Regulatory Impact Solutions

Options to ban combustible cladding in Victoria

Cost benefit analysis

December 2020

This Report was prepared by Regulatory Impact Solutions for the Department of Environment, Land, Water and Planning. It is not intended for any other purpose.

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Glossary

the Act	*Building Act 1993*
ABCB	Australian Building Codes Board
ACP	Aluminium Composite Panels
BAB	Building Appeals Board
BCA	Building Code of Australia, since 2011 part of the National Construction Code
BMF	Building Ministers' Forum
CBA	Cost-benefit analysis
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSV	Cladding Safety Victoria
DELWP	Department of Environment, Land, Water and Planning (Victoria)
DTS	Deemed to satisfy
EPS	Expanded polystyrene
MG-14	Ministerial Guideline pursuant to section 188(1)(c) of the *Building Act 1993*, issued by the Minister for Planning on 13 March 2018
NCC	National Construction Code
PE	Polyethylene
PI	Professional Indemnity
VBA	Victorian Building Authority
VSL	Value of a Statistical Life

Executive Summary

Context

Until recently, the installation of combustible cladding products as part of external wall systems on buildings in Victoria and other jurisdictions was widespread. Some cladding products contain materials that are extremely flammable may contribute to the spread of a building fire. Non-compliant use of these products as external wall cladding presents a substantial risk to life and property, particularly in multi-storey buildings.

Two types of cladding commonly used in Australia are aluminium composite panels (ACPs) and expanded polystyrene (EPS). Many ACP products incorporate polyethylene (PE) as a major component, sometimes with the addition of minerals such as magnesium hydroxide or aluminium hydroxide. PE is a thermoplastic with extremely poor reaction to fire properties. When it burns, a kilogram of polyethylene will release more energy than a litre of petrol. EPS is also combustible and may melt or ignite when exposed to temperatures above 100°C or an open flame.

Inappropriate use of ACP (with PE or other polymer in its core) and EPS present a significant risk in Victoria. ACP has been implicated directly in the high-profile Grenfell and Lacrosse fires, and both products have been implicated in numerous other fires. In addition to being fire hazards, both products are prone to melting, dripping and collapsing as they burn.

External cladding and the National Construction Code

The National Construction Code (NCC[1]) Volume One primarily applies to Class 2 to 9 (multi-residential, commercial, industrial and public) buildings and structures. NCC BCA 2019 Volume 1 provides for 'deemed to satisfy' (DTS) and 'performance solution' compliance.

In Victoria, the Building Regulations 2018, through the *Building Act 1993* (the Act) adopt the Building Code of Australia (BCA) as a technical reference that must be complied with.

The use of ACP cladding in buildings does not automatically result in those materials being non-compliant with the BCA. While there have been a number of changes to the BCA Volume 1 in recent years that strengthen the standards for use of, or in relation to, external cladding (in particular the DTS provisions relating to fire performance of external walls), there may well be instances in which the use of ACPs will be compliant with the performance-based regime under the BCA.

On 13 March 2018 (with effect from 22 March 2018), the Minister for Planning released a new Ministerial Guideline (MG-14) pursuant to section 188(1)(c) of the Act. Municipal building surveyors and private building surveyors must have regard to this guideline pursuant to section 188(7) of the Act. The Guideline[2] restricts the use of ACPs with a core of 30 per cent or more PE, and EPS, on all new multi-story buildings.[3]

ACPs with 30 per cent or more PE by mass still require a performance solution to demonstrate compliance with performance requirements, unless the manufacturer has evidence of suitability to state the ACP is not deemed combustible (testing to AS1530.1).

[1] The National Construction Code (NCC) incorporates all on-site construction requirements into a single code. Volumes One and Two of the NCC are the Building Code of Australia (BCA) and Volume Three is the Plumbing Code of Australia (PCA).

[2] This is a guideline relating to the functions of municipal building surveyors and private building surveyors when considering an application for a building permit which proposes the use of combustible materials in external wall systems.

[3] The restrictions apply to Type A and Type B constructions, as defined under the BCA. This is defined as buildings of 2 or more stories where the building is Class 2, 3, and 9 (generally for residential occupancy or of a public nature), or 3 or more stories for other types of occupancies (Class 4, 5, 6, 7, and 8 buildings). Building classes 1, 4 and 10 are not included.

Options assessed in this Report

In March 2020, the Minister for Planning declared his intent to ban the use of both ACPs with a core that is less than 93 per cent inert content (roughly equivalent to 7 per cent PE) and EPS in external wall systems for multi-storey buildings in Victoria.

In light of this intention, DELWP commissioned Regulatory Impact Solutions to undertake a cost-benefit analysis of the option to ban ACPs with 93 per cent or less inert mineral filler (and continue the ban on all EPS). The proposed option will also remove the existing ability for the Building Appeals Board (BAB) to permit the use of non-compliant Prescribed Combustible Product where it can be shown that it complies with the Act and Regulations (i.e., the BCA).

As with MG-14, the proposed option would apply to Type A and B buildings, as defined in the BCA.

Assessment of proposal

The impacts of the proposed option can be summarised as follows:

Table 1: Summary of costs and benefits

Impact	20-year present value	Annualised annual cost
Costs		
Additional costs of cladding used in buildings	$6.23 m	$311,600
Loss of aesthetic value where cladding no longer used	$8.53 m	$426,400
Benefits		
Reduced damage to buildings (proxied as lower costs of insurance)	$34.75 m	$1.74 m
Avoided deaths and injury to persons	*Not quantified*	*Not quantified*
Net benefit (excluding avoided deaths and injuries)	***$19.99 m***	***$1.0 m***

The analysis indicates that the proposed option will at least break even and have an annualised net benefit of around $1 million per year in relation to quantifiable impacts, or a net benefit of $20 million over 20 years (present value). In addition, the proposal will reduce the risk of injury and death to people, which would be significant if a single catastrophic fire event occurred similar to the Grenfell Tower fire, due to use of combustible cladding. Therefore, there is a high level of confidence that the benefits of the proposal exceed the costs.

Costs

The additional costs of this proposal, in comparison to the status quo, are estimated to be $14.8 million over 20 years (present value), with an annualised cost of $738,000 per year. This comprises:

- additional cladding costs of around $6.23 million over 20 years, or an annualised cost of $311,600 per year, on account of buildings using a higher rated cladding product. This is an additional cost to the party paying for the construction of the building, but likely to be passed through to the purchasers of individual dwellings/premises and/or tenanted occupiers
- the loss in aesthetic value and energy performance of around $8.5 million over 20 years, or an annualised cost of $426,400 per year, on account of buildings opting to use no external cladding, instead of high-risk ACP cladding. This is a loss (opportunity cost) to the building owners, as it may limit the price, they can attract for selling/renting individual units.

There is not expected to be any material impact on competition in the building sector or property market overall. ACP cladding is not manufactured in Australia, but is wholly imported. While there is expected to be a reduction in the amount of cladding used, the total expenditure on cladding is expected to increase due to higher costs of safer cladding. It is also noted that a broad range of cladding products can continue to be used for Class 1 and 10 buildings (within BCA standards). The imposition of restrictions therefore is not expected to affect the availability and supply of compliant product[4], or lessen the extent of competition among those businesses that import and on-sell cladding product.[5]

Benefits

Over ten years, the proposed option would amount to 909 buildings that have a significantly reduced risk of fire damage attributable to combustible cladding.[6]

An obvious benefit of reduced risk and extent of damage caused by fire is the avoided cost associated with loss of building value and/or cost of repair. Cost of repair can in general be approximated by insurance claims with insurance data providing an estimate of the loss incurred across a range of claims. Analysis of the nature and circumstances of each claim can give an indication of the typical loss attributable to certain types of events. However, there is insufficient data on insurance claims involving combustible cladding to directly estimate the value of this benefit. This is because significant fires involving cladding are rare compared with, for example, claims for defective building work.

However, using approximated cost savings based on discussions with insurers, the estimated savings to insurance premia is likely to be in the order of $280,000 per year, for the effective life of the buildings affected by the ban each year. Aggregating the impacts for the additional number of buildings that can achieve insurance savings each year, the total savings to insurance costs under the proposed ban are $34.75 million over 20 years (present value), with an annualised saving of $1.74 million per year.

Using this measure alone, the savings in the costs of insurance premia exceed the estimated costs, with a net benefit of $19.99 million over 20 years (present value) and an annualised net benefit of around $1.0 million per year.

The benefits of lower insurance costs relate to fire damage associated with combustible cladding. However, a more important consequence of reducing risk is avoiding death and injury to people.

There is no objective way to place a monetary value on the loss of life. However, for public policy purposes the value of a 'statistical life' (not a real person) can serve a useful purpose to help assess government policies. The value of a statistical life (VSL) refers to the benefits derived from reducing risk of an individual death that is experienced in a population. The term 'statistical' is used to describe an ex-ante (i.e., before the event), anonymous individual, and the concept does not imply that an individual life is a market good.

If avoided deaths were the only measure of benefit, the costs of this proposed option would be more than offset if the measure prevents at least one death every 80 months, or about 3 deaths every 20 years. It is difficult to measure the likelihood of this occurring, as:

- The probability of any particular fire in a Type A or B building resulting in death is extremely low; but it is that small probability that can, at some time in the future, result in a catastrophic number

[4] The building industry will continue to have a wide choice of cladding products, however, close substitutes of ACP, such as solid aluminium cladding, requires stronger affixation to buildings (owing to its slightly heavier weight) and is more difficult to bend, if required.

[5] It is noted that the competition test is not intended to ensure that every business is able to continue, but that competition overall is not affected.

[6] Less use of combustible cladding does not reduce the incidence of fires per se, as the cladding is not associated with the source of the fire, but if a fire occurs, the extent and speed of the spread of the fire.

of deaths, as was the case with the Grenfell Tower in London. Deaths from building fires occur in discrete events over a long period of time rather than a smooth distribution across shorter periods. It is therefore not always useful to consider the change in risk over ten or twenty years but would need to consider the risk profile over a much longer period.

- As combustible cladding can be responsible for the spread of a fire, but not its source, it can be difficult to determine the extent to which cladding is responsible for deaths that do occur, in the context of other common fire safety measures expected in buildings such as apartments, hotels and hospitals.[7] The presence or otherwise of these other fire safety measures will also contribute to the extent and speed of fire spread and the likelihood of deaths occurring.

It would therefore be a matter of judgement as to how risk-averse the community is to avoiding a single catastrophic event that may see, like Grenfell Tower, over 70 deaths in one incident. Preventing a single catastrophic event (attributable to the use of combustible cladding) on the scale of Grenfell Tower once in 100 years would alone justify the costs associated with this option.

We also note that the value used for VSL in this analysis is itself a limited estimate. For example, the value does not make any allowance for the manner of death (death or even injury by fire is likely to be severely traumatic); nor does the value take into account the grief of those who lose loved ones.

Given the difficulty in quantifying the benefits associated with avoiding deaths from low probability events, for the purposes of this Report, we have instead relied on other benefits (reduced risk of building damage) to demonstrate that the proposal is likely to have a net benefit, noting that avoided deaths are over and above this break even basis and therefore provide additional confidence that the benefits of the proposal clearly outweigh the costs.

Conclusion

The proposal to ban ACP with less than 93 per cent inert mineral filler is assessed to have a material net benefit. This is based solely on the estimated savings to insurance costs as a result from reduced risks to property damage attributable to combustible cladding. Avoided deaths or injuries associated with the reduced risk were not quantified, but would provide even further benefits over and above the quantified net benefit.

However, based on our analysis, a number of concurrent steps should be taken in the implementation of the proposal to ensure these benefits are achieved:

- The insurance industry, and the market as a whole, would need a high level of assurance that the proposal is being complied with. We recommend the Department work with the VBA to ensure appropriate enforcement and compliance activities are undertaken, including opportunities to inspect cladding product before it is installed, and audits.
- Further attention is needed to improve the capacity and availability of professional indemnity insurance for practitioners. We note that further work in this area is already progressing.
- The Department or Cladding Safety Victoria could list cladding products on a website that are compliant for particular construction applications. During consultation, industry highlighted considerable market uncertainty concerning product compliance.
- While property and professional indemnity insurance premia are driven by many factors, there would be benefits in liaising with the insurance industry to let them know that combustible cladding is no longer being used for Type A and B buildings in Australia. This may allay some concerns the insurance industry has with all cladding.

[7] Common fire safety measures include fire sprinkler systems, warning systems, emergency lighting, exit signage, fire isolated exit stairs, fire extinguishers, multiple exists, fire and smoke alarms, fire-rated doors, capacity of fire escapes.

1 Context

Until recently, the installation of combustible cladding products as part of external wall systems on buildings in Victoria and other jurisdictions was widespread.

1.1 Types of cladding

In Australia, the two commonly used types of cladding are aluminium composite panels (ACPs) and expanded polystyrene (EPS).

ACP products are flat panels, generally 3-6mm thick, consisting of two thin aluminium sheets bonded to a non-aluminium core (such as polyethylene or a mineral product). Panels are produced in various formats but can span 2-6m in length and 600mm to 2m wide.

The growth of ACP product use over the last 10 years, particularly in high rise applications, has been attributed to its light weight and aesthetic qualities. ACPs do not generally add to the structural integrity of a building but may contribute to the energy efficiency and weather proofing of an external wall.

Despite the combustible characteristics of ACPs, they are legitimate products and have a multitude of uses, for example, advertising, signage, interior design features, caravans, refrigeration and freezer applications, and trailers.

The various types of ACP are distinguished by their core materials, which significantly influence the fire properties of each panel. While some examples of I00 per cent mineral core ACPs have been identified, the majority of ACPs have a core material that is a mixture of a polymer (polyethylene) and mineral fillers or fire retardants. The proportion of the polymer can be as little 1-3 per cent or as high as nearly I00 per cent.

EPS is a lightweight plastic material commonly used in packaging as well as in the building and construction industry. Key characteristics of EPS include ease of installation and its thermal insulating properties. EPS is typically rendered with cement when used as a cladding material.

1.2 Cladding causes increased damage from fires

Some cladding products contain materials that are extremely flammable. Non-compliant use of these products as external wall cladding presents a substantial risk to life and property, particularly in multi-storey buildings.

Many ACP products incorporate polyethylene (PE) as a major component, sometimes with the addition of minerals such as magnesium hydroxide or aluminium hydroxide. PE is a thermoplastic with extremely poor reaction to fire properties. When it burns, a kilogram of polyethylene will release more energy than a litre of petrol. A one metre by one metre square section of PE core ACP cladding that will have about three kilograms, the equivalent of about five litres of petrol.[8]

Polystyrene is also a thermoplastic with extremely poor reaction to fire properties. EPS is combustible and may melt or ignite when exposed to temperatures above 100°C or an open flame. Chemical fire retardants may be added to EPS but these do not prevent combustion from large fire sources. Furthermore, these retardants may leach over time.

[8] Australian Fire Safety Engineer Tony Enright, cited in the Senate Economics References Committee for inquiry into Non-confirming Building Products, 2015, Chapter 2.

The combustibility of cladding means that, should a fire occur in a building with cladding, the fire may spread further and faster, leading to greater damage than otherwise, including an increased risk of harm to people.

Inappropriate use of ACP (with PE or other polymer in its core) and EPS present a significant risk in Victoria. ACP has been implicated directly in the high-profile Grenfell and Lacrosse fires, and both products have been implicated in numerous other fires—see below.

In addition to being fire hazards, both products are prone to melting, dripping and collapsing. When burning, polyethylene and polystyrene release two and a half times the amount of energy as an equivalent amount of wood.

1.3 Cases studies

The 2014 fire at the Lacrosse apartment building in Melbourne's Docklands and the tragic Grenfell fire in London in June 2017, highlighted the fire safety risks arising from the non-compliant use of combustible cladding in Victoria and in other jurisdictions.

Lacrosse Building in Melbourne, 2014

A fire broke out in the 23-storey Lacrosse apartment building at 673 La Trobe Street, Docklands, Melbourne. The cause was a non-extinguished cigarette disposed of in a plastic container. The incident involved rapid external fire spreading across the façade of the building. There were no casualties.

ACPs were installed on the Lacrosse building's balconies, putting them into close contact with potential ignition sources including cigarettes, BBQs, air-conditioning units and other items.

The Metropolitan Fire Brigade's (MFB) analysis of the Lacrosse Apartments fire found that the ACP with a polyethylene core contributed to the fire load and the rapid spread of the fire up the vertical face of the building. The MFB's post incident analysis report noted that the Lacrosse fire was a 'rare and challenging fire incident'. Over four hundred people were evacuated from the building, with fire crews forced to enter every level and alert occupants of each apartment to ensure total evacuation as the building's electrical systems were compromised by the fire. The MFB's report observed that 'it was fortunate that the installed fire sprinkler system operated well above its designed capability preventing further internal spread.'

CSIRO conducted tests on the cladding and found it to be combustible and non-compliant with National Construction Code (NCC) standards for use in buildings of three or more storeys. The imported combustible cladding installed at the Lacrosse building was tested by the CSIRO and found to be so combustible that the tests were abandoned after 93 seconds due to the potential for the equipment to be damaged.

Grenfell Tower in London 2017

A fire broke out in the 24-storey Grenfell Tower block of flats in North Kensington, West London. The fire was started due to a malfunctioning refrigerator freezer. The rapid spread of the fire on the building's façade was primarily attributed to the building's cladding. It caused 72 deaths. The Grenfell Tower had completed a major refurbishment in 2016 which included new exterior cladding.

The use of ACP cladding on the Grenfell Tower has been linked to the rapid spread of the fire around the outside of the building, alongside the chimney effect of the cavity between the wall and the cladding, and has been highlighted as a likely major contributor to the tragic loss of life in that incident.

Testing undertaken in the wake of the Grenfell Tower fire has also indicated that ACP FR (fire retardant) products will only comply with full scale fire tests when used in combination with non-combustible insulation and sarking, and where other wall elements are present. As such, significant

caution must be given to the supply or use of ACP with less than 70 per cent inert mineral filler in its core, including ACP FR products in designs, specifications and construction. Furthermore, there is no industry standard of FR products, which may lead to further confusion in the construction sector.

Neo200 building in Melbourne, 2019

The building at 200 Spencer Street (Neo200) in Melbourne caught fire in February 2019, most likely caused by a discarded cigarette that ignited combustible materials stored on an apartment balcony.

The rapid spread of the fire on the building's façade was primarily attributed to its cladding. There were no deaths or serious injuries.

United Arab Emirates (UAE)

A number of high-rise buildings in the UAE have suffered fires in recent years in which ACP cladding contributed to the rapid spread of flame. On New Year's Eve 2015, a 63-storey hotel went up in flames in Dubai. Hundreds of residents of the city's Torch Tower also escaped a blaze in August 2017, the second to hit the high-rise since 2015.

In May 2020, a blaze at the 48-storey Abbco Tower in Sharjah, a city-state neighbouring Dubai, caused flaming debris to shower neighbouring parking lots and left metal siding littered on surrounding streets. The most likely cause of the fire was a discarded cigarette butt or shisha coals. Flammable cladding on the building was found to be one of the main causes of fire spread. The blaze left 12 people with minor injuries, and has forced over 250 families to find alternative accommodation until the tower can be renovated.

Sharjah stopped issuing permits to install flammable materials on the facades of buildings in 2016. The owners of about 150 buildings in the emirate that still have combustible ACP cladding have been directed to have it replaced.

1.4 Insurance problems

In a well-functioning market, damage caused by fire is an insurable event. Interventions that change the risk of fire (or extent of fire damage) have implications for insurance coverage, availability and price. This is particularly important for buildings where, not only would building owners (and occupants) seek to directly insure against loss, but other parties that may be found to be liable for some or all of loss associated with fire—such as builders, designers, surveyors and inspectors—would also seek to be insured. There are complex legal implications in each jurisdiction that affect who may be liable, and to what extent.

There are known concerns in relation to the market for building practitioners' professional indemnity insurance. The Australian Institute of Building Surveyors (AIBS) has expressed concern surrounding professional indemnity insurance:

> *...an emerging area of concern for the regulatory system and consumers is the issue of professional indemnity insurance. The current public debate on external cladding is already having a negative impact, with AIBS recently being advised that some insurance companies are inserting exclusion clauses for external cladding and non-complying building products into their policies*

Insurance providers believe that the non-compliant use of building products such as external cladding materials 'critically undermines the ability for an insurer to rely upon the safety and performance of the building'. This directly impacts the insurer's ability to establish their risk exposure which influences the setting of insurance premiums.

Non-compliant use of PE ACP cladding has increased in recent years (up to 2014) posing a fire risk much higher than other materials available, particularly when paired with equally combustible plastic foam insulation. Insurers commented that these materials are often being used in a way that does not conform with the NCC and Australian Standards, which was a particular concern because:

- this threatens the safety of their customers, employees and the broader community
- it increases the fire risk of buildings placing upward pressure on premium costs for consumers
- non-compliance is a hidden risk, and if risk cannot be cannot accurately assessed, the uncertainty results in sub-optimal outcomes for customers and insurers.

These views align with other recent intelligence provided to DELWP, which found:

- The current state of the professional indemnity (PI) insurance market in relation to building practitioners in Victoria (and across Australia) can be described as challenging at best and for some there are signs of near market failure. This has largely been due to the volume and size of claims that has impacted the profitability of insurers as well as various high-profile losses in Australia and other places around the world (such as Lacrosse and Grenfell towers fires) highlighting the potential exposures facing building practitioners.
- There has also been a number of high-profile cases alleging structural failures in a number of high-rise residential apartments such as the Opal and Mascot towers.
- Even where cover can be sourced, such cover will contain restrictions for cladding or non-conforming materials. No insurers are actively pursuing this class of business. As such they are not seeking to expand cover or provide any form of discount to improve market share.
- Issues identified by insurers include: concerns about the independence of statutory roles, leading to a higher risk of non-compliant builds; a broad and unclear role and responsibility for the building surveyor, leading to higher liabilities; and the ability for builders or principal contractors to pass on liability to other building practitioners.

See Appendix C for a discussion about how insurance risk has been used in this report.

2 Current regulation of external cladding in Victoria

2.1 National level

The National Construction Code (NCC[9]) Volume One primarily applies to Class 2 to 9 (multi-residential, commercial, industrial and public) buildings and structures.

The Building Code of Australia (BCA) stipulates that:

- all building products and materials must be "fit for purpose"
- for the acceptance of design and construction, evidence of suitability must be established to demonstrate that a material, design or construction meets all relevant "Performance Requirements" or "Deemed-to-Satisfy" (DTS) provisions
- in the case of Performance Requirement CP2, a building must have elements that will avoid the spread of fire in a building and between buildings. DTS Provision C1.9 provides that this requirement can be met, in part, by use of non-combustible external walls. Combustible material includes material deemed to be combustible by Australian Standard 1530.1-1994.

The ACPs installed at the Lacrosse tower were non-compliant with the BCA, as they did not satisfy the DTS provisions of the BCA. The use of ACPs in buildings (even those with a 100 per cent PE core, which is highly flammable) does not automatically result in those materials being non-compliant with the BCA. There may well be instances in which the use ACPs will be compliant with the performance-based regime under the BCA. The issue of compliance or non-compliance of building materials used in a circumstance is a complex question which requires consideration by building experts, such as fire services engineers and others.

On 14 August 2017, the ABCB announced that the NCC would be amended out-of-cycle to:

- include a new Verification Method that adopts the external wall testing standard AS 5113[10]
- improve the evidence of suitability provisions
- clarify the DTS provisions relating to the fire performance of external walls
- reference the updated sprinkler standard AS 2118.

The amendments were adopted in 2018.

NCC 2019 also included new mandatory sprinkler protection requirements for Class 2 and 3 buildings 4 storeys and above.

[9] The National Construction Code (NCC) incorporates all on-site construction requirements into a single code. Volumes One and Two of the NCC are the Building Code of Australia (BCA) and Volume Three is the Plumbing Code of Australia (PCA).

[10] Standards Australia completed the development of AS 5113, *Fire propagation testing and classification of external walls of buildings*, in 2016. The old standard for testing combustibility—AS1530.1—was not considered to be appropriate for testing bonded laminated products such as ACPs. The new standard sets out procedures for testing and classification of external walls according to their tendency to limit the spread of fire across their surface and between neighbouring buildings. It can be applied to external vertical surfaces and external wall systems. AS 5113 also integrates international standard test methods where practicable.

2.2 Victoria

The *Building Act 1993* (the Act) governs building activity in Victoria. It sets out the legislative framework for the regulation of building construction, building standards and the maintenance of specific building safety features.

Among other things, the Act and subordinate Building Regulations 2018 establish the regulatory framework for the licensing of building practitioners, and the procedure for building permits.

The regulations adopt the Building Code of Australia (BCA) as a technical reference that must be complied with.[11]

Regulating Victoria's building industry is a shared responsibility reliant on co-operation, information sharing and accountability.

- Private building surveyors have first line responsibility for ensuring buildings are built in compliance with the building legislation, and they are safe, accessible and energy efficient. Once appointed, they are involved for the duration of the building project, issue the building permit if they are satisfied the design is compliant, carry out or organise mandatory inspections and are responsible for issuing occupancy permits or certificates of final inspection. They are responsible for assessing building plans with a view to ensuring they comply with building legislation and the National Construction Code.
- Local government has oversight of all building work and building stock within their municipality. They are responsible for addressing emergency situations. This oversight includes the use of statutory powers to ensure compliance with the Act.
- The VBA has oversight of registered builders and building surveyors. It can also take disciplinary or prosecutorial action for breaches of the building legislation.

In relation to the use of external cladding, the Victorian Cladding Taskforce found problems in the areas of:

- complexity, ambiguities and poor understanding of the application of the National Construction Code (NCC) and how to comply with it
- variations in regulations and codes and their inconsistent interpretation over time regarding combustibility tests and use of panels
- poor understanding of performance-based solutions, evidentiary requirements and inadequate oversight.

The VBA has found:[12]

- There are many types of external cladding material in use throughout the Victorian building industry but whether one is 'fit for purpose' over another is not always properly understood by architects, designers, engineers, building surveyors and builders.
- The BCA requirements for external walls, including the suitability of materials, are inconsistently applied and poorly understood.

[11] The Building Code of Australia (BCA) is produced and maintained by the Australian Building Codes Board (ABCB) which is an initiative of the Council of Australian Governments (COAG). It is updated annually and provides a uniform set of technical provisions for the design and construction of buildings and other structures. The BCA is performance-based and allows for state variations to provide additional requirements or cater for specific community expectations. This means it defines the way of achieving a specified outcome without prescribing a particular method.

[12] VBA Audit report released 17 February 2017.

- No single category of practitioner involved in the design, approval or construction of those building projects audited is consistently responsible for the non-compliant use of cladding.

Since 1 December 2017, the VBA has significantly increased the number of inspections of buildings under construction. It has also reviewed and consolidated compliance, enforcement and prosecution policies based on risk. It has improved data collection and analysis and worked to ensure private building surveyors do not have prohibited exclusions from their PI insurance policies. The VBA is also making sure practitioners have a greater understanding of the NCC, so compliance is taken more seriously.

The Victorian Government has taken a series of steps to disincentivise the use of combustible cladding products and to rectify buildings where the presence of such materials poses a significant risk to the public. (See Appendix A for context on government policy and the Victorian Cladding Taskforce.)

The Government has taken action to address existing buildings, including the introduction of a low-cost financing option to help owners remove dangerous combustible cladding from their properties. The Victorian Cladding Taskforce, the VBA and local governments have also worked with building owners and residents to make buildings safe by completing emergency works such as removing cladding around fire exits and installing smoke alarms.

In relation to new buildings, on 13 March 2018 (with effect from 22 March 2018), the Minister for Planning released a new Ministerial Guideline (MG-14) pursuant to section 188(1)(c) of the *Building Act 1993* (Act). Municipal building surveyors and private building surveyors must have regard to this guideline pursuant to section 188(7) of the Act. The Guideline[13] bans ACPs with a polyethylene core of more than 30 per cent, and expanded polystyrene (EPS),[14] on all multi-story buildings.[15]

ACPs with more than 30 per cent polyethylene by mass may still be used under MG-14, but require a performance solution to demonstrate compliance with performance requirements, unless the manufacturer has evidence of suitability stating that the ACP is not deemed combustible (testing to AS1530.1).

The VBA closely monitors compliance with the Minister's Guideline MG-14. Practitioners who do not follow the directive face disciplinary action.[16] The VBA also issued a product safety alert in March 2018 to accompany the declaration of MG-14.[17]

Subsequent to the release of MG-14 the Act has been amended to enable the Minister for Planning to declare the use of high-risk cladding products to be prohibited under section 192B of the Act. The Minister has yet to exercise such powers.

[13] This is a guideline relating to the functions of municipal building surveyors and private building surveyors when considering an application for a building permit which proposes the use of combustible materials in external wall systems.

[14] Prescribed Combustible Products means: a panel that comprises a polyethylene core or lamina bonded to one or more sheets of metal panels including an aluminium composite panel (also sometimes referred to as aluminium composite material); or an expanded polystyrene product used in an external insulation and finish (rendered) system. Polyethylene core means a core or lamina that is comprised of 30% or more polyethylene by mass.

[15] The restrictions applies to Type A and Type B constructions, as defined under the BCA. This is defined as buildings of 2 or more stories where the building is Class 2, 3, and 9 (generally for residential occupancy or of a public nature), or 3 or more stories for other types of occupancies (Class 4, 5, 6, 7, and 8 buildings). (Building classes 1, 4 and 10 are not included).

[16] Exemptions are possible where the building permit includes a determination of the Building Appeals Board that the installation of the Prescribed Combustible Product in relation to that application complies with the Act and Regulations.

[17] https://www.vba.vic.gov.au/__data/assets/pdf_file/0015/102903/Building-Product-Safety-Alert-ACP-and-EPS.pdf

2.3 Comparison to other Australian jurisdictions

The following table sets out current bans on use of external cladding in other Australian jurisdictions.

Table 2: Current prohibitions on combustible cladding in Australia

	ACPs	EPS
NSW	Since 15 August 2018, NSW has banned ACP with a core comprised of greater than 30% PE (by mass) for Type A or B construction. Exemptions for products tested according to specified AS standards.	No ban
Queensland	On 22 September 2017, Queensland introduced a ban on the use of any PE core cladding on government constructions. From 18 October 2019, ACPs with greater than 30% PE are not permitted to be used on any building (all Types and classes) (Queensland Development Code Part 2.5—Use of external cladding)	EPS is not permitted to be used on Class 2-9 building of Type A or B (18 October 2019).
Western Australia	Since 5 October 2018, performance solutions are not permitted for combustible external walls other than those verified in accordance with CV3. (See Building Regulations 2012, r. 31HA)	No ban
South Australia	No ban—certain products are designated 'high-risk' and can only be used in certain circumstances (i.e., use of cladding is considered on a case-by-case basis).	No ban
Tasmania	No ban	No ban
ACT	No ban	No ban
Northern Territory	No ban	No ban

3 Options to be assessed

In March 2020, the Minister for Planning declared his intent to ban the use of ACPs with a core that has less than 93 per cent inert content (roughly equivalent to 7 per cent polyethylene (PE)) and EPS in external wall systems for multi-storey buildings in Victoria.

In light of this intention, DELWP commissioned Regulatory Impact Solutions to undertake a cost-benefit analysis of the option to ban ACPs with 93 per cent or less inert mineral filler (and continue the ban on all EPS). The costs and benefits are relative to the current position as reflected in MG-14.

The proposed option removes the current ability for the BAB to permit the use of non-compliant Prescribed Combustible Product where it can be shown that it complies with the Act and Regulations (i.e., the BCA).

As with MG-14, the proposed option would apply to Type A and B buildings, as defined in the BCA (see footnote 15 on page 12).

Note: the proposal is assessed relative to the current position in Victoria (application of the BCA, Building Regulations 2018 and MG-14).

4 Consultation with stakeholders

To inform this report, Regulatory Impact Solutions contacted stakeholders from a list provided by DELWP. From 12 June to 30 June 2020, a number of stakeholders were interviewed or provided written responses to inform the cost-benefit analysis (CBA). Stakeholders were in three broad categories: peak bodies (who received member input); private sector firms in the building (cladding) industry; and government.

Consultation was undertaken with the following bodies.

Industry bodies	*Industry*	*Government*
Housing Industry Association	A sample of suppliers of cladding	Cladding Safety Victoria (CSV)
Australian Industry Group	A sample of insurance providers	Victorian Building Authority (VBA)
Engineers Australia		
Master Builders Association (Victoria)		
Property Council of Australia Victoria		
Strata Community Association of Victoria		
Insurance Council of Australia		

Key points raised by stakeholders:

- The cost of ACP is: $55 per square metre (product with at least 70 per cent inert mineral filler, compliant with MG-14); $75 per square metre (product with at least 93 per cent inert filler, compliant with the ICA Protocol), and $90 per square metre for solid aluminium cladding.
- There has been a move away from ACP to other cladding solutions.
- Insurance issues provided a strong driver to avoid the use of combustible ACP cladding, or to avoid ACP altogether.
- Amendments to the National Construction Code (NCC) have strengthened and clarified the appropriate usage of cladding.
- A number of stakeholders were not in favour of a 'ban' of ACP or PE but submitted that cladding solutions should be performance based (in line with the NCC). This approach would allow flexibility, innovation, and would reduce unnecessary costs.
- The are no manufacturers of ACP in Australia, and no cladding importers are providing ACP with a combustible core of more the 30 per cent.
- Insurance costs for professional indemnity (PI) insurance have risen as a result of the cladding issue; however, given the recent volatility in the building insurance market it is extremely difficult to attribute a specific increase to the cladding issue. Increases in excess (deductibles), limitation on payouts, and exclusions contained in insurance policies also masks cost increases for policies covering cladding.
- A future ban of combustible cladding will not result in a general reduction of insurance premiums

in the short term, but properties with specific combustible cladding insurance loadings will see that loading reduced as cladding is rectified.

Specific information relied on from stakeholders as part of the cost-benefit analysis are noted later in this report.

In March 2020, the Minister for Planning made a declaration pursuant to section 192B of the *Building Act 1993* of his intent to ban the use of ACPs with a core that has less than 93 per cent inert content and EPS in external wall systems for multi-storey buildings in Victoria. As required by the Act, submissions were invited on the proposed ban. Eleven submissions were received by 31 October 2020. Submissions were received from the following:

ACLAD

BlueScope Steel

Bondor Metecno Group

Eco Block

Enright Consulting

Fairview

Housing Industry Association

HVG Facades

Insulated Panel Council Australasia

Network Architectural

Victorina Health and Human Services Building Authority

To the extent relevant, the information provided in the submissions is consistent with the modelling in this report. The submissions did not provide any specific additional evidence that affected the cost-benefit analysis of this report. For clarity, this report assumes that insulted sandwich panels are not within the scope of the proposed ban.

The submissions raised a number views in relation to the proposed ban, including views on compliance, definitional issues, and scope for product innovation. Some submissions proposed alternative solutions that were beyond this scope of this cost-benefit analysis. We note that some matters can be addressed through how the ban is enforced by the VBA.

5 Assessment of options

5.1 The base case (status quo)

The base case involves use of external cladding complying with the *Building Act 1993* and Building Regulations 2018, including the adopted requirements of NCC BCA 2019 Vol 1, and the application of MG-14.

Feedback from industry stakeholders indicates that the use of ACP with less than 70 per cent inert mineral filler is unlikely to meet the BCA requirements. For this reason, industry stakeholders considered that this type of ACP was already being avoided.

Difficulties in obtaining insurance in relation to buildings with combustible cladding was also suggested as a driver in slowing the use of external cladding, with some participants not able to obtain any insurance cover for cladding.

Stakeholder feedback indicates that there is a greater awareness among building owners and the general population about the risks of combustible cladding following the Grenfell Tower fire in 2017. Since 2017, there has been a marked decline in the demand for cladding product, even without any further regulatory interventions.

However, the base case assumes that a small amount of ACP with less than 70 per cent inert fill and some EPS continue to be used, where it can be demonstrated as either meeting the standard under the 'performance solution',[18] or where the inferior product is illegally used (e.g., substitution from approved design that is not detected upon inspection).

Under the base case, there would be around 155,000 square metres of external cladding used on Type A and B buildings each year, with a total annual expenditure of $10.43 million.

See Appendix C for discussion of all modelling assumptions and data sources used in this Report.

5.2 Proposed option

The option assessed is the introduction of a ban on the use of particular cladding products using the Minister's power under section 192B of the Act. The prohibition would apply to any building practitioner involved in the construction of a building, as opposed to MG-14 which applies only to building surveyors, and it would carry higher penalties than MG-14. It does not allow for the use of a performance solution and imposes a higher requirement on the amount of non-combustible filler required in ACP cladding: it must comprise at least 93 per cent inert mineral filler. As with Option 1, all EPS continues to be prohibited for use on buildings of Type A and B construction.

5.2.1 Expected costs

This option would see a larger number of buildings move away from using non-compliant ACP or MG-14-compliant ACP to a higher rated ACP or some not using cladding at all. The shift in use of different cladding type would lead to a fall in the total amount of cladding used on Type A and B buildings of around 8 per cent, with the total cost of cladding used for the remaining buildings being around $11.01 million. This is an increase in direct costs of $588,000 per year. Noting that cladding is an upfront cost for buildings (but can be capitalised in the building's value), and that the other impacts of the proposal are expected to occur over the life of the building, it is more useful to consider the direct impact of the proposal on the cost of cladding as the present value over a period of 20 years—this is an additional cost of $6.2 million, or an annualised cost of $331,600 per year.

[18] The products may, however, be used in a performance solution that have received a determination from the Building Appeals Board (BAB), or in cases where the manufacturer has evidence of suitability to state the ACP is not deemed combustible by testing to AS1530.1.

However, if some buildings no longer use external cladding, there are likely to be impacts on the visual aesthetic of the buildings (which can affect the buildings' market value) and the energy performance of the building.

The combined loss in aesthetic value and energy performance (excluding externalities) must be more than the cost the building owner would have paid to use ACP<93, but less than the cost of changing to ACP>93, or else they would retain the benefits by moving to compliant cladding. Taking the mid-point as the average impact, and noting that the impact on aesthetic value and energy performance occurs over the life of the building, the loss in value is therefore estimated to be a 20-year present value of $8.5 million, with an annualised cost of $426,400.

This gives a total cost of the proposal, relative to the base case, of $14.8 million over 20 years (present value), with an annualised cost of $738,000 per year.

5.2.2 Expected benefits

There are offsetting benefits of this proposal. The direct impact is that, each year:

- 75 buildings that would have used ACP cladding with less than 93 per cent inert material instead use a safer form of cladding
- 15 buildings that would have used ACP cladding with less than 93 per cent inert material instead use no external cladding.

Over ten years, this would amount to 909 buildings that have a significantly reduced risk of fire damage exacerbated by combustible cladding.[19]

This reduced risk is theoretically observed by a reduction in the costs of rectification/rebuilding following fire damage and avoided deaths or injuries (including trauma).

While it is acknowledged that products with 70 per cent inert material (i.e., the base case) can be used safely according to industry tests, this is only true when they are installed correctly as part of a compliant wall system. Advice from CSIRO indicates that 70 per cent inert products may be unsafe when installed incorrectly (e.g., with combustible insultation) and it can be very difficult to retrospectively check that every element of a product's installation is compliant. Therefore, a product with a higher percentage inert material can significantly reduce this residual risk and provide a higher level of confidence of safe use.

Reduced fire risk reflected in lower insurance costs

An obvious benefit of reduced risk and extent of damage caused by fire is the avoided cost associated with loss of building value and/or cost of repair. Cost of repair can in general be approximated by insurance claims; insurance data can provide an estimate of the loss incurred across a range of claims and analysis of the nature and circumstances of each claim can give an indication of the typical loss attributable to certain types of events. However, there is insufficient data on insurance claims involving combustible cladding to directly estimate the value of this benefit. This is because significant fires involving cladding are rare compared with, for example, claims for defective building or plumbing work.

In the Lacrosse building fire, the builder was found to be liable to the building owners for a breach of the statutory warranties owed by builders to owners for domestic works. The relevant breaches included compliance with the law and fitness for purpose warranties implied by the *Domestic Building*

[19] Less use of combustible cladding does not reduce the incidence of fires per se, as the cladding is not associated with the source of the fire, but if a fire occurs, the extent and speed of the spread of the fire.

Contracts Act 1995 (DBCA).[20] The builder was liable for damages to the building owners of approximately $5.74 million for a breach of the relevant implied warranties in the DBCA.[21]

It is not evident that the amount of damages awarded in that case corresponded to the total loss resulting from the fire.[22] More importantly, it is unknown if the amount of damage at the Lacrosse building is typical of loss likely to result from fires linked to combustible cladding.

In the case of the Grenfell Tower fire—an extreme catastrophic event—the insurer initially said the building itself was covered with a £20 million policy, but other costs including those for re-housing residents likely to take the total loss above £25 million. Subsequent reports suggest costs anywhere from £200 million to £1 billion, depending on the extent and cost of any litigation, the number of deaths, re-housing and rehabilitation costs, demolition and rebuilding costs, and also whether any other tower blocks have to be improved or evacuated.

This suggests that to break even, this option would need to prevent a fire similar to the Lacrosse building at least 2.5 times every 20 years; or alternatively prevent one fire similar to the Grenfell Tower over a much longer period (perhaps over 100 years). While the probability of a catastrophic event similar to the Grenfell Tower may be small, it is still a possibility.

Theoretically, a better indicator of reduced risk arising from the proposed option is how insurers would be able to adjust insurance premia in response to stricter limits on use of ACP cladding. Setting insurance premia is complex and it can be difficult to directly apportion a share of insurance costs to specific types of events. However, based on stakeholder consultation, use of combustible cladding (including uncertainty about the relative safety of different cladding type and compliance) increases building insurance costs by between 5 and 10 per cent. Insurers themselves have limited data on damage that may be attributed to different types of cladding, and indicated that any change in the types of cladding allowed would need to be in place for some time before a meaningful reassessment of insurance risks could be determined.

Our preliminary analysis of insurance costs indicates that in order to 'break even', insurance costs would need to decrease by 5 per cent for those buildings that no longer use any type of cladding, and by just under 2 per cent for other buildings that instead use safer cladding than under the base case. These break-even points are below the expected insurance cost savings.

The estimated savings to insurance premia is likely to be in the order of $280,000 per year, for the effective life of the buildings affected by the ban each year. Aggregating the impacts for the additional number of buildings that can achieve insurance savings each year, the total savings to insurance costs under the proposed ban are $34.75 million over 20 years (present value), with an annualised saving of $1.74 million per year.

Using this measure alone, the savings in the costs of insurance premia exceed the estimated costs, with a net benefit of $19.99 million over 20 years (present value) and an annualised net benefit of around $1.0 million per year.

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[20] The implied warranties under the DBCA provided a claim for damages for: (a) diminution in value of the property; (b) rectification of the defective work to give the owners corporation and owners a building in accordance with the warranties and contractual terms (i.e., a compliant building); and (c) all other loss arising naturally or flowing from the breach of the implied warranties that are reasonably within the contemplation of parties at the relevant time.

[21] *Owners Corporation No 1 of PS613436T v LU Simon Builders Pty Ltd & Ors* [2019] VCAT 286. Note, each of the Building Surveyor (33%), Architect (25%) and Fire Services Engineer (39%) were in turn liable to meet 97% of the amount of damages to the Builder for breach of their respective consultancy agreements, in negligence (for specifying the ACPs and/or failing to warn as to their use). (The Builder, therefore, bore the risk of the consultants not having insurance or having insufficient insurance coverage and/or assets to reimburse it.)

[22] The VCAT determination noted additional claims for loss were being pursued separately. This may include compensation for alternative accommodation while the building was unoccupiable following the fire.

However, based on our analysis, a number of concurrent steps would need to be taken in the implementation of the proposal to achieve these benefits:

- The insurance industry, and the market as a whole, would need a high level of assurance that the proposal is being complied with. We recommend the Department work with the VBA to ensure appropriate enforcement and compliance activities are undertaken, including opportunities to inspect cladding product before it is installed, and audits.
- Further attention is needed to improve the capacity and availability of professional indemnity insurance for building practitioners.

Reduced risk to human life

The benefits of lower insurance costs relate mainly to lower costs of fire damage associated with combustible cladding. However, a more important consequence of reducing risk is avoiding death and injury to people.

There is no objective way to place a monetary value on the loss of life. However, for public policy purposes the value of a 'statistical life' (not a real person) can serve a useful purpose to help assess government policies. The value of a statistical life (VSL) refers to the benefits derived from reducing risk of an individual death that is experienced in a population. The term 'statistical' is used to describe an ex-ante (i.e., before the event), anonymous individual, and the concept does not imply that an individual life is a market good. (See Appendix E for further detail on how the VSL is determined).

If avoided deaths were the only measure of benefit, the costs of this proposed option would be more than offset if the measure prevents at least one death every 80 months, or about 3 deaths every 20 years. It is difficult to measure the likelihood of this occurring, as:

- The probability of any particular fire in a Type A or B building resulting in death is extremely low; but it is that small probability that could, at some time in the future, result in a catastrophic number of deaths, as was the case with the Grenfell Tower in London. Deaths from building fires occur in discrete events over a long period of time rather than a smooth distribution across shorter periods. It is therefore not always useful to consider the change in risk over ten or twenty years, but would need to consider the risk profile over a much longer period.
- As combustible cladding can be responsible for the spread of a fire, but not its source, it can be difficult to determine the extent to which cladding is responsible for deaths that do occur, in the context of other common fire safety measures expected in buildings such as apartments, hotels and hospitals. The presence or otherwise of these other fire safety measures will also contribute to the extent and speed of fire spread and the likelihood of deaths occurring.

It would therefore be a matter of judgement as to how risk-averse the community is to avoiding a single catastrophic event that may result in, for example like Grenfell Tower, over 70 deaths in one incident. Preventing a single catastrophic event (attributable to the use of combustible cladding) on the scale of Grenfell Tower once in 100 years would alone justify the costs associated with this option.

We also note that the value used for VSL in this analysis is itself a limited estimate. For example, the value does not make any allowance for the manner of death (death or even injury by fire is likely to be severely traumatic); nor does the value take into account the grief of those who lose loved ones.

Given the difficulty in quantifying the benefits associated with avoiding deaths from relatively improbable events, for the purposes of this Report, we have instead relied on other benefits (reduced risk of building damage) to demonstrate that the proposal is likely to have a net benefit, noting that avoided deaths are over and above this break even basis, and therefore provide additional confidence that the benefits of the proposal clearly outweigh the costs.

5.2.3 Indirect impacts

The proposed option represents an imposed restriction on competition, as it limits what products may be sold or used in Victoria. However, it is considered to pass the 'competition test' (see Appendix D), as while the restriction does represent a minor lessening of competition in relation to products currently available within Victoria, the benefits are expected to outweigh the costs.

As part of this assessment, it is noted that ACP cladding is not manufactured in Australia but is wholly imported. The imposition of restrictions therefore is not expected to affect the availability and supply of compliant product, or lessen the extent of competition among those businesses that import and on-sell cladding product.[23] It is noted that while there is a reduction in the amount of cladding used, the total expenditure on cladding is expected to increase (due to higher costs of safer cladding). It is also noted that other cladding types can continue to be used for Class 1 and 10 buildings (within BCA standards).

There is no basis to expect a disproportionate impact on regional areas (noting that the largest share of buildings that use proportionately more cladding is in the CBD and adjacent inner-city areas).

Given the overall impact is small, we do not expect this option to have any material impact on the property market as a whole or any segment.

5.3 Conclusion

The impacts of the proposed option can be summarised as follows:

Table 3: Summary of costs and benefits

Impact	20-year present value	Annualised annual cost
Costs		
Additional costs of cladding used in buildings	$6.23 m	$311,600
Loss of aesthetic value where cladding no longer used	$8.53 m	$426,400
Benefits		
Reduced damage to buildings (proxied as lower costs of insurance)	$34.75 m	$1.74 m
Avoided deaths and injury to persons	*Not quantified*	*Not quantified*
Net benefit (excluding avoided deaths and injuries)	***$19.99 m***	***$1.0 m***

This indicates that the proposed option will at least break even, and have a net benefit of around $1 million per year in relation to quantifiable impacts, or net benefit of $20 million over 20 years (present value). In addition, the proposal will reduce the risk of injury and death to people, which would be significant if a single catastrophic fire event similar to the Grenfell Tower fire were avoided.

[23] It is noted that the competition test is not intended to ensure that every business is able to continue, but that competition overall is not affected.

Appendix A – Background on Victorian Government policy

Victorian Cladding Taskforce

On 3 July 2017, the Victorian Government established the Victorian Cladding Taskforce to investigate the extent of non-compliant external wall cladding on Victorian buildings, and make recommendations for improvements to protect the public and restore confidence that building and fire safety issues are being addressed appropriately. The Taskforce's "overriding priority has been to ensure Victorians are safe in their homes".

In November 2017, the Taskforce's Interim Report found that systems failures had led to major public safety risks and widespread non-compliant use of aluminium composite panels (ACP) and expanded polystyrene (EPS) cladding in the building industry across Victoria.

Despite these risks, the Taskforce found that buildings in Victoria were still being constructed with inappropriate use of ACP and EPS. The Interim Report therefore recommended that the Victorian Government take action to restrict the use of ACP and EPS in buildings above 2 storeys

Government Policy

On 13 March 2018, the Minister for Planning published *Minister's Guideline MG-14: Issue of building permits where building work involves the use of certain cladding products* (MG-14). MG-14 advises building surveyors that they should not issue permits for new multi-storey building work unless they are satisfied that the products used in the external wall system are not prescribed combustible products, defined as ACP with a core of 30 per cent or more polyethylene and rendered EPS. The products may, however, be used in a performance solution that has received a determination from the Building Appeals Board. The VBA may take disciplinary action against building surveyors who can be shown not to "have regard to" the guideline.

In September 2018, the Victorian Parliament passed the *Building Amendment (Registration of Trades and Other Matters) Act 2018*, which made a series of key amendments to the *Building Act 1993* and the *Local Government Act 1989* in response to recommendations of the Taskforce's Interim Report to improve safety.[24] In particular, the Act provided a power to the Minister for Planning to declare a prohibition on the use of high-risk cladding products which will be enforced by the VBA and be subject to serious penalties for non-compliance.

Section 192B of the Act provides that the Minister may declare that an external wall cladding product is prohibited from being used by any person in the course of carrying out any building work in connection with the construction of a building. The Minister may make such a declaration if he is satisfied that use of the external wall cladding product is or will likely cause:

- occupants of the building to be at risk of death or serious injury; or
- occupants of neighbouring buildings to be at risk of death or serious injury; or
- members of the public to be at risk of death or serious injury; or
- property to be at risk of severe damage.

A risk referred to may arise from the use of the external wall cladding product in particular circumstances or because of a certain event including a fire. A declaration may apply in relation to a specified use, a class of use or all uses of the external wall cladding product, or a specified building or a specified class of building.

[24] The Parliamentary debates reinforce this message. Frank McGuire MLA submitted that, "This bill aims to save lives. That is the most critical point, that is where it starts from and, if you have a look, that is the intent all the way through". Hansard, Assembly, Building Amendment (Registration of Building Trades and Other Matters) Bill 2018, Second Reading, 22 August 2018, Frank McGuire (ALP), p. 2926

Appendix B – Ministerial Guideline MG-14

Hon Richard Wynne MP

Minister for Planning

Minister's Guideline MG-14: Issue of building permits where building work involves the use of certain cladding products

This is a guideline issued by the Minister pursuant to section 188(1)(c) of the Building Act 1993 (Act). Municipal building surveyors and private building surveyors must have regard to this guideline pursuant to section 188(7) of the Act.

Purpose

This Guideline has been issued to reduce the risks to life and property which can arise from the inappropriate use of products containing combustible materials in external wall cladding systems in some multi-storey buildings in Victoria.

This is a guideline relating to the functions of municipal building surveyors and private building surveyors when considering an application for a building permit which proposes the use of combustible materials in external wall systems.

This Guideline takes effect from 22 March 2018.

Issue of building permits for the use of certain cladding products on Type A and B Construction

When considering whether to issue a building permit in relation to a building of Type A or Type B Construction, the relevant building surveyor should not be satisfied that proposed building work which includes the installation of a Prescribed Combustible Product as part of an External Wall (including as an attachment) would comply with the Act and Regulations **unless** the application for the building permit includes a determination of the Building Appeals Board that the installation of the Prescribed Combustible Product in relation to that application complies with the Act and Regulations.

Definitions

For the purposes of this Guideline:

BCA Volume One means Volume One of the National Construction Code Series including any variations or additions in the Appendix Victoria set out in the Appendices to that Volume.

External Wall has the meaning given to it in Part A1 of the BCA Volume One.

Prescribed Combustible Products means:

- a panel that comprises a polyethylene core or lamina bonded to one or more sheets of metal panels including an aluminium composite panel (also sometimes referred to as aluminium composite material); or
- an expanded polystyrene product used in an external insulation and finish (rendered) system.

Polyethylene core means a core or lamina that is comprised of 30% or more polyethylene by mass.

Type A Construction has the meaning given to it in Part C1 of the BCA Volume One.

Type B Construction has the meaning given to it in Part C1 of the BCA Volume One.

I have issued this guideline pursuant to section 188(1)(c) of the Building Act 1993 (Vic).

The Hon Richard Wynne MP

Minister for Planning

Issued: 13 March 2018

Appendix C – Modelling assumptions

Modelling parameters and sources

The estimated use of cladding (in Type A and B buildings) under the base case and proposed ban is as follows:

Table 4: Costs of external cladding under the base case (in 2019 reference year)[25]

Metric	Base Case	Proposed Ban
Number of Type A or B buildings that use external cladding	194	194
Average amount of cladding used per building	800 m^2	800 m^2
Percentage of buildings using:		
ACP less than 70% inert filler	3%*	1%*
ACP greater than 70%, less than 93% filler	47%	2%*
ACP greater than 93% filler	28%	65%
Solid aluminium cladding	20%	22%
EPS	2%	2%
No cladding	-	8%
Cost of external cladding used (per year)	**$10.42 million**	**$11.01 million**

* assumptions allow for a small percentage of non-compliant ACP (used illegally and not detected).

The cost of different cladding product was based on consultation with industry. In summary, the point estimates used were as follows:

Table 5: Cost of external cladding

Cladding product	Cost per m^2 ($)
ACP with less than 70% inert filler	50
ACP with at least 70% inert filler	55
ACP with at least 93% inert filler	75
SAC	90
EPS	50

The average amount of cladding used for each new building—800 square metres—was based on discussions with Cladding Safety Victoria (CSV). This estimate is based on the replacement of cladding of existing buildings under the government's replacement program. Consultation with industry participants suggested that the overall amount of cladding used on new buildings may be decreasing, as people become more aware of the risks of cladding, it may be limited to only smaller decorative use rather than being routinely used over an entire building façade. However, we have decided to retain the CSV estimate to provide a conservative basis for assessing the options.

The number of Type A and B buildings that use some form of external ACP or EPS cladding is based on audit and permit data provided by VBA, interpolated with data on total permits, the number of buildings by class in the current building stock, and ABS data on building approvals. The proportion of buildings that use different types of cladding is based on VBA audit data. Changes under each option are based on discussions with industry.

The amount of total cladding used (the number of buildings and the amount of cladding per building) is the source of the greatest uncertainty in the modelling. We have opted to use upper estimates for

[25] For this Report, where relevant, data has been modelled based on the 2019 calendar year.

each of these to test the magnitude of potential impacts. We note that if either of these parameters were lower, the overall magnitude of the costs and benefits would also be reduced, but in a proportional manner such that the relative net benefit would be unaffected. In other words, the conclusions of the cost-benefit analysis can be interpreted on a per-building or even per-cladding area basis.

Impacts on cladding costs are generally upfront (albeit reflected in the capital value of the building), whereas other impacts (aesthetic value, energy performance, insurance impacts, lower safety risk) extend over the life of the building (or at least the effective life of the cladding products). To compare costs and benefits, present values were used, aggregating impacts over a modelled period of 20 years. Where relevant, annualised figures are presented. A real discount rate of 7 per cent per annum has been used, in line with guidelines from the Office of Best Practice Regulation. While this may overstate real interest rates at the moment, a higher discount rate also factors in a general decline in overall impacts over time (e.g., product innovation and industry shifts away from combustible cladding that would have occurred anyway). In sensitivity testing, use of a lower discount rate did not affect the overall outcomes of the cost benefit analysis.

The statistical value of a life is based on Commonwealth Government analysis, endorsed in Victoria by Better Regulation Victoria for use in cost-benefit analysis of regulatory interventions. See Appendix E for further detail.

Notes on analysis of insurance

Insurance in relation to new buildings

In practice, building owners may have recourse to hold others liable for damage caused by fire, which may include those that caused the fire to occur, or those involved in the design and construction of the building where professional decisions may have contributed to the extent of damage. Building practitioners, who may be responsible for damage in buildings, would also seek to insure against potential loss.

For example, the Lacrosse decision[26] held the building surveyor 33 per cent liable for the losses the claim, where ACP was used and deemed not to be compliant. By way of very onerous contractual terms, the builder was able to pass on 100 per cent of its liability to the architect (25 per cent), the building surveyor (33 per cent) and fire engineer (39 per cent), while the party responsible for starting the fire was held responsible for the remaining three per cent.

Use of cladding in buildings affects how risks are assessed

In relation to the insurance market for buildings where cladding is involved, insurers do not always know how different types of cladding affect the risks of fire damage to the building. This can be because:

- The particular risks from different cladding product types are not well understood (noting that significant fires are infrequent and cladding is generally only one of the contributory factors).
- Insurers cannot be certain what cladding is in situ in a building. (We know from audit data that some builders may substitute a lower quality cladding, or suppliers may supply different product, contrary to the intended design.) Once in place, it can be difficult to check the risk of cladding.
- Use of different types of cladding is reliant on assessment under the BCA, which can be subjective in relation to performance solutions.

Therefore, insurers "price in" a level of uncertainty (the information they do not know), which may be over and above the true level of risk associated with the cladding actually used on a building. In the extreme, some insurers may be unwilling to offer insurance cover at all where they consider the risks

[26] Owners Corporation No.1 of PS613436T v LU Simon Builders Pty Ltd (Building and Property) [2019] VCAT 286)

not easily quantifiable. This occurred in the insurance market for properties with cladding, where insurance companies did not have enough information on cladding to accurately assess its risks.

Particular concerns in relation to liability spread over different parties exacerbates the insurance problem, as insurers have noted:

- a broad and unclear role and responsibility for the building surveyor, leading to higher liabilities
- the ability for builders or principal contractors to pass on liability to other building practitioners.

In part, the difficulty in building practitioners being able to obtain PI insurance also reflects:

- PI insurance is provided on a 'claims made' basis. The protection is for legal liability claims made during the period of the policy, not at the time the error was made. Therefore, an error made 5 years ago is covered under the policy in place at the time the claim is made against the insured.
- Because of that, the insurance problem is partly due to past performance (i.e., not correctly pricing risk and recognising a significant tail risk in existing buildings) rather than the ability of insurers to assess and insure future risks for new buildings, and may also reflect particular emerging risks related to liability of building practitioners[27] rather than insuring the risk of building damage per se.

Where market failures exist, certainty can be increased by directly reducing the prevalence of certain types of product known to be of highest risk.

For this report, consultation with the insurance industry and market research found that insurance premiums for a typical 3-5 story building, insured for around $15 million, would be around 0.3 to 0.4 per cent. This is a modelled composite of insurance costs, incorporating the building itself, separate cover for occupants' contents and liabilities, and indemnities and warranties of practitioners attributable to a typical building, reflecting expected levels of coverage. This gives a typical annual insurance premium associated with a typical Type A and B building of around $52,500 per annum—noting that insurance would also be subject to GST and stamp duty. Feedback from industry indicated that changes to the use of cladding could see insurance premiums for practitioners' professional indemnity reduce by between 10 and 50 per cent—the wide range reflecting the extent of uncertainty (information asymmetries), and incorporating this together with reduced risk for other insurance products would see overall insurance costs associated with a building reduce by between 5 and 10 per cent. But it was noted that the achievement of any reduction in insurance premiums would depend on a high level of compliance.

That said, insurance prices are unlikely to change immediately in response to a regulatory intervention in restricting product type; insurers would still need to collect data on the implementation and effectiveness of any new rule.

In relation to Professional Indemnity (PI) insurance for building practitioners, insurers require at least one to two years once reforms are operational before new insurers would seek to enter or re-enter the PI insurance market for the 'high-risk' (Building Surveyors, Building Inspectors, and Fire Engineers) category of Building Practitioners. This is because insurers require a demonstrable evidence base of the positive impacts of legislative reforms to inform a commercial decision to provide new capacity to a previously distressed PI insurance market.

[27] Following the Lacrosse fire, it was evident following the losses and several reviews and State audits into non-compliant cladding that there was a larger issue at play that insurers had not factored into their underwriting.

Appendix D – Competition Test

The Competition Principles Agreement requires that any new primary or subordinate legislation should not restrict competition unless it can be demonstrated that the government's objectives can only be achieved by restricting competition and that the benefits of the restriction outweigh the costs.

This is the 'competition test' also to be applied to formulating proposals. It is noted that the competition assessment does not preclude a proposal being considered but requires that any decrease in competition should ensure that the benefits outweigh the costs and that the desired outcomes can only be achieved by affecting competition.

In some cases, proposals can affect competition by preventing or limiting the use of products within particular markets. The primary cost of a restriction on competition is that it can reduce choice of products and/or lead to higher prices.

The types of regulations that may be regarded as affecting competition either directly or indirectly are set out in the following table.

Table 6: Types of interventions that may affect competition

Category of restriction	Examples
Barriers to entry or exit	Governs the entry and exit of firms or individuals into or out of markets Creates or protects a single buyer or seller Limits the number of firms that can carry out a particular activity Restricts who can own or operate a business Gives existing firms access to information that is not available to new market participants
Conduct Restrictions	Controls prices or production levels Restricts certain activities, for example, advertising Imposes requirements on product quality Restricts the quality, quantity or location of goods and services available Restricts access to inputs used in the production process, for example, infrastructure and employment standards; restricts the price of or type of inputs used in the production process Limits consumer access to particular goods or services Restricts advertising and promotional activities
Increase in business costs	Imposes specific levies and/or imposts on a particular industry Imposes high administrative or compliance costs
Advantage for some firms over others	Imposes requirements on certain firms, but not on competing firms Sheltering some activities from the pressures of competition Advantages government businesses over the private sector Gives one firm access to infrastructure, but not others

Source: Based on *Assessment against the Competition Test*, guidelines published by the New South Wales Department of Finance, Services and Innovation, 2017, with additional examples from *Legislation Impact Assessment Guidelines* published by Tasmanian Department of Treasury and Finance December 2016.

Some regulatory arrangements may impose more than one restriction, and some restrictions may fall into more than one category.

Appendix E – Theoretical value of an avoided death

There is no way to place a monetary value on the loss of life. However, for public policy purposes the value of a 'statistical life' (not a real person) can serve a useful purpose to help assess government policies.

The value of a statistical life (VSL) refers to the benefits derived from reducing risk of an individual death that is experienced in a population. The term 'statistical' is used to describe an ex-ante (i.e., before the event), anonymous individual, and the concept does not imply that an individual life is a market good.

Valuing a statistical life is a way of formalising and understanding implicit trade-offs. In a policy context, scarce resources must be allocated across a wide variety of issues, and a value for a statistical life is a useful tool for comparing different types of benefits and costs in order to produce better outcomes for society. Trade-offs may include a choice between two initiatives with varying safety implications; a project that saves a life versus a project that produces environmental benefits; or a regulation that saves lives versus improving travel times.

The Commonwealth Office of Best Practice Regulation has published guidance on the value of a statistical life.[28] The guidance is based on work done by Abelson in 2007.[29] To the extent that providing a default value of a statistical life promotes use of a consistent value across different regulatory proposals, it allows:

- regulatory proposals to be dealt with consistently across a range of issues
- the total costs and benefits of different proposals to be compared
- more time to be devoted to the analysis of the expected number of lives saved, rather than the value of a life.

The estimated value of a statistical life year is $213,000—based on Abelson's work, indexed to 2019 dollars. For a typical life, that would on average continue for another 40 years, this gives a net present value of $4.9 million per statistical life.

It is stressed that this estimate is a statistical tool only and does not reflect many other impacts associated with loss of life, particularly for the individuals most directly affected. The literature acknowledges that avoiding particularly painful or traumatic deaths would be expected to have a higher value. The estimate gives no weight to how a death may affect the emotional wellbeing of others—the death of a person is likely to be devastating for the family and also impact on emergency and medical workers involved.

[28] https://www.pmc.gov.au/sites/default/files/publications/value-of-statistical-life-guidance-note_0_0.pdf
[29] https://www.pmc.gov.au/sites/default/files/publications/Working_paper_2_Peter_Abelson.pdf