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Insulation escalation

Changes to H1 will deliver the warmer, drier new homes the government requires and start the journey of building for climate change.

INCREASES IN ENERGY efficiency through better insulation will become the norm later this year. The Ministry of Business, Innovation and Employment (MBIE) estimated that the updates to the Acceptable Solutions and Verification Methods to Building Code clause H1 *Energy efficiency* will achieve an average of 23% energy use reduction in the heating and cooling of large non-residential buildings. A reduction of up to 40% in new residential buildings is also predicted.

This in turn will improve warmth, health and wellbeing of users of those new homes and buildings, theoretically resulting in a reduction in hospital and GP visits. It is also expected to support New Zealand's efforts to cut carbon emissions.

From 3 November, new buildings will need higher construction R-values.

Changes from 3 November 2022

With the previous H1 Acceptable Solution and Verification Method about to be superseded, the industry has until 2 November 2022 to adopt the new H1/AS1 and H1/VM1 (being Amendment 5) and demonstrate compliance.

From 3 November 2022, all new building consent applications can either comply with the new 5th edition of Acceptable Solution H1/AS1, a corresponding new Acceptable Solution for larger buildings H1/AS2 or Verification Methods H1/VM1 and H1/VM2 or achieve compliance using an Alternative Solution. Professionals need not wait for November though. The new Acceptable Solutions and Verification Methods can be used now. For existing buildings, the requirements remain unchanged except for extensions and change of use such as converting a commercial office into an apartment.

It can only be a good thing for occupants and the environment to use less energy for warmer homes. For construction professionals, while there may be some adaptation and prolonged construction time, MBIE asserts that the H1 changes have been widely supported by consultation submitters and key construction stakeholders and have deliberately been designed to be simple and pragmatic. Therefore, it is hoped the industry should be able to implement them using extended existing design and construction methods.

Housing and smaller buildings

The new requirements in the 5th edition seek to reduce the amount of heating of residential homes by about 40% over the previous minimum requirements. Published on 29 November 2021, they will completely replace the 4th edition by 3 November 2022.

Readers may know that the 4th edition included reference to NZS 4218:2009 *Thermal insulation - Housing and small buildings,* which had to be read alongside the 4th edition. The 5th edition does away with this approach by incorporating much of the relevant text in full.

Note, however, that compliance with H1.3.2E (building performance index) by itself will no longer satisfy compliance with H1.3.1(a) (adequate thermal resistance requirement). The method used, which includes the calculation method, will depend on what is most appropriate in the circumstances.

Other notable changes between the 4th and 5th editions:

- The number of climate zones has increased from three to six.
- Under the schedule method, the minimum R-values have increased.
- Under the calculation method, the 5th edition expressly points out that, while much of the BRANZ *House insulation guide* (which is based on calculations from NZS 4214:2006 *Methods of determining the total thermal resistance of parts of buildings*) can be used for determining the thermal resistance of common building components, it cannot be relied upon for determining the thermal resistance of slab-on-ground floors, windows and doors. This is due to differences in calculation methods and assumptions compared to Appendix E and Appendix F in the 5th edition.

Larger buildings

There is a new Acceptable Solution H1/AS2 and Verification Method H1/VM2 entirely for larger buildings (greater than 300 m²), while H1/AS1 and H1/VM1 apply to all housing, regardless of size.

Like the new requirements for smaller buildings, the new requirements for larger buildings seek to reduce the amount of energy required to heat and cool a building, namely by about 23%.

The main changes for larger buildings found in the 5th edition include:

- the minimum R-values previously found in NZS 4218:2009 and NZS 4243.1:2007 *Energy efficiency - Large buildings - Building thermal envelope* have been replaced with higher values
- the inclusion of requirements for establishing the orientation of a building (previously found in NZS 4218:2009 Appendix E)
- a new procedure for calculating the R-value of windows, doors and skylights
- tables with R-values of selected slab-on-ground floor scenarios and a new alternative procedure for calculating these values.

Industry implications

The Building Act 2004 requires all building work to comply with the Building Code, even where a building consent is not required. While designers and BCAs will need to take the time to familiarise themselves with these updated requirements, it is not expected that demonstrating compliance using the new documents will be more complex or time-consuming than work previously undertaken.

Any increases in initial upfront delays and costs as a result of the changes are likely to be offset over time by improvements in thermal performance and comfort of residential dwellings, the health of occupants, and will benefit the climate into the future.

Note This article is not intended as legal advice. For specific advice, contact your legal advisor or the Major Projects and Construction Team at Dentons Kensington Swan on (09) 379 4196.