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## **Independent Affordable Housing Supply Review Response to the call for evidence from Woodknowledge Wales**

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### **Who we are**

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Woodknowledge Wales is a not-for-profit, for-public-good, membership organisation:

- seeking to inspire a movement capable of leading an expansion of forestry and wood-based industries;
- harnessing the collective spirit of businesses and organisations to put trees, timber processing and wood products at the heart of the green growth agenda;
- with an ambition to increase the market for wood, find ways to use wood better and to increase the supply and value of the homegrown resource.

### **Our ambition**

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Woodknowledge Wales is a change organisation with an ambition to transform the way we currently view our forests, timber processing industry and housing. We want to see a step change in performance and quality across these sectors and we believe that with the right policy interventions this transformation could be delivered within a generation. Imagine Wales as a high-value forest nation. A Wales with a large and expanding forest area with many more people with an economic interest in trees. A Wales with a dynamic timber processing and manufacturing sector which is fully integrated with an advanced timber housing industry. The benefits would be huge - a healthy and high-performance built environment, substantial climate change mitigation through nearly zero carbon housing and expanded forestry, high value employment (particularly in rural areas) and an economic win through reduced import dependency. Spin-off environmental benefits would be improved air, soil and water quality, reduced flooding and increased biodiversity. Other social benefits would include more cohesive communities benefiting from the multiple well-being aspects of trees, woodland and local timber utilisation enterprises.

### **Why we're responding to this call for evidence**

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This review aims to identify ways of improving the delivery of more affordable housing and at some scale and pace, identifying opportunities for innovation and creativity which can be stimulated, encouraged and supported by all the stakeholders in the process. We think our work in promoting the use of timber grown and processed in Wales to build

homes is something the Review Panel should know about as it points to some important ways in which we can provide some home-grown solutions to improving delivery.

We have worked closely with Powys County Council which has taken a leadership role in the development of the Welsh timber industry – it's Wales's largest county, it has a substantial area on which to grow trees and it is home to one of the UK's largest sawmills. The council's housing department has spent a number of years joining up timber supply with housing demand, by facilitating the construction of modern high-performance timber houses in a way that also maximises the social benefits of procurement. Building houses and using the local supply chain creates employment opportunities for local people. In 2016 we worked with the council to develop its Wood Encouragement Policy - the first of its kind to be adopted by a council in the UK.

Working with social housing providers, the Welsh Local Government Association, Community Housing Cymru and Natural Resources Wales, the council set up the Home-Grown Homes Partnership. Working directly with social housing organisations provides an opportunity to educate and inform them about the benefits of building with timber. The Partnership secured European funding to support timber supply chain development – and appointed Woodknowledge Wales to act as advisors and develop a larger pan-Wales project. This project received funding through the Rural Development Programme and started work early in 2017 as the Home-Grown Homes Project working across the whole of Wales, led by Powys County Council and delivered by Woodknowledge Wales in partnership with TRADA (the Timber Research and Development Association), Cardiff Metropolitan University and Coed Cymru. The themes of this ambitious project are more and better homes from wood, more and better local manufacturing and more and better home-grown timber.

So Woodknowledge Wales is taking the opportunity of commenting on the review's purpose: to examine current arrangements supporting the development of affordable housing and to make recommendations for changes designed to increase supply and improve delivery from the resources available.

We believe that the current arrangements are broken and need fixing if we are to genuinely produce better quality homes. Our interest is to see a focus on quality before quantity because if we focus on quantity alone, we will fail to address the structural problems which exist in the chain of supply.

### **Why more use of timber is part of the solution to increasing the supply & quality**

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The role of the building fabric and the choice of materials is critical to the quality and performance of a house. Materials have an effect on energy efficiency, indoor air quality, thermal comfort, moisture control (breathability) and acoustics. More use of timber as a construction material will help with meeting our Well-being Goals as a nation. Timber combines the qualities of a natural resource with the high performance of modern building materials. It can deliver innovative design, speed, cost and resource efficiency, health and wellbeing, and offers a path to a low carbon economy – in an industry

dominated by the use of concrete and steel (materials responsible for almost 50% of the world's industrial carbon emissions), timber has a much lower carbon footprint.

We believe a thriving wood industry is a cornerstone of a sustainable society. It provides a valuable low carbon resource for industry and rewarding employment for many thousands of people. Well managed woodlands contribute to climate change mitigation, flood prevention, soil health, clean air, biodiversity and enables many forms of recreation necessary for our health and well-being.

Only 15% of the timber we use in construction is grown in the UK. The UK is the second largest importer of wood in the world after China. We urgently need to build many more houses and most of the efficient, low carbon and high-performance housing throughout the world is based upon wood. Using more wood, using more homegrown wood and growing more trees is good for our economy, our environment and our people.

But timber housing in Wales is currently less than 25% of new build. We think Wales could match Scotland where timber construction accounts for over 80% of the new build market.

In recent years, there has been insufficient investment in timber research and development in the UK. The technical possibilities of wood and the demand and context for trees does not stand still, and nor should we. Guided by our commitment to innovation and wood science, we have supported the development of many new products from homegrown timber. Our work has shown through exemplar projects, events, research and publications that we know how to use timber and to innovate with it.

The review specifically poses a question about the role of off-site manufacture and modern methods of construction (MMC). We know there are a number of timber construction methods available in Wales which are capable of utilising Welsh grown timber in designs that deliver high thermal performance. Costs of systems vary widely but the cheapest open panel and twin-wall methods which are factory built are already mainstream; they can be manufactured using homegrown timber and can deliver high thermal performance. Developments and innovations are inevitable and will follow on from wood science currently being carried out; glulam, closed panel systems and Cross Laminated Timber (CLT) offer potential step changes to construction in Wales. However, in 2015 the most modern closed panel production plant in Wales fell victim to the adversarial practices employed by contractors in the economic downturn and timber frame manufacturers are relying on small margins, uncertainty of flow through the factory, well-established problems with housing products which are non-standardised, and a lack of skills to build factory housing. So, building more housing whether on site or off-site won't deal with the structural problems of the housebuilding sector

### **The need for change**

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For all our ambition and desire to lead change there is only so much organisations like Woodknowledge Wales can achieve. We think Welsh Government itself should be leading change by moving the agenda beyond the achievement of numerical targets for increased supply. Whatever targets are set, we know that we just don't build enough homes. The deficit of supply over demand gets worse and not better – the evidence of unmet and increasing need and annual housebuilding statistics for the last few decades show this. What's as important is that the homes we do build are fit for the future. That means we should focus on quality which also means a focus on process and procurement. The current approach to housebuilding relies on an approach where two thirds of the homes supplied in the UK are built by 10 companies in an environment where risk aversion, procurement practice, cost and adversarial relationships have driven down quality, lowered skills, driven out small and medium sized and local providers in a market where the needs of consumers come second to those of the producer. The business model is plan, design, build, sort out the defects and then leave the occupier to live with a home the performance of which few appear to be concerned about.

There is well documented evidence in the UK that there is a 'performance gap' between the 'as designed' and 'predicted' performance of a house and its 'use' and 'operation'. The performance gap where design aspirations are not translated into construction details is still a major problem and therefore impacts significantly upon two performance criteria – thermal (the efficiency of the fabric to minimise energy use for heating) and fire safety (the adequacy of passive fire protection measures to prevent the spread of fire, smoke and toxic gas) - latterly known as the safety gap (Littlewood, 2018). As a result, the current Energy Performance Certification system is under review, as is Approved Document B of the Welsh Building Regulations.

Performance is not just about energy and carbon, thermal comfort and fire protection but also air quality, acoustics, lighting, moisture control and occupant health and safety. We talk about wanting to create homes which are affordable, but just as important are health and wellbeing, safety, security and accessibility – we need to define how we want new housing to perform once it's built. So, our response to the review's question about whether there should be changes to the standards governing the design and quality of affordable housing is yes, the focus should be on the quality of performance in use – but of all housing, not just affordable housing.

**So, we would like to see the Review lead to action on a series of issues:**

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### **Changing thinking and culture**

Link strategic thinking across sectors- recognise that Wales is woefully underperforming in its forestry and timber processing industries in comparison to European best practice, and begin to address the structural problems where the interests of public sector forestry, private sector land-owners, private sector processors and the house building customer are appallingly misaligned. When effectively aligned, the construction market can provide the market pull necessary to underpin the development of forestry and wood processing. Given the huge economic, environmental and social opportunity for sector development and the cross-departmental nature of the challenge we believe that

a clear 'Industrial Strategy for Wood' is required and should be overseen by a 'Wood Champion'.

**Engineer culture change** - lead a change in the culture of procuring, specifying and producing housing which encourages more entrants into the supply process and where genuine collaboration and partnership across the supply chain is nourished and supported so the needs of consumers and quality can be restored and where performance in use is valued. So, risks and rewards can be shared, all parties are involved at the start of a scheme and where collaborative tools such as BIM are used. This might help counter the challenges of an industry which has endemic problems of company failure, low margins, high risks, investment uncertainty and adversarial relationships.

**Develop more market diversity** - accept that the volume house builders are never going to build the quantity and quality of housing required and plan accordingly. This means supporting the development of all forms of SME developer, social and self-procured housing through land availability, finance and planning mechanisms and wider government policy.

**Embed whole life carbon thinking into construction** - currently only operational carbon emissions are regulated. A clear focus on embodied carbon emissions reduction would encourage innovation, efficiency improvements and cost reduction in building materials supply such as, improved resource efficiency, new business models (such as leasing), favour local supply chains through reduced transport, encourage the use of lower carbon materials such as timber. Government should set out a clear and unambiguous pathway to whole life carbon reduction in construction. After all, to meet our Paris climate change commitments Wales will need effectively carbon neutral by 2055. That means that infrastructure delivered today that is expected to have a 40-year life or more should be carbon neutral today.

**Do more to change the image of construction** - undertake a review of the culture of construction to better understand how to make the creation of homes a more attractive career path. Designing and constructing new homes is one of the most creative things we do as a species, and yet young people are not drawn to the industry. Why is that? We would suggest that the adversarial culture of construction is one of the key reasons why young people are put-off entering the profession.

**Upskill** - reboot past investment in skills for everyone involved in the delivery of homes, most especially the teams working in factories and on sites. Ideally with housebuilders and contractors having an in-house workforce so that the training and learning is captured and retained. Without investment in appropriate new skills, there is a real risk that the shift to MMC will not address the quality and performance of new housing. The competitive nature of FE and HE provision is not providing the radical alternative education and training needed for a carbon neutral Wales as they respond to perceived need rather than lead on the provision of the kind of skills required for a carbon neutral future. Radical new thinking is required here and we can learn from education programmes offered in countries such as Germany, Switzerland and Austria.

### **A Performance-based approach to standards**

Champion a move to 'performance in use' standards - work with producers and consumers to define what we mean by 'performance' in housing and change the Building Regulations from the current compliance with a 'design standard' to a 'performance in use' standard. This will also provide compelling reason for the industry to move to more integrated and offsite factory-based solutions. At the same time, give attention to education and awareness training for local authority staff and local councillors on the performance of housing. Consider how repair and maintenance teams can be re-trained and re-branded as building performance teams – thereby creating a better feedback loop to inform the design of new homes. Stimulate a campaign to improve consumer understanding of housing performance so they can become more demanding occupiers in the best sense of the word and raise the quality of production. This change in standards should focus on health and well-being performance and consider indoor air quality, daylighting, acoustics, condensation, thermal comfort (overheating), safety, fire and security. It could draw upon the requirements of the Building Regulations but add the missing elements and requires post completion checking. This standard should be voluntary at first, and once proven, absorbed fully into Building Regulations. Government can lead the way through its funding programmes to establish performance-based procurement and the development of performance-based standards.

Rationalise existing standards and compliance requirements - long standing voluntary standards e.g. 'Secured by Design' (SBD) should either be absorbed into planning policy and/or Building Regulations (both of which allow multiple routes to demonstrate compliance) or be scrapped. The compliance costs associated with SBD have created a barrier to joinery companies in Wales supplying social housing.

Extend performance standards to improve quality in production - encourage social housing providers to collaborate with the timber construction industry (under the leadership of CHC) on creating a performance-based manufacturing standard for timber construction (e.g. an advance BIM enabled pattern book) thereby helping to standardise componentry to reduce costs and improve quality without limiting flexibility in design. Unless housing suppliers are effectively required to collaborate in this way, there is a risk that imported solutions from large mega-factories will become the lowest cost solution of choice.

Set standards for all - create a level playing field by holding all house building in Wales to the same standards.

Continuous improvement in innovation - commit to further funding of the Innovative Housing Programme with an emphasis on delivery at scale of proven high performance, low whole-life carbon, manufactured housing in a way that supports the development of local supply chains and draws upon the learning from Phase 1. We suggest that the name

for phase 2 could be along the lines of the 'Transformative Housing Programme' to reflect the post-IHP implementation of the learning.