NZGBC
TE KAUNIHERA HANGANGA TAUTAIAO

22nd January 2025

Building System Performance
Ministry of Business, Innovation and Employment
PO Box 1473
Wellington 6140

RE: H1 Consultation Dec 2024

Tēnā koe,

Thank you for the opportunity to submit on the proposed changes to the H1 section of the New Zealand Building Code. We are writing to you in addition to our official submission to set out an opportunity to use this consultation as a mechanism to solve a considerable issue for the New Zealand construction industry.

As Minister Penk has mentioned publicly on several occasions, New Zealand is seeing many new build homes experiencing overheating issues, which is causing considerable discomfort for Kiwi families. There is growing media interest in this issue, and home builders and members of the public are relaying their concerns to the NZGBC directly. People are reporting incredibly high indoor temperatures, saying the temperatures are stopping them sleeping and they describe the heat as inescapable. In 2024 Auckland Council research found the overheating is causing costs and discomfort for families.

The first stated purpose of the building act is to "ensure people who use buildings can do so safely and without endangering their health". It seems that instead NZ families are experiencing high temperatures and interrupted sleep in their new homes which can lead to health issues.

Unfortunately, the Building Code changes being proposed by MBIE do not address overheating. Given the consultation's scope, we believe this is a missed opportunity. Aotearoa's design, research and construction community propose addressing this issue by moving to require designers to check and reduce the risk that their home designs overheat. This is a simple, non-prescriptive requirement, which would help designers ensure they use simple steps like glazing design, shading, and ventilation to prevent overheating. We outline how this would work in more detail below.

Number of hot days set to quadruple

The scale of this problem is increasing. Fifty years ago in warmer parts of New Zealand, such as Auckland and Whangārei, there were around a dozen hot days each summer. By the early 2020s that had doubled. There are now about 30 days every summer where the mercury shoots up to 25° or more - roughly one in every three days.

By the middle of this century the number of hot days is expected to almost double again to 50 each summer. Later this century, within the lifetime of many of the homes being designed now, nearly every summer day will be a 'hot day' in parts of the country.

This is impacting the health of New Zealanders. A study published last year estimated that 500 children under five are hospitalised in New Zealand each year for heat-related reasons. If that study was expanded to all age groups, and particularly older age groups, that number would rise significantly. People with pre-existing cardiovascular issues are at particular risk during hot days. Prolonged extreme heat places extra stress on the heart. Hot houses are likely to exacerbate these issues.

How we build is changing

Houses are now often built with large amounts of glazing, increasing the amount of heat entering homes. Often this is combined with a lack of adequate shading or ventilation to cool the home down. Until we address the cause, Kiwi families will continue to experience distress, discomfort, and considerable additional costs.

People are increasingly spending large amounts of time and money on investigating and installing cooling and solutions after they have bought a new home. This will often include buying additional systems that place further stress on New Zealand's energy system. Potential solutions such as external shading are not always available due to local and community building controls. This can mean high temperatures are locked in, causing ongoing discomfort or cost for years and years.

Terraced homes and apartments now make up almost 50% of homes (~15,000 homes) being consented in New Zealand each year and will constitute a large proportion of the 55,000 homes planned for Schedule 2 Fast-track projects. With fewer external facing walls and openable windows, terraced homes and apartments have less opportunity to provide cross ventilation. Because they are built at height, the window openings are constrained. Unless designed well, terraced homes and apartments can easily overheat causing significant discomfort to Kiwi families.

These costs and health implications are unnecessary. A small investment of time during the design phase of new homes can mitigate overheating risk, and ensure long-term comfort, lower running costs, and ultimately healthier places.

It is important to note that preventing overheating is not about reducing insulation and it is not expensive. Insulation is still important, so that homes are warm and energy-efficient in winter. Insulation also aids in preventing over-heating in summer from the outside air. It is not over insulation, but over insolation – solar gain – that causes overheating. In practice, designing out overheating risk means factors like accounting for size and orientation of windows, installing shading such as eaves, and enabling good natural ventilation. Modelling, which is needed to design out overheating, enables the opportunity to reduce material costs such as insulation or glazing.

It is important to deal with overheating in the current review of the Building Code. Once a section of the Building Code is changed, it is usually many years before it is considered again. Overheating is causing considerable distress and cost for Kiwi families right now. Dealing with it now helps reduce that risk for hundreds of thousands of Kiwi families.

An opportunity

The proposed changes to the H1 section of New Zealand Building Code do not address overheating. Our proposal is to require designers to evidence that the home they have designed has significantly reduced overheating risk, transitioning away from the calculation method for H1 compliance, and moving entirely to modelling.

This is not about being prescriptive about the solutions to use, or about creating a new set of standards or asking the industry to learn new practices. The methodology to prevent over-heating is well established and used on thousands of homes each year in New Zealand.

Modelling is available and understood by much of the architectural design practices, architectural firms and those designing for residential construction. All we are suggesting is that this consideration be made a requirement.

The small additional time spent in design, which is expected to average around one to three hours per house, will:

- significantly reduce the risk of overheating and discomfort
- mean Kiwi families are less likely to face the stress and considerable costs of rectifying a new build homes
- ensure lower running costs for Kiwi families
- improve the liveability of homes built under the new Fast-Track Approvals process
- reduce demand for energy helping to ameliorate New Zealand's energy crisis
- support New Zealand's emission reductions
- ensure more designers have the skills and knowledge to build comfortable homes
- help deliver cost savings for developers. Modelling is the only option that allows designers to evaluate actual insulation requirements taking into consideration other factors such as orientation and glazing percentage. This analysis is what can result in being able to reduce insulation levels and thereby cost.
- bring us into line with other territories such as Germany, Denmark, the United Kingdom, Australia, and British Columbia, all of whom require modelling when new build homes are designed

It is proposed that this requirement be announced by mid-2025 and a 20-month transition timeframe be provided to phase out the calculation method allowing time for the sector to prepare. Training on how to model overheating, as well as tools and calculators are already available from the likes of BRANZ, the NZGBC, and others.

The 20-month timeframe provides certainty for industry. This transition timeline is supported by Te Kāhui Whaihanga New Zealand Institute of Architects (NZIA), Architectural Designers NZ (ADNZ), BRANZ, and the New Zealand Construction Industry Council (NZCIC). Together, these

industry groups represent the majority of New Zealand architects, designers for home builders, researchers, and many of our leading construction firms and suppliers.

There is strong industry support for this move. We urge you to enact these changes, and take up this opportunity to help tackle overheating and ensure New Zealanders live in more efficient, better homes.

We would welcome meeting to discuss this further.

Ngā mihi nui,

Andrew Eagles
CEO, New Zealand Green Building Council

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Please note – our formal consultation response includes additional recommendations on the detail of improving the reference building minimums, combining heating and cooling loads, infiltration rates, transition periods and other elements to the review delivers for the construction sector and kiwi families