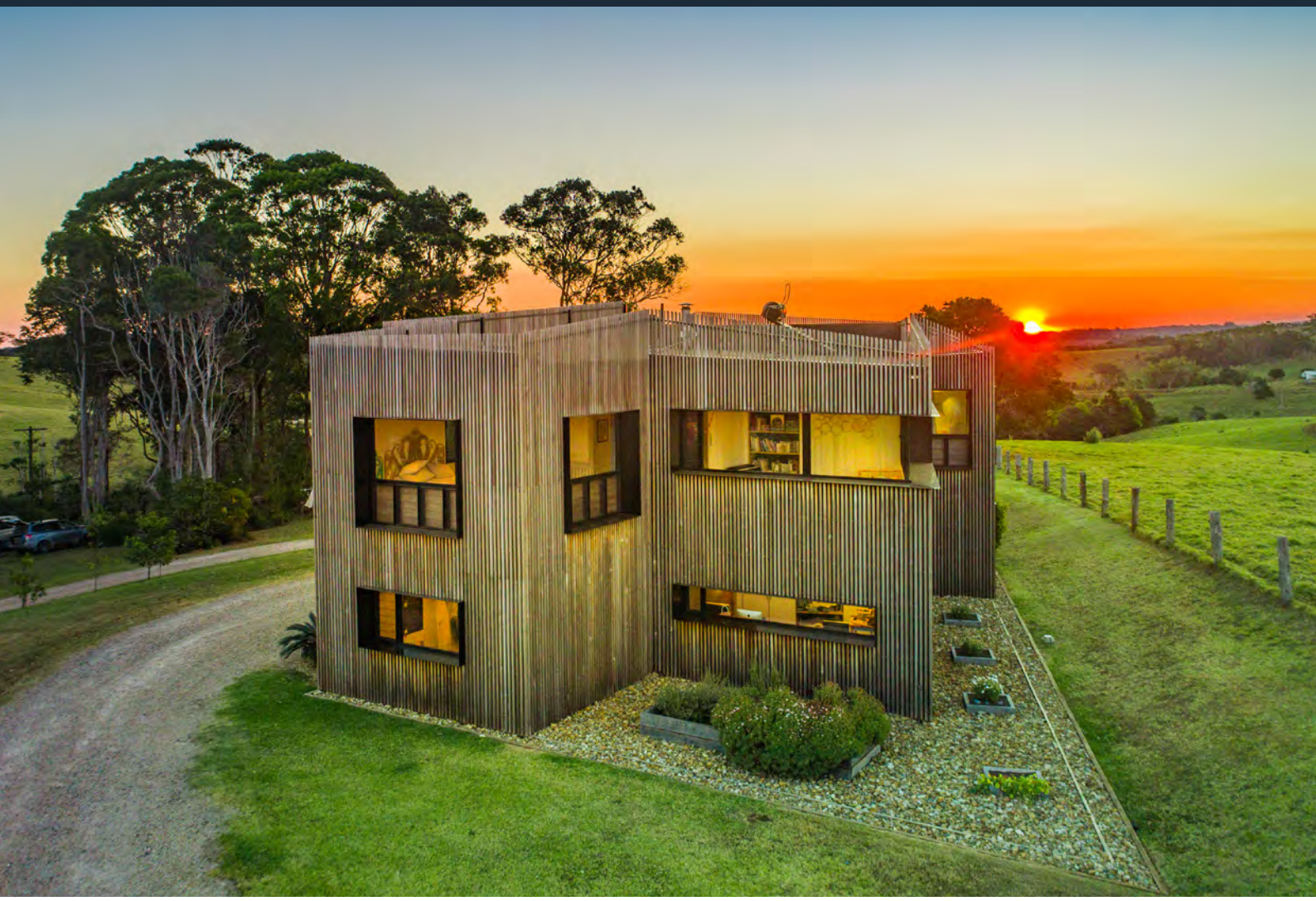
RED CEDAR, GREEN CHOICE

Boosting Sustainability and Energy Efficiency in Homes with Western Red Cedar Cladding



CEDAR SALES
ARCHITECTURAL TIMBER SPECIALISTS
Sustainable Style

PART OF THE modinex GROUP

INTRODUCTION

With concerns regarding climate change and the environment escalating across the globe, design and construction professionals are seeking new ways to incorporate sustainability measures into all elements of construction. This includes choosing eco-friendly building materials that minimise environmental harm across the entire life cycle of commercial and residential buildings.

New consumer research has found that green credentials are increasingly important to buyers and renters seeking new homes. In the United Kingdom, a 2019 survey of homeowners and renters highlighted that over half of survey respondents considered that it was important that their home used environmentally-friendly materials.[1] In the commercial space, investor demand and changes to building regulations, such as stricter emissions and efficiency targets, have led to property developers and design professionals seeking sustainable yet cost-effective alternatives to traditional building materials that better address the climate problem.

Against this backdrop, Australian designers and specifiers are under growing pressure to identify and utilise design solutions that deliver elevated energy efficiency and sustainability outcomes without compromising performance and aesthetics. This can be achieved through a careful and informed specification process with an emphasis on high performing, fit-for-purpose building materials that are inherently sustainable, renewable and long-lasting.

In this whitepaper, we take a closer look at Western Red Cedar and how its use as a cladding material can enable the above objectives to be met with ease. Specifically, we look at the material's benefits in terms of energy efficiency, code compliance and overall sustainability value, in addition to its high degree of design flexibility.

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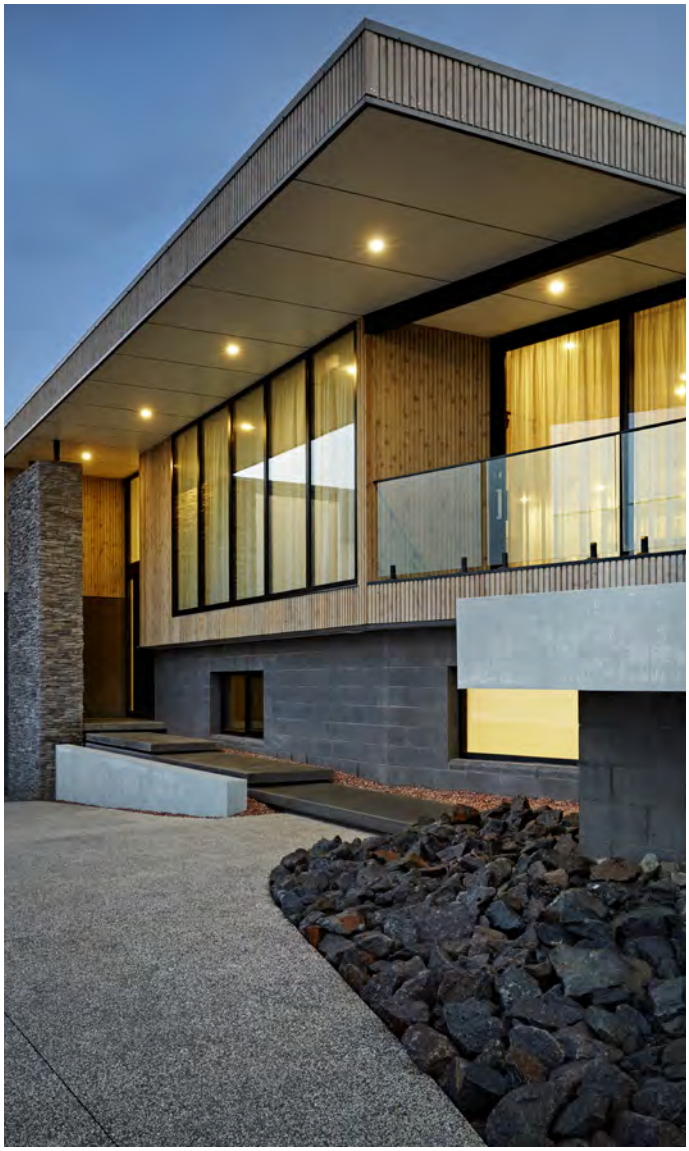
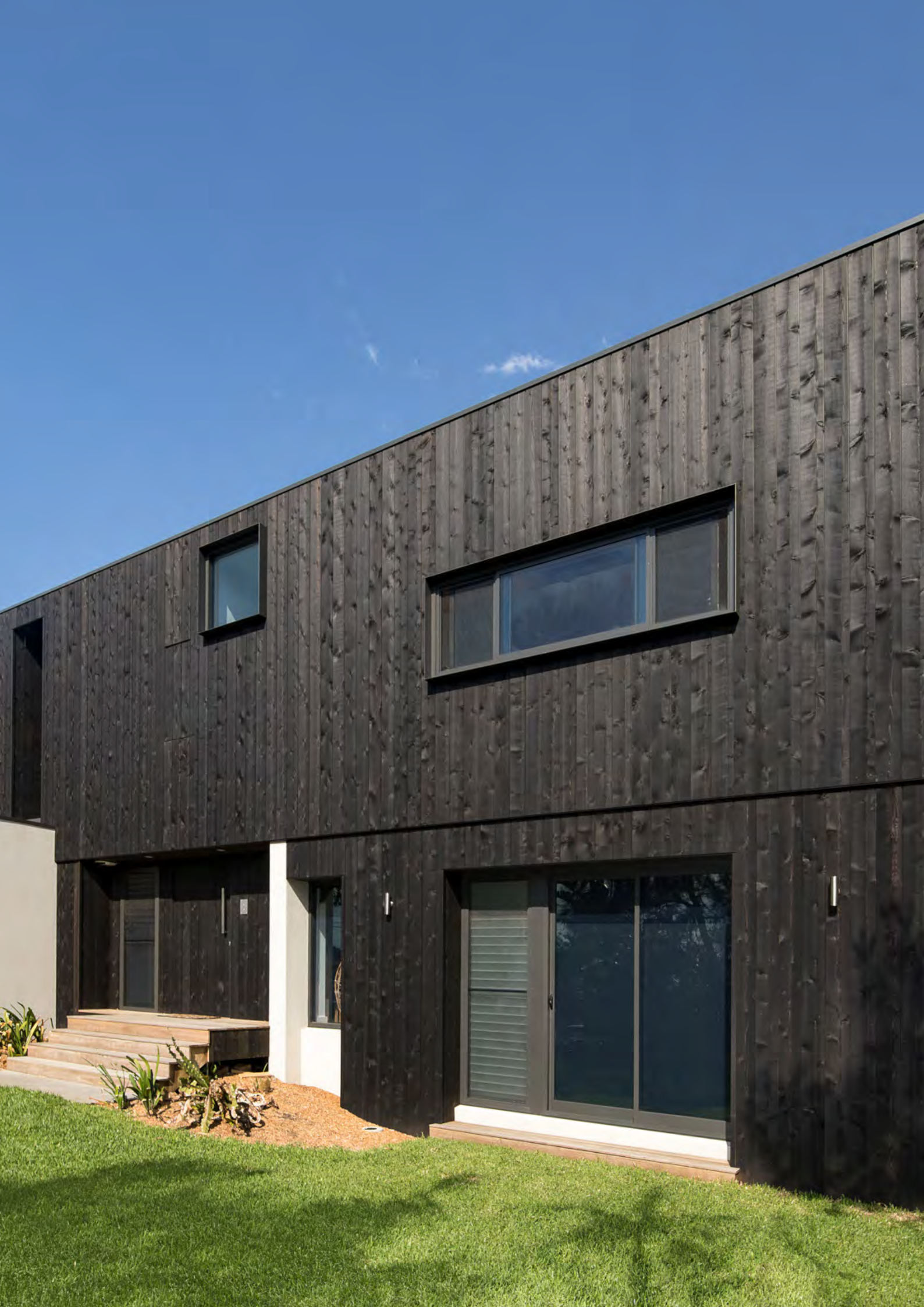


WHAT IS WESTERN RED CEDAR?

Western Red Cedar (WRC) is a softwood native to British Columbia, Canada and some western states of the United States of America, including Washington and Oregon.[2] The WRC available on the Australian market is typically sourced from Canada.

In construction, WRC is prized for its versatility and dimensional stability. It is not prone to shrinkage nor swelling making it ideal for external applications such as cladding, roof shingles and windows. It is also visually attractive with a rich, dark colour that makes it a popular choice for internal wall linings and joinery. The performance and sustainability benefits of WRC are discussed in more detail over the page.



THE KEY BENEFITS OF WESTERN RED CEDAR

ENERGY EFFICIENCY

Earlier this year, the 2019 update of the National Construction Code (NCC) entered into force superseding the 2016 version. This update included measures that help ensure the delivery of buildings that achieve high levels of performance with respect to fire safety, energy efficiency and reduced gas emissions.

One of the three major areas of reform targeted by the NCC 2019 update, thermal efficiency is addressed in the new Section J. In general, these new requirements place a sharper focus on minimum standards for energy efficiency that enable climate comfort with minimal reliance on artificial heating and cooling. Part J1.2(e) sets out the minimum requirements for the R-Value (thermal resistance) and U-Value (thermal transmittance) of building insulation systems. In light of these enhanced requirements, designers and specifiers must consider the thermal insulation properties of their desired material during the specification process.

In general, timber is an outstanding insulator, especially lightweight and low-density species. As one of the lowest density softwoods available on the market, WRC offers insulation values superior to most common building materials.[3] With an R-Value of 0.225 per 25mm of thickness, WRC is approximately seven times more thermally efficient than brick of a comparable thickness and also outperforms concrete and steel. "R-Value" is a measure of a material's resistance to heat transfer – the higher the value, the greater insulating effectiveness.[4] Accordingly, when specified within a robust insulation system, WRC cladding enables buildings to meet the strict efficiency requirements under the NCC and minimises non-renewable energy use.

FIRE PROPERTIES

The impact of fire on carbon storage

Forests around the world store more than one trillion tonnes of carbon and play a significant role in mitigating the impact of global emissions.[5] The combustible nature of wood means that forests are prone to wildfires that not only reduce their size and number but also result in the release of carbon into the atmosphere. The 2009 Victorian bushfires alone released the equivalent of more than one third of the Australia's CO2 emissions for a whole year.[6]

In this context, utilising certified sustainable timber products, such as cladding, in construction has several environmental benefits. Firstly, sustainably-managed forests take an active role in protecting forest carbon stores from the damaging effects of wildfires.[7] Secondly, harvested timber that is then processed into cladding, locks carbon into the building product providing long-term carbon storage.[8] According to the Forestry Corporation, the net annual carbon sequestration of sustainably-managed forests combined with the carbon storage in timber products is equivalent to the greenhouse gas emissions produced by 230,000 cars.[9]

Fire performance under the NCC

Considering the stringent fire safety requirements under the NCC, the combustible nature of timber is also a key consideration when specifying WRC for building cladding. Performance Requirement CP2 of the NCC requires buildings to have elements that prevent the spread of fire in a building and between buildings, in a manner appropriate for that building.

In terms of Australian Standards, cladding must comply with the requirements set out in:

- *AS 1530.1-1994 Methods for fire tests on building materials, components and structures – Combustibility test for materials*, which provides for the standard NCC test for non-combustibility; and
- *AS/NZS 1530.3-1999 Methods for fire tests on building materials, components and structures – Simultaneous determination of ignitability, flame propagation, heat release and smoke release*, which determines the ignitability, flame propagation, heat and smoke release of a material.

Like many natural timbers, WRC is combustible however, it has a fire rating of Group 3.

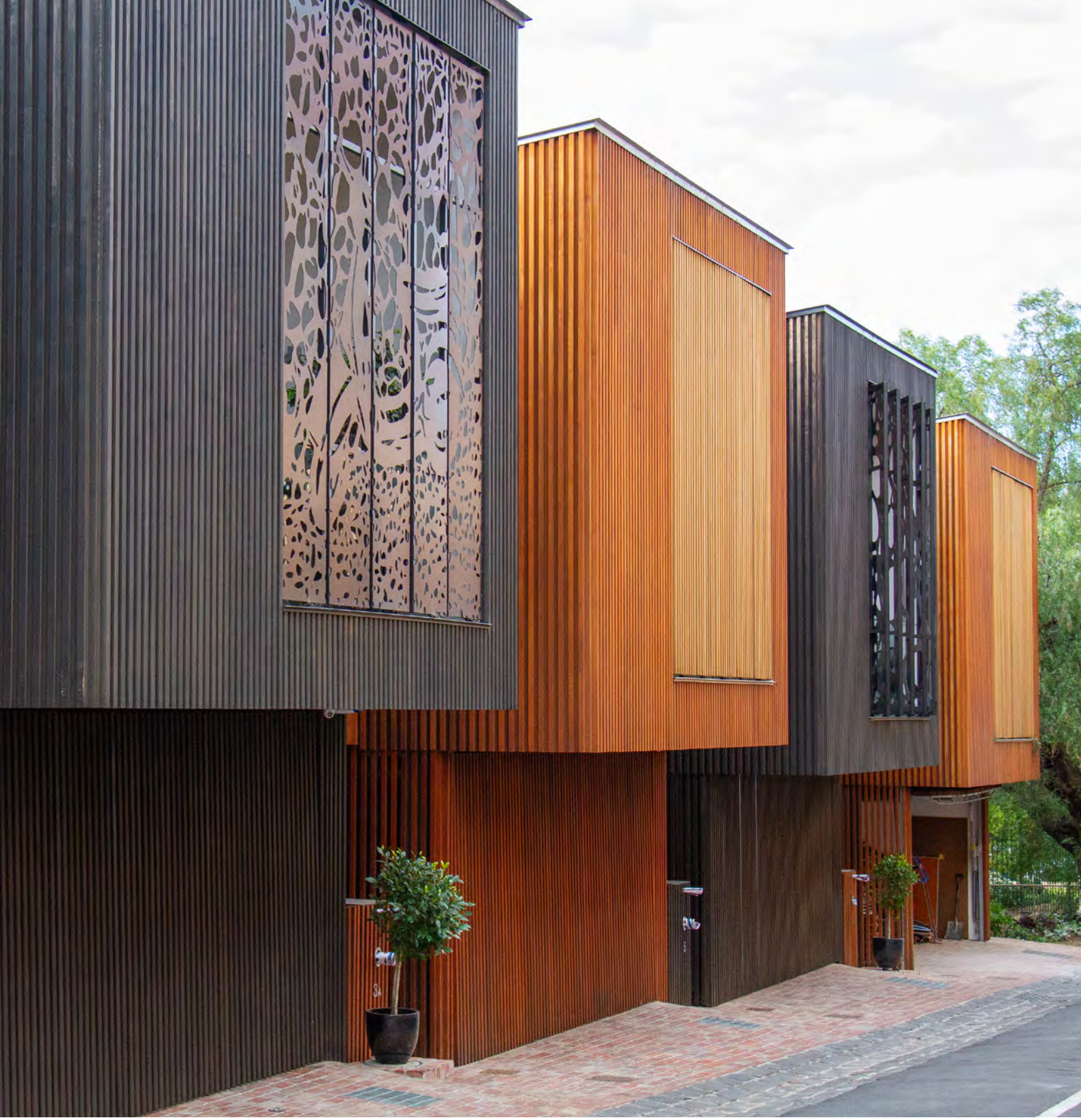
Designers and specifiers should exercise care when specifying timber cladding to ensure they remain compliant with the latest requirements under the NCC. Under previous versions of the NCC, timber was permitted for external cladding on three-storey Class 2 and 3 buildings.[10] In late September 2019, the Australia Building Codes Board issued a proposed amendment to the NCC for public comment that will have the effect, if no further changes are made, of prohibiting timber cladding from being used on three-storey apartment buildings.[11]

AN ENVIRONMENTALLY SOUND CHOICE

Being a natural product, WRC is inherently sustainable. As noted earlier, timber is a carbon store that sequesters potentially harmful carbon from the atmosphere. It is also a renewable resource that can be regrown. When sourced from sustainably-managed plantations, such as those with Programme for the Endorsement of Forest (PEFC) or Forest Stewardship Council (FSC) certification, WRC provides designers and specifiers with valuable peace of mind that they are choosing an eco-friendly product.

In general, timber contributes to buildings with lower embodied energy. "Embodied energy" is the energy consumed in providing materials for building construction, including extraction, processing and manufacturing of building products.[12] Products with high embodied energy result in high levels of greenhouse gas emissions and fossil fuel consumption. Timber manufacturing is less energy intensive compared to other materials with similar uses and has far lower embodied energy than concrete, steel and aluminium. Lightweight timber species like WRC also require less energy to transport and install. According to industry reports, steel and aluminium manufacturing consumes 300% and 1500% more energy respectively than the timber equivalent on a weight-by-weight basis.[13]

Timber can play a significant role in "whole of life" approaches to specification. Saw dust and unused off cuts produced during the manufacturing and installation stages can be ground into fertiliser



that enhances soil for local crop generation. Furthermore, high quality timber, including softwood species, can be recycled and reused for a variety of purposes from flooring and furniture to animal bedding and particle boards.[14] Even if it cannot be recycled, WRC is biodegradable and releases minimal carbon dioxide after disposal.

Sustainable design encompasses delivering elevated health and wellbeing outcomes, which is another area in which WRC outstrips other building materials. Studies assessing the performance of WRC decking and cladding have demonstrated its ability to outperform comparable wood-plastic, vinyl, fibre cement and brick cladding in select criteria including human respiratory effects as well as global warming and soil acidification potential.[15]

DURABILITY

With an Australian durability rating for above ground use of Class 2, WRC is particularly durable, providing reasonably high levels of resistance to decay and termite attack.[16] Class 2 timbers are suitable for cladding environments with a life expectancy of 15-40 years.[17]

Under some circumstances, WRC can be simply washed clean with a water and sponge, with no need for special treatments or machinery. Where conditions might expedite decay, WRC should be treated with the appropriate wood preservatives. The material's low maintenance requirements combined with its natural durability reduces the waste and energy consumption associated with repairs and replacement over the life of a building.

OTHER BENEFITS

DESIGN VERSATILITY

When sourced from high quality suppliers and manufacturers, WRC building products, including cladding and panelling, are typically available in a wide breadth of colours and finishes. A broad range of measurements and profiles are also usually available, enabling installation in virtual any internal and external environment. This material can also be easily machined to meet the required size, shape and size requirements of any building project.

EASE-OF-INSTALLATION

Reputable suppliers will also supply WRC cladding with a shiplap profile that is designed to simplify the installation process. Shiplap profiles typically feature a tongue and groove type joint that enables vertical or horizontal installation with only basic carpentry skills and tools. This characteristic allows commercial and residential building projects to reduce cost and labour requirements.

MODINEX GROUP

Modinex Group is a leading Australasian supplier of high quality, contemporary architectural timber products for internal and external applications. Driven by a commitment to intelligent, sustainable designs that meet the performance requirements set by Australian building standards and regulations, the company has earned a reputation for delivering compliant, user-friendly and environmentally-certified building solutions that enhance commercial and residential projects alike.

The Modinex catalogue of brands includes Cedar Sales, Austratus and Urbanline Architectural, offering design and construction professionals a one-stop-shop for architectural timber solutions that set the benchmark in terms of quality, aesthetics and performance.

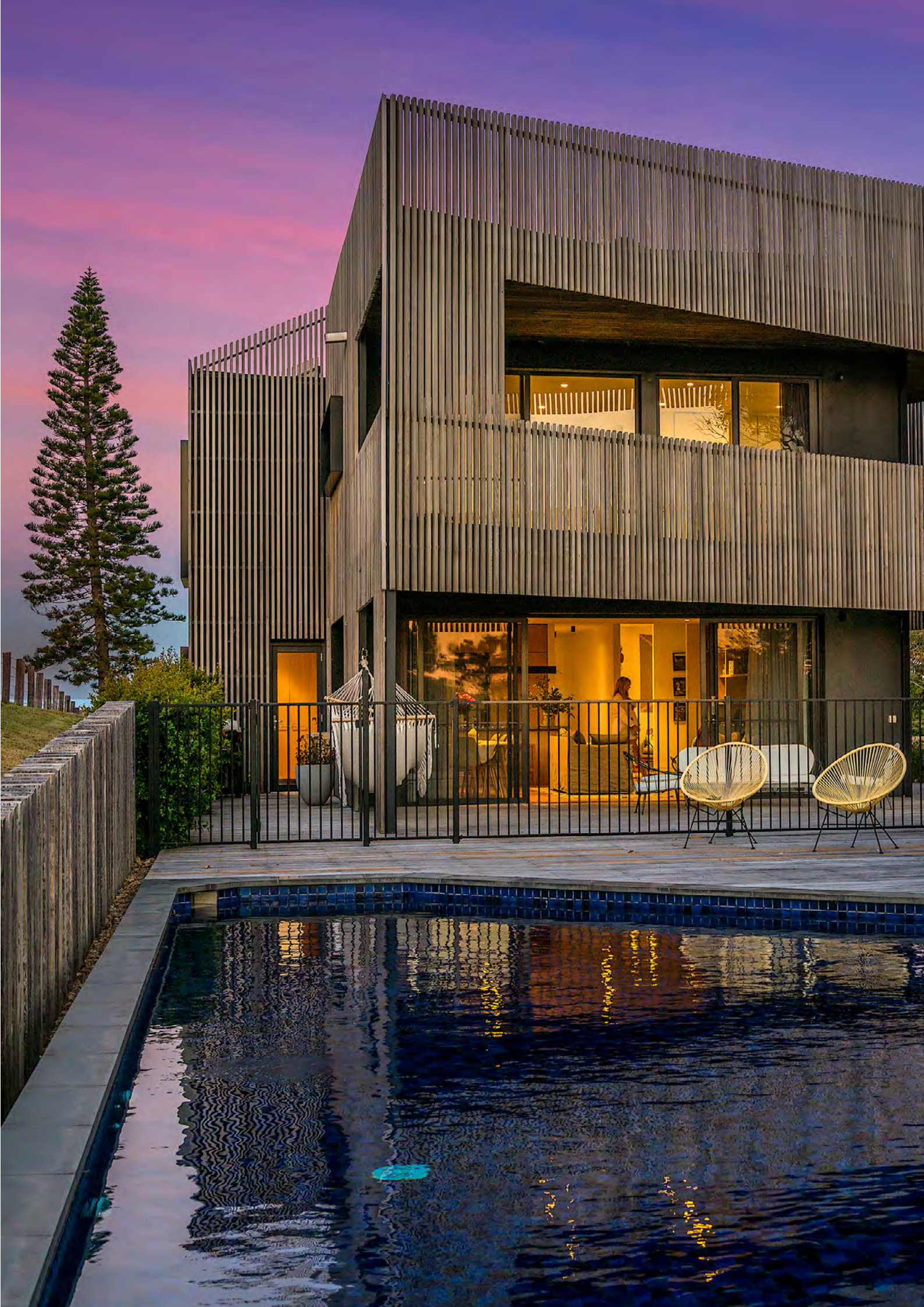
Cedar Sales Western Red Cedar Cladding and Panelling
For more than 30 years, Cedar Sales has provided the Australian design and construction industry with stylish, practical and durable WRC panelling, cladding and screening solutions across multiple sectors. In addition to its contemporary aesthetics and outstanding physical properties, WRC helps designers and specifiers deliver elevated sustainability outcomes for commercial and residential buildings in line with current environmental and regulatory demands.

A renewable, eco-friendly resource, WRC generates less water and air pollution, greenhouse gas emissions and waste than other less sustainable alternatives. All Cedar Sales WRC are sourced from sustainably-managed forests that have PEFC Certification.

Cedar Sales offers a range of innovative WRC cladding solutions that can deliver any look – from a natural, rustic aesthetic to the clean lines popular in contemporary design. The company provides designers with a selection of colours, textures and finishes, delivering rich, warm tones including mellow ambers, vibrant reds and sienna browns. Available in a variety of profiles and styles, including shiplap, diamond and flat panel, Cedar Sales cladding gives designers the opportunity to enhance buildings with bold, dynamic features across their external facades.

Cedar Sales WRC cladding and panelling also offers outstanding physical properties, including natural termite and rot resistance, thermal performance and sound control. This means WRC cladding enhances acoustic comfort, while keeping buildings cooler in summer and warmer in winter. In addition, WRC's natural durability ensures it delivers long-lasting performance and quality with minimal maintenance and cleaning requirements. This species will retain its shape and resist warping, cupping and twisting, even when exposed to harsh elements, making it suitable for virtually any internal or external application.

These high quality WRC cladding solutions are also lightweight and easy-to-install, reducing labour costs during construction. They can be easily cut to match any profile, and painted and stained for added visual impact, without compromising on dimensional stability or weather protection. Cedar Sales provides advanced in-house manufacturing capabilities that enable the standard WRC offering to be customised to meet specific project requirements.



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