



Non-compliant use of External Cladding Products on Buildings

Regulation Impact Statement for Consultation

August 2016

This Regulation Impact Statement for consultation accords with the requirements of *Best Practice Regulation: A Guide for Ministerial Councils and National Standard Setting Bodies* endorsed by the Council of Australian Governments. Its purpose is to inform interested parties of proposals to address non-compliant external cladding assemblies on buildings. Comments on this Regulation Impact Statement are invited by 30 September 2016.

The Australian Building Codes Board

The Australian Building Codes Board (ABCB) is a joint initiative of all levels of government in Australia, together with the building industry. Its mission is to oversee issues relating to health, safety, amenity and sustainability in building. The ABCB promotes efficiency in the design, construction and performance of buildings through the National Construction Code, and the development of effective regulatory and non-regulatory approaches. The Board aims to establish effective and proportional codes, standards and regulatory systems that are consistent between States and Territories. For more information see the ABCB website.

Consultation

This is a consultation document where interested parties are invited to provide comment on any matter raised in this Regulation Impact Statement (RIS). A number of consultation questions are listed in the Consultation chapter of this RIS and respondents are encouraged to address these questions to assist in the finalisation of this document. Comments are invited by close of business Friday 30 September 2016, and can be emailed to abcbris@abcb.gov.au with the subject title "External Cladding RIS".

The ABCB Office will review all comments received and incorporate stakeholder information and data into the regulatory analysis, as appropriate. The RIS will be revised in the light of stakeholder comments and will be forwarded to the Board and BMF as an input to decision-making.

The Consultation RIS can be downloaded from the ABCB website at abcb.gov.au/consultation/regulation-impact-analysis/consultation-ris by clicking on the link to "Non-compliant use of External Cladding Products on Buildings".

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Glossary

Abbreviation	Full Name
ABCB	Australian Building Codes Board
ACP	Aluminium Composite Panel
BCA	Building Code of Australia
BMF	Building Ministers' Forum
COAG	Council of Australian Governments
DTS	Deemed-to-Satisfy Provisions in the NCC
MFB	Metropolitan Fire Brigade
NCC	National Construction Code
OBPR	Office of Best Practice Regulation
RIS	Regulation Impact Statement
SOG	Senior Officers Group
VBA	Victorian Building Authority

Introduction

External cladding products are typically fixed to the exterior of buildings to be decorative, provide weatherproofing or contribute to energy efficiency outcomes. The cladding is usually not load-bearing and most products are considered light weight. A frequently used external cladding product in Australia and internationally is the Aluminium Composite Panel (ACP).

This Regulation Impact Statement (RIS) primarily considers the class of external cladding products that contain some combustible material. Under the National Construction Code (NCC) Volume One, Performance Requirement CP2 requires that a building must have elements which will avoid the spread of fire in a building, in a manner appropriate for that building. This requirement is met, in part, under a Deemed-to-Satisfy Solution for buildings of Type A and Type B construction by non-combustible external walls (Specification C1.1 Clauses 3.1(b) and 4.1(b)). A non-combustible external wall inhibits fire-spread via the external face of the building, thereby contributing to compliance with Performance Requirement CP2. An external cladding product that does not comply with these requirements can only be used where it can be demonstrated through a Performance Solution that the relevant NCC Performance Requirements can be met.

The focus of this RIS is on the non-compliant use of external cladding products on high rise (Type A and B) buildings, where the installed products do not avoid the spread of fire.

Non-conforming products - products that purport to be something they are not and are marketed or supplied with the intent to deceive those who intend using them – are out of scope. This RIS is only concerned with external cladding products which can be used to comply with the BCA in particular situations, i.e. are BCA conforming products for particular applications but are used in other situations in construction where their use is non-compliant with the BCA.

Evidence

There is a paucity of credible evidence about external cladding products used on high rise (Type A and B) buildings in Australia. There is no collected data series that show the number of relevant products, the extent and nature of testing of these products and the extent that these products are currently being used in a non-compliant manner.

The assessment of these issues in this RIS reflects the perceptions of the Australian Building Codes Board (ABCB), which appear in the Impact Analysis as assumptions. Stakeholders are invited to bring forward any evidence they are aware of that would inform this RIS, as well as commenting on the assumptions used in this regulatory analysis.

The Lacrosse Fire

On 25 November 2014 a fire occurred at the Lacrosse apartment building in Melbourne. The fire started on an eighth floor balcony, spread to a strip of external cladding adjacent to the

balcony and then progressed vertically as the strip of external cladding continued to burn to the top of the building. The internal sprinkler system operated in the majority of units affected by the fire and prevented its spread inside the building. No fatalities or significant injuries were reported.

The Metropolitan Fire Brigade, in its post incident report, identified it was the building's external cladding material that contributed most to the spread of fire. The external cladding was a non-compliant ACP product that did not resist the spread of fire on a high rise building as required by the BCA.

In response to the Lacrosse fire the Building Ministers' Forum (BMF) agreed to work cooperatively to implement a range of measures to address safety issues associated with high risk building products. Ministers agreed in principle for the ABCB to investigate measures to address the fire risks specifically associated with cladding used in high rise buildings, distinguishing between the use of products in a manner that is non-compliant with the BCA from that of a non-conforming product. Measures to address the fire risks associated with external cladding on high rise buildings are the subject of this RIS.

BMF also agreed that the Senior Officers' Group (SOG) and the ABCB would review the NCC with a view to considering establishing a national register for cladding products. This issue will be progressed through a joint project of the SOG and the ABCB. It should be noted that a national register could have significant costs. As these costs would be spread over a limited number of products, the unit cost per product could be very high.

Current Regulation

The BCA contains specific fire resistance requirements for a building's external surface in the NCC Volume One Section C Performance Requirements and Deemed-to-Satisfy (DTS) Provisions.

The DTS Provisions of Part C1 require the external wall of Type A and Type B buildings to be non-combustible. An Australian Standard AS 1530.1 specifies test methods to determine whether a product is non-combustible. If an external cladding passes the relevant test it would be permitted to be used on the exterior of a Type A or Type B building under the DTS Provisions. The DTS Provisions through C1.12 do, however, permit the use of certain materials that may contain some combustible elements, but are known to provide acceptable levels of fire safety and should not result in the spread of fire.

An external cladding product that does not satisfy the DTS Provisions can only be considered for use on a high-rise building via the development of a Performance Solution provided the product can satisfactorily demonstrate to the authority having jurisdiction that the design will satisfy the relevant BCA Performance Requirements primarily Performance Requirement, CP2(a)(iv), which states that:

A building must have elements which will, to the degree necessary, avoid the spread of fire between buildings and in a building.

This means that an external cladding product intended to be installed on a high rise building must demonstrate that it has the capacity to avoid the spread of fire via the façade of a building to meet the fire resistance requirements of the BCA.

Standards Australia has published a new standard, AS 5113, which specifies tests to be undertaken on external cladding products to demonstrate the extent to which they resist the spread of fire. The standard is voluntary and may be applied by the manufacturer or supplier of external cladding products. Tests in accordance with the standard, when undertaken by a registered testing laboratory, would be regarded as third party certification. At present the new standard is not referenced in the BCA.

International Experience

Cases of recent international high rise building fires that were spread through external cladding are summarised below.

1. 28 March 2016 Ajman UAE – Fire broke out in a 30 storey apartment building which spread to a second apartment tower. Fire still under investigation, however, it is thought to be as the result of ACP.
2. 31 December 2015 Dubai - Fire occurred in a 63 storey hotel building called “The Address”. The external cladding consisted of ACP.
3. 1 October 2015 Sharjah UAE – Fire occurred in a high rise apartment building under construction. The external cladding consisted of ACP and was thought to be the cause of the rapid spread of fire.
4. 19 May 2015 Azerbaijan – Fire occurred in a 16 storey apartment building called “Buku”. The external cladding consisted of low quality flammable material (not ACP) and the building was not sprinkler protected. Fifteen people died in the fire.
5. 21 February 2015 Dubai - Fire occurred in a 79 storey apartment building called “Marina Torch Tower”. The external cladding consisted of ACP.
6. 3 April 2013 Chechnya Russia – Fire occurred in a 40 storey apartment building called “Grozny-City Towers”. The external cladding consisted of ACP.
7. 18 November 2012 Dubai – Fire occurred in a 34 storey building called “Tamwheel Tower”. The external cladding consisted of ACP.
8. 24 April 2012 UAE – Fire destroyed two floors of a 40 storey apartment building called “Al Tayer Tower”. The external cladding consisted of ACP.

9. 15 November 2010 Shanghai – Fire destroyed a 28 storey older apartment building. The building was not sprinkler protected. The fire started on the 10th floor, possibly internally where refurbishment was occurring, then spread to the exterior of the building where the external cladding, comprised of flammable polyurethane insulation foam, contributed to the spread and severity of the fire. 58 people died in the fire.
10. 14 May 2012 Roubaix, France – Fire occurred in an 18 storey apartment building. The external cladding consisted of ACP and contributed to the spread of fire. One person died.

ACP Products

The external cladding product observed in most high rise external fires internationally, as documented above, and including the Lacrosse incident, is ACP. This does not mean that all ACP products are non-compliant; rather that the ACP products that do comply with the BCA were not installed on those particular buildings.

The Problem

The problem is the installation of external cladding products on high rise (Type A and B) buildings that do not comply with the BCA requirements for resistance to the spread of fire. In the event of a fire starting on the exterior of a high rise building, non-compliant cladding can facilitate the vertical and horizontal spread of fire, and so endanger the lives of people occupying the building.

During the Lacrosse fire, occupants were protected by the internal sprinkler system, which operated above specification. However, the sprinkler system was not designed to respond to an extended vertical fire igniting multiple floors. In the event of a future external cladding fire on a high rise building it cannot be presumed that the internal sprinkler system will operate above specification. It is possible that the sprinkler system may not cope in these circumstances, leading to the intrusion of fire into the building with possible injuries and fatalities to the occupants.

In response to the Lacrosse fire the Victorian Building Authority (VBA) undertook an audit of the external cladding used on many high rise residential and public buildings in Melbourne.

The main findings of the audit were:

- The level of non-compliance identified by the VBA was very high, however, generally did not pose a risk to the safety of occupants. The risk posed by non-compliance was

assessed through a matrix of building elements that impede the spread of fire¹ and for most buildings the risks to occupants were assessed as medium or low.

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

The VBA also noted many cases of product substitution, where the cladding product on the building was not what was specified in design. ACP products are visually similar once installed, so substitution may not be obvious.

The international evidence of external cladding fires shows that:

- The fires predominantly occurred on high rise apartment buildings.
- Typically the cladding type observed in such fires was ACP.
- Most fires started on a balcony and many were the consequence of an occupant smoking on the balcony.
- Multi-fatality events occurred during fires of external cladding on high rise apartment buildings that were not sprinkler protected - in Azerbaijan and Shanghai. In other instances, the operation of sprinkler systems in response to fire of the external cladding was associated with an avoidance of multi-fatality consequences.
- The number of external cladding fires is very small compared with the total number of new high rise buildings constructed world-wide over the past five years.

Extent of the Problem

The VBA audit of external cladding used on 170 high rise residential and public buildings in Melbourne that were constructed in the past 10 years, found a non-compliance rate of 51%. Other jurisdictions have not collected data on non-compliance and hence the best estimate for non-compliant use of external cladding products in Australia would be 51%.

This does not imply a high risk to the life safety of building occupants. As the VBA discovered through its risk matrix tool, the risk to occupants in most buildings was rated either medium

¹ The matrix covers: balconies / no balconies; sprinklers / no sprinklers; window and door openings / no openings.

or low, taking into account the characteristics of the buildings. Two buildings out of 170, or about 1% of surveyed buildings, were assessed as high risk with immediate remedial action required to be undertaken.

The 51% non-compliance rate is associated with a risk to life safety from a possible future external cladding fire event in a high rise building. The risk to life safety is unquantifiable because only one data point exists; only one fire of external cladding in a high rise building has occurred in Australia to date with no fatalities. However, the possibility of a future external cladding fire, with risks to life safety, is not trivial as 51% of high rise residential buildings constructed over the past 10 years are considered to contain non-compliant external cladding. This stock of non-compliant buildings is likely to continue to grow each year unless the problem is addressed.

The Nature of the Problem

The problem – of the installation of non-compliant external cladding products on high rise (Type A and B) buildings - may be characterised as the consequence of two principal factors.

First, a lack of understanding about what evidence of suitability for an external cladding product is necessary to demonstrate its fitness for purpose. The information content of the BCA has been diminished either by misuse, lack of awareness, poor understanding or differing interpretations. This affects the behaviour of manufacturers, suppliers, building designers, the builders installing cladding during construction and certification.

- Manufacturers and suppliers may not be clear about what information is necessary or what tests should be undertaken to demonstrate compliance. Hence, the information provided by manufacturers and suppliers will be variable.
- For designers, information provided by suppliers may not be conclusive in demonstrating compliance with the BCA, compromising their ability to choose appropriate cladding products. In these circumstances it is possible that a non-compliant product will be specified.
- For builders and sub-contractors installing the cladding products, the available information may not clearly establish that the product does comply with the BCA, so the builders may rely on their own experience in assessing cladding products on site. In these circumstances it is possible that a non-compliant product will be installed.
- For building certifiers, the information about a product installed on a building may not be sufficient to enable them to definitively assess the product as non-compliant. In these circumstances it is possible that a non-compliant product will be accepted by a building certifier.

Some clients may be unduly influencing the choice of external cladding product. In an environment where there is a lack of understanding in industry about what evidence of

suitability is required to demonstrate fitness for purpose, client suggestions can become a strong influence on product choice and contribute to the non-compliant use of cladding products on high rise buildings. This issue touches on another issue, of levels of professionalism and competency within industry, where some practitioners may not behave in a fully competent manner when specifying or installing external cladding products on high rise buildings.

Second, where practitioners substitute products from those specified in design and, in addition, the substituted products do not have adequate fire resistance properties for high rise buildings. Substitution will typically occur to lower costs, where the inadequate fire resistance properties may be accidentally or knowingly allowed. The VBA in its audit of Melbourne buildings found that 20% of external cladding products on high rise buildings were not what was specified in design.

The practice of product substitution occurs in an environment where enforcement by the States and Territories is infrequent and may be too infrequent to influence building practitioners in their decision-making about the use of external cladding products. A range of reports from the jurisdictions and industry have pointed to the need to improve compliance and enforcement. The ABCB compiled a summary of views expressed by industry on their perceptions about non-compliance and enforcement. The following views are representative of industry and point to the need for a national and coordinated enforcement response to the issue of non-compliance.

The majority of the blame can be put at the feet of the regulator who is charged with the responsibility of regulating our industry and ensuring compliance.

The ABCB should work at identifying and communicating best practices that improve compliance and enforcement of the BCA.

Effective compliance and enforcement is a higher priority than full national consistency at this stage.

Australia has world class building standards and regulations, but we have a third world enforcement regime.

Industry is not calling for more or different regulations, but compliance with and enforcement of those that already exist.

Objective

The objective is to safeguard occupants from illness, injury or fatality due to a fire on a high rise building involving external cladding, by ensuring that the external cladding installed on a high rise building adequately resists the spread of fire.

Options

The COAG *Principles of Best Practice Regulation* require the RIS to contain a range of feasible options, including non-regulatory approaches, that could wholly or partly achieve the objective. The following choices are presented for consideration and comment by stakeholders and ultimately for decision by Ministers of the BMF.

The Status Quo

Option 1 - mandatory third party certification of all external cladding products

Option 2 - mandatory third party certification of composite panel products, including ACPs

Option 3 – a package of measures that are intended to be cost-effective and would, as a package, be capable of achieving the objective:

- a. Reference AS 5113 in the BCA
- b. ABCB to provide informative and educational material for practitioners
- c. Greater enforcement by the States and Territories

Each option can contribute to addressing the problem but will be more effective in combination with other options or sub-options. The three sub-options of Option 3 will be more effective if implemented together rather than separately. Option 1 or Option 2 will also be more effective if implemented with Option 3. Other actions are also being considered by the BMF that will contribute to the larger issue of product non-compliance and non-conformity.

The Status Quo

The Status Quo is the default choice for decision-makers in considering alternatives to achieve the objectives. Where the incremental impacts of other options would result in more costs than benefits, or would be ineffective in addressing the problem or achieving the objectives, the RIS will conclude in favour of the Status Quo.

The Status Quo will be regarded as a baseline to determine the incremental impacts of the other options.

Option 1 – Mandatory third party certification of all cladding products

Section A2 of the BCA would specify that manufacturers and suppliers of all external cladding products must provide independent third party certification of the evidence of suitability to demonstrate that their products are fit for purpose.

Option 1 would improve the information provided by manufacturers and suppliers about their external cladding products. It would help address a lack of understanding in the industry about external cladding products' evidence of suitability.

Option 2 – Mandatory third party certification of composite panel products, including ACPs

Section A2 of the BCA would specify that manufacturers and suppliers of composite panel products must provide independent third party certification of the evidence of suitability to demonstrate that their products are fit for purpose.

Option 2 would focus on the product type most commonly observed in external cladding fires internationally and with the Lacrosse event. It would improve the information provided by manufacturers and suppliers about composite panel products and help address a lack of understanding in the industry about these products' compliance with the BCA.

Option 3 – A package of measures

Whilst the ABCB would have the ability to deliver Options 3.a and 3.b, the feasibility of Option 3.c is entirely in the hands of the States and Territories, which at this stage have made no commitment to this measure.

Option 3.a - Reference AS 5113 in the BCA

Under Option 3.a the external cladding testing standard, AS 5113, would be referenced in the BCA through a Verification Method that may be used to demonstrate compliance with the Performance Requirement. The standard would introduce a new pathway that manufacturers and suppliers could choose to demonstrate the compliance of their products with the BCA. Referencing the standard in the BCA would increase the standard's visibility and authority within industry. It would address the lack of understanding in the industry about external cladding products' compliance with the BCA.

The reference of the standard in the BCA would also require the external cladding product be clearly labelled to display its test report classification. This requirement would help address the issue of product substitution. Labelled products would be obvious to all practitioners on-site and so could limit substitution and installation of products that do not comply with the BCA for their intended use.

Option 3.b – ABCB informative and educational material for practitioners

Under Option 3.b the ABCB would provide a range of informative and educational material for cladding suppliers and practitioners. This material would help them understand the BCA requirements and support the compliant use of external cladding products on buildings.

The range of informative and educational material includes:

- Produce a National Advisory Note on the appropriate selection and use of cladding on buildings
- Develop a non-mandatory National Product Assurance Handbook
- Develop revised and contemporary requirements for suitability of materials in the NCC
- Improve product compliance documentation
- Raise practitioner education and awareness.

Produce a National Advisory Note on the appropriate selection and use of cladding on buildings:

In consultation with the State and Territory Governments, the ABCB would develop and distribute a National Advisory Note on the appropriate selection and use of external wall claddings on buildings in compliance with the NCC. It would provide additional guidance on the appropriate installation and fire testing of external cladding products.

Develop a non-mandatory National Product Assurance Handbook:

This Handbook would explain in detail the NCC requirements and the intent of the evidence of suitability provisions. It would introduce and encourage manufacturers/suppliers/designers to use the conceptual risk-based framework for product compliance that is commensurate with the risks associated with product failure and the involvement of third parties in the conformance assessment of high risk products. The Handbook would be similar in nature to a document produced by the New Zealand Ministry for Business, Innovation and Employment.

This document has been advocated for by industry as a non-regulatory alternative to mandatory building product certification. Once developed, approval authorities could encourage manufacturers/designers to use the model framework for the compliance assessment of building products.

Develop revised and contemporary requirements for suitability of materials in the NCC:

Part A2 (and Part 1.2) in Volume Two of the NCC contains the requirements for evidence of the suitability of materials, forms of construction and designs. Industry practitioners have raised concerns regarding the general understanding on the correct application of the provisions and that there is a general desire from industry to have the requirements tightened. The objective of this work will be to clarify and simplify the requirements for the NCC Acceptance of Design and Construction (evidence of suitability) provisions.

Improve product compliance documentation:

To support the use of products, a template can be developed that summarises the need-to-know product and Code compliance information in a digestible format. This information would be prepared by product manufacturers and suppliers to provide good technical information to indicate how the product satisfies the NCC requirements and describes the

scope of use of the product for those purchasing and installing their products, as well as for approval authorities in approving the use of the product.

Raise practitioner education and awareness:

In addition to the other measures identified, further education material on the appropriate selection and application of external wall cladding materials can be developed. This material would be integrated into a range of education packages that the ABCB produces, reaching stakeholders from students through to practising industry professionals.

Option 3.c – Greater enforcement by the States and Territories

Under Option 3.c each jurisdiction would increase its staff resources assigned to enforce the BCA. The purpose would be to enhance the enforcement presence in industry with a significant improvement to the audit of building project documentation and site inspections for products that may be substituted from the original design to comply in all respects with the BCA. Option 3.c would help address product substitution and installation of non-compliant external cladding products on high rise buildings.

Option 3.c can only be delivered if agreed to by the BMF and implementation would be dependent upon the individual jurisdictions. Option 3.c provides a unique approach to addressing the problem of non-compliance, that complements other options, and belongs as part of a range of feasible options for consideration by Ministers of the BMF.

Impact Analysis

Stakeholders affected by the options include:

- Manufacturers and suppliers of external cladding products
- Practitioners – architects, designers, engineers, builders and sub-contractors
- Building certifiers that accept the installation of external cladding on buildings
- The State and Territory building administrations that enforce compliance with the BCA for new construction work
- Occupants and owners of new high rise buildings
- Fire brigade services

Benefits

A rate of non-compliance of external cladding products on high rise buildings constructed over the past 10 years, of 51%, is large and implies a material probability of an external cladding fire in the future. Over the past 10 years, one external cladding fire has occurred and so over the next 10 years one further external fire could be expected unless the issue of non-compliance is addressed.

The proportion of high rise buildings where there is a high risk to occupants from an external cladding fire, of around 1%, is small. The one external cladding fire in Melbourne did not

involve fatalities so it could not necessarily be expected that fatalities would occur in a future external cladding fire.

Benefits of Option 1

The benefits of mandating all external cladding products to have third party certification would be to improve the information that manufacturers and suppliers provide about their external cladding products. Better information about the products' suitability will assist designers to select appropriate products, builders' capacity to refer to relevant information when installing external cladding and building certifiers' ability to definitively assess external cladding as compliant with the BCA. These are useful benefits that address a lack of understanding of external cladding products by industry practitioners.

However, better information from manufacturers and suppliers does not necessarily mean that industry will be aware of this product information and so non-compliant external cladding could still be unknowingly installed on buildings. In addition, mandatory certification does not address the issue of product substitution. Hence, it would remain possible for product switching to occur with non-compliant external cladding installed on high rise buildings.

In summary, mandatory certification would make a useful contribution to the information available to practitioners for each external cladding product but may not make a measureable difference to the rate of non-compliance because it does not directly address the installation of non-compliant products on-site.

Benefits of Option 2

Option 2 will require independent third party certification of composite panel products, including ACPs. The benefits of Option 2 will be as described under Option 1, but apply only to composite panel products rather than all external cladding products.

Benefits of Option 3

Option 3 will provide a range of benefits. However, these will be most effective when treated as a whole as opposed to a series of individual measures.

Benefits of Option 3.a

Option 3.a would provide manufacturers and suppliers of external cladding products with combustible elements with a new and rigorous way to demonstrate the suitability of their products under the BCA. Products with combustible elements may well fail the combustibility test under AS 1530.1 as required under the DTS Provisions, so this new pathway under a Verification Method provides the means to demonstrate to industry that the products do sufficiently resist the spread of fire. When AS 5113 is referenced in the BCA, the standard would acquire a visibility and authority by association with the BCA. Use of the standard by manufacturers and suppliers would be expected to be substantial, at around 50% of external cladding products.

Testing under AS 5113 by a registered laboratory would be third party certification. So Option 3.a would deliver the benefits of third party certification as described under Option 1, to the extent of the take up of the standard. However, as noted above, better information from suppliers does not necessarily mean that industry will be aware of this product information and so non-compliant external cladding could still be unknowingly installed on buildings.

Labelling of external cladding products, as proposed once the BCA references AS 5113, will mean that their compliance or non-compliance will be obvious to all practitioners on-site during construction. This visibility can deter product substitution involving external cladding products that do not comply with the BCA.

Benefits of Option 3.b

Under Option 3.b the ABCB would provide a range of informative and educational material for cladding suppliers and practitioners. The cost to prepare this material would be absorbed by the ABCB within its current budget.

The benefit of this material would be to help practitioners understand the BCA requirements and support the compliant use of external cladding products on buildings. This benefit is similar to that of mandatory certification in that it would address the lack of understanding by industry practitioners of external cladding products. Practitioners – designers, builders and building certifiers – could operate more effectively with better information about external cladding products and so comply more readily with the BCA.

Practitioners would benefit from better compliance documentation provided about each external cladding product, and the scope for non-compliant external cladding to be unknowingly installed on buildings would be reduced. However, as noted above, better information from manufacturers and suppliers does not necessarily mean that industry will be aware of this product information and so non-compliant external cladding could still be unknowingly installed on buildings.

Benefits of Option 3.c

The benefit would be to enhance the enforcement presence in industry with a significant improvement to the audit of building project documentation and support the installation of products that comply in all respects with the BCA. The effect of the additional enforcement would be to reduce product substitution and the installation of non-compliant external cladding products on-site. As greater enforcement targets on-site construction activity, a significant enforcement presence could change the behaviour of practitioners knowingly involved in product substitution and so reduce or minimise non-compliant installation of external cladding products on-site. Option 3.c would then ensure that the external cladding installed on high rise buildings adequately resist the spread of fire.

Benefits of avoiding Property Damage

Property damage would occur when the external cladding on a high rise building ignites and causes a fire on that building. Over the past ten years, one external cladding fire has occurred. So, if the problem is not addressed, one further fire could be expected in the next ten years. The Metropolitan Fire Brigade suggested the direct cost of damage to the Lacrosse building was in the order of \$5 million. Taking into account discount factors over the next ten years, and allowing for one external fire event in that period, the expected property damage would be \$3.8 million. Hence, the benefit of avoiding property damage by avoiding a further external cladding fire would be \$3.8 million.

Options 1 and 2 would not be wholly effective in avoiding an external cladding fire. While mandatory third party certification would support better information from manufacturers and suppliers about their cladding products, this does not necessarily mean that industry will be aware of this product information and so external cladding could still be unknowingly installed in a non-compliant manner on buildings. Mandatory certification also does not address product substitution that can occur on-site. Given these reservations it is unlikely that Options 1 and 2 will materially avoid property damage.

Option 3 contains a package of measures directed to reduce the possibility of an external cladding fire, as well as the consequences of an external cladding fire, by reducing the likelihood of products being used in a manner that does not comply with the BCA. In these circumstances a benefit of \$3.8 million can be assigned to Option 3 in avoiding property damage over the next ten years.

Costs

There is little definitive information known about external cladding products on the Australian market. Hence, the assessment of costs is based on many assumptions. Stakeholders are invited to provide information relevant to the costings and comment on the assumptions that have been used.

The cost of each option is indicated in the table below, in present value or equivalent terms.² Costs of additional product testing are incurred in the year of implementation while ongoing costs of labelling and enforcement are incurred in each year of the ten year period. The calculations used to generate the cost estimates are found below the cost summary. The assumptions used in the calculations are discussed following the table.

Table – Costs of the Options

Option 1 - cost of additional product testing	\$216,000,000
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² Costs incurred in the year of implementation have a discount factor of 1 and so are comparable to streams of costs over the remainder of the ten year period with discount factors less than 1.

Option 2 - cost of additional product testing	\$67,200,000
Option 3.a - cost of additional product testing	\$108,000,000
- cost of labelling	\$15,763,709
- total cost	\$123,763,709
Option 3.b - cost of informative material to industry	\$0
Option 3.c - cost of additional enforcement	\$15,781,988

CALCULATIONS

Option 1

Number of external cladding products used on Type A & B buildings	3,600
Number of external cladding products WITHOUT third party certification	1,800
Number of tests per product	4
Number of additional product tests	7,200
Cost of testing per product	\$30,000
Cost of additional product tests	\$216,000,000

Option 2

Number of composite panel products, including ACPs	1,120
Number of composite panel products WITHOUT third party certification	560
Number of tests per product	4
Number of additional product tests	2,240
Cost of testing per product	\$30,000
Cost of additional product tests	\$67,200,000

Option 3.a

Number of external cladding products used on Type A & B buildings	3,600
Number of external cladding products subject to testing under AS 5113	1,800
Number of external cladding products WITHOUT third party certification	900
Number of tests per product	4
Number of additional product tests	3,600
Cost of testing per product	\$30,000
Cost of additional product tests	\$108,000,000

Labelling - upfront cost of equipment per product type	\$20,000
Types of external cladding products types requiring labelling	450
Labelling - total upfront cost of equipment	\$9,000,000
Labelling - operational costs per product per year	\$2,000
Labelling - operational costs for products tested under AS 5113	\$900,000
Labelling - operational costs for products tested under AS 5113 (present value)	\$6,763,709

Cost of labelling	\$15,763,709
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Option 3.c

Indicative additional enforcement staff required, all jurisdictions	14
Cost of one additional staff per year	\$150,000
Cost of additional enforcement staff required, all jurisdictions, per year	\$2,100,000
Cost of additional enforcement staff required, all jurisdictions (present value)	\$15,781,988

Discussion about the Assumptions

The calculations of the costs of additional testing are focussed on the tests required for external cladding products used on Type A and B buildings. This approach takes account of the number of product types used, the variety of products within each type and the number of product manufacturers or suppliers. The numbers of product types, variety and suppliers were assessed by the ABCB, from a review of online information, to be 15, 4 and 60 respectively. The number of contexts, understood to be 4, follows from the BCA requirement that a building element must be identical with the prototype that has been submitted to a fire test, and allows for the numerous forms of construction currently used such as steel framed building, concrete tilt panels, masonry, etc. The average cost of testing is based on the ABCB's consultation with testing authorities.

The calculations for Option 2 are based on lower numbers of product types and suppliers, of 8 and 35 respectively. Product variety amongst each product type remains at 4, as does the contexts for testing. These assumptions were derived from an online review of products undertaken by the ABCB.

Calculations for Options 1, 2 and 3.a assume a proportion of third party certification already undertaken by external cladding manufacturers / suppliers of 50%, which is higher than for building products generally of 30%, from the ABCB's consultation with industry.

Under Option 3.a, the take up of AS 5113 when referenced in the BCA is assumed to be 50% of all external cladding products. The take up could be higher than this so the costs could be higher, as well as the benefits. Note that the standard would be voluntarily chosen by manufacturers / supplies and its costs borne through commercial decisions. From this perspective referencing AS 5113 in the BCA is not imposing a regulatory burden on industry; instead the standard is being willingly embraced by industry.

For Option 3.c, the additional resource costs are estimated by allowing three additional staff for each of the larger States and one additional staff for each of the smaller jurisdictions. This is indicative and the actual level of resourcing would depend on the implementation by each jurisdiction. While imprecise, this approach to costing does facilitate a comparison of the broad costs of enforcement compared with the costs of other options.

Strategic Policy Risk

There is potentially a strategic policy risk with Options 1 and 2. The risk is that these options could have unintended implications going forward. Identifying a particular class of product under Option 1 or 2 may set a precedent that could result in a number of different certification schemes for different product classes that become complex within the NCC and result in higher costs overall.

Business Compliance Costs

Business compliance costs are assessed under the following checklist.

- Notification – businesses will not be required to report certain events.
- Education – businesses will not be required to keep abreast of regulatory requirements.
- Permission – businesses will not need to seek permission to conduct an activity.
- Purchase cost – businesses may be required to purchase third party certification services from independent providers and also incur labelling expenses, as indicated in the table above.
- Record keeping – businesses will incur costs of updating their records at a cost in present value terms of up to \$2 million.
- Enforcement – businesses will not incur additional costs when cooperating with audits or inspections.
- Publication and documentation – businesses may incur costs of producing documents for third parties at a cost in present value terms of \$1 million.
- Procedural – businesses will not incur cost of a non-administrative nature.
- Other – businesses will not incur any other costs.

Regulatory Cost Offsets

The Commonwealth Department of Industry, Innovation and Science provided the following advice in relation to regulatory cost offsets.

The RIS contains a number of options including some that will increase regulatory burden, as measured in accordance with the Commonwealth's Regulation Burden Measurement framework, of up to \$21.6 million per annum. The Commonwealth's share of this is \$2.4 million. The Commonwealth warrants that it will offset the amount of \$2.4 million per annum, and that the portfolio's (Department of Industry, Innovation and Science) net regulatory objective will be met by the end of the relevant reporting period. It is a requirement of the Commonwealth's Regulatory Burden Measurement framework that such a warrant be provided and it should not be construed that the Commonwealth necessarily supports one option over any other.

COAG has not agreed a Regulation Burden Measurement framework and Governments of the States and Territories are not required under COAG policy to identify regulatory offsets. Some

jurisdictions may have their own mechanisms regarding regulatory offsets, which would be a matter for those jurisdictions to consider.

Consultation

Interested parties are invited to provide comment on any matter raised in this Consultation RIS. Comments are invited by close of business Friday **30 September 2016** and can be emailed to abcbris@abcb.gov.au with the subject title "External Cladding RIS".

The ABCB believes meaningful consultation can promote trust between industry, the community and government. Transparency allows stakeholders to see and judge the quality of government actions and regulatory decisions. Consultation also provides an opportunity for stakeholders to participate in the development of policy solutions and encourages broad ownership of those solutions. For more information on the ABCB's consultation philosophy and objectives, visit www.abcb.gov.au/consultation

The ABCB invites stakeholders to provide information and comment on any matter that will assist the further development of this RIS. The following questions highlight areas where feedback from stakeholders will be helpful.

1. Do you have information about the number, types, variety and suppliers of external cladding products?
2. Do you have any information about the non-compliant use of external cladding products on high rise buildings?
3. Do you have any comments on the way the problem is described, including the extent of the problem and the nature of the problem?
4. Do you have any comments on the objective - of safeguarding occupants' safety by ensuring that the external cladding installed on a high rise building adequately resists the spread of fire?
5. Do you consider the options listed in this Consultation RIS address the problem and may be capable of achieving the objective? Should any options be added to the list? Should any options be removed? Why?
6. Do you have any comments about the efficacy of mandatory third party certification – Options 1 and 2?
7. Do you consider the benefits of the package of measures under Option 3 are achievable?
8. Do you agree with the broad order of magnitude of the costs for each option, as set out in the table?
9. Do you have any comments on the calculations of these costs, as set out in the calculation table?
10. Do you have any comments about the assumptions used in these calculations, contained in the discussion following the calculation table?

11. From the information provided, do you prefer any option?
12. What further information would be most helpful in assessing these issues? Can you suggest where this information may be found?
13. Do you have any comment on the technical suitability of the preliminary draft NCC Volume One Part A2 proposals (see attachment) which could accommodate the two mandatory third party certification options?

Conclusion

This is a Consultation RIS and comments are invited from stakeholders to inform its development. There is little definitive information known about external cladding products on the Australian market. Stakeholders are invited to provide information relevant to the regulatory analysis and comment on the assumptions that have been used.

The problem is the installation of external cladding products on high rise (Type A and B) buildings that do not comply with the BCA requirements for resistance to the spread of fire. In the event of a fire starting on the exterior of a high rise building, non-compliant cladding can facilitate the vertical and horizontal spread of fire and so endanger the lives of people occupying the building.

One fire of external cladding has occurred in Australia, on the Lacrosse apartment building in Melbourne. No fatalities occurred in that fire. Several fires involving external cladding have occurred overseas:

- The fires predominantly occurred on high rise apartment buildings.
- Typically the cladding type observed in such fires was ACP.
- Most fires started on a balcony and many were the consequence of an occupant smoking on the balcony.
- Multi-fatality events occurred during fires of external cladding on high rise apartment buildings that were not sprinkler protected - in Azerbaijan and Shanghai. In other instances, the operation of sprinkler systems in response to fire of the external cladding was associated with an avoidance of multi-fatality consequences.
- The number of external cladding fires is very small compared with the total number of new high rise buildings constructed world-wide over the past five years.

In response to the Lacrosse fire, the VBA undertook an audit of the external cladding used on many high rise residential and public buildings in Melbourne. It found a non-compliance rate of 51%, and 2 out of 170 buildings posed a high risk to the safety of occupants.

The problem may be characterised as the consequence of two principal factors. First, a lack of understanding about what evidence of suitability for an external cladding product is necessary to demonstrate its fitness for purpose. Second, where practitioners substitute

products from those specified in design and, in addition, the substituted products do not have adequate fire resistance properties for high rise buildings.

The objective is to safeguard occupants from illness, injury or fatality due to a fire on a high rise building involving external cladding by ensuring that the external cladding installed on a high rise building adequately resists the spread of fire in accordance with the BCA.

The RIS contains a number of alternative choices for consideration and comment – the Status Quo plus three options. The Status Quo is the default choice for decision-makers where the incremental impacts of other options would result in more costs than benefits, or would be ineffective in addressing the problem or achieving the objectives.

The three options are:

1. Mandatory third party certification of all external cladding products
2. Mandatory third party certification of composite panel products, including ACPs
3. A package of measures intended to be cost-effective:
 - a. Reference AS 5113 in the BCA
 - b. ABCB to provide informative and educational material for practitioners
 - c. Greater enforcement by the States and Territories

Options 1 and 2 would provide the benefits of better compliance documentation provided about each external cladding product. The scope for non-compliant external cladding to be unknowingly installed on buildings would be reduced. However, better information from suppliers does not necessarily mean that industry will be aware of this product information and so non-compliant external cladding could still be unknowingly installed on buildings. In addition, mandatory certification does not address the issue of product substitution and hence it would remain possible for product switching to occur with non-compliant external cladding installed on high rise buildings. Options 1 and 2 would also be high cost, at \$216 million and \$67 million respectively.

Option 3 contains a package of measures and would deliver a range of benefits. Better compliance documentation provided about each external cladding product from testing under AS 5113 would reduce scope for non-compliant external cladding being unknowingly installed on buildings. The labelling requirements associated with AS 5113 would limit the potential for product substitution on-site. The ABCB's informative and educational material would provide the benefits of helping practitioners understand the BCA requirements and support the compliant use of external cladding products on buildings. Greater enforcement by the States and Territories would enhance the enforcement presence in industry with a significant improvement to the audit of building project documentation. It could materially reduce non-compliant installation of external cladding products on high rise buildings.

The costs of Option 3 would be \$123 million for Option 3.a. AS 5113 would be voluntarily chosen by manufacturers / suppliers, so it could be considered as not imposing a regulatory burden on industry. Instead, the standard is being willingly embraced by industry. Costs would not be incurred under Option 3.b because the educational material is not being mandated. Costs would also be incurred under Option 3.c, with an indicative estimate of \$15 million.

In this Consultation RIS stakeholders are invited to consider the impacts of each of the options and to provide information that would be helpful in selecting the option with the greatest net benefits.

Attachment - Possible NCC Volume One changes to accommodate Options 1 and 2

One of the decisions by the Building Ministers Forum at its February 2016 meeting was that the ABCB review the 'evidence of suitability' provisions in Clause A2.2 of NCC Volume One, which require that a product must be fit for purpose in its intended use. This review was to be undertaken with a view to considering options that include mandatory third party certification of external wall cladding materials.

This content would be a pre-requisite piece of administrative infrastructure to enable a mandatory third party certification scheme for external wall cladding to operate within the framework of the NCC.

The preliminary draft NCC Volume One Part A2 proposals which could accommodate the two mandatory RIS options (Options 1 and 2) are contained in this attachment.

The approach proposed in the draft proposals is similar to that used in A2.3 of Volume One, whereby the method of determining the fire-resistance of building elements must be in accordance with a prescribed method (Specification A2.3).

For cladding the proposed changes would limit the evidence of suitability to only those options under A2.2 which are considered to be third party (independent) certification.

The third party certification would only be required for cladding used on buildings of Type A and Type B construction and to certify that it is non-combustible, or if combustible or containing combustible elements, that it meets Performance Requirement CP2 (protection to avoid the spread of fire). In order that the requirement for third party certification does not extend to those cladding products known to be non-combustible, i.e. bricks, concrete, glass, etc. and those able to be used under C1.12 where non-combustible material is required, it is proposed to amend C1.12.

However, it should be noted that the draft proposals are still in preliminary form and have been included to assist in informing consideration of the Consultation RIS and how this could be potentially accommodated through the NCC. Additionally, the work being undertaken by the ABCB in reviewing the NCC 'evidence of suitability' provisions, may also result in further changes to clarify the application of the NCC Assessment Methods and Part A2.

Question for Stakeholders: Do you have any comment on the technical suitability of the preliminary draft NCC Volume One Part A2 proposals which could accommodate the two mandatory options?

Draft NCC Volume One Part A2 proposals:

A2.2 Evidence of suitability

- (a) Subject to **A2.3**, **A2.4** and **A2.6**, evidence to support that the use of a material, form of construction or design meets a *Performance Requirement* or a *Deemed-to-Satisfy Provision* may be in the form of one or a combination of the following:
- (i) A report issued by a *Registered Testing Authority*, showing that the material or form of construction has been submitted to the tests listed in the report, and setting out the results of those tests and any other relevant information that demonstrates its suitability for use in the building.
 - (ii) A current *Certificate of Conformity* or a current *Certificate of Accreditation*.
 - (iii) A certificate from a *professional engineer* or other appropriately qualified person which—
 - (A) certifies that a material, design, or form of construction complies with the requirements of the BCA; and
 - (B) sets out the basis on which it is given and the extent to which relevant specifications, rules, codes of practice or other publications have been relied upon.
 - (iv) A current certificate issued by a product certification body that has been accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).
 - (v) *****
 - (vi) Any other form of documentary evidence that correctly describes the properties and performance of the material or form of construction and adequately demonstrates its suitability for use in the building.
- (b) Evidence to support that a calculation method complies with an ABCB protocol may be in the form of one or a combination of the following:
- (i) A certificate from a *professional engineer* or other appropriately qualified person which—
 - (A) certifies that the calculation method complies with a relevant ABCB protocol; and

- (B) sets out the basis on which it is given and the extent to which relevant specifications, rules, codes of practice and other publications have been relied upon.
- (ii) Any other form of documentary evidence that correctly describes how the calculation method complies with a relevant ABCB protocol.
- (c) Any copy of documentary evidence submitted, must be a complete copy of the original report or document.

Option 1 - Mandatory third party certification of cladding

A2.6 Wall cladding

- (a) Evidence to support that cladding used on an *external wall* of a building of Type A or Type B construction is—
- (i) *non-combustible*; or
 - (ii) complies with *Performance Requirement CP2*,
- must be in the form of one or a combination of **A2.2(a)(i), (ii) or (iv)**.
- (b) The requirements of (a) do not apply to a material covered by **C1.12**.

C1.12 Non-combustible materials

- (a) The following materials are deemed to be *non-combustible*, ~~though *combustible* or containing *combustible* fibres,~~ may be used wherever a *non-combustible* material is *required*:
- (i) Concrete.
 - (ii) Masonry.
 - (iii) Metals.
 - (iv) Glass.
- (b) The following materials, though *combustible* or containing *combustible* fibres, may be used wherever a *non-combustible* material is *required*:
- (i) Plasterboard.
 - (ii) Perforated gypsum lath with a normal paper finish.
 - (iii) Fibrous-plaster sheet.
 - (iv) Fibre-reinforced cement sheeting.
 - (v) Pre-finished metal sheeting having a combustible surface finish not exceeding 1 mm thickness and where the Spread-of-Flame Index of the product is not greater than 0.
 - (vi) Bonded laminated materials where—
 - (A) each laminate is *non-combustible*; and

- (B) each adhesive layer does not exceed 1 mm in thickness; and
- (C) the total thickness of the adhesive layers does not exceed 2 mm; and
- (D) the *Spread-of-flame Index* and the *Smoke-Developed Index* of the laminated material as a whole does not exceed 0 and 3 respectively.

Option 2 – Mandatory third party certification of composite panel wall cladding

A2.6 Composite panel wall cladding

- (a) Evidence to support that a composite panel used on an external wall of a building of Type A or Type B construction is—
 - (i) non-combustible; or
 - (ii) complies with Performance Requirement CP2,
must be in the form of one or a combination of A2.2(a)(i), (ii) or (iv).
- (b) The requirements of (a) do not apply to a material covered by C1.12.

Note: For Option 2 no change is required to C1.12.