



Guide for the Assessment of Buildings with Combustible Cladding

Matters for consideration

September 2019



Published by NSW Department of Planning, Industry and Environment

dpie.nsw.gov.au

Title: Guide for the Assessment of Buildings with Combustible Cladding

Subtitle: Matters for consideration

First published: September 2019

© State of New South Wales through Department of Planning, Industry and Environment 2019. You may copy, distribute, display, download and otherwise freely deal with this publication for any purpose, provided that you attribute the Department of Planning, Industry and Environment as the owner. However, you must obtain permission if you wish to charge others for access to the publication (other than at cost); include the publication in advertising or a product for sale; modify the publication; or republish the publication on a website. You may freely link to the publication on a departmental website.

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (September 2019) and may not be accurate, current or complete. The State of New South Wales (including the NSW Department of Planning, Industry and Environment), the author and the publisher take no responsibility, and will accept no liability, for the accuracy, currency, reliability or correctness of any information included in the document (including material provided by third parties). Readers should make their own inquiries and rely on their own advice when making decisions related to material contained in this publication.

Contents

Introduction	1
Background.....	1
Scope of this guide	1
External combustible cladding	2
Cladding laws	2
When assessments are conducted	3
Matters for consideration	4
Whole-of-building assessment	4
Type of cladding	4
Location and configuration of cladding	5
Building characteristics	6
Existing fire safety measures	6
Exit systems.....	7
Occupant characteristics.....	7
Fire-fighting operations	8
Sources of ignition	8
Mitigation actions	8
Assessment tools and methodologies	9
Stakeholder engagement	9
Assessment report	9
Appendix A	10
Assessment tools and methodologies.....	10

Introduction

Background

The potential for combustible cladding to pose a risk to the spread of fire and the safety of persons in the event of a fire is a significant public safety issue. Events such as the tragic fire at the Grenfell Tower in London in 2017, the Lacrosse Building fire in Melbourne in 2014 and the recent Neo 200 tower fire in Melbourne in 2019 have highlighted the risks posed by inappropriate use of certain combustible cladding products on the external areas of buildings.

Additionally, the Building Confidence report commissioned by the Building Ministers Forum identified that there were many instances of Australian buildings constructed with non-compliant cladding due to poor quality documentation, improvisation, and decision-making that was not in line with the Building Code of Australia (BCA)¹.

In response to the issue of combustible cladding, the NSW Government established the inter-agency Fire Safety and External Wall Cladding Taskforce (the Taskforce) in June 2017. The Taskforce has worked with councils, fire safety practitioners, agencies and communities to collect information from a range of sources about buildings with potential or confirmed combustible cladding. This has included Government and council audits of buildings, a review of available planning and building data and gaining access to industry data sources.

Buildings identified by the Taskforce have all been inspected by Fire and Rescue NSW, and any that were assessed as potentially higher risk due to the building type and the amount and configuration of cladding were formally referred to councils by the Fire and Rescue Commissioner.

In addition, in October 2018 the *Environmental Planning & Assessment Regulation 2000* (EP&A Regulation) was amended to require the registration of certain buildings that have external combustible cladding. These new regulatory requirements have resulted in the creation of a 'cladding register'. Information about buildings identified on the cladding register is available to councils and other relevant authorities. The Government has also issued a building product use ban relating to certain aluminium composite panels on the external areas of some buildings.

Identified buildings are being assessed by councils, relevant authorities or consultant experts engaged to consider the risk posed by a building with combustible cladding.

This guide sets out matters for consideration that could be included in an assessment of a building with external combustible cladding. However, it must be noted that the presence of combustible cladding does not necessarily mean that there is a fire safety risk.

Scope of this guide

The purpose of this guide is to inform and assist councils and relevant authorities to undertake or review combustible cladding risk assessments and determine what, if any, next steps are necessary.

It may also support consultant experts when undertaking assessments of buildings with cladding.

The guide seeks to promote the consideration of a standard set of matters when undertaking an assessment of a building with combustible cladding, while acknowledging the various risk assessment methodologies and tools that are currently available.

¹ Peter Shergold and Bronwyn Weir 2018, Building Confidence – Improving the Effectiveness of Compliance and Enforcement Systems for the Building and Construction Industry across Australia, Australian Department of Industry, Innovation and Science, Canberra, Australia https://www.industry.gov.au/sites/default/files/July%202018/document/pdf/building_ministers_forum_expert_assessment_-_building_confidence.pdf

The guide accepts that while compliance with the BCA may contribute to an assessment, buildings are individual in nature and need to be assessed on a case-by-case basis.

This document is not intended to impose a minimum requirement for the assessment of a building with combustible cladding. The matters for consideration set out in this guide are not exhaustive. It is recognised that professional expertise and judgement is required and will also be applied by councils, relevant authorities and consultant experts to make assessments.

External combustible cladding

The terms 'cladding', 'combustible cladding' and 'external combustible cladding' are used interchangeably in this guide. These terms refer to cladding that has been applied to an external part of a building. The meaning is taken from the definition of 'external combustible cladding' in the EP&A Regulation which is reproduced below.

external combustible cladding, in relation to a building, means:

- (a) any cladding or cladding system comprising metal composite panels, including aluminium, zinc and copper, that is applied to any of the building's external walls or to any other external area of the building, or
- (b) any insulated cladding system, including a system comprising polystyrene, polyurethane or polyisocyanurate, that is applied to any of the building's external walls or to any other external area of the building.

These types of combustible cladding are described below.

Metal composite panels

Metal Composite Panels (MCP) are commonly used as cladding or applied to a building as part of a cladding system. MCPs are comprised of a core material laminated between two sheets of metal, such as aluminium, zinc or copper.

Although many products appear similar, the composition of the core material can vary considerably in terms of its combustibility and its potential to contribute to the spread of fire. Due to a lack of permanent labelling and the core material being concealed, it is often difficult to identify the product or determine the composition of the material. Laboratory testing may be necessary to achieve conclusive identification.

Insulated cladding systems

Insulated Cladding Systems (ICS) comprise expanding foam, foam panels or similar products that are fixed to a structural frame and then sealed, rendered and painted. The finished appearance of an ICS is similar to that of rendered concrete or masonry but can often be differentiated by the hollow thud sound produced when tapping on the surface, which is unlike the sound made when tapping brick, concrete or other high-density forms of construction.

Cladding laws

The Government has implemented laws in response to the use of combustible cladding. These laws focus on identifying certain existing buildings with combustible cladding and limiting the use of unsafe building products, including combustible cladding.

In December 2017 the *Building Products (Safety) Act 2017* commenced. This legislation provides powers for the Government to ban the use of building products that may pose a safety risk to the occupants of a building. Buildings that do not comply with a ban automatically become 'affected buildings' within the meaning of this Act. For buildings that already have a banned product

installed, an 'affected building notice' may be issued to the building owners. Fire and Rescue NSW, councils and relevant authorities may then determine if any further actions are necessary in these cases.

In August 2018, a building product use ban was issued in relation to the use of Aluminium Composite Panels with a core comprised of more than 30% polyethylene by mass. This ban applies to the use of external cladding in certain types of buildings.

In October 2018, new provisions in the EP&A Regulation took effect to require owners of new and existing class 2, class 3 and class 9 buildings of two or more storeys (and any class 4 part of a class 9 building of two or more storeys) with external combustible cladding to register their buildings with the Government and provide information about the cladding. The new regulation is one of several sources the Taskforce is using to identify and collect information about buildings with combustible cladding.

Neither the cladding ban nor the cladding register automatically require rectification or other actions be taken with regard to cladding on a building. Councils, relevant authorities and the Commissioner for NSW Fair Trading (in the case of a banned product) may determine necessary actions to address the risk posed by the cladding and take any necessary compliance and enforcement actions.

When assessments are conducted

An assessment may be undertaken when it has been identified that a building could contain combustible cladding, or when a building has been referred to the council or relevant authority by the Taskforce or Fire and Rescue NSW.

Initially councils and other authorities may undertake a triage process to determine whether buildings present any cladding risk. The urgency of further detailed assessments can then be prioritised based on the level of risk.

A council or relevant authority should then undertake an inspection or assessment of any building requiring a more detailed evaluation. It is recognised that different processes may be applied as part of an assessment. Councils and relevant authorities could also require assessments be conducted through existing powers to issue fire safety orders under the *Environmental Planning and Assessment Act 1979*.

A building owner may also choose to engage a consultant expert to conduct an assessment of a building at any time. This may be done if there are fire safety concerns, or for any other reason. These assessment reports should be provided to the council or relevant authority (as appropriate).

Assessments of buildings could be undertaken by a fire safety engineer, certifier, council officer or other consultant expert who can demonstrate competence to perform the task. In determining if a person is competent to perform an assessment, consideration should be given to the following attributes:

- relevant legislative and technical knowledge.
- knowledge of applicable statutory responsibilities.
- necessary skills to perform the assessment and communicate the outcomes.
- appropriate experience.

Matters for consideration

The presence of combustible cladding does not necessarily mean that there is a fire safety risk. A number of factors need to be considered in any cladding assessment to determine the impact of any cladding on a building's overall safety and performance in the event of a fire.

The specific matters for consideration detailed in this section may provide a framework for an assessment. However, as each building is unique there could be other factors that contribute to the overall fire safety and performance of a building that are not covered by this guide. A council, relevant authority or consultant expert will need to determine the relevant matters to be considered in any assessment. This will vary from building to building taking into account the level of complexity of each building.

Whole-of-building assessment

An assessment of a building with combustible cladding should be conducted from a 'whole-of-building' perspective. This involves the consideration of each relevant matter or element in combination with all others.

When using this type of approach, a holistic understanding of the overall fire safety in the building can be demonstrated and the full effects of the presence of combustible cladding can then be considered.

Type of cladding

Accurate identification of the cladding material (i.e. the type of panel or product) and its associated cladding system (including any framing, fixing, cavity (including cavity barriers), sarking, insulation and service installations) is of primary importance in an assessment. This information will enable the expected performance of the cladding system to be determined, including its contribution to fire growth and spread.

The identification of the cladding material and its composition will also help to determine whether the product is subject to a building product use ban.

A process to identify the type(s) of cladding or cladding system on the building could include:

Review of building documentation

A review of the documentation relating to the design, approval or construction of the building, or subsequent modifications, may provide information about the building and its cladding. These documents could assist in identifying the cladding product and/or cladding system specified for construction, its compliance with the BCA, and the method of how its use was approved for the building (i.e. via a deemed-to-satisfy solution or a performance solution). The documents that could be reviewed include copies of:

- the development consent, construction certificate or complying development certificate, including the associated approved plans, reports and specifications.
- any construction plans, drawings, product specifications and purchase documentation.
- the occupation certificate, including any as-built plans and relevant certificates
- the fire safety schedule, fire safety certificates, fire safety statements and any available maintenance records for the building.

It is important to note that there may be significant challenges associated with the review of an existing building and its documentation. This information (where known) may not always be sufficient in identifying and determining the risk posed by the cladding or if any further actions are necessary.

During a Victorian audit of buildings with cladding, it was found that BCA requirements for external walls were inconsistently applied and poorly understood. Many buildings were found to have cladding that was non-compliant with the BCA, and the nature and scope of design detail documented in many drawings and specifications were inadequate to determine compliance. The audit also indicated it is common for building products to be substituted between the design and construction stages, which can lead to poorly specified and/or poor performing products being used².

Some cladding products may be subject to CodeMark Certificates of Conformity. In these instances, an assessment should consider the product purpose, use and application and any relevant conditions or limitations of the CodeMark Certificate. The council, relevant authority and consultant experts should also be aware of updates relating to CodeMark Certificates of Conformity and cladding products – for more information please see the Fire safety and external wall cladding page on the NSW Fair Trading website at www.fairtrading.nsw.gov.au/housing-and-property/fire-safety-and-external-wall-cladding

Inspection of the building

The presence of cladding could be established through a visual inspection of the building. Where possible the inspection should aim to verify the type of cladding on the building and the associated system/method of fixing the cladding to the building. However, in most cases, further evidence may be necessary to correctly identify the cladding product and its composition.

The inspection should take into consideration the characteristics of the building and the location and configuration of any cladding. It could also assist in identifying and/or verifying other relevant fire safety matters such as any existing active and passive fire safety measures serving the building.

Testing of cladding samples

Product testing may be necessary in some cases to provide certainty in identifying the particular cladding product installed on the building. This will assist in determining the expected performance of the cladding material in the event of a fire as different types of cladding (particularly MCP) can be similar in appearance.

Any testing of cladding should use representative samples taken from various locations and/or cladding types across the building. This would provide an indication that the cladding product designed and approved for the building was installed during construction. It may also help identify potential product substitution.

The National Association of Testing Authorities (NATA) can provide details of appropriate testing authorities who have demonstrated competence and capacity to conduct relevant tests.

Location and configuration of cladding

Identifying the location and configuration of cladding on the external parts of a building is an important factor in understanding the potential for the cladding to contribute to fire growth and spread. Any assessment should identify where cladding is located on each façade, the quantity of the cladding and how that cladding is arranged on the building. If there are multiple types of cladding on a building it is important to accurately identify and locate each type.

Specific attention should be given to:

- horizontal, vertical and/or angled configurations of cladding.

² Victorian Cladding Taskforce, 2017, Interim Report – November 2017, The State of Victoria Department of Environment, Land, Water and Planning, https://www.planning.vic.gov.au/__data/assets/pdf_file/0012/110316/Victorian-Cladding-Taskforce-Interim-Report-November-2017.pdf

- spacing and separation between any continuous areas of cladding.
- cladding that forms a bridge between fire compartments or openings.
- cladding that is near or adjacent to openings or internal corners in the external wall.
- cladding that is near or above paths of travel, exits and points of discharge from exits.
- building signs, awnings or other ancillary elements constructed using cladding.

In considering the location and configuration of cladding on a building, an assessment should also consider potential ignition sources and relevant fire scenarios. The design fire scenarios used in an assessment should be selected based on considerations such as the type of fire, the likelihood of occurrence and consequence of the event.

Building characteristics

The characteristics of the building plays an important role in an assessment. Understanding these characteristics will help determine a minimum benchmark for the performance of a building and the safety of occupants in the event of a fire.

Key building characteristics include:

- building classification/s under the BCA and its uses.
- height, area and volume.
- type of construction.
- proximity to public spaces and adjoining buildings.
- any relevant performance solutions.

An assessment should identify these characteristics and any others that may impact on the building's fire safety. This could include fire safety issues that have been previously identified or any outstanding fire safety orders. Relevant building characteristics may be found in existing building records but should also be confirmed by an inspection of the building and/or further investigation where necessary. Any relevant differences between the approved plans and specifications and the as-built construction should also be considered.

Existing fire safety measures

A fire safety measure is defined in clause 165 of the EP&A Regulation as:

fire safety measure means any measure (including any item of equipment, form of construction or fire safety strategy) that is, or is proposed to be, implemented in a building to ensure the safety of persons using the building in the event of fire.

The fire safety measures in a building contribute to the safety of building occupants in the event of a fire. These measures are often installed as part of the original design and construction of a building. However, they could also be provided as part of any subsequent modifications to the building or changes to the building use.

Fire safety measures are generally identified as being either active or passive. Active measures are often listed on a fire safety schedule or may be identified through a visual inspection. Passive measures are likely to form part of the building structure and may be more difficult to identify. The person undertaking the assessment should conduct an inspection and review relevant building records to identify any fire safety measures serving the building. Any assessment should also take into consideration the efficacy of each system to control fire spread and facilitate occupant evacuation.

Active measures

Active fire safety measures are generally those measures that activate when exposed to the products of fire such as heat, flame, smoke and toxic gases. They also include measures which can be used by the Fire and Rescue NSW and building occupants to undertake fire-fighting activities. Typical examples of active fire safety measures found in a building could include:

- hydraulic systems including hydrants, hose reels, sprinklers and other fire suppression systems.
- equipment to facilitate initial fire-fighting attack including portable fire extinguishers.
- systems to facilitate occupant evacuation including exit signs and emergency lighting.
- automatic detection and alarm systems.
- smoke management and control systems.

Passive measures

Passive fire safety measures are generally those measures that form part of the building structure. These measures could be less obvious than active measures. Identification of passive measures may require a review of the building records to determine their presence and performance capabilities. Typical examples of passive fire safety measures found in a building could include:

- non-combustible building elements.
- fire-resisting building elements such as walls, floors, columns and beams.
- fire doors, smoke doors, fire seals, smoke seals and the like.
- fire hazard properties of materials, finishes and linings.

Exit systems

Buildings must have exits which provide for the safe evacuation of the occupants in the event of a fire. The exit system in a building must be appropriate to the number and characteristics of the occupants. An assessment should consider the capability of a buildings exit system to facilitate the safe evacuation of the occupants before the onset of untenable conditions. This includes:

- the number, location and distance to exits.
- the width and dimension of exit systems.
- fire isolation of exits.
- safe discharge from exits to a road or open space.

Consideration could also be given to any other existing measures within the building such as exit signs, emergency lighting, smoke control or fire suppression systems that may support the evacuation of building occupants in the event of a fire.

Occupant characteristics

The building occupants and their associated characteristics can impact on the time required to safely evacuate a building. Some occupant characteristics will have a greater impact on the time for evacuation than others. An assessment should consider the characteristics of all occupants including:

- the number of occupants, including their age, gender and location.
- the level of alertness of the occupants e.g. sleeping.
- physical attributes of the occupants e.g. mobility, sensory impairment.

- mental attributes of the occupants e.g. ability to detect, interpret and respond to cues.
- the level of assistance required for evacuation e.g. infants, children, patients and visitors.
- occupant familiarity with the building and its exit systems together with any emergency training.

Fire-fighting operations

Building fires involving combustible cladding can present significant challenges to fire-fighting operations. This can include the rapid spread of fire and the potential for falling debris. An assessment should consider the ability of Fire and Rescue NSW to respond and undertake effective fire-fighting operations. This could include factors such as access within and around the building and the type of fire-fighting equipment available to attack high level façade fires.

When undertaking an assessment, there may be a need to consult with Fire and Rescue NSW where it is determined that firefighting operations could be affected.

Sources of ignition

Ignition sources can be flame, spark or radiant heat that could come from inside, directly outside or near the building. While most fixed ignition sources are readily identifiable, some temporary or relocatable ignition sources may not be present at the time of the assessment.

An assessment should consider any potential sources of ignition of cladding including:

- adjoining buildings.
- parked vehicles, loading docks, garbage bins.
- electrical substations and LPG cylinders.
- street furniture and vegetation.
- openings such as windows and doors that could allow fire to spread to the outside of the building.
- activities involving the use of balconies such as cooking, smoking and storage.
- utilities such as air-conditioning units and hot water systems.
- any other hazards or potential sources of ignition that are temporary or could be subjected to change.

Mitigation actions

Mitigation actions may be required to address risks associated with a building and its cladding. An assessment may include suggested actions to be undertaken. Any actions should be determined on a case-by-case basis in consultation with relevant stakeholders, based on the whole-of-building assessment and be commensurate with the level of risk posed by the cladding.

For example, some actions that could be taken to address the risk posed by the cladding include:

- the alteration, rectification or removal of part or all of the cladding
- alterations to the building or its existing fire safety systems
- the installation of new fire safety systems.

The actions proposed may also be temporary and implemented while further investigation is being undertaken, or while rectification works are being carried out. These actions could include building

management and use controls such as on-site security, removal of potential ignition sources from areas adjacent to the cladding or emergency management plans.

Alternately, an assessment could determine that no further action is necessary.

Councils or Fire and Rescue NSW may also request further actions to be undertaken in addition to those proposed in the assessment.

Assessment tools and methodologies

There are several tools and methodologies that could be used when undertaking an assessment of a building and its cladding. Some of these methodologies are listed in **Appendix A** and these include both fire risk assessment methodologies and risk rating tools. This list is not exhaustive and there may be others available. The methodology and/or tool selected need to be suitable for the particular circumstances.

The risk assessment methodologies listed in **Appendix A** provide a framework for assessing buildings with combustible cladding. **Appendix A** also includes some risk rating tools that may be used to determine the level of risk posed by a building with cladding. These tools and methodologies have been developed by independent industry organisations including the Insurance Council of Australia, Engineers Australia – Society of Fire Safety and the National Fire Protection Association. This guide intends to complement the chosen methodology by providing further information about the key matters that should be considered in assessing a building with combustible cladding.

Many methodologies do not cover what actions (if any) are necessary to address the risk posed by combustible cladding. Industry and academic bodies are continuing to work to understand the risks posed by combustible cladding and establish best practice for rectification and mitigation actions.

Stakeholder engagement

Consideration should be given to the broad range of stakeholders that will be involved in the assessment of a building with combustible cladding. These stakeholders could include building owner(s), the strata manager, the building's insurer, the council and Fire and Rescue NSW.

It is important to acknowledge that a building owner may have individual expectations regarding the performance of their building, additional legislative responsibilities or insurance requirements. These should be identified and considered in any assessment.

Assessment report

The assessment of a building and its cladding should be documented in a report. The report should identify how the building and its cladding has been assessed, including the relevant matters considered and any tool or methodology adopted.

Where mitigation actions are proposed in an assessment report, evidence or analysis should be provided to demonstrate how these actions provide for an appropriate level of safety and building performance.

Appendix A

Assessment tools and methodologies

Author	Description	Link
Insurance Council of Australia	<i>Insurance Industry Aluminium Composite Panel and Other Combustible Façade Materials, Residual Hazard Identification/Reporting Protocol</i>	http://www.insurancecouncil.com.au/issues-submissions/issues/insurance-industry-aluminium-composite-panels-residual-hazard-identificationreporting-protocol
Engineers Australia - Society of Fire Safety	<i>Society of Fire Safety Practice Guide Façade/External Wall Fire Safety Design</i>	https://www.engineersaustralia.org.au/sites/default/files/resource/s/Public%20Affairs/2019/Engineers%20Australia%20-%20Society%20of%20Fire%20Safety%2C%20Facade%20Fire%20Safety%20Design.pdf
National Fire Protection Association	<i>Exterior Facade Fire Evaluation and Comparison Tool (EFFECT™)</i>	https://www.nfpa.org/Codes-and-Standards/Resources/Code-requirements-for-exterior-walls-containing-combustible-components
Standards Australia	<i>AS ISO 31000:2018 Risk management – Guidelines</i>	https://www.standards.org.au/standards-catalogue/sa-snz/publicsafety/ob-007/as--iso--31000-colon-2018
Department for Communities & Local Government (UK)	<i>Information note for landlords and building owners of tall residential buildings with ACM cladding</i>	https://www.gov.uk/government/publications/information-note-for-landlords-and-building-owners-of-tall-residential-buildings-with-acm-cladding