. This will remain the case once rules reform has been implemented.

Retrofit and reuse of existing buildings

38. Retrofit and reuse of existing buildings, where practicable, should be prioritised over new build to conserve resources, minimise embodied carbon emissions, reduce demolition waste and deliver cost-effective solutions to delivering on housing demand. Local authorities and housing developers are expected to balance multiple objectives when meeting housing needs, and therefore require a coherent policy framework to support the balancing of retrofit and new, low-carbon housing delivery. The Government states it is promoting the benefits of re-using and retrofitting ahead of demolition, but we have seen limited evidence to demonstrate that this is yet the case. In some cases, reforms to permitted development rights appear to have created a perverse incentive for demolition and new-build over retrofit. We are concerned that the amendment to permitted development rights which allowed demolition and replacement was introduced without full consideration of its potential impact on

sustainability and on carbon emissions. In our view, permitted development conversions should deliver low-carbon homes: regrettably, in some areas they have established a legacy of sub-standard properties that will need to be retrofitted in the future. (Paragraph 213)

The Government remains committed to the aspiration set out in the Clean Growth Strategy of upgrading as many homes as possible to EPC Band C by 2035, where practical, cost-effective, and affordable. The Government remains committed to this target and we are considering options to encourage and support homeowners to upgrade their property. The Heat and Buildings Strategy, published in October 2021, sets out the actions we will be taking to reduce emissions from buildings in the near term and provides a clear long-term framework to enable industry to invest and deliver the transition to low-carbon heating and improved energy efficiency.

The Government has committed £6.6 Billion over the course of this Parliament to support upgrading the energy efficiency of existing homes. The Department has a number of grant schemes in place to help homeowners afford upgrades including the Energy Company Obligation, the Local Authority Delivery scheme and the Home Upgrade Grant to help those less able to pay, as well as the Boiler Upgrade Scheme to engagement those able to pay to transition to low carbon heating.

On the broader question of the merits of retrofitting buildings, the National Planning Policy Framework is clear that the planning system should support the transition to a low carbon future in a changing climate. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

In relation to permitted development rights, the majority of permitted development rights that deliver housing do so through a change of use. In the six years to March 2021, such rights have delivered over 82,000 new homes, making an important contribution to housing supply and at the same time making effective use of existing buildings. All such homes are required to comply with Building Regulations. From 31 August 2020, a new permitted development right provides for the demolition of specified types of buildings (single, purpose-built detached blocks of flats, single detached buildings for office, light industrial or research and development use) and replacement build as residential. The right includes important limitations, including that the building was built before 1 January 1990, and that it has been vacant for at least 6 months. As the right has been in place for less than two years there is currently limited information on the use of the right, with 34 applications under the right in the year from April 2021, and no data on the number of homes delivered, however we continue to keep the application of the right under review.

39. We recommend that Ministers urgently commission a comprehensive evaluation of the impact which recent amendments to permitted development rights have had on incentives to retrofit existing properties. The outcome of that evaluation should inform further amendments to the permitted development rights regime to ensure full alignment with the Government's stated commitment to promote reuse and retrofit ahead of demolition. (Paragraph 214)

The Government is grateful to the Committee for these recommendations about the impact of permitted development rights. As set out in the Net Zero Strategy, we will

review the National Planning Policy Framework to make sure it contributes to climate change mitigation and adaptation as fully as possible. We believe that consideration of the incentives for developers to pursue retrofit compared to demolition is best addressed through the review of the NPPF. We have no plans to carry out specific research of the impact of permitted development rights on incentives to retrofit existing properties, but we continue to keep the application of the right under review as set out under Recommendation 38.

40. We welcome the steps taken by the Chancellor of the Exchequer to address the inequity in the VAT regime between new build and retrofit. We nevertheless note that this differential treatment will expire in 2027 and is limited in scope, covering only Energy Saving Materials rather than broader aspects of retrofit work (Paragraph 215)

As referenced in the report, at Spring Statement the Chancellor announced the removal of the 5 per cent VAT charge on the installation of energy saving materials (ESMs) in Great Britain for the next five years and the permanent reversal of restrictions imposed by the Court of Justice of the European Union, removing complex eligibility conditions and reinstating wind and water turbines as qualifying materials. This represents a £280 million tax cut to support investment in energy efficiency over the next 5 years.

The Government already maintains a reduced rate of VAT at five per cent, subject to certain conditions, for residential renovations, such as building services and materials. This includes conversions of buildings from one residential use to another, converted from commercial to residential use, and the renovation of properties that have been empty for two years or more prior to the renovation work. Extending this to all property renovation, repairs and improvements would cost the Exchequer approximately £3.75 Billion per year, much of which would provide VAT relief on renovations that have little or no energy efficiency benefits.

Again, these costs would have to be balanced by changes elsewhere and risks reducing the money available to support important public services, including the NHS and policing.

41. We recommend that Ministers evaluate the impact of the time-limited zero rate of VAT for the installation of certain Energy Saving Materials well before its expiry date of 2027, with a view to extending the provision beyond 2027 if it has made a demonstrable and positive contribution to meeting carbon budgets and the Government's Net Zero objectives. We also recommend that Government go further and consider harmonising the VAT rates of new build and retrofit work. We have already recommended that the Government consider extending the zero rate of VAT to innovations which improve energy efficiency, such as energy storage systems (Paragraph 216)

It is important to recognise that the changes to the ESMs relief announced at Spring Statement were brought in at pace to immediately support households to improve the energy efficiency of their homes, bolstering the UK's energy security and contributing to our transition to Net-Zero.

Evaluating the case for extending relief to other innovations which improve energy efficiency, such as energy storage, would require careful consideration and consultation to ensure changes represent value for money and would not have unintended behavioural effects.

The Government recognises the importance of ensuring that policy remains in step with the rapid pace of technological development in the ESMs market and the changing policy context since this particular relief was first introduced. However, any further changes should also be viewed in the context of over £50 Billion of requests for relief from VAT received since the EU referendum. Such costs would also have to be balanced by increased taxes elsewhere, increased borrowing or reductions in government spending.

Regarding the recommendation that the 'Government go further and consider harmonising the VAT rates of new build and retrofit work' please see our response to recommendation 40.

Finally, legislation for the zero rate of VAT for the installation of certain ESMs includes a sunset clause that will bring the relief to an end in 2027, unless Treasury Ministers decide to extend it through the laying of a statutory instrument. This is in line with the NAO's recommendation in the 2020 Management of Tax Expenditures report that the Government 'consider specifying time-periods or triggers for evaluation and review when designing each tax expenditure'.

The Government continually reviews and assesses taxes in order to ensure they strike the right balance between keeping taxes simple to administer whilst also being well-targeted and effective. Treasury Ministers will draw on this assessment, in order to make a timely and well-informed decision regarding this relief ahead of its 2027 expiry date.

42. A mandatory requirement to undertake whole-life carbon assessments when undertaking building projects will further incentivise retrofitting. This provides another justification for our whole-life carbon recommendation in chapter 2. (Paragraph 217)

As noted above, the NPPF is clear that the planning system should support the transition to a low carbon future in a changing climate. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

As set out above, we intend to consult on our approach and interventions to mainstream the measurement and reduction of embodied carbon in the built environment in 2023.

43. We recommend that circular economy statements including pre-demolition audits should be a requirement of planning applications which entail demolition of properties, as is already the case for certain applications which London boroughs are required to refer to the Mayor of London for consideration. The circular economy statement must explain why retrofit to match existing or new uses is not possible if demolition is proposed and be accompanied by a whole life carbon assessments of both new build and retrofit. This requirement should be introduced as soon as is practicable and not later than any package of reforms to the planning system which the Secretary of State for Levelling up, Housing and Communities is expected to introduce before the end of the current Parliament. (Paragraph 218)

We acknowledge the recommendation to incorporate the use of circular economy principles into planning decision-making. The NPPF is clear that in supporting the

transition to a low carbon future, the planning system should help to minimise vulnerability and improve resilience and encourage the reuse of existing resources, including the conversion of existing buildings where appropriate.

As set out in the Government's Net Zero Strategy, we intend to review the National Planning Policy Framework to make sure it contributes to climate change mitigation and adaptation as fully as possible. We will consider the role of circular economy principles in national planning policy as part of that review.

44. A lack of consumer awareness regarding retrofitting solutions, the perception that retrofit work is costly and/or disruptive, and consumer mistrust in the retrofit sector's ability to deliver quality housing solutions, is creating further barriers to investment in retrofit. In our view there is a clear role for Government to support the industry in promoting retrofit installations, in particular at a time when energy costs are rising rapidly, and the running cost of heating homes and businesses could be reduced by improving energy efficiency of buildings. (Paragraph 219)

The Government recognises the pressures people are facing with the cost of living. This is why we have set out a £22 Billion package of support, including a £150 council tax rebate and a £400 energy Bill discount in October to cut energy Bills quickly for the majority of households. We know that energy efficiency improvements can cut energy costs, delivering an average Bill savings of £300. We have, therefore, committed to spend £6.6 Billion in this Parliament to further improve the energy performance of our buildings.

The Government is stimulating demand for retrofit through direct investment in energy efficiency and decarbonisation measures, introducing a zero-rate of VAT for the next five years on energy efficiency measures, strengthening minimum energy performance standards for existing properties, supporting the development of the green finance market, and improving consumer understanding and awareness of ways to improve the energy performance of their homes.

In our Public Attitudes Tracker, we asked respondents who they would trust to provide advice on which heating system to install in home. In Winter 2021, trust was highest among tradespeople (46%), low carbon heating specialists (37%), official websites such as GOV.UK (36%), heating manufacturers (29%) and energy advice websites (29%). This demonstrates the importance of extensive co-operation and collaboration from government, industry and consumers. We also found that the most common barriers to installing each type of insulation for respondents living in owner-occupier households included cost, feeling it was unsuitable for their home, or that it entailed too much hassle or disruption. Cost was the main barrier for double glazing (48%), whereas perceived unsuitability for their home was the main barrier for installation of cavity or solid wall insulation (47%), loft insulation (33%), and under floor insulation (24%).[1]

To reduce consumer mistrust of retrofit, the Each Home Counts (EHC) Review, an independent review of consumer advice, protection and standards, called for a technical code of practice and standards to ensure that the risk of poor-quality insulations was minimised. As a result of this review, PAS 2035, which must be used in conjunction with PAS 2030, was established as the standards framework document for the end-to-

1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1080043/BEIS_PAT_Winter_2021_Heat_and_Energy_in_the_Home_REVISED.pdf (Figure 6.3)

end delivery of domestic retrofit work. These British Standards Institution published standards represent an industry wide approach to ensuring quality in the retrofit of people's homes and are a requirement for those installing energy efficiency measures in government funding schemes (MCS standards or equivalent are required for low carbon heat installations).

The EHC Review also called for a quality mark against which all those engaged in design and installation of measures will be assessed and certified against. This function is undertaken by TrustMark. PAS certified and TrustMark registered installers have been thoroughly vetted for technical competence, customer service and trading practices, and will be operating in accordance with the TrustMark Customer Charter. This ensures customers are financially protected in the event of remediation works required or should the installing company go into financial administration, as well as being provided with appropriate guarantees.

The Government is currently determining how best to partner with industry, local actors and other stakeholders to help consumers make cost-effective energy efficiency improvements through high-quality installers.

45. We recommend that the Government work with industry to increase consumer awareness of the environmental and monetary benefits of high-quality retrofit solutions with a view to increasing the uptake of retrofit work in line with the net zero trajectory and at a time of rising energy costs. (Paragraph 220)

The Government is working to review and improve our communications to ensure that consumers have access to the information and advice they need to make retrofit decisions that are right for them. The British Energy Security Strategy sets out some of the activities we are pursuing to help households understand how to improve the energy performance of their home, including improving labelling and product standards and launching a new energy advice service to help consumers improve the energy performance of their homes.

Our Simple Energy Advice Service (SEA), launched in 2018 in response to the Government-commissioned Each Home Counts Review, provides homeowners with impartial and tailored advice on how to cut their energy Bills and make their homes greener and has been accessed by over 1.7 million users. It also provides estimates of the monetary benefits that consumers can enjoy through making improvements to their home. We are reviewing and improving our digital service. By summer we will migrate the main user journey to GOV.UK, which will help consumers navigate what can be unknown territory to improve the energy performance of their homes. BEIS have recently launched a new heat pump online calculator, a tool which helps consumers check if a heat pump could be suitable for their home. The tool has been published on GOV.UK and aims to provide tailored information to consumers about the options for changing their heating system to a heat pump. The tool has been developed as part of the government's £16.5m Electrification of Heat Demonstration Project and includes information on suitability of people's homes for a heat pump, as well as an indicative estimate of upfront costs. Alongside the tool, we are publishing a 'Find a Heat Pump Installer' guidance webpage and series of heat pump user case studies, which are linked through the tool.

We are considering options to support tailored retrofit advice in local areas, and are continuing to collate and publish case studies to help consumers understand the real-world impacts of taking steps to decarbonise building energy use.

Skills and training

46. The present shortage of workers in the energy efficiency and retrofit sector is chronic, given the overall timetable for decarbonisation of properties. This is a point we have repeatedly emphasised in our recent reports. Significant skills gaps also exist in the measurement of embodied and whole-life carbon and the use of low carbon materials. On the evidence before us, the Government has not yet responded adequately to our recommendations to develop a retrofit strategy and programme to encourage the development of relevant green skills across the construction trade. (Paragraph 233)

The Government recognises the need for a skilled, competent and robust supply chain to deliver the improvements to buildings necessary to meet our net zero targets.

The Department of Business, Energy and Industrial Strategy has spent almost £6 million on a skills training competition which delivered around 7000 training opportunities for the energy efficiency and low carbon heating supply chains. We are developing options for further funding.

The Government have also previously provided £4.7 million of funding over a period of two and a half years to six local supply chain demonstration pilots which tested innovative approaches for supporting and growing the energy efficiency installer supply chain.

Going forward we intend to monitor the market and its response to our interventions, and are considering options to work with the industry to support training in key skills shortage areas and new

routes of entry to increase capacity. Many of our plans to bridge this gap are represented in the strategies and programmes referenced below, in response to recommendation 47.

47. We reiterate our recommendation to develop a retrofit strategy and up-skilling programme for construction to meet the needs of net zero. This should be published before the 2022 summer recess. (Paragraph 234)

The Government agrees with the Committee that upskilling and supply chain growth will be needed as we progress to net zero, which is why both the Heat and Buildings Strategy and the Net Zero Strategy set out our plans to work with industry to create the skilled workforce needed to deliver our climate targets. Last year, the Green Jobs Taskforce report called on government and industry to work together to drive action on green jobs and we have recently established the Green Jobs Delivery Group, co-chaired by Minister Hands and Michael Lewis, CEO of E.ON Energy UK, with the aim of bringing together government, industry and other key stakeholders to progress work collaboratively on the green jobs and skills agenda.

In April 2022, the Department for Education (DfE) published a Sustainability and Climate Change Strategy, which builds on the work already underway across the education and children's services sector to support the delivery of the UK government's 25 Year Environment Plan and Net Zero Strategy. Working through the Green Jobs Delivery

Group, DfE will continue to ensure that existing skills programmes can be directed to support the net zero agenda, and where appropriate identify further opportunities to flex key skills programmes to support green sectors and occupations.

On retrofit specifically, BEIS spent almost £6 million on a skills training competition which delivered around 7,000 training opportunities for the energy efficiency and low carbon heating supply chains, including training for retrofit coordinators and assessors. We are currently developing options for further funding.

The Department for Education are refining interventions for the construction sector through the Construction Skills Delivery Group – a joint HMG-industry initiative which develops and promotes skills initiatives to improve progression routes into the sector. Through the Lifetime Skills Guarantee, we are supporting workers to gain the skills they need to transition to the green economy and support improved energy efficiency across the country, including through targeted support for retraining. We are delivering Skills Bootcamps, which are short, flexible courses covering digital, technical and green skills, including retrofit.

We are continuing to roll out T Levels which support green careers, providing high quality technical qualifications as an alternative to A Levels, which are underpinned by the same employer-led approach as apprenticeships. The building services engineering for construction T Level, launched in September 2021, will cover housing retrofit and heat pump installation. From September 2022, new T Levels will be available in Engineering, Manufacturing, Processing and Control. The suitability of potential future T Levels and occupational specialisms to support green skills is being considered.

The Free Courses for Jobs offer has, since April 2021, been supporting adults who do not have a qualification at Level 3 or higher to access over 400 Level 3 courses for free. The offer currently includes qualifications linked to green sectors such as Building and Construction. This offer replaces loan funding with grant funding for any adult over the age of 23 looking to achieve their first Level 3 qualification. In addition, we have recently announced that, from April this year, any adult in England who is earning under the National Living Wage annually (£18,525) or unemployed will also be able to access these qualifications for free, regardless of their prior qualification level.

Further, the Institute for Apprenticeships and Technical Education (IfATE) has convened a Green Apprenticeships Advisory Panel (GAAP) to work with employers to align apprenticeships to net zero objectives. Work is underway to map existing apprenticeship standards against green occupations and identify opportunities to create new standards, including in retrofit. The GAAP has endorsed existing apprenticeships which support green career pathways. Proposals for a new Low Carbon Heating Technician apprenticeship have already been approved, and the standard and assessment plan for this apprenticeship are currently being developed.

48. Alongside a mandatory requirement to undertake whole-life carbon assessments and a national methodology for assessments, the Government should make training in undertaking whole-life carbon assessments accessible across all levels of education and the entire supply chain. The Government, in response to this report, should set out how the Department for Education plans to achieve this. (Paragraph 235)

Through the Skills for Jobs White Paper, we are reforming our skills system to create more routes into skilled employment in sectors the economy needs, such as housing retrofit. The Government has put employers at the heart of these reforms. Therefore, qualifications and skills offers are being designed in a way that is responsive to the needs of the market and employers. There are mechanisms in place for employers to get involved with the Institute for Apprenticeships and Technical Qualifications to ensure the training and education they need is available.

We have existing programmes that currently support construction skills, such as Skills Bootcamps which offer short, flexible courses in key green sectors such as housing retrofit, and The Engineering for Construction T Level which launched in Sept 2021, which covers housing retrofit and heat pump installation.

Working alongside industry, we will continue to ensure that our existing skills programmes can be directed to support the net zero agenda, and where appropriate identify further opportunities to flex key skills programmes to support green sectors and occupations. The key vehicle for achieving this will be the new Green Jobs Delivery Group.