



Registered Master Builders Association of New Zealand Incorporated

Proposal 1. Energy efficiency for housing and
small buildings of the Building Code Update
2021 submission

MAY 2021

The Registered Master Builders Association submission on Proposal 1. Energy efficiency for housing and small buildings of the Building Code Update 2021

The Registered Master Builders Association (*RMBA*) welcomes the opportunity to provide this submission on *Proposal 1. Energy efficiency for housing and small buildings (Proposal One)* of the Building Code Update 2021.

About RMBA

The RMBA represents over 3,000 commercial and residential builders and are the leading sector advocates on the built environment. Our sector is a key contributor to the New Zealand economy, with every \$1 million spent on house building supporting \$2.6 million across the wider economy.

Summary of Submission

- The RMBA supports changes to the Building Code that result in more energy efficient homes for New Zealanders.
- Although supportive of ways to improve energy efficiency such as increasing insulation, it is important that any changes can be implemented and do not result in negative unintended consequences.
- We are concerned about the following aspects of proposal one:
 - Sole reliance on increasing insulation, which is only part of the energy efficiency story and is not a complete solution. We support an investigation into a new measure/schedule method that considers all aspects of thermal design not just insulation. It should also include orientation of houses to maximise use of sun and shade.
 - Thermal bridging, infiltration and ventilation will remain significant issues impacting energy efficiency despite the proposed change to insulation.
 - Increases in carbonisation from the new methods of manufacturing, production, materials and building that would reduce any energy efficiency gains from increasing insulation.
 - The proposed changes will have significant impacts on the buildability of homes. The solutions to these issues will result in increased costs to building new homes, at a time when New Zealand is facing a housing affordability crisis.
 - Implementing the proposed changes (including new materials, manufacturing, building methods) will result in significant delays in new builds, at a time when New Zealand's construction sector is already impacted by significant delays. This may negatively impact on New Zealand's housing availability.
 - Inconsistencies between this proposed change and other proposed reforms or current regulations.

- The RMBA supports improving New Zealand’s building stock and is committed to adopting best practice where we can. However, in this instance we do not support using the selected overseas benchmarks for R-Values.
- We are supportive of the increase of climate zones from three to six; however, note that zones five and six will be particularly impacted by the proposed changes and warrant further specific investigation in terms of cost / benefit and ability of the industry to meet the potential higher settings.
- Due to the issues raised in this and other industry submissions, we do not support moving to “international standard” or an Effective Date of 4 November 2021. The sector will need significant time to work through the proposed changes to find an appropriate solution.

The RMBA supports the objective of Proposal One to increase the energy efficiency of housing and small buildings.

The RMBA supports changes to the Building Code that result in better homes for New Zealanders. We are committed to transforming the construction sector and rebuilding New Zealand’s economy by focusing on building better homes, communities and workplaces, and ultimately better lives for all New Zealanders. We want to work with the Government on opportunities to drive regulatory best practice in the delivery of homes, with a focus on improving construction, efficiency and timeliness across the whole system.

However, it is important that the changes proposed result in increased energy efficiency and can be implemented. In our view there are significant issues with relying on increases to insulation and R-Values as the main method to improve the energy efficiency of homes.

RMBA supports more energy efficient homes. However, we want to ensure that any changes to increase energy efficiency are effective and evidence-based, applicable to New Zealand, and can be implemented.

Proposal One proposes increasing current insulation levels, with three options for consideration: 1) half, 2) at or 3) above international standards. The increases for each option will be via specific increases of R-Values for the roof insulation, windows, wall insulation and underfloor insulation. Each option also has different R-Value increases for a proposed six different climate zones, with Zone 1 experiencing the lowest R-Values (and therefore the least increase in insulation) and Zones 5 and 6 the highest R-Values (and therefore the biggest increases in insulation requirements).

We have the following concerns with Proposal One:

| Issue | Rationale | Recommendation |
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| Sole reliance on increasing insulation is not a complete solution. | There are many aspects of housing design and build that impact energy efficiency. Solely focusing on increasing insulation may have some benefit but is not the complete answer. It is a simplistic response to a complex issue, and alone will not result in the gains in energy efficiency sought. | We support investigating a new measure/schedule method that considers all aspects of thermal design and wall / roof performance not just insulation. This consideration should also include orientation of houses to maximise use of the sun and shade. |

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| <p>Thermal bridging, infiltration and ventilation will continue to significantly impact a home's energy efficiency, despite the proposed changes to insulation.</p> | <p><u>Thermal breaks/bridging</u></p> <p>Junctions where there is a big build-up of timber create thermal breaks in insulation. Thermal breaks will impact the ability to implement the increase in insulation as, depending on the extent of the thermal breaks in the overall design, the proposed R-Values will not be achieved.</p> <p>Energy saving is potentially overstated. We understand the figures presented in the consultation document assume 24% framing ratio (proportion of timber) compared with BRANZ 2020 study finding of 34%. This will overstate the thermal gains from increased insulation.</p> <p>In many cases the breaks are structural and impact the earthquake rating, so it is not possible to eliminate all thermal breaks. And, although there is scope to significantly reduce thermal breaks in insulation, it is hugely expensive.</p> | <p>Any changes in design where a thermal break occurs should be practical and provide a noticeable improvement in the thermal performance of the house at minimal cost. It has been suggested, for example, that balloon framing (continuous studs up to two storey high) be used to avoid a thermal break at the wall/first floor junction. However, implementing this change would result in a range of issues including: difficulty in lifting frames because of the weight and the length of the frames; difficulty in temporary bracing-especially on restricted sites; instability of the timber; twisting and warping of the timber and obtaining good quality timber lengths over 5m regardless of their dimensions.</p> <p>We also note that structural changes caused by changing details where there are thermal breaks will have an impact on NZS3604.</p> |
| | <p><u>Infiltration</u></p> <p>Increasing insulation will have no impact on the amount of infiltration in a house. Put simply, it does not matter how much insulation a home has if much of the heat is leaking out of the house.</p> | <p>Consideration of the impact of infiltration on energy efficiency</p> |
| | <p><u>Ventilation</u></p> <p>As houses become more airtight to improve infiltration per the above comment, people are more reluctant to leave windows open and a ventilation system is almost essential to ensure that there</p> | <p>Consideration of the impacts on ventilation resulting from the proposed changes. This should include impacts on terrace design and less ventilation options, and the fact mechanical ventilation will</p> |

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| | is air movement within the house | be required beyond standard current code requirements for bathrooms and kitchens. |
| An unintended consequence of increases in carbonisation from the new methods of manufacturing, production, materials and building required that would negate any energy efficiency gains from increasing insulation | There is a risk that implementing the proposed changes will result in increased carbonisation. The new materials, manufacturing and production and ways of building required will mean increases in carbonisation. One example is the current industry capacity for IGU triple glazing, which will likely require imported product. The issue then becomes that in seeking to improve energy efficiency homes will ultimately end up with a high carbon footprint than before. | Investigate and understand the entire carbon footprint implications of the proposed changes. |
| The proposed changes will have significant impacts on the buildability of homes. The solutions to these issues will result in increased costs to building new homes, at a time when New Zealand is facing a housing affordability crisis. In addition, the new requirements will result in more expensive building methods and materials. | Current estimates within our member base is that costs could increase up to 15 to 20% for a typical new build. One example is the current industry capacity for IGU triple glazing, which is significantly more expensive and likely require imported product. | We note that current MBIE / BRANZ research has been based on mathematical modelling. A working cost impact analysis based on real world examples should be undertaken to understand the implications on housing affordability. One option could be working with Group Home Builder members to use working homes with the same family metrics to understand the real-world costs on the different options proposed against the status quo. We also strongly support reductions in peak demand for energy, carbon reduction and carbon credits being subsidised by EECA as with the Healthy Homes Grants. This could be in the form of annual rebates. |
| Implementing the proposed changes (including new materials, manufacturing, building methods) will result in significant delays in new builds, at a time when New | Supply issues and delays is a major issue for the construction sector, with latest estimates putting the delay at six months for some materials. This will only be exacerbated | Consideration of the implications on housing availability. |

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| Zealand’s construction sector is already impacted by significant delays. This will negatively impact on New Zealand’s housing availability. | under the proposed changes, with greater importation of product required. | |
| Inconsistencies between the proposed change and other government requirements such as Proposal 4, Natural Light for Higher-Density housing and current structural requirements to protect from earthquakes | In some instances, the structural detail already provided is best practice and so changing these details is impractical. | Inconsistencies must be eliminated. This is critical at a time when NZS3604 is up for review. |

We recommend a targeted New Zealand approach based on determining the climate environments of each region and cognisant of the New Zealand build and construction sector, rather than an international benchmark.

The RMBA supports improving New Zealand’s building stock and is committed to adopting best practice where we can. However, in this instance we do not support using an international standard as the benchmark for R-Values. Rather, we recommend development of a targeted New Zealand approach based on the climate environments of each region that considers cost / benefits of proposed changes for New Zealanders.

It is proposed to increase the minimum insulation requirements against international standards (defined as those countries that have climates similar to New Zealand). In reality the international standard is only provided by four regions: Wales & Ireland, California, England and Australia.

We question the utility of comparing the New Zealand approach to an international benchmark. Our view is that the climates of those regions, particularly London and Dublin, are different enough to New Zealand as to make them unhelpful as comparisons. The comparisons also overlook the different building methods in these countries, that make adopting similar R Values challenging. Often this is driven by different seismic risk profiles. This is not a case of like for like – either in climate or building methods. We should not assume that international standards are applicable or comparable to our needs as each country has their own unique methodology in building.

We support the increase in climate zones but note that Zones Five and Six will be heavily impacted by the proposed changes.

This change recognises that New Zealand has more diverse climates across more regions and we view increasing the number of climate zones as sensible.

However, we note that the changes will have disproportionate implications for different regions, with those located in Zones Five and Six bearing the brunt of the proposed changes. These regions may experience supply issues, building delays, and negative impacts on housing affordability as a result of implementing the proposed changes and transitioning to new building methods that will be required as a result of the proposed changes. Housing affordability and availability will be of a particular issue in areas in the South Island, which has been significantly impacted by drops in tourism as a result of COVID.

Due to the issues raised a longer lead time than six months is required.

Proposal One proposes three transition periods for the changes proposed to take effect, each have an Effective Date of 4 November 2021 with a cessation date of either one year, two years or three years.

Due to the issues raised in this submission we do not support an Effective Date of 4 November 2021.

The building and construction sector will need significant lead time to work through the issues raised in this submission. Any changes will also need longer than six months to prepare for. This includes both adapting to the new methods of design and construction, and being able to scale up production and manufacturing of new materials required, such as windows, where there is currently insufficient capacity in NZ to product thermally broken triple glazed windows. As already noted, any changes could also affect the review of NZS3604 and clashes between details must be avoided.