BUILDING PERFORMANCE

Discussion document

Building Code fire safety review

Issues in the Building Code regulations

October 2024

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government

Ministry of Business, Innovation and Employment (MBIE)

Hīkina Whakatutuki – Lifting to make successful

MBIE develops and delivers policy, services, advice and regulation to support economic growth and the prosperity and wellbeing of New Zealanders.

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Minister's Foreword

Minister for Building and Construction, Hon Chris Penk

One of my key focus areas for the Building and Construction portfolio is improving fire safety in buildings. To achieve this, I am reviewing the fire safety provisions in the Building Code regulations.

On 16 May 2023, a fire broke out at Loafers Lodge in Newtown, Wellington resulting in the deaths of five people. Since the Loafers Lodge fire, there has been increased public interest in the level of fire safety in buildings. There have also been ongoing frustrations in the sector over unnecessary costs and delays in the construction of buildings.

The Building Code plays an important role in protecting people from fire. It is essential that fire safety provisions in the Building Code achieve safe, healthy and durable buildings. These provisions need to be proportionate and support timely and consistent decision-making.

The way we build is changing, and we are seeing the use of rapidly evolving technologies. These changes are adding new complexities to fire safety in our homes and buildings, and to firefighting.

The discussion document seeks feedback on the issues that have been identified during the review of fire safety provisions in the Building Code. It is important to get feedback from a wide range of submitters to make sure we have identified the right issues.

As the Minister responsible for Building and Construction, I am pleased to present this discussion document for public consultation.

Executive summary

Purpose of the discussion document

The discussion document provides background material on the fire safety issues in the Building Code regulations. Its purpose is to give information on the issues which you can provide feedback on.

The document seeks to build a shared understanding within New Zealand of issues as a basis for considering future change. The issues identified in this document draw on industry feedback, lessons learned from fire events in New Zealand and overseas, and how other countries are regulating for fire safety.

It contains findings from phase one of MBIE's review into fire safety issues in the Building Code. The review was started in the wake of several emerging fire safety concerns in New Zealand including the Loafers Lodge fire which happened in Wellington on 16 May 2023, and in which 5 people lost their lives.

With its phase one review, MBIE's wants to:

- identify issues relating to fire safety in the Building Code
- understand the challenges facing the owners of modern buildings in relation to fire safety provisions.

As part of the review MBIE looked at:

- discussion and feedback from over a hundred industry bodies and organisations from April to July 2024
- lessons learned from historical fire events in New Zealand and overseas
- 30 different reports on the New Zealand Building Code and the fire safety provisions prepared over the last 3 decades
- comparisons to other international building codes with similar frameworks and buildings as New Zealand.

There is a separate background paper that contains supporting technical information with additional evidence on the issues described in the discussion document.

Issues MBIE identified in its phase one review

MBIE's phase one fire regulatory review identified several key issues in the Building Code, including:

- effectiveness of fire safety measures
- the need to keep up with new technologies and new fire challenges such as mass timber buildings and greater housing density
- a lack of certainty, clarity, and consistency.

These issues are summarised in the discussion document. For further information on the areas of concern MBIE identified read the background document.

The issues impact people using buildings and the building regulatory system and may mean:

- failing to protect those who are most at risk in our country from the effects of fire
- leaving people and buildings in New Zealand at greater risk to a wide variety of fire hazards
- exposing firefighters and emergency responders to potentially avoidable risks
- making it harder for people to build in New Zealand and introduce unnecessary delays and costs in designing, consenting, and constructing buildings
- creating barriers to using products from overseas or using new technologies as part of a design
- causing frustrations for designers, engineers, and building consent officers who each are left to work out requirements which can lead to inconsistent decision making on what is required to comply with the Building Code

- create inconsistencies with other relevant legislation and regulations, which can create challenges when trying to comply with multiple requirements at once.

Now is the time to provide feedback on these issues

To support this ongoing fire safety review, MBIE is keen to hear your feedback on the issues identified so far. Also let them know if you think they have missed any.

There are questions in the submission form on the fire safety review and the issues identified.

Your feedback will be used to develop further options for change and any further fire safety consultations.

Please take the time to let MBIE know your thoughts. They will carefully consider and weigh all submissions. Instructions on providing your feedback are on MBIE's Fire safety review Have Your Say webpage.

Contents

Seeking feedback

Consultation process

Use the discussion document to see what fire safety issues there are and send your feedback on them.

Think about the objectives for fire safety provisions in the Building Code and the key issues that MBIE has identified that are barriers to achieving those objectives.

The document includes questions for feedback. When you send your feedback, it helps if you can include evidence to support your views, for example references to independent research, facts and figures, or other relevant examples.

MBIE needs your feedback on the Building Code fire safety review by 5:00 pm on Friday, 6 December 2024.

You can provide your feedback by either:

- completing a survey online via MBIE's Have Your Say webpage, or
- by download a submission form at Have Your Say and either email or post it
    - Email to: building@mbie.govt.nz, with subject line Building Code Fire Safety review
    - Post to:
      Building Code Fire Safety review
      Building System Performance
      Ministry of Business, Innovation and Employment
      PO Box 1473
      Wellington 6140

Next steps

Your feedback on this document will be collated and analysed along with all the other responses.

Following consideration of the submissions, MBIE will develop potential options for improvements to fire safety provisions in the Building Code.

MBIE will seek feedback on these potential options for change through a further round of public consultation. Timelines for the review will depend on the information received in this year's consultation and any new or emerging issues along the way.

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- state this at the start of your submission, with any confidential information clearly marked within your feedback text
- provide a separate version, with your confidential information removed, for publication on the MBIE website.

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1. Introduction

1.1. Government review of the Building Code's fire safety provisions

1.1.1. Our knowledge of fire safety continues to grow

Fire safety is a complex and challenging area and there are significant life safety risks when getting things wrong.

The Loafers Lodge fire in 2023 put a spotlight on:

- the importance of fire safety in buildings in New Zealand, and
- some of the long-standing issues in the building regulatory system.

Building uses, technology, building materials and construction methods have evolved rapidly since the last review of the fire safety regulations in 2011.

New complexities to fire safety and firefighting have been added due to:

- the use of innovative timber products
- battery storage and charging
- roof-top solar panels
- urban intensification, with more people living in city areas than before.

This review looks to address changes in fire safety presented by these new challenges and lessons learned from fire events.

1.1.2. Demonstrating compliance with fire safety provisions makes it unnecessarily harder to build

Many New Zealanders are already facing significant cost pressures. The Government is committed to making it easier for New Zealanders to build affordable homes and buildings by improving efficiency and flexibility in the building system.

The Building Code should achieve safety outcomes without adding unnecessary costs on building owners. The level of safety required should match the hazards and outcomes if things go wrong. Compliance costs should be at the right level compared to the risks and complexity of building work. MBIE has identified that in some cases, the current provisions do not achieve this balance.

Regulatory requirements can also add unnecessary costs when there are gaps or inconsistencies in the requirements, making it costly to achieve compliance.

MBIE has heard that when people in New Zealand apply for a building consent, they often say that complying with fire requirements is a major challenge and source of uncertainty.

The current Building Code provisions can be unclear and inconsistent, leading to extra costs and delays to the building consent process.

The Government is also committed to increasing competition by allowing for a wider range of building products to be accepted for use. But some fire safety requirements are creating barriers to using building products from overseas.

This review looks at removing barriers in the designing, consenting, and construction of buildings and ensuring that the fire safety provisions in the Building Code do not add unreasonable costs to buildings.

1.2. Fire safety is integrated across the Building Act and Building Code

1.2.1. The Building Act sets out fire safety purpose and principles

The Building Act 2004 (the Act) is the primary legislation for regulating building work in New Zealand. The Building Code directly supports the Act's purpose and principles. An effective Building Code ensures fire safety so that:

- people who use a building can do so safely and without endangering their health
- people who use a building can escape from the building if it is on fire
- people entering a building to carry out rescue operations or firefighting are protected from injury
- protection is provided to limit the extent and effects of the spread of fire.

New Zealand has a performance-based code. The Building Code states how a building must perform in its intended use rather than how the building must be designed and constructed.

The Building Code is separated into parts, and clauses C1 to C6 cover Protection from Fire. These clauses are also supported by fire safety requirements in other parts of the Building Code such as the:

- prevention of ignition from electricity and flammable gases
- structural design of buildings, and
- inclusion of emergency and exit signages as part of the evacuation routes from a building.

MBIE publishes acceptable solutions and verification methods. These documents specify design and construction methods that are 'deemed to comply' with code requirements.

Building consent authorities must approve applications for building consents that are designed according to these acceptable solutions and verification methods.

Designers can also present an 'alternative solution' where an applicant shows, in their own way, how they will comply with the performance criteria directly.

1.2.2. The focus is on issues in the Building Code regulations

The focus of the discussion document is to identify issues in the Building Code regulations and other related regulations (Figure 1). This includes fire safety provisions in:

- the objectives, functional requirements, and performance criteria in the Building Code
- other regulations under the Building Act that are consequentially impacted by the fire safety provisions.

MBIE acknowledges that the Building Code works as a system and some issues will cut across different documents in the Building Code system. This is why the review also includes consideration of:

- acceptable solutions and verification methods
- information published in guidance documents.

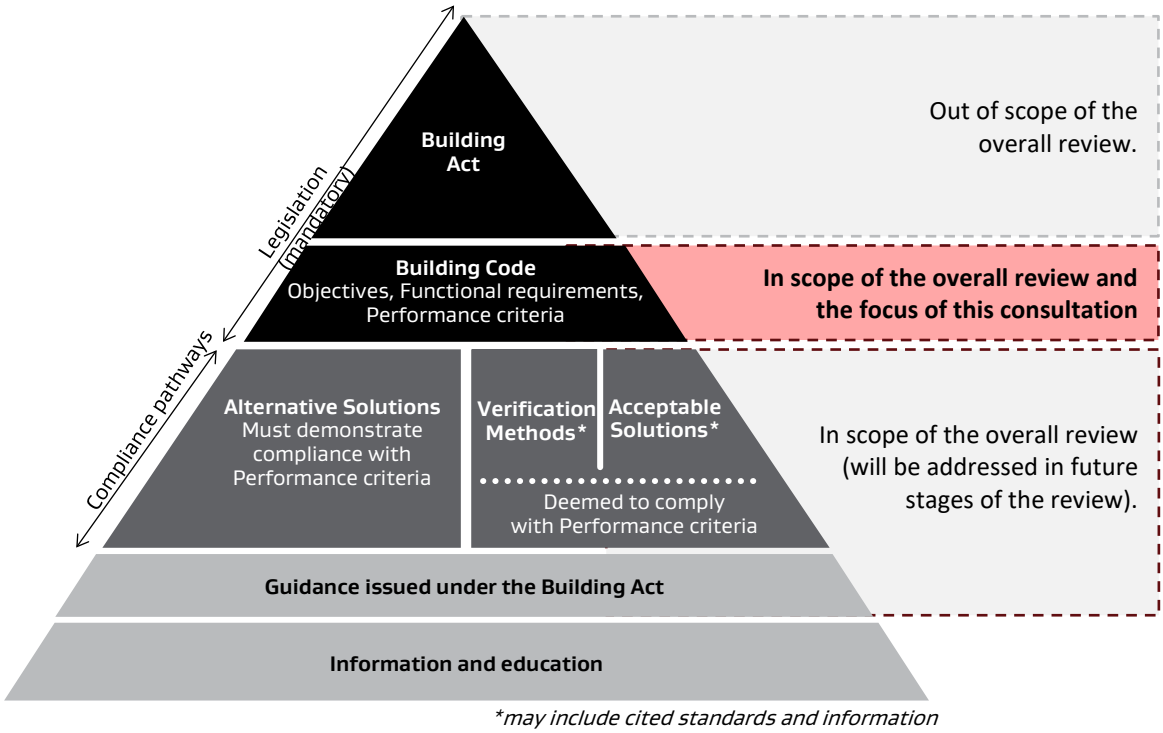

Figure 1. The Building Code system showing the scope of this review and the focus of this consultation

1.2.3. This phase of the review does not contain proposals to change the Building Code

This discussion document is phase one of the review and does not cover proposals to change Building Code regulations or the acceptable solutions or verification methods.

Any future amendments to the Building Code regulations would need to be approved by Cabinet. Proposals for change must be consulted on and are subject to Cabinet's impact analysis requirements.

The chief executive of MBIE could amend acceptable solutions and verification methods in the future but these must be consulted on and meet procedural requirements under the Act. Consultation on these items would form the next phases of this review after options for possible changes have been developed.

The supporting background paper explains how regulations are made and MBIE's role in the process.

1.3. Phase one of the fire safety in the Building Code review

1.3.1. MBIE has identified outcomes that they would like to achieve in the overall review

The overall review aims to deliver the following outcomes:

- Building Code requirements need to be clear on protection levels based on building types and their users.
- Fire safety provisions in the Building Code need to keep up with changes in urban design, modern construction methods, and the different ways buildings are being used.
- Ensure fire safety regulatory requirements in the Building Code are fit for purpose and cost-effective.
- Minimise gaps inconsistencies in fire safety regulation to provide certainty, clarity, and consistency.

1.3.2. As part of the first phase of the review, MBIE received feedback on issues in the Building Code

To identify issues, MBIE sought initial feedback from over a 100 different organisations and industry associations. This was to better understand what issues they have experienced with the Building Code fire safety provisions.

This feedback was from designers, engineers, architects, councils, product suppliers, fire safety experts, disability advisors and advocates, Government agencies, and others.

MBIE also established a stakeholder group with regular meetings to discuss their findings.

MBIE has also identified issues through:

- fire safety concerns identified through Operation Magazine, an MBIE-led project to assess fire safety in boarding houses similar to Loafers Lodge across New Zealand. This was a response to the tragedy at Loafers Lodge
- lessons learned from other fire events in New Zealand and overseas
- past consultations on the Building Code, and from other international building codes
- items raised through a recent complaint to the Regulations Review Committee relating to specific technical details in the fire safety provisions in the Building Code.

You can also read the supporting background paper for further information on the work to identify these issues.

1.3.3. Issues are across multiple topics affecting people in different ways

The issues MBIE identified span several different topics of fire safety which are included in the Building Code. These issues range from large gaps that are not addressed by the Building Code regulatory system and were frequently raised in conversations with external stakeholders as items to be resolved.

These issues may:

- leave people and buildings in New Zealand at risk to a wide variety of fire hazards
- fail to protect those who are most at risk in our country from the effects of fire
- expose firefighters and emergency responders to avoidable risks
- make it harder for people to build and introduce unnecessary delays and costs in designing, consenting, and constructing of buildings
- cause frustrations for designers, engineers, and building consent officers who are left to interpret vague requirements or fill-in the gaps in the Building Code themselves
- lead to inconsistent decision making on what is required to comply with the Building Code
- create barriers to the use of products from overseas.

Other technical issues can collectively add to costs, delays and uncertainty for BCAs and consent applicants.

The background paper that has been released alongside this document provides a full list of the areas of concern that MBIE has identified. Please refer to the background paper for a summary of work to date and supporting information.

1.4. MBIE wants to hear your feedback and opinions on fire safety

The following sections set out the issues MBIE has identified. MBIE welcomes your feedback on these issues and any other issues you think are missing.

For this section, please consider these questions if you are going to give MBIE feedback on the outcomes of the review.

1.	Do you agree or disagree with the outcomes we have identified for the review of fire safety provisions in the Building Code?
2.	How well do you think the fire regulatory system is currently performing against these outcomes? Please provide evidence if you can.
3.	Are there other outcomes MBIE should consider for the review?
4.	Would you like to provide feedback on your answers?

2. Effectiveness of fire safety measures in the Building Code

The Building Code regulations support the purposes and principles of the Building Act on fire safety. MBIE is aware some aspects of the regulations do not fully address risks. MBIE has identified issues that could mean some buildings and building users may not be adequately protected from fire.

2.1. People in some types of building can be at greater risk in a fire

The most frequent item raised by industry stakeholders during MBIE's phase one review is that the Building Code does not adequately consider the evacuation needs of different occupants in a building, including those with disabilities.

The fire safety requirements in the Building Code use a general approach when they considering building users. Some people, such as the very young, old, those with respiratory issues, or those with other disabilities may be slower to respond to a fire or fire alarm or take longer to evacuate a building. At the same time, they may have to wait until the fire service responds to assist them. This means that for a longer time they risk being exposed to the fire, including its heat and smoke.

As well as the type of building users there can be a particular problem with the types of buildings, such as residential and accommodation buildings where people sleep, healthcare facilities, taller buildings, or buildings with a lot of people in them. In these cases, the consequences of a fire can be more severe than in other buildings.

Figure 2. One purpose of the Building Act is to ensure that people who use a building can escape from the building if it is on fire

2.2. Requirements are not always set at the right fire risk level for different types of buildings

MBIE has identified issues where the current requirements in the Building Code do not consider the specific hazards in a building. Separate types of buildings have their own hazards and require levels of protection.

The Building Code requirements were intended to apply to all building types. But some of its requirements do not apply to housing. Its remaining requirements apply equally to small residential and other buildings.

Because smaller residential buildings such as houses have their own unique challenges and fire problems, the Building Code's broad requirements may not meet the right level for fire risks in housing. This could mean that complying with the Building Code is not always cost effective for residential building owners and may add unnecessary compliance costs for this group of owners.

In some cases, the Building Code requirements do not consider factors that can impact fire hazards, such as the building height, importance level, or its use. For example, taller buildings have specific considerations across multiple parts of the design, as do care and detention facilities. Applying identical levels of performance to different buildings whose fire hazards are not the same creates a risk of unnecessary compliance costs for some building owners.

MBIE also identified other gaps in the types of fire hazards addressed by the Building Code. The Building Code does not include consideration of protection from wildfire or bushfire events in rural areas or at the edge of cities.

Case study: Rest home smoke control

Smoke leakage is a key consideration to determine whether part of a building could be a place of safety for building occupants during a fire. The Building Code definition for a 'place of safety' covers several fire safety requirements but does not address smoke leakage.

Fire and Emergency NZ is responsible for approving evacuation schemes under the Fire and Emergency New Zealand (Fire Safety, Evacuation Procedures, and Evacuation Schemes) Regulations. FENZ provided feedback on an evacuation scheme that was submitted for approval for a rest home. It was noted that a lift serving multiple levels opened on to lounges designated as places of safety. As lift doors are very difficult to smoke seal, this represented a path for smoke travel into internal places of safety and could have resulted in greater risks for occupants.

The dispute was resolved by the building owner installing smoke curtains in front of the lift landing doors, at additional cost. In this example, the Building Code did not consider factors such as smoke leakage that can impact fire hazards.

The Building Code also does not address the hazards from electric transformers, overhead power lines, storage outside of buildings, and fires involving hazardous substances. These hazards can lead to fires starting or spreading to buildings. These Building Code gaps in fire protection can result in greater effects from fire events and a lower overall level of safety in buildings.

2.3. The building code focusses on life safety and protection of other property

The fire safety objectives in the Building Code focus on life safety and protection of other property. They do not address protecting owners' investments, or fire spread within a building under common ownership. Nor do they address protecting buildings which are of high value to the community.

Gaps in fire protection can increase the overall size of the fire and damage caused by the fire. Although the number of fire incidents has not significantly increased in the past ten years, the number of fires that have

spread beyond the building of origin has increased over 150% over the same period[1].This may also increase the challenges to firefighters responding to a fire. The less protection provided for the building, the greater the risk there is to firefighters.

2.4. Emergency response needs to be considered in more detail

Fire and Emergency New Zealand (FENZ) has provided feedback that the provisions in the Building Code make it difficult for firefighters to respond to emergencies in buildings.

One of the principles of the Building Act is to account for the reasonable expectation a person is protected from injury or illness when carrying out rescue operations or firefighting. But stakeholders have raised concerns that the Building Code is:

- not in line with the responsibilities of firefighters set out in other legislation, and
- does not support firefighters following their standard operating procedures and training.

Specific concerns exist for:

- access into, and within, buildings,
- the availability of fire extinguishers and water supplies, and
- the presence of firefighting facilities.

Dense urban environments make it challenging for firefighters to respond as roadways may be narrow or there may be not enough space to carry out the response to a fire.

Firefighters need the right amount of protection from flames and from building collapse, but these risks are not identified in the Building Code.

Access and evacuation are also not considered for other non-fire emergencies such as gas leaks, weather events, power outages, or medical emergencies. These Building Code gaps can result in larger consequences of fires, which puts people and firefighters at unnecessary risks.

2.5. Maintaining fire safety over the life of the building can be a challenge

Building regulations ensure that fire safety is maintained over the life of a building through a combination of Building Code requirements and ongoing requirements in other regulations.

Buildings with certain safety and essential systems, known as specified systems, are required to have a compliance schedule, which sets out how to keep those systems in good working order.

A key finding from MBIE's Operation Magazine was that there was often a mismatch between what was consented to be built, what a compliance schedule said was in the building, and what actually was in the building.

For some building components and systems, the Building Code and specified system regulations fail to provide assurance that buildings will perform as expected in the event of a fire.

For example, MBIE has identified specific issues to do with the design and maintenance provisions for external cladding and roofs, passive fire protection, means of escape features, and smoke control systems.

MBIE has also identified that there are mismatches between the description of fire safety systems in specified systems regulations. Gaps in protection in these areas mean the Building Code is:

- failing to adequately lower fire risks for some buildings, and

[1] Background Paper HFE 14

- makes it harder to comply with ongoing requirements throughout the life of the building.

MBIE has also identified that there are limited Building Code provisions for fire safety during the construction of a building. Fires during construction can spread to other buildings, and endanger the lives of construction workers and firefighters.

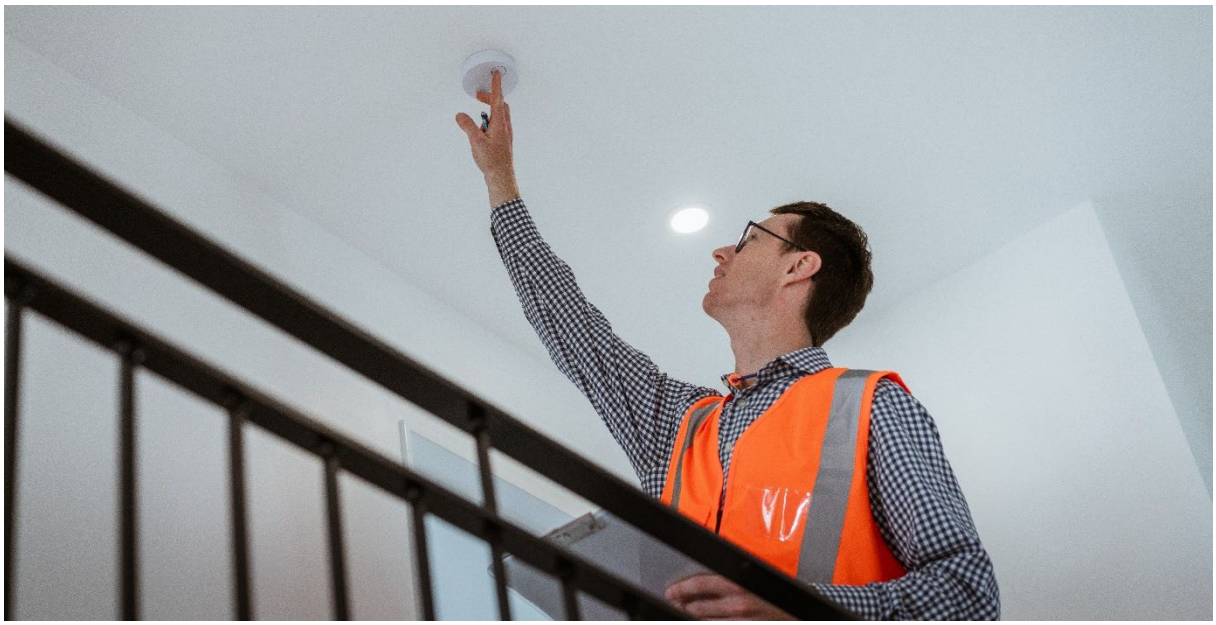

Figure 3. Specified systems such as emergency warning systems are subject to inspection, maintenance and reporting procedures under the Building Act

2.6. Questions on the effectiveness of fire safety measures in the Building Code

Please consider these questions if you are going to give MBIE feedback on this section.

5.	Do you agree with MBIE's assessment of the issues on the effectiveness of fire safety measures in the Building Code?
6.	Are there any other issues MBIE should consider on the effectiveness of fire safety measures in the Building Code?
7.	Would you like to provide any other comments or feedback on the effectiveness of fire safety measures in the Building Code?

3. Keeping pace with new technologies and new fire challenges

New technologies, urban design and methods of construction have evolved rapidly since the last review of the fire safety regulations in 2011. The Building Code should allow for the use of innovative technologies and provide protection from new and emerging fire risks.

3.1. The fire safety provisions create barriers to using overseas products

The Government is committed to strengthening competition by making it easier for a wider range of overseas building products to be accepted for use. But there are barriers to using overseas building products because of the Building Code's regulations for fire safety. These regulations refer to fire testing standards for New Zealand products and does not allow for products tested to overseas standards. This makes it difficult to use these products in New Zealand.

This means the Building Code:

- may not allow for the use of new or innovative materials, and
- can add unreasonable costs at a time when many New Zealanders are already facing significant cost pressures as the choice of available products is limited.

New Zealand-specific fire testing requirements for surface finishes, cladding systems, and other fire rated products:

- limits the availability of products that can be used in the market in New Zealand, and
- slows down the process for bringing new products to market.

Case study: Fire test standard specified in code clause

Building Code clause C4.3(a) requires internal surface finishes to be tested to ISO 9705:1993, which is a fire test standard that helps determine how a building material contributes to fire growth when ignited. This fire test has been updated to a newer version, and there are also other types of fire tests that could be used.

Because this test standard is cited in the Building Code (and there is no alternative option to comply), it requires imported products to be retested to this outdated standard and local products to undergo two tests, one for the New Zealand market and one for export.

3.2. The Building Code has not kept pace with modern construction methods

The Building Code's fire safety provisions have not kept pace with modern methods of construction such as mass timber, modular buildings, and offsite manufacturing.

Modern construction methods and details of how they meet requirements are not documented in Building Code requirements and in some cases not even mentioned.

There is increasing demand for timber to be used in new buildings, including large building structures.

There is not enough information in the Building Code to work out whether mass timber would compromise the fire safety of buildings it is used in. This uncertainty is a barrier to the sector using innovative timber products and limits the types of material that can be used.

Mass timber buildings introduce additional complexities in designing for fire safety. Effective regulation can support the use of mass timber and remove any uncertainty on its use, which can support the sector to innovate and may also support wider climate change objectives.

When the Building Code does not keep pace with modern construction methods in building it acts as a barrier to innovation. This can add costs and delays in the system and means it is difficult for the sector to:

- introduce efficient methods of construction, and
- make informed choices on the sustainability of their designs.

3.3. Fire hazards from new technology may not be adequately addressed

Most new technology is ‘green’ and renewable such as electric vehicles, solar panels, and small and medium scale energy storage systems (including lithium-ion batteries).

The use of green and renewable technology in residential and commercial buildings present new fire hazards that challenge the robustness of current fire designs.

If new hazards are not appropriately managed in building design, they can present an increased fire risk to the building and its occupants. There are currently no requirements in the Building Code that specifically address the risks from green and renewable technology. The current fire provisions in the Building Code are not flexible enough to address these or other new hazards.

Fires involving lithium-ion batteries are happening more frequently as they become the primary power source for more devices, including cars and e-scooters. These batteries store a lot of power in a small package so when they do catch fire, the effects can be severe. Solar panels can also present challenges as it may be difficult to access, or de-energise, them in an emergency.

Figure 4. The emergence of new technologies, such as lithium-ion batteries in electric vehicles, present different fire safety challenges

3.4. The fire safety provisions have not kept up with modern house construction

The types of homes we are building have changed over the past decade. New Zealand is building more multi-unit dwellings every year. This includes townhouses and apartment-style buildings such as those shown in Figure 5. Over half of all new consented homes are in multi-unit buildings.

Multi-unit dwellings and medium or high-density housing have their own unique challenges. New housing developments are taller, closer together, and have higher fuel loads than traditional dwellings. These factors can impact emergency exits, the ways to limit fire spread, and how to protect the structure.

Access to residential buildings for firefighters is getting difficult as houses are further from the street or accessed only by narrow driveways. This can delay firefighters and increases the risk a fire:

- is life-threatening
- causes the loss of someone's home
- spreads to buildings close by.

Case study: Access to infill housing

In 2022, Fire and Emergency New Zealand responded to a fire in infill housing. The fire crews arrived within 7 minutes of being notified. However, access to the development was difficult. The driveway was 45 m long and 2.9 m wide – too narrow to fit a fire truck through. Access to the house involved firefighters moving on foot and removing physical barriers on a neighbouring property in order to access the fire.

Access to a street hydrant for firefighting was over 270 m away. The building was determined to comply with the Building Code by meeting Acceptable Solution C/AS1. However, the fire destroyed the property and 3 other surrounding properties. This outcome could have been avoided with faster access to the building and the better access to the street hydrant.

Figure 5. Modern multi-unit buildings and medium or high-density housing have different fire safety challenges

3.5. Barriers to using newer fire safety systems

Improvements to the technology of fire safety systems have not been considered in the Building Code system. These newer technologies may better address the hazards in a building than current fire safety features.

While the Building Code system sets some requirements for warning systems for fires, there are no specific requirements for visual alerting devices. These are devices which can be used for emergency notification to warn people:

- with hearing impairments, or
- in a building where the background noise is too loud for audio alarms to be heard.

There are no specific provisions within the Building Code system that consider automatic fire suppression, other than the existing for water-based fire sprinkler systems. However, other types of fire suppression systems, such as those which use gas or foams may be more effective than water for some specific fire hazards.

Evacuation through stairwells in a building can be challenging in tall buildings, hospitals, and care facilities. Advances made in lift technology now allow for their use in an evacuation.

Because the Building Code system does not currently consider these new technologies, and there are often delays in citing new versions of standards into the Building Code documents, applying for a building consent as an alternative solution can be difficult. There can be challenges and duplication of work for designers, engineers, product manufacturers, or tradespeople in identifying how specific building products and building work contribute to fire safety in a building. These barriers to using new technologies result in:

- poorer safety in buildings and for their occupants, and
- more costs because of decision making delays.

3.6. Questions on the Building Code keeping pace with new technologies and new fire challenges

Please consider these questions if you are going to give MBIE feedback on this section.

8.	Do you agree with MBIE's assessment of the issues on keeping pace with new technologies and new fire challenges?
9.	Are there any other issues MBIE should consider on keeping pace with new technologies and new fire challenges?
10.	Do you have any other comments or feedback on the ability of the Building Code to keep pace with new technologies and new fire challenges?

4. Certainty, clarity, and consistency

The Building Code system aims to ensure building designs will be consistently assessed across the country. Its provisions need to be clear enough to support consistent decisions on whether buildings comply.

MBIE has identified issues where the requirements do not achieve this and leaving gaps in the regulatory framework. Gaps and inconsistencies can lead to costly and unnecessary disputes and delays.

4.1. Gaps in regulation have created a complex Building Code system to use

MBIE has identified issues where gaps in the requirements have resulted in an overly complex system.

Even for simple buildings, there are close to 300 pages of acceptable solutions and verification methods with fire safety provisions.

To address gaps in the Building Code and a lack of clarity for specific circumstances, more than a dozen guidance documents have been developed to understand the fire provisions.

There are also various design guides used by government agencies covering the design of hospitals, schools, fire stations, correctional facilities and more.

Understanding and working through the complex set of documents and fire safety provisions causes:

- delays in construction
- sparks disputes
- increases the fire risk in buildings
- leaves gaps in the regulatory system that can lead to more costs
- frustrations for designers, engineers, and building consent officers who are left to understand vague requirements.

The Building Code is used by a wide variety of people with different levels of knowledge of fire science and fire safety.

Stakeholders have told MBIE that the fire safety provisions in the Building Code need to be:

- less complex
- equal to the skills and abilities of the people who use it
- have its supporting documents simplified where possible
- be easy to work through
- easy for people to quickly understand what is required for them to do their jobs, at all stages of a building's life.

Figure 6. Current fire safety requirements can add complexity to the building process

4.2. Multiple building classifications make requirements unclear

The building regulatory system contains multiple definitions of a building's use, and these often overlap or leave gaps in the classification of buildings.

Every building is designed for a specific use and must meet Building Code requirements that ensure it will be safe, healthy, and durable when used in the way it was designed. To comply with the fire safety provisions, the building's use may be defined as one of:

- seven classified uses in Building Code clause A1
- fifteen uses for determining the change in use
- seven risks groups used in the Acceptable Solutions C/AS1 and C/AS2
- three risk groups used for emergency lighting in clause F6 of the Building Code
- five importance levels in clause A3.

International building codes commonly have one set of building classifications that cover all requirements, not just fire safety. These classification systems provide a common language and structure for developing building code requirements.

Where the classification of building is confusing, designers, owners, and councils may not agree on whether the building provides a suitable level of safety.

4.3. Unclear language leads to inconsistent decision making

Some of the language used in the Building Code's objectives and some of its fire safety provisions is unclear. This makes it difficult to work out if a building's compliant with the code.

The most recent changes to the Building Code's fire safety provisions in 2012 were made to:

- give more precise performance criteria when assessing building designs
- improve building quality
- streamline the consent process

- reduce the scope for disputes, and ensure building users were safer.

Stakeholders have raised concerns that the performance criteria in the current Building Code requirements do not achieve the right balance between clarity and flexibility. For example, some performance criteria for building materials are very specific and rigid and require use of a standard, but other performance criteria include wording such as 'low probability of injury'.

The Building Code includes terms such as 'unacceptable risk' and 'low probability.' These terms are not defined in the regulations, and the performance criteria are not adequately supported by verification methods like they are for other Building Code clauses such as B1 *Stability*.

While the performance criteria reflect the performance-based nature of New Zealand's Building Code, MBIE invites feedback on whether the Building Code system achieves an appropriate balance between clarity and flexibility for fire safety.

MBIE has also identified other concerns regarding inconsistent use of terminology and clarity of wording.

Unclear requirements can introduce uncertainty when designing and consenting buildings. People who use the Building Code can form conflicting opinions on whether designs are acceptable or not, and these can vary across different buildings. There are risks this could lead to inconsistent decision making on what is required to comply with the Building Code.

4.4. Inconsistencies when also complying with other legislation and regulations

The fire safety provisions in the Building Code generate inconsistencies with other parts of the Building Code and other legislation and regulations in New Zealand. This leads to:

- inconsistencies and incompatibilities with provisions for weathertightness or structural design
- discrepancies between the specified fire safety systems and categories of building use in other regulations under the Building Act
- no clear direction on fire safety systems, and
- Building Code users not knowing what fire safety system upgrades are needed when altering a building or changing its use.

There are also other pieces of legislation and regulations in New Zealand that contain measures for fire safety. This includes Fire and Emergency New Zealand Act, including evacuation schemes, work health and safety legislation (including hazardous substance regulations), and requirements for residential tenancies and retirement villages.

The Building Code has limited consideration for these requirements, which can result in conflicts between the Building Code and these other legislative requirements.

These issues add uncertainty over where the building is also required to comply with other legislation and regulations in New Zealand. Inconsistencies across the multiple sets of requirements can also make it harder for people to build and can adds unnecessary delays and costs in designing, consenting, and constructing buildings.

Case study: Hazardous substance regulations

Fire resistance ratings indicate how long a building material is expected to continue to satisfy stability, integrity, and insulation criteria during a fire. When the building is to be used for the storage of hazardous substances after consent, in many cases the required fire resistance rating imposed by the Health and Safety at Work (Hazardous Substances) Regulations 2017 is 240 minutes (4 hours).

However, the highest fire resistance rating required by C/AS2 is 180 minutes (3 hours) which can mean that extensive building renovations may be required when a building changes use. There are also no 240-minute rated fire doors available in New Zealand which can make it difficult to practically comply with requirements.

4.5. Questions on certainty, clarity, and consistency

Please consider these questions if you are going to give MBIE feedback on this section.

11. Do you agree with MBIE's assessment of the issues on certainty, clarity and consistency?
12. Are there any other issues MBIE should consider on certainty, clarity and consistency?
13. Do you have any other comments or feedback on the certainty, clarity and consistency of fire safety provisions in the Building Code?

General questions

14. What do you think are the most important issues MBIE should consider in the review?
15. If you have any other comments on this review, please tell us.
16. If you have anything else you would like to tell MBIE about fire safety in the Building Code, please leave your feedback below.

Summary of discussion document questions

Section 1: Introduction
1. Do you agree or disagree with the outcomes we have identified for the review of fire safety provisions in the Building Code?
2. How well do you think the fire regulatory system is currently performing against these outcomes? Please provide evidence if you can.
3. Are there other outcomes MBIE should consider for the review?
4. Would you like to provide feedback on your answers?
Section 2: Effectiveness of fire safety measures in the Building Code
5. Do you agree with MBIE's assessment of the issues on the effectiveness of fire safety measures in the Building Code?
6. Are there any other issues MBIE should consider on the effectiveness of fire safety measures in the Building Code?
7. Would you like to provide any other comments or feedback on the effectiveness of fire safety measures in the Building Code?
Section 3: Keeping pace with new technologies and new fire challenges
8. Do you agree with MBIE's assessment of the issues on keeping pace with new technologies and new fire challenges?
9. Are there any other issues MBIE should consider on keeping pace with new technologies and new fire challenges?
10. Do you have any other comments or feedback on the ability of the Building Code to keep pace with new technologies and new fire challenges?
Section 4: Certainty, clarity and consistency
11. Do you agree with MBIE's assessment of the issues on certainty, clarity and consistency?
12. Are there any other issues MBIE should consider on certainty, clarity and consistency?
13. Do you have any other comments or feedback on the certainty, clarity and consistency of fire safety provisions in the Building Code?
General questions
14. What do you think are the most important issues MBIE should consider in the review?
15. If you have any other comments on this review, please tell us.

16. If you have anything else you would like to tell MBIE about fire safety in the Building Code, please leave your feedback below.