# Practical issues with the building regulatory system for suppliers of building products – An assessment

## My Brief

1. The Commerce Commission ("Commission") has been directed by the Government to undertake a market study into the factors that may affect competition in relation to the supply or acquisition of key building supplies into the residential building products market.

2. I have been asked to assist the Commission in that study by identifying, from my expertise and experience, any features that make it difficult for suppliers of building products to navigate and use the building regulatory system in practice.

## Structure of this report and overview of potential measures

3. The report is structured as follows:

    3.1. **Section One** – outlines my expertise and experience that forms the basis for my views and opinions.
    3.2. **Section Two** – describes the New Zealand building regulatory system and its history and structure from the perspective of building products.
    3.3. **Section Three** – sets out my views and opinions about how the regulatory system as a whole works in practice with respect to building products and building products suppliers.
        3.3.1. **Section 3A** – contains my views and opinions on how the Building Code[1] system works in practice for building products and building product suppliers.

[1] This report uses the term "Building Code" or "Code" to describe the New Zealand Building Code, which is contained in secondary legislation (namely the Building Regulations 1992 which continue to apply despite the

3.3.2. **Section 3B** – contains my views and opinions on how the compliance and competency systems work in practice for building products and building product suppliers.[2]

3.4. **Section Four** – outlines the challenges faced by building product suppliers[3] to meet their building regulatory obligations, and notes some potential measures to address these.

3.5. **Section Five** – describes the potential improvement measures to address the issues I have identified in Sections 3 and 4, and which I consider would make it easier for suppliers of building products looking to establish a presence in New Zealand, while still meeting appropriate performance standards. In summary, these measures are to:

3.5.1. improve the Building Code system through less reliance on New Zealand Standards to set performance levels – this includes greater use of international Standards for product compliance pathways, as well as developing and articulating product attributes outside the referenced Standards (e.g. including them directly in Acceptable Solutions and Verification Methods)

3.5.2. provide more guidance and resources to help product suppliers navigate the building regulatory system

3.5.3. provide guidance to assist building consent authorities ("BCAs") in making more risk-informed decisions about products when used in building work

3.5.4. improve the compliance system to facilitate specification of products in consents at a performance level

3.5.5. ensure the product certification scheme regime is effective and provides for other certification schemes, and

repeal of the Building Act 1991 through the Building (Forms) Regulations 2004). The term "Building Code System" is used to describe collectively the Building Code (as above) and non-mandatory means of compliance with this Code (including Acceptable Solutions and Verification Methods), Standards (New Zealand, Australian and international) referenced in the Acceptable Solutions and Verification Methods, plus any determinations and guidance issued by MBIE under the Building Act.

[2] The term "compliance system" is used to describe the systems which assess compliance (of building work by BCAs and products by product certification bodies). The term "competency systems" is used to describe the systems which set the competency and performance requirements of those with roles and duties within the regulatory system, such as licensed building practitioners and BCAs, and hold them accountable for performance.

[3] I have used the term "supplier" as a general term to describe those that manufacture, import and otherwise provide products into the New Zealand market.

3.5.6. actively monitor the new product disclosure regime to ensure that it does not become a barrier to consents.

3.6. **Appendix 1** – includes some extracts from the Building Code for illustrative purposes.

## Section One: My expertise and experience that forms the basis for these views and opinions

4. I offer the views and opinions in this report based on the following expertise and experience:

4.1. I am a professional engineer with a Bachelor's degree in Engineering and a Master's degree in Management. I have experience in the regulation of technical and engineering systems and am a Fellow of Engineering New Zealand.

4.2. Since 2017 I have been a building regulatory consultant in New Zealand focusing on providing advice to building product suppliers and product certifiers on:

4.2.1. Building Act 2004 ("Act" or "2004 Act") and Building Code ('Code") compliance obligations, also assisting suppliers in establishing performance levels required for products

4.2.2. the evidence and compliance pathways needed to support suppliers' compliance claims

4.2.3. options available to provide evidence of compliance (e.g. product technical statements, product certificates and appraisals[4])

4.2.4. the content of suppliers' product technical statements, and

4.2.5. reviewing draft product certificates and undertaking factory and installation audits required under product certification rules.

[4] MBIE has guidance on its website that outlines a range of options available to suppliers to provide evidence to the market and to building consent authorities on the Building Code compliance of their products. https://www.building.govt.nz/building-code-compliance/product-assurance-and-certification-schemes/product-assurance/products-and-building-code-compliance/.

4.3. From 2004 to 2017 I was employed by the Ministry of Business, Innovation and Employment (MBIE) as Manager, Determinations and Assurance. In this role I was the delegated signatory from the Chief Executive for appellate function under the Act, with the power to make determinations in disputes and matters of doubt arising from the exercise of powers by local authorities under the Act and compliance with the Code[5]. In addition to these responsibilities, I was responsible for building product issues including leading the development of the product assurance framework, implementation of the current product certification scheme (brand name "Codemark"), and investigation into complaints raised about building products as part of the process of investigating possible warnings and bans.[6] This role required "face to face" interaction with product suppliers, particularly when running a significant education programme aimed at building product suppliers in 2014.

4.4. In 2018 and 2019 I worked in Australia within the Victorian building regulatory regime, holding the position of Acting (part time) Director Technical and Regulation for the Victorian Building Authority. This role also included product compliance issues at both a state and federal level. This gave me insights into how regulatory systems can be structured differently; in particular, the degree of specification of building products proposed to be used in the approvals system of building work.

4.5. I note that Australian regulatory systems do not, in general, require detailed specification of proposed products in consents or permits. While Australia has adopted the principles of the New Zealand-developed product assurance framework, consenters generally have greater confidence[7] in relying on product technical statements provided by building product suppliers.[8]

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[5] The parties who can seek determinations and the matters that can be determined are set out respectively in section 176 and section 177 of the Act.
[6] Section 26 of the Act sets out the basis for issuing a warning or ban in relation to the use of a building method or product.
[7] The risk allocation systems in Australia differs from New Zealand in that most jurisdictions use proportionate liability regimes and have greater reliance on compulsory professional indemnity insurance as a means of "underwriting" building failure.
[8] A product technical statement (PTS) is included in a list of "evidence of suitability" in the National Construction Code of Australia: https://ncc.abcb.gov.au/sites/default/files/resources/2021/HandbookEvidenceofSuitability_2021%20%282%29.pdf . The legal framework in Australia gives "more weight" to a PTS than the New Zealand legal framework does.

## Section Two: The building regulatory system and its history from a building products perspective

5. I have seen and reviewed the first part of Chapter 3 of the Commission's Draft Report on the market study referred to in paragraph 1, which describes the "regulatory and standards systems" that apply to building work in New Zealand. In my view, the Commission's report describes the building regulatory system well, so I do not propose to repeat it. However, there are some aspects of the regulatory system relating to building products which are useful to describe in more detail, as they form part of the basis for my views and opinions in this report.

### *My additional description of the building regulatory system – from the perspective of building products*

*General description and history*

6. In understanding the New Zealand building regulatory system and why it looks like it does, it is useful to understand the background to its development as that has shaped some of what is experienced today by building product suppliers in bringing new products to the market.

7. Prior to the Building Act 1991 ("the 1991 Act"), the predecessor of the current Act, building regulation in New Zealand was through local by-laws made by territorial local authorities. However, there were "model by-laws" published by Standards New Zealand which could be adopted (with or without amendment) by local authorities. These provided some degree of nationally consistent performance, although the variation in approaches to building regulation was part of the justification for the 1991 Act. The performance requirements for buildings were generally prescriptive in the sense that they defined how to construct and what materials should be used – not what performance levels needed to be achieved in buildings.

8. The introduction of the 1991 Act saw a shift to "performance-based legislation", i.e. laws seeking to regulate outcomes not inputs. It also marked the establishment of the building regulatory system that is still in place today, with the Act being supported by regulations

such as the Building Regulations 1992 (which is still in force and includes the Building Code).

9. With the advent of a national Building Code (i.e. the Code) there was a need to create compliance pathways to provide non-mandatory means of compliance with this Code. Existing Standards (many of which provided prescriptive attributes for building products) which were referenced in the model by-laws (generally New Zealand or Australian Standards) and various codes of practice were recognised through referencing them in the Acceptable Solutions and Verification Methods created for each Code clause.[9] As discussed later in this report, these Standards have taken on an additional role in that they are used to establish the *quantitative* performance levels of building products needed to meet the performance requirements in the Code which are generally expressed in *qualitative* terms (for illustrative purposes I have replicated Code clauses B1– Structure, C1-C6 (regarding protection from fire) and E2 – External moisture in the Appendix to this report). In this context the term "performance level" means the physical attributes of a product and criteria applied to measure those attributes.

10. Apart from evolutionary changes to the Acceptable Solutions and Verification Methods and referenced Standards, this is generally the same framework we have now, even though building products and practices have changed considerably in the past 30 years.

11. As at December 2021 there were 343 Standards which are primary references in Acceptable Solutions and Verification Methods, and 3415 which are "secondary" references (i.e. Standards referenced in other Standards which are primary references). While overall these Standards reflect a diversity in source (e.g. only 7% are New Zealand Standards, 17% are joint Australian and New Zealand Standards, 24% are Australian Standards and 21% are British Standards) these figures do not reflect any weighting of the importance and scale of a particular Standard, particularly in relation to residential building products. For example, the New Zealand Standard NZS 4211[10] used to establish performance of windows and doors is counted as one Standard. In comparison, there are eleven Standards in the list covering different aspects of fire detection and alarm systems

[9] The 1991 Act created the concept of "Compliance documents". These took two forms: Acceptable Solutions ("recipes" for compliant design) and Verification Methods (analysis, calculation and testing based). These have since been separated in terms of definitions under the Act, with separate definitions for each of these.
[10] NZS 4211:2008 Specification for performance of windows

but most of these, while important, do not have much relevance to the common products used in residential buildings.

12. After "weathertight" or "leaky homes" issues came to light in the late 1990s/early 2000s, there was a significant review of New Zealand's building legislation resulting in the introduction of the Building Act 2004 (the current Act). The policy response arising from this review was that building regulation had become "too light handed", and stronger and more effective regulatory tools were needed. However, the legislation has remained performance based.

13. This policy review also prompted some changes to the Building Code; in particular, to Code Clause E2 – External moisture in 2007 (mainly to require more "resilience" in design of systems to protect buildings from the ingress of external water). There have been other changes to the Code since then. However, apart from changes to Code clause C relating to protection from fire, these have been relatively minor and the Building Code remains substantively the same as its original form, with its legal title still the "First Schedule to the Building Regulations 1992".

14. The 2004 Act also required the Chief Executive to review the Code. This review was delivered to the relevant Minister on 30 March 2008. The review proposed a framework for explicit performance measures[11] for buildings and building work, but acknowledged that further work would be required before such measures could be implemented. With the exception of amendments to the fire-safety provisions no substantive changes arose from this review. If all its recommendations had been implemented, there would now be a clearer articulation of the performance required of buildings and by inference the products used in buildings. As discussed later in this report, one of the challenges in establishing the compliance of a product is establishing the required performance.

15. Subsequent to the introduction of the 2004 Act, there have been a number of amendments to it. While some amendments have been in response to events such as the Canterbury earthquake sequence, others such as the introduction of the multiple-use approval system

[11] This was principally involved in setting quantitative performance measures, replacing the qualitative performance measures.

("MultiProof")[12], minor variations to consents[13] and risk-based consenting[14] were introduced in response to views that the consent system had become unresponsive to the construction sector and that compliance costs generally exceeded the benefits. The consumer protection aspects of the Act with respect to residential building work were also changed in 2013 to provide greater protection.[15]

16. The policy objective of the regulatory regime (in particular the Code) in being performance based was to foster innovation by specifying the performance outcomes required of buildings (and, by implication, products used in their construction) rather than inputs. This, combined with open trade borders, should in theory provide ease of access to the New Zealand market for building products capable of meeting the requirements of the Code. However, in practice and for a range of reasons including those discussed later in this report, this has not proved to be the case.

17. The 2004 Act recognised that demonstrating compliance with the Building Act and Building Code can be challenging, and created the powers under section 175 for the central regulator (now MBIE) to provide guidance to assist those with roles under the Act to assist them to comply. This additional function for MBIE was funded by an increase in the building levy used to fund the regulatory responsibilities of MBIE. The 2004 Act also introduced some contractual obligations and licensing requirements for those doing residential building work. By comparison, the 1991 Act only focused on Code

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[12] National Multiple-Use Approval (commonly known as "MultiProof") is a process where a person or company who is regularly constructing buildings to the same (or similar) design such as a group home builder can apply to MBIE for a MultiProof certificate that allows them to get a consent without having to have the plans and specifications reviewed each time by BCAs. This "pre-approval" of plans and specifications means that the BCA only has to assess site-specific aspects such as foundations and connection to services (e.g. waste water). Using a MultiProof certificate in a consent has the further advantage that consents are granted within 10 working days rather than the 20 days for a "standard" consent.

[13] Under section 45A of the Act. There are regulations made to define minor variations. (https://www.legislation.govt.nz/regulation/public/2009/0408/latest/DLM2615667.html) and MBIE has issued Guidance to assist in interpreting what is a minor variation (https://www.building.govt.nz/projects-and-consents/build-to-the-consent/making-changes-to-your-plans/guidance-to-building-consent-amendments/minor-variations/)

[14] The Building Amendment Act 2012 contains a section relating to risk-based consenting (section 17). This has yet to be implemented as it was to be triggered when a number of preconditions were met such as getting sufficient licensed building practitioners registered, achieving greater awareness of the Building Code, and the implementation of better consumer protection measures (the last precondition has been met, as set out in the next footnote).

[15] These changes are set out in Part 4A of the Act (Consumer rights and remedies in relation to residential building work). This Part includes requirements for contracts and implied warranties with remedies in residential building contracts as well as requirements for defects to be remedied.

compliance. There is little current guidance that is focused on helping building products suppliers navigate compliance with the Act and the Code, particularly that relating to navigating the complexity of the system as described later in this report.

*The three pillars of the building regulatory system*

18. It is useful to think of the building regulatory system as having three important "pillars" to achieve the outcome of buildings that meet the needs of those that own and use buildings. The three pillars are:

    18.1. All building work is done to the standard set out in the Building Code.
    18.2. Where building work is being done for residential purposes, the contracts meet certain conditions and there are remedies for work that breaches the implied warranties.
    18.3. Residential building work is done by those that are licensed and competent to do so.

19. These pillars are supported in turn by several "sub-systems" set out in the Act and regulations. These are:

    19.1. The system which sets and inform the standards which buildings (and the products within them) are required to meet – *the Building Code system.*
    19.2. The systems that ensure and enforce code compliance – *the compliance systems.* These include the consenting systems as well as other approval mechanisms such as MultiProof and product certification.
    19.3. The systems which set competency and performance requirements of those with roles and duties within the regulatory system, such as licensed building practitioners and BCAs, and holds them accountable for performance – *the competency systems*.

20. Each of these three sub-systems has an impact on building products. The Building Code system has the most significant impact on the use of building products in building work, but the other systems cannot be ignored.

*Impending legislative changes that will affect building products*

21. There are also some relevant legislative changes enabled by the Building (Building Products and Methods, Modular Components, and Other Matters) Amendment Act 2021 ("Building Amendment Act 2021"). Once these changes are implemented they will have an impact on the systems for the compliance of building products.[16] These changes include:

    21.1. requirements for the mandatory disclosure of building product compliance information, which will come into force on 11 December 2023. In effect, these changes will make it mandatory for a building product supplier to meet their obligations under section 14G of the Act (to be responsible for ensuring that products, if installed correctly, will comply with the Code)[17] by, amongst other matters, explaining how the product is expected to contribute to compliance with the Code[18]

    21.2. new regulations for product certification schemes (replacing existing regulations) which come into force on 7 September 2022[19] and

    21.3. the introduction of a new modular component manufacturer scheme ("MCM scheme") which also comes into force on 7 September 2022.[20]

*The application of the building regulatory system to products*

22. There are a couple of key aspects to the building regulatory system which have a direct impact on how it is applied in relation to building products. They are:

    22.1. The activity the Act regulates is "building work". Products are only indirectly regulated when used in building work – there is, in general, no direct regulation of building products.

[16] Building (Building Products and Methods, Modular Components, and Other Matters) Amendment Act.
[17] See para 23.1 later.
[18] Building (Building Product Information Requirements) Regulations 2022.
[19] Building (Product Certification) Regulations 2022.
[20] Building (Modular Component Manufacturer Scheme) Regulations 2022.

22.2. Building work is consented though processes run by BCAs[21] where the building work is taking place – a product, unless it has a product certificate (and is being used within the conditions of use of that product certificate) is assessed for compliance in each instance it is proposed to be used in building work.

23. There are several other features of the Act which have a bearing on its application to products:

23.1. Section 14G[22] of the Act creates an obligation on product manufacturers or suppliers to be *" responsible for ensuring that the product will, if installed in accordance with the technical data, plans, specifications, and advice prescribed by the manufacturer, comply with the relevant provisions of the building code."*

23.2. Section 4 of the Act sets out the principles that must be taken into account by those performing functions[23] or duties, or exercising powers, under this Act. These include[24] 4(e) "*the costs of a building (including maintenance) over the whole of its life*"; and 4(g) "*the importance of allowing for continuing innovation in methods of building design and construction*".

23.3. There are enforcement systems which respond to instances of non-compliance with the requirements of the Act and its regulations.[25]

[21] There is the scope for non-territorial local authorities to be a BCA. To date only one exists: Consentium, which is owned by Kāinga Ora and has a scope limited to social housing.
[22] Section 14G (i) of the Act has a circular reference in that it defines a product manufacturer or supplier as one who supplies the information listed in section 14G. At present there is no obligation under the Act for the supplier to provide information, but as described earlier, this obligation will come into force on 11 December 2023 through regulations made under the Building Amendment Act 2021.
[23] These principles apply to the Minister, chief executive of MBIE and local authorities in a limited number of circumstances such as granting waivers or modifications of the Building Code (cases of building work).
[24] I add these for completeness and also to highlight that there is an obligation on those with powers under the Act to apply the principles of "innovation" and "building lifetime costs" in the exercise of those powers.
[25] There are currently 31 Regulations or Orders made under the Building Act.

# Section Three – My views and opinions about how the regulatory system as a whole works in practice with respect to building products

## Section 3A The Building Code System – issues with its application to products – complexity in its construct and design

***Determining the relevant Code clauses for products, the performance requirements and how to comply with these is challenging***

24. There is complexity in the design and construct of the Building Code system which creates challenges in establishing the Code compliance of many building products. This section discusses some of that complexity. While this report presents the complexity through the perspective of those supplying building products, this complexity is also faced by those that specify and consent building work. Their roles also require them to establish compliance of the building as a whole involving many products.

25. There are two fundamental steps in establishing compliance of a product with the Code. They are:

    25.1. **Step 1** -What are the applicable Code clauses for a particular product and to what extent do they apply?

    25.2. **Step 2** – What is the performance required by each applicable Code clause and what is the analytical and evidential base (testing, professional opinions etc.) needed to substantiate a compliance claim for that clause?

***Step 1*** *- Which Code clauses apply and to what extent?*

26. Deciding the Code clauses that apply to a particular product involves a three-stage process. The **first stage** is determining the intended use of the product. Which Code clauses apply can change depending on where and how the product is proposed to be used; e.g. where in a building it will be used, or what type of building it will be used in, or where that building will be located.

27. The **second stage** involves identifying which of the Code performance clauses apply. The way the Code is drafted and other issues make this a challenging task, and in the absence of any guidelines there is currently a wide degree of variation in approach taken by those making compliance claims in interpreting the requirements. A good example of where judgement is involved is with Code clause B1 – Structure, and in particular which of the physical conditions listed in clause B1.3.3[26] apply for a particular circumstance.

28. The **third stage** is establishing the relationship between the product and each of the applicable Code clauses. The Code is built around "subjects" for which the Code obligations apply. Examples of "subjects" are "external walls", "thermal envelope", "building elements", "walls" and "roof", and "buildings". Individually most products only make up a part of those subjects, requiring an assessment of the relationship that the product has to the forming of the subjects and the extent to which it contributes to the subject's compliance with the relevant clauses of the Code.

29. The important point here is that in most instances a product does not comply with the Building Code[27] *per se* – a product complies (or will contribute to compliance) when used in a particular use such as a defined scope of buildings and building work (wind zone, height, etc.). For example, a building wall underlay will contribute to compliance with Code clause E2.3.3 (and Code clause E2.3.7) and even then only under defined circumstances – for example over certain framing and wind zones – which come from the scope of use.

30. Having established the intended use of the product, the relevant Code clauses, and the relationship between the product and the relevant Code clauses, the challenge then moves to the fundamental question – what is the actual performance required of the product?

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[26] See the Appendix for the list of physical conditions – the challenge is in establishing which of these are "likely" to affect the stability of the buildings etc.

[27] This is an important artifact of product compliance in a performance-based regime. By way of comparison, a bicycle helmet complies with a (generally prescriptive) Standard. The developers of that Standard would have gone through all likely uses (e.g. as a racing bike, as a mountain bike) and considered all hazards (hitting cars, rocks, falling onto ground etc.) as well as consequences of that hazard. Those that provide assurance as to compliance need only certify against the Standard – they generally do not need to scope its use as product certifiers need to do in our current regime.

31. This is where the system, while simple in theory, starts providing some real challenges for product suppliers. This is particularly the case where there is no relevant Standard referenced in the Acceptable Solutions or Verification Methods (which is a problem often faced by those with innovative solutions), or where the referenced Standards only cover products and systems that have contemporary use in New Zealand (a problem often faced by those with internationally sourced products).

***Step 2*** *- Establishing the performance requirements for a particular product and how to demonstrate compliance*

32. The Code generally uses qualitative words or phrases to set performance levels (for building work). Examples of the words or phrases used are "adequate", "sufficient", "low probability" and "adequate combination".

33. To an extent, the use of qualitative words or phrases is inherent within the system, in the sense that the Code covers a wide range[28] of buildings from small garden sheds through to large hydro dams.

34. Establishing what the qualitative words or phrases mean in practice generally involves looking at Acceptable Solutions and Verification Methods and their referenced Standards as, by definition, these meet the qualitative performance requirements (i.e. are deemed to comply with the Code).

35. In the absence of any other authoritative sources of performance requirements or attributes for the compliance of products, the product Standards that are referenced in the Acceptable Solutions and Verification Methods are generally used to establish the required performance levels or attributes[29] of products.

36. However, the way that Standards are currently used to develop performance requirements can stifle the introduction of new products. This is because:

[28] The Building Code of Australia (BCA) reduces but does not eliminate some of this complexity by dividing its Building Code and supporting documents into different classes of buildings.
[29] By performance levels or characteristics, I mean the attributes required for products. For example, NZS 2295 (Pliable, permeable underlays) sets out requirements for mechanical strength, absorbency, water vapour resistance among others and gives acceptance criteria for the requirements.

36.1. Most of the product standards referenced in the Acceptable Solutions and Verification Methods are New Zealand (or Australian, or joint New Zealand/Australian) Standards. Earlier in my report I provided a breakdown of the Standards which are referenced in the Building Code system. As I explained, this diversity in the source of Standards is misleading, particularly with respect to residential building products, and it does not weight the importance of a particular Standard to common products used in residential buildings.

36.2. The rate that the Standards referenced in the Acceptable Solutions and Verification Methods are updated and that new Standards are developed does not keep pace with the increasing range of product solutions available to the building sector. As a result, many new and innovative products have no established performance benchmarks within the Building Code system, even though appropriate performance benchmarks may be established in other jurisdictions.

37. Standards often have performance requirements that exceed the minimum performance requirements of the Code, or they contain measures that are related to internal quality control, standardisation of sizes or requirements for product identification. However, the referencing of these Standards generally does not make this distinction and these "beyond Code" attributes become the basis upon which other products are evaluated. For example, the Standard NZS 2295 for pliable, permeable building underlays is referenced without modification in Acceptable Solution E2/AS1 (an Acceptable Solution for Code clause E2 – External moisture). This standard includes requirements for marking and roll labelling; however, these attributes do not relate to any Code obligation. In many instances Acceptable Solutions or Verification Methods referencing these Standards make no distinction between the Code and non-Code attributes, inferring that all attributes are required for compliance.

38. That said, there is a tension here as I discuss later in this report (from paragraph 45); i.e. the added complexity arising from MBIE's alteration of a Standard through its referencing process. If MBIE were only to reference those parts of a Standard that related to Code compliance it would add to this complexity. However, this could be managed in

the long run by the drafting of Standards in a way that draws the distinction between the Code related requirements and the "beyond" Code requirements.

39. The consequence of using the Standards framework for establishing the performance requirements for building products, particularly for products that are new to New Zealand (but compliant with building codes in other countries or other recognised Standards) or that are innovative by virtue of delivering new solutions or utilising new materials, means that demonstrating Code compliance can be challenging to achieve.

40. In my view the current focus on the reliance on referenced Standards, being (principally) New Zealand (or Australian or joint) Standards[30] for most of our common products used in residential work, is overly restrictive. Internationally, countries aim to get essentially the same performance out of buildings as we do: i.e. that buildings are dry, they don't collapse when subject to the forces likely to be imposed on them, etc. While countries may have different environmental conditions there are as many differences within countries as there are between countries – the compliance systems deal with that variation in conditions through the use of environmental zones etc.

41. Within the current building regulatory system there are two possible options for giving product attributes regulatory status without the use of referenced Standards. These are: to articulate these product attributes directly in Acceptable Solutions or Verification Methods; or to issue guidance under section 175 of the Act ("section 175 Guidance") setting out the required attributes. Both options have advantages and disadvantages.

    41.1. Putting product attributes in Acceptable Solutions or Verification Methods continues the anomaly of having non-mandatory means of compliance setting the performance standards. However, in my view this is preferable to relying on Standards referenced in those documents, as is done currently. A Standard may still be referenced as a means of compliance, but articulating the performance requirements outside that Standard will make it easier to establish performance for products not complying with the Standard.

[30] There are some international Standards referenced in Acceptable Solutions and Verification Methods but in general this is only where there are no New Zealand or Australian (or joint) Standards.

41.2. The other option is to use section 175 Guidance. This is not without precedent, as it was done for the determination of the required Group Number for surface finishes for reaction to fire[31]. However, the perceived weakness of section 175 Guidance is that section 175(2) (a) states it "is only a guide" and there is therefore an argument that it cannot be relied upon, with some BCAs focusing on the phrase in section 175(2) that the Guidance, if used, "does not relieve any person of the obligation to consider any matter to which that information relates according to the circumstances of the particular case".

**Potential improvement measures**

Make greater use of international Standards as recognised pathways for compliance of common products used in residential building work.

**Potential improvement measures**

State product performance attributes in Acceptable Solutions and Verification Methods or in guidance issued under section 175 of the Act.

42. There are often trade-offs involved in working through the two steps for product compliance that I have described (determining which Code clauses apply to a particular product and to what extent; and establishing the performance requirements and how to demonstrate compliance). This can involve an iterative process, as a product supplier seeks to establish an optimum point for establishing Code compliance for a particular scope of use (and therefore potential market size) when balanced against the cost of providing evidence of compliance for that intended use.

***Factors which add to the complexity described above***

43. The inherent complexity of demonstrating Code compliance for building products as described above is magnified by the following factors:

[31] Material "Group Numbers" are specified in Code clause C3 – Fire affecting areas beyond the fire source, and identified Standards that are equivalent to Standard ISO 9705:1993.

43.1. Compliance pathways are structured around individual Code clauses[32], not around the attributes of a particular product required to comply with the Building Code. For example, a cladding system generally requires consideration of compliance pathways for each of external moisture, structure, fire and durability (and also for hazardous building materials).

43.2. Many building products are not simply Acceptable Solutions, Verification Methods or alternative solutions[33] as illustrated in the descriptions of the building regulatory system. While a few commodity products are Acceptable Solutions to all relevant Code clauses (conforming to all the relevant Code clauses through Acceptable Solutions via a referenced New Zealand Standard), in the real world, most products are an "alternative solution" to at least one Code clause.

43.3. We do not have integrated compliance pathways for common functional products covering all relevant Code clauses. Some jurisdictions deal with this through creating guidance documents which integrate the Code compliance pathway into a "one stop shop" for common products. This assists those establishing compliance to work through the pathways and options more easily.

**An example of this complexity: - Cladding Systems**

A cladding system has Code obligations relating to Code clauses E2 –External moisture, B1 –Structure (mainly its ability to withstand wind loads acting on the cladding, but if used as bracing then seismic loads and overall building wind loads are also considered), and B2 – Durability (which could be not less than 50 years if it has a bracing contribution which is relied upon). The cladding system may also have obligations relating to spread of fire (clause C) depending on proximity of the building to the boundary and building

[32] This problem is not limited to just compliance pathways – the MBIE website is primarily structured round Code clauses.

[33] The term "alternative solution" is not a defined term under the Act but is generally used to describe a product or design that does not have its compliance established by following an Acceptable Solution or Verification Method. To provide an alternative solution, compliance is established directly with the performance requirements of the applicable Code clause (sometimes using comparisons with referenced Standards as discussed above to establish performance). The use of the terms "Acceptable Solution" and "alternative solution" is complicated further when it comes to demonstrating compliance with Code clause F2 – Hazardous building materials, as there are no Acceptable Solutions or Verification Methods for this clause that are applicable to most of the materials used in building products.

height. The actual performance required to comply with clauses B1, B2, E2 and C will depend on building height, wind and seismic zones, environmental zones (close to the coastal and volcanic area), importance level of the building, the fire risk group, etc. The supplier may be "lucky" in that for some Code clauses there may be the ability to establish compliance through an Acceptable Solution for clause E2 – External moisture. However, for clause E2, if the cladding is proposed to be used on buildings over 10 m in height, then it is an "alternative solution". In other words, there is no Acceptable Solution or Verification Method within that scope, and performance criteria needs to be established for clause E2.

43.4. Most Acceptable Solutions are limited to buildings (and products whose performance is defined in those solutions) with a limited scope of use. Any buildings (and products) outside these are then technically alternative solutions, with the need to establish performance criteria for the products in use outside this scope. In many cases the Standard retains some relevancy in the role of setting a benchmark for performance as discussed above.

43.5. For example, two of the most common Acceptable Solutions involved in residential buildings are Acceptable Solution B1/AS1 (which references NZS 3604[34], the New Zealand Standard for light framed timber construction) and Acceptable Solution E2/AS1. Generally, these only cover low rise and stand-alone or multi-unit residential buildings[35]. As we move into more medium density housing, fewer and fewer of our residential buildings (and their products) will have compliance pathways set out in Acceptable Solutions.

44. Another example of the complexity is that while identification of the appropriate Code clause at an objective level is relatively easy for a product (e.g, a cladding product has Code obligations under clause E2 – External moisture) determining which of the seven performance clauses within clause E2 applies is very dependent on the scope of use. For

[34] This Standard is now in an early stage of a review. The scope of the review includes increasing the scope to include three-storey buildings (allowing it to cover more buildings, including more medium density structures) as well improving the thermal performance of timber buildings constructed to this Standard.
[35] The scope of Acceptable Solution E2/AS1 (and by definition the product Standards referenced in it) is (in summary) "buildings within the scope of NZS 3604, Up to 3 storeys with a height of 10 m or less, and with floor plan area limited only by seismic and structural control joints, and external walls that are vertical, and roofs that are 60 Degrees or less above the horizontal".

example, does the cladding form part of a cavity[36] and does it come into contact with the ground?[37] There is no guidance currently to help identify the relevant Code clauses for each intended use.

**Potential improvement measures**

Issue guidance that articulates the appropriate Code clauses for each common product type and the possible means of proving compliance for those clauses. This could be integrated with the development and articulation of product attributes that would be compliant with the Code as suggested above.

**Potential improvement measures**

Review the Building Code from a building products' perspective, i.e. considering how it can be structured and redrafted to improve the clarity of its application to products.

***Use of Standards within the Building Code system adds additional complexity and preserves the status quo***

45. Additional system complexity is created by referencing Standards in Acceptable Solutions or Verification Methods, but with modifications[38]. There are several reasons why this can occur. Sometimes it arises from a need to change a requirement on an urgent basis (such as the need to change seismicity levels in Canterbury following the 2010/2011 earthquake sequence): there are powers given to MBIE to change an Acceptable Solution without consultation in these circumstances.[39]

46. Other reasons for modifications include where MBIE (sometimes following its own consultation processes) disagrees with some aspects of Standards and modifies the extent to which the Standard is given legal weight in an Acceptable Solution or Verification Method.

[36] Building Code clause E2.3.5: *Concealed spaces* and cavities in *buildings* must be constructed in a way that prevents external moisture being accumulated or transferred and causing condensation, fungal growth, or the degradation of *building elements.*
[37] Building Code clause E2.3.3: Walls, floors, and structural elements in contact with, or in close proximity to, the ground must not absorb or transmit moisture in quantities that could cause undue dampness, damage to *building elements* or both.
[38] A modification is where an Acceptable Solution or Verification Method references a Standard but makes changes to the Standard to the extent it applies to that Acceptable Solution or Verification Method.
[39] Sections 29(5) of the Building Act.

47. The challenge here is that someone intending to use particular Standards as a compliance pathway need to read the documents that reference them and see if they have been modified by MBIE. This in itself can be an easy process as long as they "start" with looking at the relevant Acceptable Solution or Verification Method and then see the extent to which the Standard they are using is referenced. The referenced Standards themselves do not refer back to the relevant Acceptable Solution or Verification Method.

*Use of referenced Standards in defining performance of products – can provide a barrier to potential suppliers*

48. Where product Standards for residential buildings are referenced in Acceptable Solutions or Verification Methods, they generally only relate to products that have historical New Zealand use and do not recognise contemporary building practice, including international solutions designed to similar requirements.

**Examples:**

**Structural Insulated Panels – a common product without a recognised compliance pathway in New Zealand**

One example of a type of building product which is becoming more significant in the New Zealand building products market and for which there are no compliance pathways set out in the Building Code system is Structurally Insulated Panels (SIPs). SIPs are wall, floor or roof systems which combine the functionality of providing structural capacity as well as thermal insulation. They can also provide additional functionality, e.g. as external and internal walls, as well as acoustic performance. They provide construction productivity and cost advantages in terms of cost per function (e.g. structure/thermal performance). There are well established compliance systems and associated Standards for SIPs in the US and Europe. In my view there is no fundamental reason why consideration could not be given to referencing one or more of the relevant international Standards into the Building Code system following an assessment of the appropriateness for New Zealand conditions and building practice.

**Windows**

New Zealand has a Standard for the performance of windows – NZS 4211:2008 Specification for performance of windows. This is referenced in Acceptable Solutions E2/AS1, E2/AS2, E2/AS3 and E2/AS4 but in each instance only applies for aluminium window frames. Therefore, the only "Acceptable Solution windows" in New Zealand are those that have been tested to NZS 4211, are aluminium framed, and are used with the scope of those Acceptable Solutions. As a result, many modern windows, particularly those using uPVC frames (which are increasingly common due to their superior thermal performance), do not have an Acceptable Solution pathway.

**Potential improvement measures**

Undertake a review of the building products and systems available on the New Zealand market to identify if compliance pathways exist for them and if not, develop a plan to provide them within the Building Code system (examples being Structural Insulated Panels and high performance windows). This review could include a survey of international Standards which are applicable to such products and systems.

*Use of New Zealand Standards – historical practice and not mandated*

49. There is no legislated reason why the building regulatory system should primarily use local Standards in solutions and methods. Their use is primarily historical. While local Standards can be positive in that they can reflect local practices, they can be limited for the following reasons:

    49.1. The Standard can reflect the views of the Standard's committee members and there is a risk that this may include protection of their economic position, particularly if they represent an established participant in the market.

    49.2. The fundamental nature of the Standards process is that it is consensus based – this can result in a Standard that represents the "lowest common denominator" not best practice. A consensus-based process is also unable to respond quickly to issues due to the need to work through processes to ensure a consensus is established. Committee members representing nominating groups may need to consult with them. There is also a requirement for public consultation on a draft. As a consequence it is my observation is that the Standards process can

take a considerable period of time, sometimes exceeding a year, to complete the development of a new Standard or a major review of an existing Standard.

49.3. As a small economy New Zealand only has a limited number of scientists and specialists working in building science (e.g. internal and external moisture management in buildings and durability of materials).

49.4. There is an element of self or industry selection of representatives on Standards committees. This can create a risk that a particular committee does not fully represent all the competencies required to develop a comprehensive Standard, particularly if someone with the competencies to contribute does not obtain the resources needed to assist in participation (for example, compensation for the time spent on committee work).

49.5. In my view, established and verified practices from other jurisdictions are not readily adopted into New Zealand.

49.6. Ideally, the committee's thinking behind a draft Standard is tested through the public consultation process. However, making a quality submission can be time intensive (and some sector participants comment that it could be time wasted as submissions are not heard). Consequently, those that have the knowledge and competence to provide this peer review comment may not contribute.

50. These comments are not to say that the outcome of the Standards process, and the work of the committees, is bad – far from it.

51. What the building regulatory system needs is a process to codify and establish acceptable practice in building design and products. There are different ways of achieving this which vary depending on the circumstances. The methods include:

51.1. developing or maintaining a New Zealand (or joint) Standard using the Standards process

51.2. MBIE creating its own working group to codify and set performance requirements for a particular design or product

51.3. use of other competent organisations to develop codes of practice[40], and

[40] The Building Code system already uses documents developed by Concrete NZ, the National Association of Steel Framed Housing, New Zealand Society for Earthquake Engineering, BRANZ and others.

51.4. use of international Standards.

*Use of Standards to set up the "environmental zones" used in the Building Code system*

52. As discussed earlier in this report, product compliance claims require the intended use of the product to be considered. This includes, where appropriate, the "environmental conditions" (e.g. wind), climate (thermal)[41], hazard classes (conditions that impact on the rate at which timber decays), exposure (corrosion), and seismic conditions. These conditions are identified by creating zones based on the relevant science (such as seismicity records and predictions). Due to historical reasons, these "environmental zones" are defined in referenced Standards[42] and managed through the Standards process. This can add to system complexity as product suppliers need to use a referenced Standard to define an environmental condition even though their product may not be using that Standard as a compliance pathway. In some instances the zones are used to describe both the environmental condition and a product that is able to be used in that condition.

53. A good example of this is the hazard classes used for structural timber durability. NZS 3602[43] sets out different hazards which a timber building element can be exposed to. These are mainly the likelihood that it will be exposed to moisture, e.g. from unlikely to get wet (e.g. protected from the weather) through to permanently exposed (e.g. a wharf pile).

54. NZS 3640[44] specifies the treatment needed to deal with that hazard class and sets up a marking system. The expression "hazard class" is commonly used for both the description of the hazard and the preservative treatment to meet that hazard. However, not all timber products use NZS 3640 for compliance. This creates confusion in that a product may be proven for use in a particular hazard class but compliance may not be through that Standard, and therefore the hazard class labelling taxonomy of that Standard cannot be applied. For example, a timber product may have proven performance to deal with a H5

[41] Recent changes to the Code system for clause H1 – Thermal efficiency provides a good example of what is being suggested here, as climate zones are now set in the Acceptable Solution whereas previously they were in a referenced Standard.
[42] For example, NZS 3604 – Timber framed buildings sets up the wind, seismic and environmental zones.
[43] NZS 3602:2003 Timber and wood-based products for use in buildings
[44] NZS 3640: 2003 Chemical preservation of round and sawn timber

hazard but is treated to achieve that performance using different chemicals and processes than those set out in NZS 3640, so cannot technically be labelled as H5.

55. Within the current framework, the most appropriate location for these environmental zones is in the relevant Acceptable Solution. However, this has the disadvantage of non-mandatory documents being used to set criteria for Code compliance.

**Potential improvement measures**

Create the framework for environmental zoning and hazard classes within the Building Code system rather than leaving this to be defined in referenced Standards.

***Durability as a performance requirement within the Building Code creates difficulties – but also has advantages***

56. New Zealand is unique in that it has a specific Code clause for durability (clause B2). This sets up a framework for durability to be not less than 50 years, 15 years or 5 years depending upon a range of factors such as whether the building element is structural, if degradation is observable and ease of replacement.

57. Other jurisdictions generally have "inferred" durability, which is generally for similar if not longer periods, although not articulated as explicitly as the New Zealand requirements.

58. This explicit inclusion in the Building Code creates an evidential burden to prove compliance for the appropriate duration. This can have implications for products that are sourced internationally where direct evidence may be available to support the primary functionality but not time-based durability.

**Examples:**

An internationally sourced wall underlay may be supported by evidence about its performance as part of its weathertightness functionality, but none directly related to its durability – durability may be inferred, e.g., it may give information about degradation

from UV, but there is nothing that directly aligns with the requirements of the Building Code.

An imported plasterboard sheet may not be supported by evidence of 50 years' durability if it is proposed to be used for structural bracing (a function not generally required of internal linings in other jurisdictions).

Orientated Strand Board (OSB) a common overseas product used for sheets in internal or external walls (but not exposed to weather), is often not treated. International practice is to ensure that the OSB does not get wet and therefore degrade. Providing evidence of compliance with the durability provisions of the Code becomes a challenge of scoping its use in a way that gives confidence that the OSB will not get wet to the extent that decay occurs. Ways of doing this are to require the use of "conservative" cladding details, such as cavities to drain and ventilation to ensure that any water that gets past the cladding does not come in contact with the OSB. This can be complemented by requiring a quality assurance regime for the installation that ensures integrity of the construction.

59. In my view the inclusion of explicit provisions for durability in the Building Code is overall a positive contribution to providing clear performance requirements for buildings and building elements. There is scope, however, for more guidance and education to assist those providing and assessing durability evidence to establish or assess compliance; particularly with a view to how durability is dealt with in other jurisdictions and how the evidence can be used in New Zealand to support our more explicit requirements.

**Potential improvement measures**

Develop guidance and education on providing and assessing durability evidence.

***No systems for knowledge sharing about product compliance***

60. Many parts of the building sector (e.g., structural engineering, architecture, building surveyors) have established groupings to share best practice and knowledge. There is no such framework for those involved in building product assurance within New Zealand.

61. Through the product certification process and the work of others in the business of providing product assurance information in New Zealand there is the slow aggregation of information about the relevance of overseas Standards etc. and the appropriateness or otherwise of their use in support of establishing Code compliance in New Zealand.[45] That information is not public knowledge and there is currently no central repository for it. As a result, the cost of repeating the assessment is borne each time by product suppliers looking to use that information. While there is clearly a cost implication of this, there is also a quality issue. Sharing of the assessments of the appropriateness of overseas Standards etc. among competent people and the peer review that will ensue would help reduce the regulatory risk as well as reduce costs in the long run, as the cost of gathering the information can be shared over multiple products and building product suppliers.

62. There are a number of possible models[46] for sharing of this information. This could include those involved in product certification and assurance volunteering to share the information and funding its maintenance, with some rules to be developed about the submitting and using of information and the management of liability implications. Other models include product suppliers setting up and funding a similar scheme as they would accrue benefits from reduced costs and lower regulatory risk.

**Potential improvement measures**

Support those involved in product certification and assurance to develop a framework to share certification and assurance resources.

***The Building Code compliance system can be manipulated to inhibit entry to markets***

63. The complexity in the system allows gaming by some participants, particularly if they have good knowledge of the systems. It is my observation that product suppliers can:

[45] For example, many imported building windows are tested to EN Standards such as EN 12210, EN 12207 and EN 12208. Those working (myself included) in the product certification (Codemark) area where many products presented for certification have evidence of compliance with these Standards have developed frameworks to provide translation to NZS 4211.

[46] Some have argued that MBIE could have a role – I believe it has but that is referencing those Standards in Acceptable Solutions and Verification Methods. It may also have a role in facilitating product certifiers or suppliers to come together to work collaboratively.

63.1. either through participation in Standards committees or in other groupings formed by MBIE "skew" the system in their favour, such as getting how they do things being prescribed in the Standard rather than by way of general descriptions or express performance measures, thereby giving their processes a clear compliance pathway**,** and

63.2. invest resources into participating in industry events, using these opportunities to reinforce industry acceptance of their products' compliance with the Code and (in some cases) subtly casting doubt on the compliance of their competitors' products, particularly through using the complexity of the system to confuse others such as specifiers and BCA staff.

## Section 3B – how the compliance and competency systems work in practice for building products and what this means for building products and building product suppliers

64. In section 3A, I provided my views and opinions on the impact of the Building Code system in practice on building products and building products suppliers. This section applies the same product focus to the compliance and competency systems.

***Compliance pathway options for building product suppliers***

65. The Act provides only two fundamental pathways[47] for a product supplier to obtain regulatory approval for their product. They can either obtain a product certificate which covers the intended use of all or most of the uses they expect their product to be used for, or alternatively approval must be sought from the relevant BCA and obtained each time the product is used in building work.

[47] I have used the construct of pathways in the sense of who makes the decision as to compliance. Even if the product supplier elects to use an Acceptable Solution pathway, a BCA still decides whether the evidence submitted shows compliance with the requirements of the Acceptable Solution – there is no statutory decision-making process outside of a BCA to make that decision. The only possible exception to this are products which have a compliance pathway using a referenced Standard which sets up rules for labelling a product with its achieved performance. Also as I have noted earlier there are few products which can be regarded as being an Acceptable Solution to all relevant Code clauses. Where the means of compliance is a product certificate, the decision that the BCA makes is whether the product is being used within the scope of that certificate.

66. It is also worthwhile noting here that there are three possible methods from a regulatory perspective to get products into building work. Each of these still require evidence of compliance but with slightly different grouping of people that need to be convinced to use and to give regulatory "sign-off" for the use of the product.

67. The pathways are:

    67.1. inclusion in a building consent – for this the product supplier needs to convince the designer/specifier of compliance as well as to provide evidence through the designer/specifier to the BCA that the product complies

    67.2. substitution into work already consented, either through:

        67.2.1. an amendment to the consent (for this a supplier needs to convince either the designer or builder and the BCA that the product complies), or

        67.2.2. a minor variation to a consent (for this they generally need to convince the builder and a building inspector), and

    67.3. using a product in building work which is exempt from requiring a building consent (noting that this building work – and products used in it – still need to comply with the Code). For this pathway a supplier generally needs to convince the builder, who in the case of exempt work could be a DIY homeowner.

***Product certification – can be costly and time-consuming***

68. The product certification[48] pathway has the advantage that it reduces the regulatory risk (as BCAs must accept a product certificate as evidence of compliance), but it has costs which need to be able to be recovered by sales. These costs vary, but the <u>minimum</u> assessment fee currently being charged by a product certification body is approximately $20,000. Annual fees are a minimum of $3,000 - $4,000 to cover on-going audit costs as well as confirm there are no material changes to the Building Code system which impact on compliance of the product. These costs exclude the costs associated with the evidence

[48] Product certification is currently set out in sections 261 to 272 of the Building Act.

(testing and professional opinion) required to support the application for certification in the first place. If the product has established evidence from overseas this cost may be negligible but if testing is required this can be as high as $40,000, particularly if full-scale fire or weathertightness testing is required. In my experience, establishing the business case for product certification is difficult. The outcome of this is there are only 151 Codemark product certificates as at early May 2022[49] for a scheme that was introduced in 2008.[50]

69. There is also criticism of the time product certification processes take. This can be anywhere between four and eight months.[51] Sometimes delays are attributed to poor quality applications, which is partially an outcome of the complexity of the system (and the absence of an eco-system of expertise), as well as the need to undertake factory and installation audits before a certificate can be issued.

70. While the product certification process needs to be robust, as the outcome must be accepted by BCAs, the cost structure inherent in the regulatory design of the scheme may not be optimum. There are regulated parts of the system which drive costs – they are the costs of accreditation of product certification bodies (to which will be added the registration fees once the product certification requirements of the Building Amendment Act 2021 are operative) as well as the frequency of factory and installation audits by the certification bodies, which drives the costs of certification of products.

71. The accreditation costs of product certification bodies are largely fixed (i.e., not volume dependent) and are primarily the fees for their accreditation by the product certification assessment body (currently JAS-ANZ). The audit costs are driven by audit frequencies set out in the CodeMark Scheme Rules. A significant driver of costs is the need to travel to overseas manufacturing sites. While MBIE is issuing new CodeMark Scheme Rules (due to come into force in September 2022) which make the audit frequency less prescriptive

[49] By the four accredited product certification bodies
[50] At the same date there were 441 BRANZ appraisals of products for compliance with the Building Code.
[51] Product certification uses ISO 17065 (Conformity assessment) as the referenced Standard for the certification process. This makes a clear distinction between certification, testing and consultancy, with a certification body not being able to provide consultancy services or testing services to its clients. This sets up a process where an applicant applies with evidence (in theory) and the certification process accepts or rejects that evidence. This contrasts with an appraisal where consultancy, testing and certification can be provided by the same organisation.

in my view there are still cost drivers which are not necessary for all products. Most well established international products are subject to considerable external quality assurance systems which I consider can be relied on to support the product certification requirements.

**Potential improvement measures**

Review the product certification scheme to ensure that its cost structure is more aligned to the risks of non-compliance – e.g., by allowing for greater reliance on external quality assurance systems by product certification bodies.

***Other product certification possibilities – opening up to recognise competent overseas certification***

72. Currently there is only one product certification scheme, known as "Codemark", while product certification as provided for in the Act allows for multiple schemes.

73. Section 262(2) of the Act allows MBIE to specify certifications of building methods or products by persons outside New Zealand to be treated as product certifications, subject to being satisfied that the building methods and products concerned meet the prescribed criteria and standards for certification.

74. Therefore, there is scope for increasing the product certification capacity and providing some contestability through recognising product certification schemes operated by other organisations such as the US based International Codes Committee Evaluation Service[52] (ICC-ES) or the British Board of Agrément (BBA). Other jurisdictions have similar arrangements, but these are the two most commonly seen in products imported into the New Zealand market. This would still require an assessment of a product against the Building Code but would open up more certification options for product suppliers, particularly those with existing product certification certificates from these two schemes.

[52] The ICC-ES has recently had its scope increased under ISO 17065 to include the Australian and New Zealand Building Codes. https://icc-es.org/news/streamlined-global-evaluation-options-with-icc-es-now-include-new-zealand/.

**Potential improvement measures**

Recognise the ICC- ES Reports and British Board of Agrément Certificates as recognised Product Certification Schemes so that they can issue product certificates against the Code.

***Issues with using the consent process for approval each time a supplier's product is used in building work***

75. If a product supplier chooses not to use product certification, they are then faced with issues relating to management of the regulatory and other risks associated with the assessment of their products' compliance by a BCA consenting the building work using the product.

76. Product suppliers can manage some regulatory risk by providing the users of their products (the people who apply for the building consent) evidence of compliance through:

    76.1. some form of independent assurance as to compliance (such as a BRANZ appraisal)
    76.2. having a product whose compliance is established solely through an Acceptable Solution[53] or Verification Method, and/or
    76.3. providing a statement of compliance (such as a product technical statement).

77. However, there are still significant regulatory risks that are not easily managed or mitigated by the product supplier, particularly if they have not provided any information structured around the format suggested in MBIE guidance[54]. These risks include the:

    77.1. acceptance or not of the validity of the evidence provided for compliance
    77.2. assessment of the risk of non-compliance and the potential consequence by the building official making the decision, and

[53] In practice, few products comply with all relevant Code clauses through an Acceptable Solution or Verification Method – most have in fact alternative solutions to at least one Code clause. Due to the complexity of the Code system this point is not well appreciated, particularly by building officials.
[54] https://www.building.govt.nz/building-code-compliance/product-assurance-and-multiproof/product-assurance/product-information-and-evidence/product-technical-statement/.

77.3. uncertainties that arise from the variation in approach taken by each BCA (and within each BCA). A product supplier may find that the compliance of their product is accepted by one BCA but not another. There have also been instances where the evidence of compliance was accepted by one staff member or regional office, but not by another within the same BCA.

78. There are a number of contributing factors to why those regulatory risks arise. They are:

78.1. The competency framework for building officials is based on their ability to assess building work – not building products.

78.2. The complexity in the Building Code system is also not well understood by building officials, particularly the product-related aspects.

78.3. There are no readily available resource tools to help building officials deal with products (particularly in understanding the compliance information from outside New Zealand and how to evaluate it).

78.4. The feedback on the compliance information provided by building officials can sometimes be incorrect or misleading, a point sometimes not well understood by the product supplier who then has to action the feedback.

79. Sometimes building officials have to deal with very poor-quality product compliance information but even so, in my experience, the feedback they provide is often neither clear nor actionable. This could be due to lack of training or simply down to the individual involved or advice they have received that providing such feedback creates legal risk.

80. An added complexity is that in most cases the product supplier is one step removed from the BCA. They are not a party to the consent application, so sometimes they are not well placed to enter into a dialogue with the assessing building officer to get a direct understanding of the concerns and the opportunity to respond to them. Should the consent be declined based on the product compliance evidence, the product supplier

cannot apply for a determination from MBIE on the matter nor can they be a party[55] to any determination.

81. Some BCAs undertake some centralised assessment of common building products which is then used to inform the assessment of building consent applications using that product. While that is a pragmatic response to the need to reconsider the same product each time it is included in a consent, where they exist these systems are opaque and sometimes more about the credibility of the party who provided the product information[56] assessment. Should these systems continue, their existence should be made clear with documented decision-making criteria that is applied consistently and provides for "rights of appeal" by those product suppliers whose information is not accepted.

**Potential improvement measures**

Establish best practice guidelines for how BCAs should manage "pre-assessment" processes for frequently used products when considering building consents.

***The assessment of non-compliance risk – not well done by building consent authorities***

82. The legal test for granting a building consent is "reasonable grounds"[57]. This legal test is at the lighter end of the scale of the evidential burden needed to make a statutory decision. However, in my experience, the current civil liability regime for building work makes BCAs risk averse. They arguably often apply a higher legal test than the "reasonable grounds" test that is set out in the Act when considering whether building work and the related products will comply with the Code. This is a rational response, particularly given they have often been the "last man standing" in a number of building

[55] The parties who can seek determinations and the matters that can be determined are set out in the Act section 176 and section 177 respectively. The matters that can be determined include a decision of a BCA in respect of an application for a building consent and the issuing of a code compliance certificate. Anyone who is not a party to a determination cannot appeal the determination, nor can they seek a clarification. In most cases a product supplier is considered a "person with an interest" allowing them to submit on the determination but not to apply.
[56] For example, if it is in the format of a product technical statement (PTS) which has been developed by a consultancy providing a PTS development or peer review service, the acceptance of the credibility of that company can be the criteria and not necessarily the content and quality of the PTS itself.
[57] Section 49(1) of the Act: a BCA must grant a building consent if "it is satisfied on reasonable grounds that the provisions of the [Code] would be met if the building work were properly completed in accordance with the plans and specifications that accompanied the application".

defect claims – some of which relate to product failure or the inappropriate use and installation of products.

83. In the absence of clear guidance on how to apply the "reasonable grounds" test and assess non-compliance risk, a common default starting position by BCAs when assessing a building consent application is to assume that a product will fail and the BCA will be held accountable, particularly through civil action finding them negligent.

84. A structured, risk-informed consent assessment process would work methodically through a likelihood and consequences framework:

84.1. What is the likelihood of the product failing taking into account factors such as:

84.1.1. observability of a manufacturing defect

84.1.2. the confidence that the manufacturer can provide a product of consistent and reliable quality

84.1.3. complexity of installation and the expected competencies of installers, and

84.1.4. the general appropriateness of the product for the functionality required?[58]

84.2. What is the consequence of the product failing, taking into account:

84.2.1. the degree of redundancy in the building design that will tolerate failure of one component without compromising overall compliance

84.2.2. how critical the product is to the overall Code compliance of the building, and

84.2.3. the potential scale and impact of failure (e.g. a product used rarely has a lower consequence than a product used in most buildings)?

**Potential improvement measures**

Provide guidance and support to BCAs to assist them in making risk-informed decisions when assessing products used in building work.

[58] Some building regulatory regimes have a general requirement that a product is "fit for purpose" as well as complying with the relevant code.

***The barriers provided by the perception that the consent system requires particular products to be named in the consent***

85. One of the changes made in the 2004 Act was that the point at which assessment for Code compliance with the Code changed from when the Code Compliance Certificate (CCC) is issued at the completion of the building work to when the consent is granted before the building work is started.

86. Under section 14D of the Act, designers have an obligation to ensure that their plans and specifications *"are sufficient to result in the building work complying with the building code if the building work were properly completed in accordance with those plans and specifications"*. Under section 49(1) the legal framing of the decision to grant a consent is *"A building consent authority must grant a building consent if it is satisfied on reasonable grounds that the provisions of the building code would be met if the building work were properly completed in accordance with the plans and specifications that accompanied the application.*"[59]

87. The policy objective of this change was to focus the sector on ensuring that building design (and hence consent) was finalised before construction began and to reduce the discretion available to builders on the use of products during the building process. It was also believed that assessing compliance of building work and the products within such work could best be done by those that process consents (which is seen as more a "building science" task), rather than by building inspectors who are focused more on practical building practice.

88. In my experience, following this change BCAs adopted a strict approach to the content of building consent applications that generally requires designers to specify particular products in the applications, including at the level of a specific brand. For example, most BCAs require underlays to be specified by a particular product and the product compliance information for that product to be submitted in the consent.

[59] The term "plans and specifications" is defined in section 7 of the Act. The definition includes the phrase "... the drawings, specifications, and other documents according to which a building is proposed to be constructed, altered, demolished, or removed".

89. I do not accept that this is necessarily the only approach, as I consider that it should be possible to prepare plans and specifications that meet the requirements of the Act without specifying products by a particular brand or specifically named product.

90. Using my example of underlays, in my opinion I think a statement in the consent such as "an underlay complying with Acceptable Solution E2/AS1 (and referenced Standard NZS 2295[60]) or holding a Codemark certificate or an appraisal", as long as it is being used within the scope of those documents, is consistent with the requirements under the Act.

91. Previous practice under the 1991 Act was that consents used to use phrases such as "product xx or equivalent" or "product to comply with NZS xxxx". When assessing the completed building work for compliance, the building inspector would have made a decision as to whether the specific product used met the performance test as well as being installed correctly.

92. Performance-based product specification without specifying products by specific products is used in other jurisdictions, such as most Australian states, As discussed below (from paragraph 95) we have some instances of this here, but in my view too few.

93. The requirement by BCAs for a specific product to be chosen at the consent stage has a number of significant implications, which include:

93.1. While the designer's choice may reflect the design intent including the owner's preference it may simply be a "toss of the coin" decision in that having to specify a particular product one is chosen, but it could have been one of any number of products with equivalent performance.

93.2. The designer may not be aware of the product preferences of the builder who does the building work. Preferences can come from a range of reasons including availability from the builder's preferred merchant, cost (the builder as the contracting party has a direct interest in product cost) and familiarity and experience with particular products.

[60] NZS 2295:2006 Pliable, permeable building underlays

93.3. The administrative burden on any post-consent product changes makes changing products difficult. While MBIE has provided some guidance on this (as well as changing the Act to create the concept of minor variations) product substitution[61] post-consent is problematic as it provides an advantage to the products that the designer has specified in the consent even through there may be other products with similar or greater performance in the market that would comply.

**Potential improvement measures**

Review the interpretation that has been adopted in practice that products must be specified at a specific brand or named level rather than by use of a performance specification.

***There are some aspects of the Building Code system that facilitate entry to the market and make it easier to substitute products***

94. There are some examples where the Building Code system does a good job in making the market more accessible.

95. We do have some established product performance frameworks already within the Building Code system which have survived the move to the specific listing of products.

96. These frameworks provide clear rules for the setting of performance standards for specific types of products. Examples include schemes for timber used for structural framing[62], ready mixed concrete and steel reinforcing mesh.

97. The advantage of these schemes is that they create a type of commodity market in the sense that competitors compete on the basis of service and price rather than claims of compliance. In a consent, specific products do not need be specified, but only the relevant performance specifications.

[61] There are some who equate product substitution with the use of "inferior" products – this can be an outcome but need not be, and in general most substitutions meet the necessary compliance tests.
[62] In a consent, this means that the timber can be specified such as "MG-8 and H1.2" which is shorthand for Machine Grade – 8 (a measure of its structural capacity) and the treatment level H1.2. As long as the timber used meets these criteria (which is easily established by the markings on it) the regulatory system is agnostic as to who produced the timber.

98. These schemes are generally created within a Standards framework (but need not be as they can legitimately be created by MBIE or sector organisations) and provide for:

    98.1. a classification system for performance of the products that can be used directly within the building consent system (e.g., strength and durability grading for timber[63] and ductility for steel mesh[64])

    98.2. labelling rules that allow for clear identification of the classification that a particular product meets, and

    98.3. rules for how the classification claims are made. This generally involves creating an assurance scheme (sometimes involving industry organisations) providing for some form of auditing for compliance of the processes to support the claims.

99. It is recognised that, if not properly governed, these schemes have the potential to facilitate the ability for a group (such as an industry body) to restrict access to the market by new entrants and competitors by setting performance measures or standards that only incumbents can meet and stifling innovation. However, these risks can be mitigated by good system design (e.g. independent governance, clear rules and appeal mechanisms for those whose products are excluded).

**Potential improvement measures**

Look for opportunities where more products can be specified at a performance level rather than being named as a specific product or brand.

100. As discussed in paragraph 21 new legislation will come into force later this year and next year that will have a direct impact on building products and building products suppliers, as many of these changes have a product focus.

[63] The rules for this classification and marking is set out in NZS 3622:2004 Verification of timber properties and NZS 3602:2003 Timber and wood-based products for use in building, which are referenced Standards in the Acceptable Solutions B1/AS1 and B2/AS1.
[64] The rules for this classification and marking is set out in AS/NZS 4671:2019 Steel for the reinforcement of concrete, which is referenced in Acceptable Solution B1/AS1.

101. The product disclosure requirements will, in summary, require most products – particularly those used in residential construction – to be accompanied with information about their compliance with the Code.

102. While the policy intent is positive in the sense that compliance information will help those that specify products to select products, there are possible unintended consequences as the new requirements will create added difficulties for suppliers. Earlier in this report I outlined the complexity in the Code compliance system as it relates to building products and in a later section I discuss the absence of guidance and competent advisers to assist. There is a risk that the impact of almost every product supplier having to provide information on compliance will "swamp the system" and will result, for a while at least, in some poor-quality information being provided.

103. While the product disclosure information is not a requirement of the consent process (it supports the process but is not a mandatory requirement for a consent itself) a possible consequence is BCAs being more likely to decline to grant consents on the basis of the quality of the information than they would today, particularly if they perceive that doing so increases their liability risk.

104. While the enforcement of the disclosure regime is the role of MBIE, informal enforcement through the consent process is highly likely. This can be expected to create some confusion, particularly if the BCAs are not given clear guidance and resources clearly setting out their roles and responsibilities in respect of the new regime.

**Potential improvement measures**

Actively monitor the product disclosure regime's implementation and intervene as soon as issues arise.

**Potential improvement measures**

In addition to the other guidance suggested in this report to improve understanding and navigation of the Building Code system, provide focused guidance and education on the implementation of the new product disclosure scheme to ensure ease of implementation and so that it doesn't become a barrier to the granting of consents.

***Changes to product certification – possible that it will increase cost and regulatory risk for users of the product certification scheme***

105. The impending changes to the product certification scheme give MBIE a greater role in the accreditation process of certification bodies and certification of products. This role gives MBIE the powers to make the final decision on the accreditation of a product certification body and the registering of a product certificate. This has two identifiable impacts on certification. Firstly, it will increase the costs of certification as MBIE recovers its costs for its new functions. Secondly, it adds to the regulatory risk for product suppliers if MBIE chooses to "second guess" the certification decision. MBIE's core competency is not necessarily in assessing the competencies of certification bodies or in the certification of products.

***The proposed new Modular Component Manufacturer scheme – there is a risk that the scheme may have little uptake***

106. The proposed new MCM scheme will have an impact on building products, particularly where the product being supplied is a larger component bringing together a number of "sub-products". An example of this is bespoke SIPs-based wall (or floor or roof) systems. The difficulties faced by those trying to implement modern methods of construction necessitated a regulatory response: the MCM scheme is that response and I welcome it for that reason[65]. However, the scheme may have a limited uptake and therefore the potential benefits may be limited for the following possible reasons:

106.1. The certification bodies for the MCM scheme (which are most likely to come from the existing ISO 17065 accredited product certification bodies) will be subject to a separate set of scheme rules, accreditation processes etc. to that of product certification. This is despite the fundamental similarities of both schemes (certifying compliance of "things" and "processes" against the Code).

[65] In my view the building regulatory regime provided compliance pathways for these systems. We have had companies such as Keith Hay Homes which for many years successfully negotiated the regulatory regime. Similarly, truss and frame has been a successful form of off-site construction for some time. However, I recognise the virtual barriers provided by some BCAs meant some alternative needed to be provided.

At this stage it is unclear what the impact of this increase in overhead costs will have on the economics being involved in both product certification and the MCM schemes as it will depend on whether there is sufficient additional business to recover these overheads.

106.2. The manufacturers that are certified against the MCM scheme will be required to meet an "adequate means test" to ensure that they are able to cover any civil liabilities arising from their manufacture and design. This is likely to be only within the domain for larger corporates with either "deep balance sheets" or sufficient scale to pay for insurance cover.

106.3. The costs of certification (putting in place the required systems etc.) will need to be cost effective compared with using the existing compliance options; although once manufacturers are certified that will reduce or at least change[66] their regulatory risk.

## Section Four: The challenges faced by product suppliers to meet their building regulatory obligations and manage their regulatory risk

107. In this section I discuss three key challenges that I have identified through experience with clients[67] and others I have engaged with in getting building products accepted for use in the New Zealand market. I have listed these challenges in the sequential order that generally if followed will lead to a better business outcome (and which could mean not entering the New Zealand market), rather than in order of how they are generally experienced or dealt with them. The challenges are:

107.1. navigating and understanding the system – access to appropriate advice

[66] Currently their regulatory risk is largely that BCAs do not accept their evidence of compliance and are not confident that they can assure themselves that they can inspect for compliant construction when that construction has been done in a factory many "miles away" and their regulatory costs can include payment for inspections by BCAs that duplicate their own QA systems (assuming they exist). In the MCM scheme their regulatory risk will be maintaining their accreditation and registration.

[67] In my experience many of those seeking to bring products into New Zealand are not necessarily the manufacturers of the product (and do not have access to the product information), they have limited or no knowledge of our building regulatory regime, they see "compliance as being one of meeting a prescriptive standard", and they have not included compliance costs and risks in their business case.

107.2. establishing if an evidence base can be established which is likely to provide sufficient evidence of compliance, and

107.3. making the business case – is the regulatory cost of entry worthwhile?

***Navigating and understanding the Building Code system***

108. The first challenge faced by product suppliers is navigating the system. While MBIE has provided guidance on a range of matters this generally does not relate to product compliance with an aim to assist those with section 14G obligations. The only significant guidance relating to those obligations on the MBIE website is guidance originally written in 2010 (with some minor updates since then). This guidance is directed towards providing assistance on deciding which pathway options are available (e.g., product certification, appraisals, and product technical statements and their content). There is none relating to navigating the Building Code system or how to establish performance requirements (with useful examples).

109. Should the supplier look for advice in navigating the system and assistance in managing their regulatory risks, there are few consultancy services available. For some reason that I have not been able to determine, such an extensive eco-system has not evolved to support the building product market to the extent required to service the market (this includes providing technical support to the product certification bodies).

110. The product compliance support capacity (consultants) in New Zealand is currently limited, with only four to five small companies[68] employing a total of about 10-15 people providing general services and without significant surge capacity. There are others who provide specialist advice (e.g., structural engineers for structural products and durability specialists dealing with particular material types), but few people providing product regulatory and compliance advice.

111. Similarly, there is a limited number of organisations in New Zealand which can test products (if needed). Setting aside the testing capacity at BRANZ, there are some

[68] They include Tekton Consulting, The Good Building Business Consultant, The Building Business and Building Confidence Ltd.

specialist testing organisations that provide specialised services (such as Façade Testing NZ, Façade Lab, Scion and New Zealand Wool Testing Authority) but few other significant service providers.

112. In the absence of clear guidance and education supported by an effective eco-system of consultants many product suppliers either approach BRANZ directly or a local BCA. The BRANZ response is generally to offer their appraisal or product certification service. If the product supplier approaches a BCA the general response is to suggest that they obtain "Codemark" product certification or an appraisal, or seek compliance with an Acceptable Solution (or a Standard).

113. This immediately presents a perceived cost barrier even though other options are available, particularly if the product is an established product with evidence of compliance with other building codes or other recognised international Standards. However, BRANZ and BCAs are perceived to have expertise which can mean that the advice is taken as fact.

114. BRANZ is in the business of selling testing, appraising or certification services and in my experience is not inclined to suggest other options. For BCAs, in my view one of the motivations in suggesting only these options is the perception that this manages their "risk".

115. The Act section 392 provides some statutory indemnities for BCAs when making compliance decisions, including where they make decisions based on reliance on Acceptable Solutions and Verification Methods as well as on product certificates. In my experience BCAs generally also perceive an appraisal as being "risk free" even though there is no legal basis to this. Therefore they have a bias to refer product suppliers to those pathways.

**Potential improvement measure**

Develop a programme of work to grow and increase the competency of those who provide regulatory and Code compliance support for product suppliers.

**Potential improvement measure**

Enhance and improve the guidance and education to support product suppliers in providing compliance information.

***Establishing an evidence base for Code compliance***

116. The second challenge is dealing with the complexity of the system and deciding if an evidence base exists (or can be created) to establish compliance with the Code. Even with good advice, suppliers are often challenged by the complexity in the Building Code system. In my experience the challenges are different depending on whether the product is one that has some existing evidence of compliance to another code or Standard or is a generic product off a production line producing for the global market.

117. In most cases suppliers with some existing evidence of Code compliance have a relationship with those producing the building products so can access test reports and other compliance evidence. Those supplying generic products, in most cases, have no such access, and if there is it can be through third parties who may not have the incentive to produce evidence of compliance.

118. For those with a product certified to some valid code or Standard the challenges are generally:

118.1. the need to provide evidence for durability (particularly if the Code obligation is not less than 50 years)

118.2. providing an installation manual that uses New Zealand building practice, terminology and units (US-sourced information is generally still in "Imperial" units such as inches and pounds), and

118.3. correlating the parent jurisdiction's environmental zoning to the New Zealand framework.

119. For those with a generic product, the challenges are generally:

119.1. providing any form of evidence of compliance (in English) to any standard (and a copy of the standard (again in English)), and

119.2. the absence of a capacity to understand the nature of the evidence required and then the ability to action the process of obtaining the information needed by appraisers or certifiers) to the standard required (e.g., there is some independence in its source, it applies to the product under assessment etc.). In many instances certificates purporting to be ISO 9001 (Quality Systems) is the only evidence offered up.

***Making the business case***

120. Establishing the business case can also be problematic. In general, in my experience the problems are not necessarily in the accuracy of costs in establishing compliance to support claims, as most certification bodies (as well as those that review compliance evidence claims) provide fixed quotes.

121. The bigger challenge is the quantum of those costs. It is hard to make a comparison between the cost of an appraisal and Codemark certification as it is not an "apples for apples" comparison. An appraisal fee includes evidential gathering (e.g., testing and opinions done by BRANZ staff). However, the costs of both can be considerable. Estimates are set out in paragraph 68.

122. However, in my view in many cases the quality of the product and the evidence base available is sufficient for the regulatory pathway to be a product technical statement (which comes at a lower cost), but the fact that there is a strong possibility that it may not be accepted draws me back to the behaviour of BCAs and their inability to make appropriate risk-based decisions on product compliance which raises costs and deters entry.

123. In my experience the general outcomes for my clients are as follows, in broadly equal proportions:

123.1. Some decide that market entry is not justified on compliance cost and/or regulatory risk issues that they cannot be confident that they can easily mitigate.

123.2. Those with an adequate capital base (which could be a large international building product supplier) generally go for the high cost but low regulatory risk option – i.e. Codemark or a BRANZ appraisal.

123.3. Those without an adequate capital base sometimes use the product technical statement option[69] which is lower cost but has a higher regulatory risk, as the claim may not be accepted (generally unlikely) or clarifying questions may be asked by the consenting BCA before the consent is granted. This can be "embarrassing" for product suppliers as it is generally their client (the product purchaser, such as a builder, who is the person (as the applicant to the consent) that becomes the intermediary[70] in the process. This can occur on a number of occasions before the product technical statement is (or is ultimately not) accepted. This process may also be repeated a number of times with other BCAs.

## Section Five – Suggested improvement measures to address these practical issues for building products

124. In earlier sections I have identified potential improvement measures to mitigate the issues I raised and which I consider would make it easier for building products to enter and for suppliers to establish a presence in New Zealand. In this section I collate these improvement measures. I have put them in themes, and in descending order of priority within those themes.

### *Improve the Building Code system through less reliance on New Zealand Standards to set performance levels*

125. Improve the Building Code system by providing more clarity with respect to the required performance or attributes of building products, including less reliance on the use

[69] My role is generally to undertake a regulatory peer review of the product technical statement, which is then stated on the document – the product supplier remains responsible for the claims made.
[70] In the sense that any Requests for Information (RFIs) go to the consent applicant (or their agent) who then has to go to the product supplier to get the information requested. A number of these RFIs can very quickly erode confidence in the product even if they are trivial in nature.

of referenced New Zealand Standards to establish product performance requirements. Specific measures are:

125.1. Make greater use of international Standards as recognised pathways for compliance of products.

125.2. Undertake a review of the building products and systems available on the New Zealand market to identify if compliance pathways exist for them and, if not, develop a plan to provide them (examples being Structured Insulated Panels and high-performance windows).

125.3. Develop and articulate product attributes outside the referenced Standards. Options include stating performance attributes in Acceptable Solutions and Verification Methods or in guidance issued under section 175 of the Act.

125.4. Create the framework for environmental zoning and hazard classes within the Building Code system rather than leaving this to be defined in referenced Standards.

125.5. Review the Building Code from a building products perspective, i.e. considering how it can be structured and redrafted to improve the clarity of its application to products.

***Provide more guidance and resources to help product suppliers navigate the system***

126. Provide more resources and capacity to support product suppliers and their consultants to help them understand, navigate, and meet the building regulatory requirements in a cost-effective manner. Specific measures are:

126.1. Issue guidance that articulates the appropriate Code clauses for each common product type and possible means of establishing compliance for those clauses.

126.2. Enhance and improve the guidance and education to support product suppliers in providing compliance information; e.g., guidance on how to establish performance levels required for products).

126.3. Support those involved in product certification and assurance to develop a framework to share certification and assurance resources.

126.4. Develop a programme of work to grow and increase the competency of those who provide regulatory and Code compliance support for product suppliers.

126.5. Develop guidance and education on providing and assessing durability evidence).

***Provide guidance to assist BCAs in making more risk-informed decisions about products when used in building work***

127. Improve the quality of decision making (including risk assessment) by BCAs – helping them "de-risk" the decision-making about product compliance in building work and make their policies on acceptance of products clear. Specific measures are:

127.1. Provide guidance and support to BCAs to assist them in making risk-informed decisions when assessing products used in building work.

127.2. Establish best practice guidelines for how BCAs should manage "pre-assessment" processes for frequently used products when considering building consents.

***Improve the compliance system to facilitate specification of products in consents at a performance level***

128. Improve the compliance system so that more products are able to be specified at a performance level rather than by specific product or brand. Specific measures are:

128.1. Review the interpretation that has been adopted in practice that products must be specified at a specific brand level rather than by use of a performance specification.

128.2. Look for opportunities where more products can be specified at a performance level rather than being named as a specific product or brand.

***Ensure the product certification regime is effective and provides for other certification schemes***

129. Ensure that the statutory product certification regime is cost effective and recognises competent international building product certification bodies as part of the scheme. Specific measures are:

129.1. Review the product certification scheme to ensure that its cost structure is more aligned to the risks of non-compliance – e.g., by allowing for greater reliance on external quality assurance systems by product certification bodies.

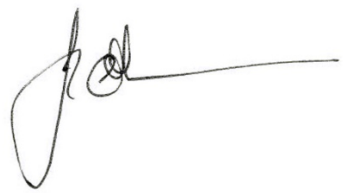
129.2. Recognise the ICC- ES Reports and British Board of Agrément Certificates as recognised product certification schemes so that they can issue product certificates against the Code.

***Actively monitor the new product disclosure regime to ensure that it does not become a barrier to consents***

130. Actively manage the implementation of the new product disclosure regime through guidance, education and monitoring to and of product suppliers, specifiers and BCAs to ensure ease of implementation and that it does not become a barrier to the granting of consents. Specific measures include:

130.1. Actively monitor the product disclosure regime's implementation and intervene as soon as issues arise.

130.2. In addition to the other guidance suggested to improve understanding and navigation of the Building Code system, provide focused guidance and education on the implementation of the new product disclosure regime.



John Gardiner
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3rd August 2022

# Appendix One – some extracts from the Building Code – reproduced for illustrative purposes

## Clause B1—Structure

| Provisions | Limits on application |
|---|---|

**Objective**

**B1.1** The objective of this provision is to:

(a) safeguard people from injury caused by structural failure,

(b) safeguard people from loss of *amenity* caused by structural behaviour, and

(c) protect *other property* from physical damage caused by structural failure.

**Functional requirement**

**B1.2** *Buildings*, *building elements* and *sitework* shall withstand the combination of loads that they are likely to experience during *construction* or *alteration* and throughout their lives.

**Performance**

**B1.3.1** *Buildings*, *building elements* and *sitework* shall have a low probability of rupturing, becoming unstable, losing equilibrium, or collapsing during *construction* or *alteration* and throughout their lives.

**B1.3.2** *Buildings*, *building elements* and *sitework* shall have a low probability of causing loss of *amenity* through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during *construction* or *alteration* when the *building* is in use.

**B1.3.3** Account shall be taken of all physical conditions likely to affect the stability of *buildings*, *building elements* and *sitework*, including:

(a) self-weight,
(b) imposed gravity loads arising from use,
(c) temperature,
(d) earth pressure,
(e) water and other liquids,
(f) earthquake,
(g) snow,
(h) wind,
(i) *fire*,
(j) impact,
(k) explosion,
(l) reversing or fluctuating effects,
(m) differential movement,
(n) vegetation,
(o) adverse effects due to insufficient separation from other *buildings*,
(p) influence of equipment, services, non-structural elements and contents,
(q) time dependent effects including creep and shrinkage, and
(r) removal of support.

**B1.3.4** Due allowance shall be made for:

(a) the consequences of failure,
(b) the intended use of the *building*,
(c) effects of uncertainties resulting from *construction* activities, or the sequence in which *construction* activities occur,
(d) variation in the properties of materials and the characteristics of the site, and
(e) accuracy limitations inherent in the methods used to predict the stability of *buildings*.

**B1.3.5** The demolition of *buildings* shall be carried out in a way that avoids the likelihood of premature collapse.

**B1.3.6** *Sitework*, where necessary, shall be carried out to:

(a) provide stability for *construction* on the site, and
(b) avoid the likelihood of damage to *other property*.

**B1.3.7** Any *sitework* and associated supports shall take account of the effects of:

(a) changes in ground water level,
(b) water, weather and vegetation, and
(c) ground loss and slumping.

## Clause C1—Objectives of clauses C2 to C6 (protection from fire)

| Provision | Limit on application |
|---|---|
| The objectives of clauses C2 to C6 are to: | |
| (a) safeguard people from an unacceptable risk of injury or illness caused by *fire*, | |
| (b) protect *other property* from damage caused by *fire*, and | |
| (c) facilitate firefighting and rescue operations. | |

Schedule 1 clause C1: replaced, on 10 April 2012, by regulation 6 of the Building (Building Code: Fire Safety and Signs) Amendment Regulations 2012 (SR 2012/33).

## Clause C2—Prevention of fire occurring

| Provision | Limit on application |
|---|---|
| **Functional requirement** | |
| **C2.1** Fixed appliances using controlled combustion and other fixed equipment must be designed, constructed, and installed in *buildings* in a way that reduces the likelihood of illness or injury due to *fire* occurring. | |
| **Performance** | |
| **C2.2** The maximum surface temperature of *combustible building materials* close to fixed appliances using controlled combustion and other fixed equipment when operating at their design level must not exceed 90°C. | |
| **C2.3** Fixed appliances using controlled combustion and other fixed equipment must be designed, constructed and installed so that there is a low probability of explosive or hazardous conditions occurring within any spaces in or around the *building* that contains the appliances. | |

Schedule 1 clause C2: replaced, on 10 April 2012, by regulation 6 of the Building (Building Code: Fire Safety and Signs) Amendment Regulations 2012 (SR 2012/33).

## Clause C3—Fire affecting areas beyond the fire source

| Provision | Limit on application |
|---|---|
| **Functional requirement** | |
| **C3.1** *Buildings* must be designed and constructed so that there is a low probability of injury or illness to persons not in close proximity to a *fire source*. | |
| **C3.2** *Buildings* with a *building height* greater than 10 m where upper floors contain sleeping uses or *other property* must be designed and constructed so that there is a low probability of external vertical fire spread to upper floors in the *building*. | Clause C3.2 does not apply to importance level 1 *buildings*. |
| **C3.3** *Buildings* must be designed and constructed so that there is a low probability of *fire* spread to *other property* vertically or horizontally across a *relevant boundary*. | |

**Performance**

**C3.4** (a) materials used as internal surface linings in the following areas of *buildings* must meet the performance criteria specified below:

Clause C3.4 does not apply to *detached dwellings*, within *household units* in *multi-unit dwellings*, or *outbuildings* and *ancillary buildings*.

| **Area of *building*** | **Performance determined under conditions described in ISO 9705: 1993** | |
|---|---|---|
| | ***Buildings* not protected with an automatic *fire* sprinkler system** | ***Buildings* protected with an automatic *fire* sprinkler system** |
| Wall/ceiling materials in sleeping areas where care or detention is provided | Material Group Number 1-S | Material Group Number 1 or 2 |
| Wall/ceiling materials in exitways | Material Group Number 1-S | Material Group Number 1 or 2 |
| Wall/ceiling materials in all *occupied spaces* in importance level 4 *buildings* | Material Group Number 1-S | Material Group Number 1 or 2 |
| Internal surfaces of ducts for *HVAC systems* | Material Group Number 1-S | Material Group Number 1 or 2 |
| Ceiling materials in crowd and sleeping uses except *household units* and where care or detention is provided | Material Group Number 1-S or 2-S | Material Group Number 1 or 2 |
| Wall materials in crowd and sleeping uses except *household units* and where care or detention is provided | Material Group Number 1-S or 2-S | Material Group Number 1, 2, or 3 |
| Wall/ceiling materials in occupied spaces in all other locations in *buildings*, including *household units* | Material Group Number 1, 2, or 3 | Material Group Number 1, 2, or 3 |
| External surfaces of ducts for HVAC systems | Material Group Number 1, 2, or 3 | Material Group Number 1, 2, or 3 |
| Acoustic treatment and pipe insulation within airhandling plenums in sleeping uses | Material Group Number 1, 2, or 3 | Material Group Number 1, 2, or 3 |

(b) floor surface materials in the following areas of *buildings* must meet the performance criteria specified below:

| **Area of *building*** | **Minimum critical radiant flux when tested to ISO 9239-1: 2010** | |
|---|---|---|
| | ***Buildings* not protected with an automatic *fire* sprinkler system** | ***Buildings* protected with an automatic *fire* sprinkler system** |
| Sleeping areas and exitways in *buildings* where care or detention is provided | 4.5 kW/m$^2$ | 2.2 kW/m$^2$ |
| Exitways in all other *buildings* | 2.2 kW/m$^2$ | 2.2 kW/m$^2$ |
| *Firecells* accommodating more than 50 persons | 2.2 kW/m$^2$ | 1.2 kW/m$^2$ |
| All other occupied spaces except *household units* | 1.2 kW/m$^2$ | 1.2 kW/m$^2$ |

(c) suspended flexible fabrics and membrane structures used in the construction of *buildings* must have properties resulting in a low probability of injury or illness to persons not in close proximity to a *fire source*.

**C3.5** *Buildings* must be designed and constructed so that *fire* does not spread more than 3.5 m vertically from the *fire source* over the external cladding of multi-level *buildings*.

**C3.6** *Buildings* must be designed and constructed so that in the event of *fire* in the *building* the received radiation at the *relevant boundary* of the property does not exceed 30 kW/m$^2$ and at a distance of 1 m beyond the *relevant boundary* of the property does not exceed 16 kW/m$^2$.

**C3.7** External walls of *buildings* that are located closer than 1 m to the *relevant boundary* of the property on which the *building* stands must either:

(a) be constructed from materials which are not *combustible building materials*, or

(b) for *buildings* in importance levels 3 and 4, be constructed from materials that, when subjected to a radiant flux of 30 kW/m$^2$, do not ignite for 30 minutes, or

(c) for *buildings* in Importance Levels 1 and 2, be constructed from materials that, when subjected to a radiant flux of 30 kW/m$^2$, do not ignite for 15 minutes.

**C3.8** *Firecells* located within 15 m of a *relevant boundary* that are not protected by an automatic *fire* sprinkler system, and that contain a *fire load* greater than 20 TJ or that have a floor area greater than 5,000 m$^2$ must be designed and constructed so that at the time that firefighters first apply water to the *fire*, the maximum radiation flux at 1.5 m above the floor is no greater than 4.5 kW/m$^2$ and the smoke layer is not less than 2 m above the floor.

**C3.9** *Buildings* must be designed and constructed with regard to the likelihood and consequence of failure of any *fire safety system* intended to control *fire* spread.

Schedule 1 clause C3: replaced, on 10 April 2012, by regulation 6 of the Building (Building Code: Fire Safety and Signs) Amendment Regulations 2012 (SR 2012/33).

## Clause C4—Movement to place of safety

| Provision | Limit on application |
|---|---|

**Functional requirement**

**C4.1** *Buildings* must be provided with:

(a) effective means of giving warning of *fire*, and

(b) visibility in *escape routes* complying with clause F6.

**C4.2** *Buildings* must be provided with means of escape to ensure that there is a low probability of occupants of those *buildings* being unreasonably delayed or impeded from moving to a *place of safety* and that those occupants will not suffer injury or illness as a result.

**Performance**

**C4.3** The *evacuation time* must allow occupants of a *building* to move to a *place of safety* in the event of a *fire* so that occupants are not exposed to any of the following:

(a) *fractional effective dose* of carbon monoxide greater than 0.3:

(b) a *fractional effective dose* of thermal effects greater than 0.3:

(c) conditions where, due to smoke obscuration, visibility is less than 10 m except in rooms of less than 100 m$^2$ where visibility may fall to 5 m.

**C4.4** Clause C4.3(b) and (c) do not apply where it is not possible to expose more than 1 000 occupants in a *firecell* protected with an automatic *fire* sprinkler system.

**C4.5** Means of escape to a *place of safety* in *buildings* must be designed and constructed with regard to the likelihood and consequence of failure of any *fire safety systems*.

Schedule 1 clause C4: replaced, on 10 April 2012, by regulation 6 of the Building (Building Code: Fire Safety and Signs) Amendment Regulations 2012 (SR 2012/33).

## Clause C5—Access and safety for firefighting operations

| | Provision | Limit on application |
|---|---|---|
| **Functional requirement** | | |
| **C5.1** | *Buildings* must be designed and constructed so that there is a low probability of firefighters or other emergency services personnel being delayed in or impeded from assisting in rescue operations and performing firefighting operations. | |
| **C5.2** | *Buildings* must be designed and constructed so that there is a low probability of illness or injury to firefighters or other emergency services personnel during rescue and firefighting operations. | |
| **Performance** | | |
| **C5.3** | *Buildings* must be provided with access for fire service vehicles to a *hard-standing* from which there is an unobstructed path to the *building* within 20 m of:<br>(a) the firefighter access into the *building*, and<br>(b) the inlets to automatic fire sprinkler systems or fire hydrant systems, where these are installed. | Performance requirements in clauses C5.3 to C5.8 do not apply to *backcountry huts*, *detached dwellings*, within *household units* in *multi-unit dwellings*, or to *outbuildings*, and *ancillary buildings*. |
| **C5.4** | Access for fire service vehicles in accordance with clause C5.3 must be provided to more than 1 side of *firecells* greater than 5,000 $m^2$ in floor area that are not protected by an automatic fire sprinkler system. | |
| **C5.5** | *Buildings* must be provided with the means to deliver water for firefighting to all parts of the *building*. | |
| **C5.6** | *Buildings* must be designed and constructed in a manner that will allow firefighters, taking into account the firefighters' personal protective equipment and standard training, to:<br>(a) reach the floor of fire origin,<br>(b) search the general area of fire origin, and<br>(c) protect their means of egress. | |
| **C5.7** | *Buildings* must be provided with means of giving clear information to enable firefighters to:<br>(a) establish the general location of the *fire*,<br>(b) identify the *fire safety systems* available in the *building*, and<br>(c) establish the presence of *hazardous substances* or process in the *building* | |

**C5.8** Means to provide access for and safety of firefighters in *buildings* must be designed and constructed with regard to the likelihood and consequence of failure of any *fire safety systems*.

Schedule 1 clause C5: inserted, on 10 April 2012, by regulation 6 of the Building (Building Code: Fire Safety and Signs) Amendment Regulations 2012 (SR 2012/33).

## Clause C6—Structural stability

| | Provision | Limit on application |
|---|---|---|
| **Functional requirement** | | |
| **C6.1** | Structural systems in *buildings* must be constructed to maintain structural stability during *fire* so that there is:<br>(a) a low probability of injury or illness to occupants,<br>(b) a low probability of injury or illness to *fire* service personnel during rescue and firefighting operations, and<br>(c) a low probability of direct or consequential damage to adjacent *household units* or *other property*. | |
| **Performance** | | |
| **C6.2** | Structural systems in *buildings* that are necessary for structural stability in *fire* must be designed and constructed so that they remain stable during *fire* and after *fire* when required to protect *other property* taking into account:<br>(a) the *fire* severity,<br>(b) any automatic fire sprinkler systems within the *buildings*,<br>(c) any other active *fire safety systems* that affect the *fire* severity and its impact on structural stability, and<br>(d) the likelihood and consequence of failure of any *fire safety systems* that affect the *fire* severity and its impact on structural stability. | |
| **C6.3** | Structural systems in *buildings* that are necessary to provide firefighters with safe access to floors for the purpose of conducting firefighting and rescue operations must be designed and constructed so that they remain stable during and after *fire*. | |
| **C6.4** | Collapse of building elements that have lesser *fire* resistance must not cause the consequential collapse of elements that are required to have a higher *fire* resistance. | |

Schedule 1 clause C6: inserted, on 10 April 2012, by regulation 6 of the Building (Building Code: Fire Safety and Signs) Amendment Regulations 2012 (SR 2012/33).

## Clause E2—External moisture

| Provisions | Limits on application |
|---|---|
| **Objective** | |
| **E2.1** The objective of this provision is to safeguard people from illness or injury that could result from external moisture entering the *building*. | |
| **Functional requirement** | |
| **E2.2** *Buildings* must be constructed to provide *adequate* resistance to penetration by, and the accumulation of, moisture from the outside. | Requirement E2.2 does not apply to *buildings* (for example, certain bus shelters, and certain *buildings* used for horticulture or for equipment for washing motor vehicles automatically) if moisture from the outside penetrating them, or accumulating within them, or both, is unlikely to impair significantly all or any of their *amenity*, durability, and stability. |
| **Performance** | |
| **E2.3.1** Roofs must shed precipitated moisture. In locations subject to snowfalls, roofs must also shed melted snow. | |
| **E2.3.2** Roofs and exterior walls must prevent the penetration of water that could cause undue dampness, damage to *building elements*, or both. | |
| **E2.3.3** Walls, floors, and structural elements in contact with, or in close proximity to, the ground must not absorb or transmit moisture in quantities that could cause undue dampness, damage to *building elements*, or both. | |
| **E2.3.4** *Building elements* susceptible to damage must be protected from the adverse effects of moisture entering the space below suspended floors. | |
| **E2.3.5** *Concealed spaces* and cavities in *buildings* must be constructed in a way that prevents external moisture being accumulated or transferred and causing condensation, fungal growth, or the degradation of *building elements*. | |
| **E2.3.6** Excess moisture present at the completion of *construction* must be capable of being dissipated without permanent damage to *building elements*. | |

| Provisions | Limits on application |
|---|---|
| **E2.3.7** *Building elements* must be constructed in a way that makes due allowance for the following:<br>(a) the consequences of failure:<br>(b) the effects of uncertainties resulting from *construction* or from the sequence in which different aspects of *construction* occur:<br>(c) variation in the properties of materials and in the characteristics of the site. | |