ABCB Consultation - Complex Buildings Definition

Submission from MBA and Property Council of Australia

Summary

Master Builders Australia and the Property Council of Australia support the need for risk-based building classifications and strongly urge state and territory governments to adopt a consistent approach through the National Construction Code (NCC). Further, our organisations support a robust, risk-based inspection regime which would see uniform mandatory inspection regimes adopted by state and territory governments, connected to risk-based classifications set out in the NCC.

More than ever Australia needs to adopt nationally consistent risk-based building classifications connected to mandatory risk-based inspection regimes. We may risk negative outcomes and divergent approaches by basing our national response on the current definition without careful review of know risks in the Australian market and current approaches of states and territories.

Our critiques of the current draft definition of 'Complex Buildings' are as follows:

- use of the word 'complex buildings' is misleading, the term 'building risk' is more appropriate
- the definition introduces unnecessary complexity by overlaying a separate classification disconnected from the existing building classification system
- the definition as drafted is based on a theoretical approach, divorced from known buildings types that present a heightened risk for defects in the Australian market (e.g. some apartment buildings), and does not identify these as 'high risk' or 'high consequence'
- it is difficult to garner support for a definition of risk-based building classifications without knowing any of the detail on the risk-based inspection regime to which it would be connected. It is critical that these two measures are developed and consulted on together.

Our recommendations to ensure the successful adoption of risk-based building classifications defined in the NCC and connected to a mandatory risk-based inspection regime are as follows:

Recommendation 1: Establish risk-based building classifications in the NCC to enable inspection regimes to correlate with building risk.

Recommendation 2: Use existing risk-based models operating in states and territories, as well as the ABCB draft model, to further develop a risk-based building classification system in the NCC, mapped to the existing building classification system.

Recommendation 3: Establish an ABCB working committee for a risk-based building classification regime. The committee should be used to risk profile the building code building classifications and evolve those classifications with a view to marrying them with a mandatory risk-based building inspection regime developed in parallel.

Recommendation 4: Building regulations mandate a final joint inspection for Medium and High-risk buildings. Prior to issuing the certificate of final inspection the building official will arrange and attend a joint inspection with representatives from the officers of all the key building practitioners that have had involvement with the building project.

Detailed Response

1. Introduction

The Property Council and Master Builders are committed to good practice policy improvements that will ensure confidence in Australia's building and construction industry.

It is important that Commonwealth, State and Territory governments work together and urgently to implement the foundation, delivery, and post construction reforms recommended in the *Building Confidence* Report.

Australia has a strong building and construction sector, but the lack of enforcement, consistency and clarity of the regulatory framework means that the quality of activity in our sector has been compromised. Nationally consistent laws and/or principles should be pursued to reduce complexity, duplicated effort and to assist businesses operating across jurisdictions.

Building Ministers have started on the pathway towards doing this in their commitment to deliver reforms in the *Building Confidence* Report. However, to make this happen, substantial changes to the National Construction Code and development of corresponding state/territory legislative provisions that are supported by education and non-regulatory tools need to be developed and implemented.

Key outcomes from this process should be a consistent approach in the NCC and across building regulations that effectively guide, govern and enforce building control rules. This process would be enhanced by a more substantial re-engineering of the building regulatory ecology. The elements of a good practice building control regime have been summarised in the following chart:

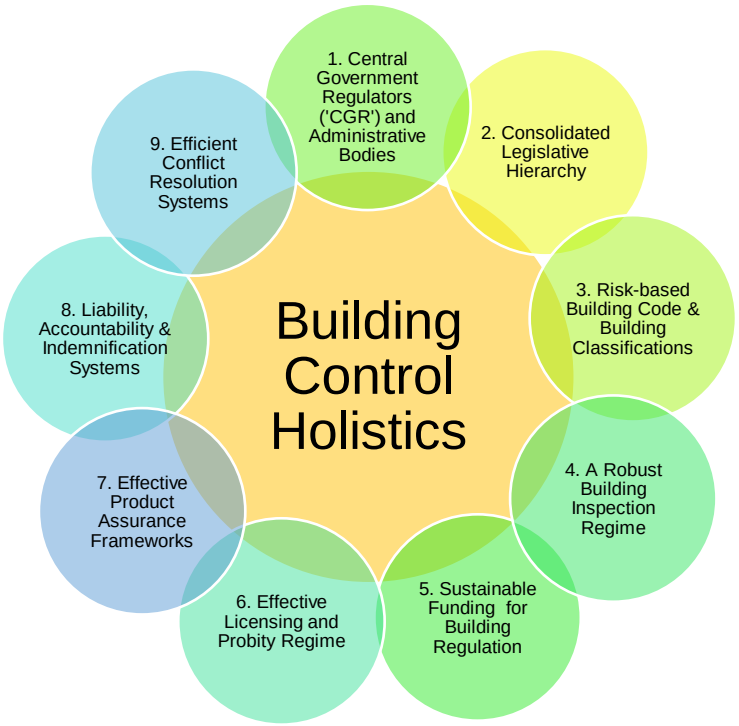

Figure 1: Elements of good practice building control regimes

2. Risk-based building code and building classifications

Current Situation

The NCC building classification system is internationally well regarded. The NCC has a structure that quantifies the risk associated with buildings by identifying building classifications and type(s) of construction.

Notwithstanding the classification system, the NCC does not comprise a building classification system based upon building type risk profiling or building consequence profiling. Although most Australian jurisdictions have introduced mandatory inspection regimes for Class 2 to 9 buildings, these are inconsistent and inspections are not calibrated with the risk profile of building classifications.

The NCC's building classification in its current form would need to be further evolved to be considered a best practice risk-based building classification regime, when viewed through international good practice lenses.

For instance, class 6 buildings include the likes of showrooms and petrol/service stations – this is not a risk-based classification, as a service station would be considered a high consequence building under a risk-based regime, whereas a show room would be more likely a medium consequence building. Again, class 10a sheds, for example, would be considered low risk, but a class 10c bushfire refuge would likely be a high risk and a class 10b pool would likely also be high risk. This shows that the building code classifications as they stand do not reflect risk-based realities and nuances.

The ABCB has developed a building complexity framework as its preferred NCC risk-based building framework. The following criteria determines a buildings complexity as low, medium, high and very high consequence, including:

- key building attributes (height, performance solution, prone to natural disaster)
- complex procurement and
- the number of occupants determine whether the building is low, medium, high or very high complexity.

There are several recommendations in the Shergold-Weir Building Confidence Report that correlate or align with development of a risk-based building framework, including:

- establishing a process for consistent licensing and registration of building practitioners
- engaging fire authorities in design
- requirements for design and building approval
- third party review
- mandatory inspections and
- Inspection and certification of fire safety systems.

These are Shergold-Weir Building Confidence report recommendations 1,2,3,8, 13-16, 17, 18 and 19.

Solutions

The NCC should be evolved into a code that categorises buildings according to risk, taking into account new building innovations and the need to align building categories with risk-based inspection regimes.

The classes of building should be correlated to at least the following risk categories: Low Consequence, Medium Consequence and High Consequence. Regard must be had to the type of construction, environmental factors and the proposed use of the building. For example:

- Low consequence or minimal consequence buildings such as non-controversial simple structures like warehouses should be classified as such
- Medium level and medium risk buildings should be identified and classified as such
- High risk and higher consequence buildings should be identified and subcategorized mindful of the fact that some of these subcategories may well be profoundly different types of buildings and
- Super High-Rise buildings would be classified as a higher risk building as would a hospital or facility that is designed for toxic storage, yet they are profoundly different types of structure with profoundly different uses and applications.

This would allow the building classification system to integrate with regulated mandatory inspections carried out by key actors. Ideally, assessment of buildings that are considered low, medium or high consequence would be done by highly qualified and experienced technical experts.

Development of a risk-based building framework for the NCC and in a Model Building Act should canvass existing risk-based models operating in states and territories, as well as the ABCB draft risk-based building framework definition. Most jurisdictions already have mandatory inspections for class 2 to 9 buildings that could be used as a starting point to build from.

The ABCB risk-based building complexity framework requires further consideration regarding the following:

- simplification: make it a more readable document, better aligned with existing NCC risk elements such as building classification and type and aim to minimise extra unproductive administrative layers/burden
- improved definition of key terms including but not limited to: elevated, structurally complex, codified design principles, high environmental risk, high natural hazard, design and construct, traditional contract, complex procurement and
- clarification of scope of Building Complexity model: what will it be utilised for?

The development of a risk-based building framework should correlate and align with requirements for implementing Shergold-Weir Building Confidence report recommendations 1,2,3,8, 13-16, 17 and 18 – in particular recommendations 17, 18 and 19 regarding independent third-party certification and mandatory inspection.

3. Recommendations

Recommendation 1: Establish Risk-Based Building Classifications Under the Building Code of Australia to Enable Inspection Regimes to Correlate with Building Risk

The Building Code of Australia should be evolved into a code that categorises buildings according to risk, taking into account new building innovations and the need to align building categories with risk-based inspection regimes.

The view will be to align these risk-based building classifications with risk-based mandatory inspection regimes, including requirements for issuance by key building practitioners of compliance certificates and an independent peer review regime.

Recommendation 2: Existing risk-based models operating in states and territories, as well as the ABCB draft model, be considered options to further develop as administrative tools for assessment.

The development of risk-based models should build on the existing BCA building classification framework and demonstrate shortcomings in jurisdictions that already have mandatory inspections for Class 2 to 9 buildings, such as Queensland Inspection Guidelines. The ABCB Building Complexity model requires further consideration regarding the following:

- simplification: make it a more readable document and better aligned with existing NCC risk elements such as building classification and type
- improved definition of terms: elevated, structurally complex, codified design principles, high environmental risk, high natural hazard, design and construct, traditional contract, complex procurement and
- clarification of scope of Building Complexity model: what will be utilised for.

Recommendation 3: Establish an ABCB Working Committee for a Risk-Based Building Classification Regime

An ABCB working committee should be established to risk profile the building code building classifications and evolve those classifications with a view to marrying those classifications with a mandatory risk-based building inspection regime.

The classification system should also be set up to provide for future needs e.g. Super High Rises (SHRs). There is an argument to suggest that there should be a new building classification that is specifically designed to take into account the unique characteristics of Super High Rises as they pose novel and evolving design challenges including but not limited to:

- Vertical movement and swing
- Egress challenges for occupants and
- Air conditioning challenges.

As an example of a manipulation of the existing BCA categories to a risk-based regime, see the Queensland Risk Framework below.

Recommendation 4: Building Regulations mandate a final joint inspection for Medium and High Consequence Buildings

Prior to issuing the certificate of final inspection the building official will arrange and attend a joint inspection with representatives from the officers of all of the key building practitioners that have had involvement with the building project.

The key building practitioners separately certify that installation and completion of the as-built structure achieves an outcome which is sufficient for occupation.

If at the end of the mandatory inspection process, including independent peer review (where necessary), the building official is satisfied the work is fit for occupation, they will issue an occupancy permit which will be filed with the local municipality.

The joint inspection regime is drawn from international best practice and is very common in many Chinese jurisdictions (see example in Section 4.3 below).

4. Examples of Good Practice

4.1. Australian Good Practice – Queensland

Queensland has seen fit to attempt to adapt the building classification to a risk-based classification system – the Queensland system is outlined in the table below[1].

Whilst this represents perhaps one of the leading adaptations of the Building Code of Australia classifications in Australia it must be acknowledged that this system does not utilise the risk adaption to coordinate inspections. In fact, the function these guidelines serve is to evidence that a building certifier in Queensland has done its duty under the act.[2] It is not strictly mandatory for a certifier to follow this risk-matrix or the example inspection routines listed in the guidelines.

Regardless, the table exemplifies how risk-modification of the existing Building Code of Australia building classifications may occur. The table could be evolved prior to being used to form the basis of a mandatory risk-based inspection regime, particularly with respect to accounting to greater risk factors.

Risk factor	Risk level		
	Low risk	Medium risk	High risk
Building classification	Building is a class 2, 3, 4 (part of a building), 5, 6, 7 or 8 and has a rise in storeys of less than three storeys.	Building is class 2, 3, 4 (part of a building), 5, 6, 7 or 8 and has a rise in storeys of more than three storeys.	Building is class 9 or of any class determined to be of importance level 3 or 4 in accordance with the BCA.
Height/floor area	Not greater than three storeys above the ground. Fire compartments do not exceed the provisions of BCA Table C2.2.	More than three storeys above ground but no more than 25 metres in height.	Contains fire compartments exceeding the provisions of BCA Table C2.2. More than 25 metres in height.
Alternative solutions	No alternative solution – proposal meets deemed-to-satisfy provisions of BCA.	Incorporates alternative solution not involving fire safety systems.	Incorporates alternative solution involving fire safety systems.
Experience of the design and building team	Practitioners designing and constructing the building have been involved with more than three buildings of the same classification.	Practitioners designing and constructing the building have been involved with, and completed, fewer than three buildings of the same classification.	Practitioners designing and constructing the building have no previous experience relating to the proposed classification or building type.
Climatic conditions	Area is not impacted upon by known risks e.g. flood, bushfire, earthquake, cyclone, landslip.	Area has known risks e.g. flood, bushfire, earthquake, landslip, contaminated land. Building is not a class 9.	Area has known risks e.g. flood, bushfire, earthquake, landslip, contaminated land. Building is a class 9.

[1] Accessed at: https://www.hpw.qld.gov.au/__data/assets/pdf_file/0009/4113/guidelines-inspection-of-class-2-to-9-buildings.pdf

[2] See: *Building Regulation 2006* (QLD), Reg 26.

4.2. International Good practice - Japan

In Japan, the risk profiles of building categories are calibrated with inspections and independent peer review regimes. This ensures that larger and more complex buildings require a much higher level of inspection rigour and require the mandatory involvement of independent review checkers.

Where buildings exceed 60 metres in height, the Japanese building standard law requires a Designated Performance Review Body to determine whether an alternative solution meets the performance benchmarks.

In the case of large buildings, the inspection body must ensure that a Designated Structural Calculation Review Body undertakes independent calculations to determine whether the calculations comply with performance criteria.

The Japanese categorise buildings as follows:

- category 4 small buildings
- category 3 medium
- category 2 large
- category 1 high rise

There are different inspection regimes that mandate different level of involvement of review bodies depending upon the size of the building and category. It is significant that there is a specific category for high rises which is in itself pre-emptive and live to the specific characteristics of high-rise buildings.

High Rises require government approval in the form of ministerial sign-off. Large buildings require mandated checking by Designated Structural Calculation Review Bodies and building inspectors.

Small and medium buildings only require the inspections to be carried out by the designated confirmation and inspection bodies.

4.3. International Good practice – Joint Inspection Protocol SHR Innovation in Shanghai

Shanghai is an exemplar in terms of its robust final inspection protocol. This should apply to High Consequence Buildings in Australia.

For more complex structures, such as Super High Rises, a joint inspection is conducted at the end of the project by the key building practitioners involved in the construction process. These include the:

- Developer
- Contractor
- Engineers
- Architect and
- Quality assurance supervisors.

Once the building has arrived at the completion gateways the stakeholders are called upon to participate in a final joint inspection. The merit in this approach is that, before an occupancy permit is issued, those who were pivotal in the design and the construction of the building are called upon to inspect, deliberate, jointly confer and then determine whether the building is fit for occupation. For the Shanghai Tower, a Super High Rise, this process took 16 months.