FIRE PROTECTION ON BUILDING EXTERIORS

HOW TO DE-RISK FACADE SELECTION

Network Architectural

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Introduction

In recent years, combustible cladding materials have grown to be a major challenge for the construction industry. Following the Grenfell and Lacrosse tower fires, a slew of building investigations revealed that the exterior cladding of hundreds of buildings throughout Australia were cladded in aluminium composite panels (ACPs) with combustible 100% polyethylene cores.

Since then, the need for fully compliant Deemed-to-Satisfy non-combustible cladding materials has grown exponentially. In response, the New South Wales (NSW) government has created an important oversight panel for this issue, as well as a funding program called Project Remediate to help building owners who are required to replace combustible cladding on their residential buildings.

Recladding initiatives have been established in other states too, such as the Victoria Cladding Rectification Program.

A complex and difficult situation arises when replacing flammable cladding on high-risk apartment buildings. One facade cannot simply be replaced with another to create a strong and long-lasting remediation solution; instead, the entire wall system build-up must be examined.

In this whitepaper, we provide an overview of Project Remediate and how it is helping designers identify facade products that are fire safe and fully compliant with the National Construction Code (NCC) as well as sustainable, durable, and cost-effective.

What is Project Remediate?

There is a relatively long history of fire incidents involving notable buildings that have used flammable exterior cladding all over the world. The issue was brought back into the spotlight in 2019 by the fire that damaged the 41-storey Neo200 building in Melbourne. As with Grenfell and Lacrosse, it was found that ACPs with combustible 100% polyethylene cores were directly to blame for the speed and intensity with which the fires at Neo200 spread. Although Australia no longer permits the material's exterior use on high-rise structures, it is still widely utilised.

Recent modifications to building codes have caused many older panels to be deemed non-compliant, necessitating their removal and replacement from the structures to which they are attached. All new construction must use only compliant panelling. Over time, it has become apparent that disputes over who should be liable for the cost of replacing the materials has been a major point of contention for older structures.

After realising the potential for delays, the number of court cases that were being contested, and the overall risk if remediation was not done, the NSW Government introduced Project Remediate in 2020 as a mitigating measure. Project Remediate is a three-year program to assist with the financial and technical support needed in managing the process of replacing combustible cladding on Class 2 private apartment complexes in NSW.

What is the Cladding Product Safety Panel?

To advise the NSW Cladding Taskforce and the Cladding Support Unit on the viability of wall assembly techniques and replacement cladding products, the NSW Government established the Cladding Product Safety Panel (CPSP) in 2020. The CPSP is an authority in the fields of fire safety engineering, product testing, building surveying and certification, and construction and building insurance. Its recommendations are made available to help councils, consent authorities, and building owners decide on cladding rectification work in a consistent, long-lasting, and cost-effective manner.

The CPSP released its initial report on non-combustible material alternatives in April 2021, outlining four materials that they had deemed suitable replacements for combustible cladding. Bonded Laminate Materials (BLMs) were not included in the first tranche of approved materials but would later be included with additional BLM testing criteria.

Products used in Project Remediate need to be approved. While the CPSP publishes a consolidated list of cladding materials that are submitted for consideration for Project Remediate, they will not be publishing a list of brands and products that can be specified for the program. The question that follows is: how will designers and specifiers know which products have satisfied the additional testing requirements and have been approved?

Specifying compliant cladding products

Project Remediate and beyond

The NSW Government released the *Cladding Replacement Pattern Book* (the Pattern Book)[1], which is an industry first and essential resource for designers working on Project Remediate structures as well as for professional performing private facade remediation. This resource details what types of products can be used and what requirements they need to meet. Additionally, it describes the types of evidence that will be needed to prove compliance with the performance standards applicable to all the adopted products.

Not only does the Pattern Book provide guidance to designers under Project Remediate, but it also gives a useful framework for specifying safe, compliant facade solutions for any new building going forward. Below, we discuss some of the key considerations.

Is it fire safe?

Clause C1.9 of NCC 2019 specifies that for external walls of Type A construction, all components of the facade must be non-combustible including covering, framing and insulation, unless exempted under C1.9(e). The list of materials in C1.9(e) includes:

(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) Sarking-type materials that do not exceed 1 mm in thickness and have a Flammability Index not greater than 5.

(vii) Bonded laminated materials where—

(A) each lamina, including any core, is non-combustible; and

(B) each adhesive layer does not exceed 1 mm in thickness and the total thickness of the adhesive layers does not exceed 2 mm; and

(C) the Spread-of-Flame Index and the Smoke-Developed Index of the bonded laminated material as a whole do not exceed 0 and 3 respectively.

Materials and components must provide test certificates to demonstrate compliance with the NCC's fire performance requirements. Under the NCC, 'non-combustible' means a material that is not deemed combustible as determined by AS 1530.1:1994 "Methods for fire tests on building materials, components and structures, Part 1: Combustibility test for materials".

When applied to construction or part of a building, this requirement means that it must be constructed wholly of materials that are not deemed combustible.

In addition to the requirement of non-combustibility, there are additional fire performance requirements that may be relevant to an external wall system. This includes, for example, Clause 1.10 which provides the fire hazard properties for certain elements within Class 2 to 9 buildings. Reference should be made to the applicable Australian standards and testing regimes.

As of the time of writing, six materials have been approved for reclad use under Project Remediate: Solid Aluminium; Solid Metal Sheets; Fibre Cement; Non-combustible Cement Render; Engineered Ceramic Cladding Systems. Bonded Laminate Materials as a product group have also been approved if they have successfully satisfied all testing requirements required by the CPSP for Project Remediate.

The BLM reference tests include the regime set out in AS/NZS 1530.3:1999 “Methods for fire tests on building materials, components and structures, Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release” for determining Spread of Flame (SOF) and Smoke Developed (SD) indices, as well as the associated limits for compliance as specified in Schedule 6 of the NCC. Additional performance testing on joints and perforations must also be satisfied.

Is it structurally adequate?

Application of material design standards in accordance with the structural design process outlined in AS/NZS 1170.0:2002 “Structural design actions” will ensure structural adequacy. For the purpose of demonstrating suitability, some design standards offer testing procedures as an alternative to calculations.

It is preferred that prototype testing be carried out by a NATA-approved laboratory, but peer reviews by accredited organisations are acceptable in cases where this is not possible.

Is it sufficiently durable?

The AS 2312 “Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings” series sets out the requirements for metal products. In general, Quality Assurance procedures and product warranties will serve as evidence that the protection systems’ workmanship, applied coatings, and thicknesses are sufficient.

Guidelines for classifying atmospheric corrosivity zones in Australia and their impact on the corrosion of steel and other metals are provided in AS 4312:2019, “Atmospheric corrosivity zones in Australia.” The designer can specify the appropriate corrosion protection system and maintenance schedule after the corrosivity has been established using the relevant standards.

Is it weather tight?

FP1.4 in the NCC provides that a roof and external wall (including openings around windows and doors) must prevent the penetration of water that could cause unhealthy or dangerous conditions, or loss of amenity for occupants; and undue dampness or deterioration of building elements. Regarding external walls, there are no Deemed-to-Satisfy Provisions for this Performance Requirement.

To demonstrate compliance, testing of the proposed wall systems can be performed, or you can seek an expert determination based on reliable scientific literature. The testing procedures in AAMA 501.2-15 “Quality Assurance and Water Field Check of Installed Storefronts, Curtain Walls and Sloped Glazing Systems” can be used to determine whether the solution meets the performance criteria for water penetration resistance.

Mitsubishi ALPOLIC™ NC/A1 ticks all the boxes

Mitsubishi ALPOLIC™ NC/A1, a fully compliant aluminium cladding product from Network Architectural, has satisfied all testing requirements for the Project Remediate recladding scheme.

All building owners who have registered with Project Remediate now have access to Mitsubishi ALPOLIC™ NC/A1, the safest and most thoroughly tested aluminium cladding product in the world, as a replacement for the existing non-compliant materials on their structures.

The gold standard in DtS non-combustible cladding

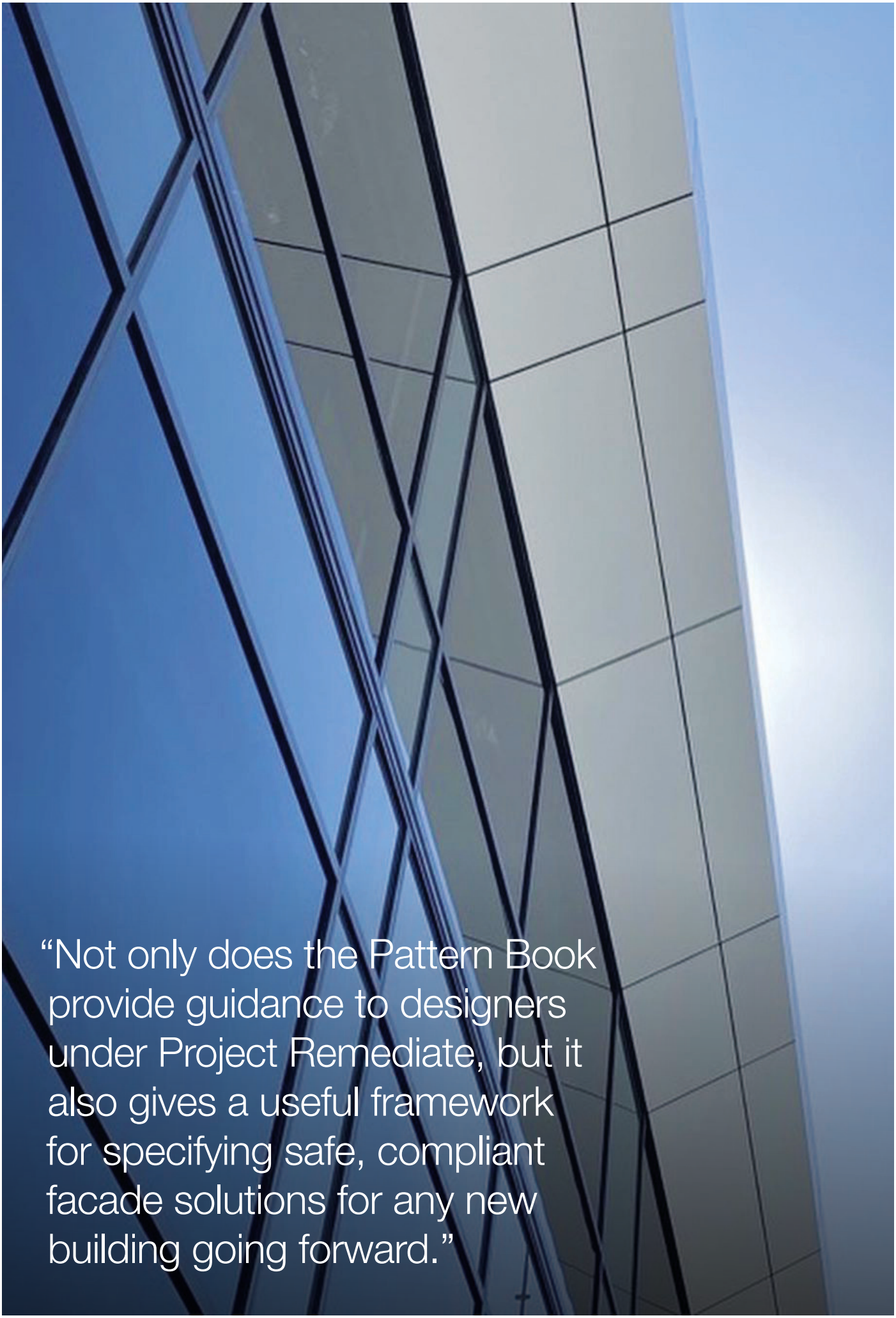
Mitsubishi ALPOLIC™ NC is a fire-safe, fully compliant, aluminium composite cladding product that is far superior to other aluminium cladding substitutes on the market because it has a non-combustible mineral core and contains zero polyethylene. This product also offers superior flatness, is easy to process and shape, and is impact and weather resistant. The front side is colour-coated with the high-quality fluoropolymer resin Lumiflon FEVE, making it exceptionally durable and highly resistant to weathering, UV radiation, corrosion, and colour fading.

Mitsubishi ALPOLIC™ NC, which has the highest possible safety rating from the Insurance Council of Australia, was introduced exclusively for the Australian construction market and has been scientifically proven to be the safest aluminium facade product in real-life fire tests around the world. It is particularly recommended for building projects where a very high level of fire protection or the use of non-combustible facade materials is required, including high-rise buildings, schools, hospitals, retirement homes and more.

By successfully registering its Environmental Product Declaration (EPD), which was created by Good Environmental Choice Australia (GECA), Mitsubishi ALPOLIC™ NC also receives the green light for sustainability. When specifying sustainable facades on reclads or new construction that is serious about sustainability and the environment, this EPD should be a major ongoing factor.

Key features and benefits

- Fully compliant as per NCC 2019.
- The world's safest aluminium facade product – scientifically proven through real fire tests around the globe.
  - Tested to AS1530.1, AS1530.3 & AS5113.
  - Currently the only composite material that has been classified for the highest fire protection class A1 according to the European fire protection standard EN 13501-1.
- CodeMark Certified.
- Recognised by the Victorian Building Authority as having received the highest possible safety category with the Insurance Council of Australia.
- Global leader in sustainability – EPD based on EN 15804 and ISO 14025 – leading the market in sustainability with an EPD produced by GECA.
- Largest selection of colours and finishes on the market.
- Industry-leading 20-year full replacement manufacturer's warranty backed by Mitsubishi.
- Superior flatness.
- Exceptional durability – Proven in harsh Australian conditions for over 30 years.
- Design flexibility limited only by your imagination.
- Easy and fast to install.
- Cost effective, large local stock holdings.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REFERENCES

[1] NSW Government. “Project Remediate Cladding Replacement Pattern Book.” NSW Government. https://www.nsw.gov.au/building-commissioner/remediate-cladding/pattern-book (accessed 12 October 2022).

All information provided correct as of October 2022.

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