

127

NOVEMBER 2017  
ARCHITECTURAL  
STEEL INNOVATION  
WITH BLUESCOPE

# STEEL PROFILE

**TANDEM DESIGN STUDIO**  
TRUE NORTH

**IREDALE PEDERSON HOOK**  
FALCON HOUSE

**IN PROFILE:**  
WINY MAAS





# EDITORIAL

Welcome to *Steel Profile* 127.

BlueScope is a longstanding supporter of architectural excellence. This is our 32nd year as Principal Corporate Partner of the Australian Institute of Architects and we are proud to continue our endorsement of the Institute's endeavours to improve the built environment and foster the architectural industry.

We congratulate all recipients of the 2017 National Architecture Awards and especially applaud the COLORBOND® Award for Steel Architecture winners for buildings that exemplify inspirational and innovative design. This year's National COLORBOND® Award for Steel Architecture – Arts West, University of Melbourne by ARM Architecture and Architectus in joint venture – shone particularly brightly amongst a worthy field of contenders.

Also this year, we have an exciting evolution in the form of COLORBOND® steel Matt – featuring new paint technology which is designed to diffuse light reflection for an elegantly soft, textured finish. Now available in five colours ranging from light to medium to dark, in depth-of-colour. COLORBOND® steel Matt provides architects with the flexibility to adapt to any design.

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*Tanya Tankoska*  
*BlueScope editor*

# EDITORIAL ADVISORY PANEL

*Steel Profile* has an Editorial Advisory Panel to ensure that only projects of the highest calibre are selected for publication. The panellists are:



FRANK STANISIC

Stanisic Associates founder Frank Stanisic is a Sydney-based architect and urbanist.

His work is fuelled by an evolving interest in the diagram and frame as a basis for architectural invention, and the aesthetics of permeability.

Frank's projects have won numerous awards including Australian Institute of Architects' Special Jury, Wilkinson, Aaron Bolot and Frederick Romberg prizes



PENNY FULLER

Penny is a partner at Silvester Fuller, established in 2008. Silvester Fuller's first built projects have been awarded for their creativity and design sensibility. Penny's work draws on experience gained across a broad range of international projects. She is a previous recipient of the Australian Institute of Architects' Emerging Architect Prize



MATTHEW HYLAND

Matthew Hyland works with Woods Bagot. He obtained a Master of Architecture from the University of Tasmania and was awarded the 2015 BlueScope Glenn Murcutt Student Prize.

Having a preoccupation with enriching the ordinary, Matthew is continuing to develop and refine design processes through observation, research and experimentation

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A curvilinear shell made from COLORBOND® steel contributes structure, rhythm and spatial delight to this home in inner-city Melbourne by Tandem design studio



This country horse stable designed by Casey Brown Architects sits beautifully in the rugged Snowy Mountains of the New South Wales landscape

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COVER PROJECT

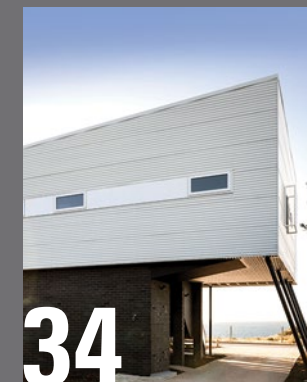
True North

PHOTOGRAPHER

Peter Hyatt



Tridente's Architects' simplicity of form for a music centre made from ZINCALUME® steel delivers an elegantly restrained and exquisitely detailed expression



iredale pederson hook's latest elevated and elegantly wrapped steel house is a clever yet modest affair that harks back to Western Australian beach shacks of old



Dutch architect Winy Maas of MVRDV favours using steel to increase the transparency and porosity of buildings whilst minimising structure – all with the goal of improving cities' liveability on a global scale



Tangentyere Design fuses Western and traditional ideas in this civic shelter made from XLERPLATE® steel that echoes a spinifex-clad desert wiltja as much as traditional A-framed lean-to



This ski field building sports insulated Kingspan panels made from COLORBOND® steel and a vast array of structural steel to create its cantilevered triangular form that echoes New Zealand's The Remarkables mountain peaks

Issue 126 of *Steel Profile* featured an article on the Forest Hill Police Station. That article identified the steel cladding as COLORBOND® steel, which was specified for the project. Following publication of that Issue, BlueScope and others involved in the project became aware that a non-COLORBOND® steel product was used for cladding. We apologise for this error

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# WAVE HOUSE

**ARCHITECT**  
Tandem design studio  
**PROJECT**  
True North  
**LOCATION**  
Kensington, Victoria

An elegantly tailored shell made from broad-ribbed, pearlescent COLORBOND® Metallic steel produces a stellar result in downtown, inner-urban Melbourne.

Words **Peter Hyatt** Photography **John Gollings; Paul Bradshaw; Peter Hyatt**



The prototype house demands a restless curiosity, and a certain alignment of the stars, to ensure occupants remain dry and comfortable. Inspiration is one thing, practicality and function, another. The search for an original response can emerge in many ways, but for Melbourne architect Tim Hill of Tandem design studio, his own house largely came about by association or metaphor.

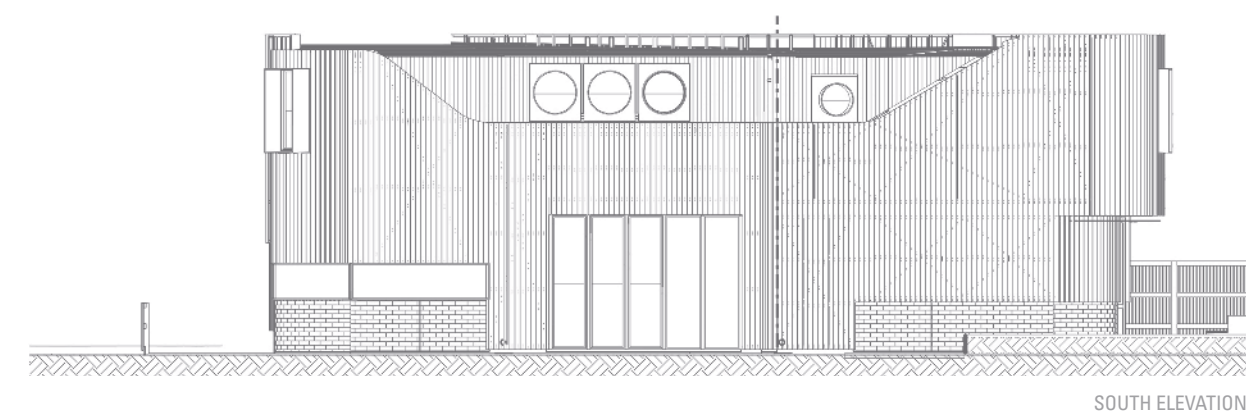
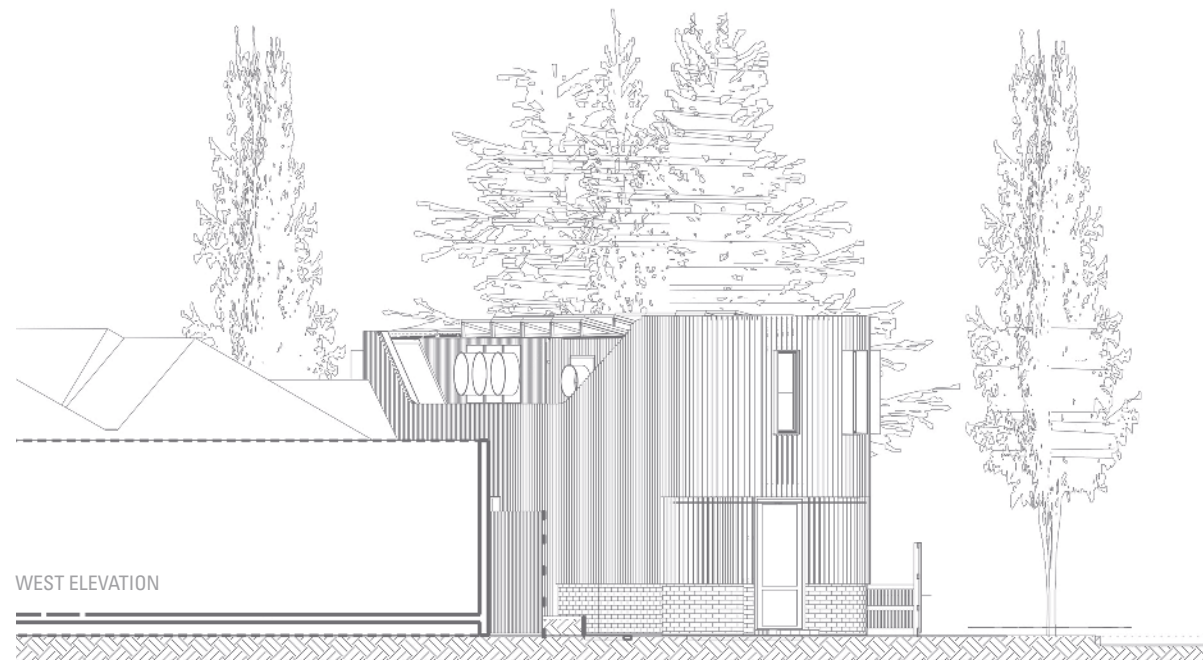
While designing in Melbourne's inner-urban Kensington, Hill found himself reflecting upon the beauty and function of coral bommies – column-like structures that support the complex array of marine organisms and fish within coral reefs and outcrops. Describing his work as inspired by the “visual metaphor”, Hill saw parallels in a house that transcended the typical two-dimensional front and back, to become a permeable, vibrant series of possibilities.

Hill says he prefers architecture to have a certain life of its own that allows others to make their individual associations. “I was most interested in the idea of the ‘slippery metaphor’ that allows everybody to bring their own reading; where people would say: ‘Oh, it reminds me of something I haven’t thought of,’” he says. “I like it when others form their own relationship and find their own meaning in a shape, but it has to engage people in a friendly way,” he adds. “There are plenty of examples of corporate architecture that try to intimidate or impress. Good domestic architecture has to be warm, inviting and stimulating. It should be a very positive and uplifting experience.”

**“I like it when others form their own relationship and find their own meaning in a shape, but it has to engage people in a friendly way”**

The once working-class suburb of Kensington is now gentrified, with upstarts frequently appearing as space-hungry behemoths. Hill's house on the other hand is all about available square millimetres. The site would have deterred many architects and clients – or simply driven them crazy. And yet for all of its oddities, the architecture elicits a satisfying cohesion. Hill's work is known for its jelly-mould form thanks to his organic gestures, but his designs are neither arbitrary nor whimsical.

Its curvilinear form isn't meant to directly reflect the ocean, but to respond to a testing, tapered, triangular site that could easily have shoe-horned a far more geometric, restrained and unyielding result. ➔



With an envelope as light-catcher and shadow play, the surface of the house is animated by its wrap-around envelope

OPPOSITE: Roofing is made from COLORBOND® steel in Stramit Speed Deck Ultra® profile, in the colour Ironstone®, delineating the planes and providing a colour contrast. Exhaust vents made from weathering steel form part of the expressed vocabulary to naturally vent the house





Despite the physical constraints and frugal means, fearlessness, invention and common-sense all intersect on this project.

It's not a house where sheer volume or space was the goal, but rather it provides a variety of options: a house for all seasons, where every room has its own signature and opportunity. "Exactly," Hill says. "It's an object in the round, and part of that is because it's on a very exposed corner and yet it sits back into its block. You can actually see all three sides and that's unusual because most inner city houses are concealed behind walls."

The house draws on an industrial vernacular but introduces an organic, quite soft, almost feminine hand. It's not a brutal thing. "I think the house is really 'pretty'. I use that adjective quite a lot to describe the result," Hill says. "I think it's to do with the scale of the pleats and the colours. My previous house was kind of masculine,

but this one is quite pretty. I think it's to do with the scale and the amount of detail."

The house's walls are entirely covered in cladding made from COLORBOND® Metallic steel in a custom-made profile, in the colour Galactic®. Hill says the metallic colour Galactic® was chosen for its pearlescent finish that responds with endless subtlety to prevailing conditions and light. Roofing, meanwhile, is made from COLORBOND® steel in Stramit Speed Deck Ultra® profile, in the colour Ironstone®, delineating the planes and providing a colour contrast.

The steel cladding was customised into a triangular profile that Tandem designed and had steel fabricators Design Sheet Metal (DSM) roll-form into shape. The resulting profile was designed to achieve the precise visual ratio of

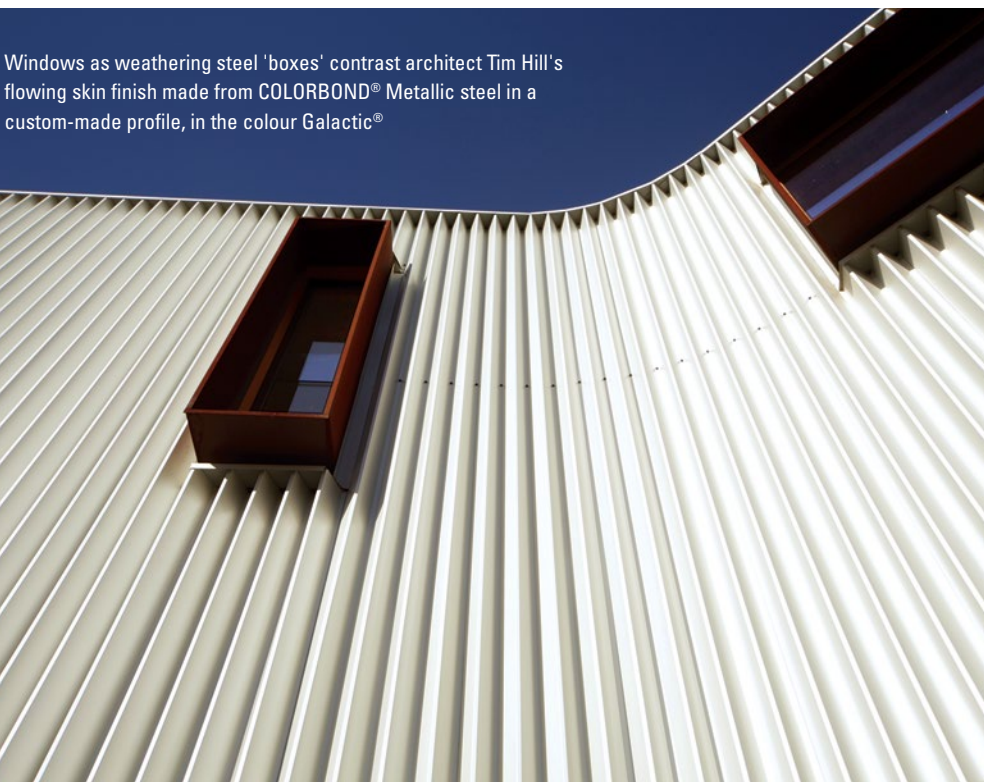
ribs to flat surface. "We went through a whole prototyping process to get the optimum pleat size with three or four prototypes," Hill says. "We eventually settled on a 125x125mm equilateral triangle. It was amazing that even a minor variation in size either direction – up to 150mm or down to 100mm – changed the building's whole appearance.

"DSM picked up on the idea of the slippery metaphors I was presenting," he continues. "They took me to a pleating factory once I'd started to talk about the pleat. As the steel fabricators, they were interested in participating in how the cladding could be most efficiently folded and expressed, and evolving something really special." ➔

Ribbed skin punctuated with upper level shaded glazing and origami-inspired cut metal for ground-floor windows



Windows as weathering steel 'boxes' contrast architect Tim Hill's flowing skin finish made from COLORBOND® Metallic steel in a custom-made profile, in the colour Galactic®



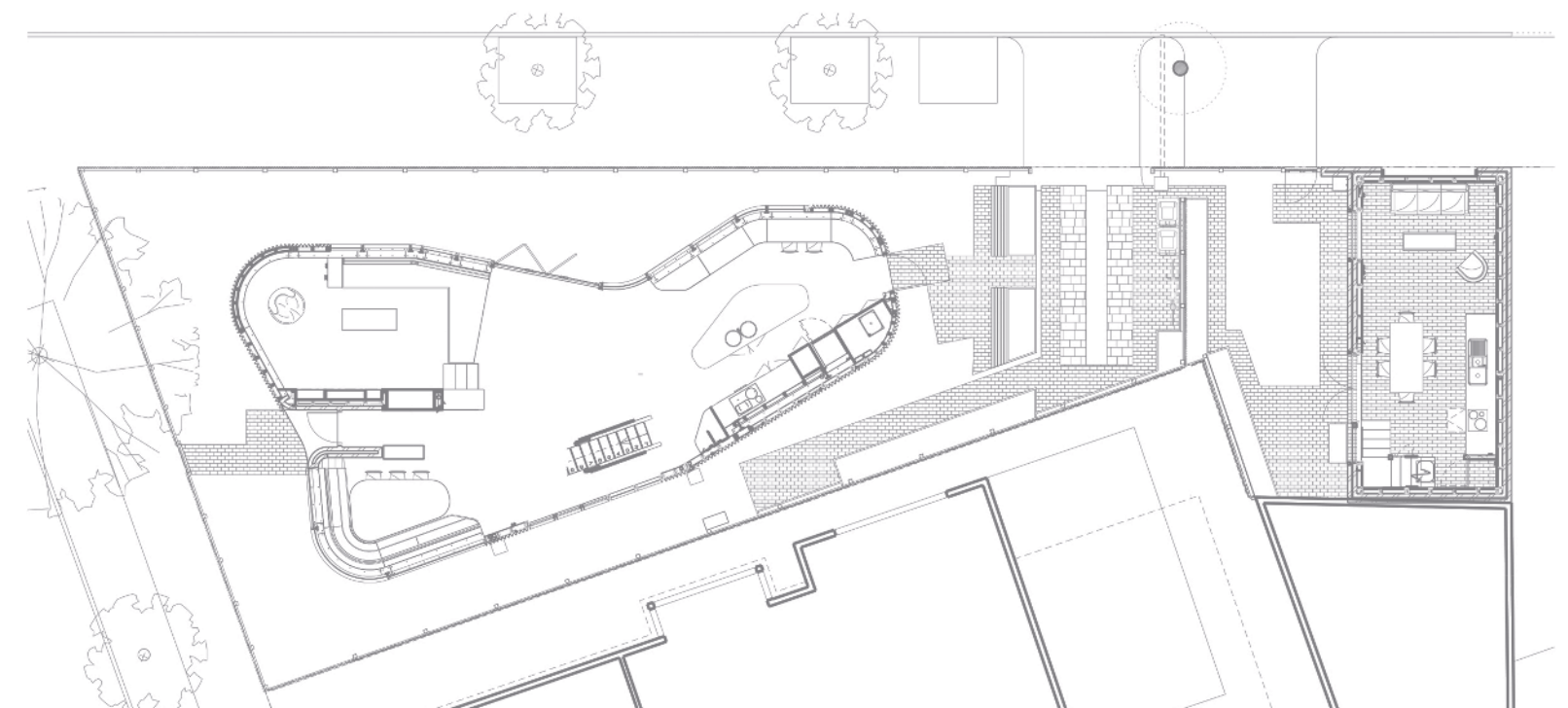
## PANEL SAYS

As a counterpoint to its neighbours – which include traditional timber and masonry homes with pitched roofs – this curvaceous flat-roofed house showcases the capacity of steel to be both practical and playful. It also serves the architect-owner's aspiration to make efficient use of this odd-shaped site, thanks to its ability to cloak unusual geometries with ease. Conceived as an object in the round, the house is clad entirely in custom-profiled COLORBOND® Metallic steel in the colour GALACTIC™. The wide ribs accentuate the design's careful manipulation of proportion and scale, and enliven the play of light and shadow across the material's surface. With its projecting window hoods made from weathering steel, and internal timber linings that echo the dimensions of the exterior steel cladding, the design achieves a neat symbiosis between external and internal worlds, and provides a joyous addition to the streetscape

The curving form is visually dynamic, appearing to be always in motion. Cladding pleats are punctuated by window hoods made from weathering steel



"We eventually settled on a 125x125mm equilateral triangle. It was amazing that even a minor variation in size either direction – up to 150mm or down to 100mm – changed the building's whole appearance"



GROUND FLOOR PLAN





ABOVE LEFT TO RIGHT: An internal staircase and footbridge link the mezzanine study to master bedroom and en-suite. A complex void and series of connections link seamlessly to help generate spatial flow



During the course of each project, Hill investigates other associations and uses those thoughts to push the design forward. “Here, the facade pleats for example, were literally a connection back to a simple way of wrapping the building up without creating too many construction problems. Once I decided that, they started to remind me of fabric, and then I was interested in capturing some sort of sense of movement or some sort of restlessness with the form.”

The zig-zaging, pleated facade creates a continuous, curving edge which is pinned together over the front door. The curving form is visually dynamic, appearing to be always in motion. The pleats are punctuated by window hoods made from weathering steel that frame views across the neighbourhood from the upper-level bedrooms.

“Once I made the decision to round the corners, I was quite fearful about creating too much complexity,” he says. “I decided to extrude the plan shape up, but subtract volume from the interior. While there are some vital sectional qualities, it’s primarily about the plan as a response to site and orientation.”

The building is placed in the centre of the block, so the facade undulates and bends to create north-facing pocket gardens, a rear produce garden, and to allow light to enter neighbouring rear yards.

The new dwelling is a high-performance solar passive house with living on the ground floor and sleeping above. The open corner block is wide enough to accommodate two rooms and a corridor on the western boundary, narrowing to a single room towards the east.

Hill says the house’s energy efficiency is “Largely about the fundamentals of aspect and volume. That was something of a surprise to me because we’re often working with these long and skinny, inner city houses where you struggle with energy ratings because of such large surface area to volume. Ours was terrific to begin with,” Hill says.

“The other remarkable benefit of the pleated profile is its stiffness,” he adds. “My previous house was a pole-and-frame structure made of timber that used to wobble. This one is just really rock-solid rigid. Other subtle qualities emerged almost coincidentally

“Here, the facade pleats for example, were literally a connection back to a simple way of wrapping the building up without creating too many construction problems”

as the consequence of this shape and particular ribbed profile that forms an ever-changing display of striations across the surface with sun movement.”

Now that it’s finished, Hill says he frequently hears the comment: ‘Oh, you must have had a preconceived idea for the house, and so you finally got the opportunity to build it’. “Actually, it was the opposite,” he asserts. “The site created the constraints which produced the building, so it is very much the other way around rather than the popular understanding of how these things are designed.”

While he found the process of being both architect and client a challenging one, he says it was hugely rewarding. “It’s really an opportunity to do something on your own, to make and back your own judgments. There are going to be risks, but you have to negotiate those risks in a way that makes them acceptable rather than frightening. Finding a site, having some freedom to perform your own work, reaching the end and then living in it is just really satisfying.”

Rather than the idealised, glamour-model view of architecture, Hill’s work shines as a lighthouse. It reminds us that architecture can be a way of life, rather than the standalone, remote object. Lightweight in feel and appearance, a curvilinear steel shell made from COLORBOND® Metallic steel contributes structure, rhythm and spatial delight. While the sum of many parts, it’s this bespoke shell that brings haute-couture to this inner ‘burb. **SP**

**PROJECT** True North **CLIENT** Tim Hill **ARCHITECT** Tandem design studio **PROJECT TEAM** Tim Hill **BUILDER** Vizbuilt / Tim Hill **SHOP DRAWING** Tim Hill **STRUCTURAL ENGINEER** Hive Structural **LANDSCAPE ARCHITECT** Victoria English / Tim Hill **STEEL FABRICATOR** Design Sheet Metal (DSM), Joe Conway Roofing **PRINCIPAL STEEL COMPONENTS** Wall cladding made from COLORBOND® Metallic steel in a Design Sheet Metal (DSM) custom-made profile, in the colour Galactic®. Roofing made from COLORBOND® steel in Stramit Speed Deck Ultra® profile, in the colour Ironstone®. Custom-welded window frames made from weathering steel **PROJECT TIMEFRAME** 14 months **SIZE** House: 175m<sup>2</sup>; block: 312m<sup>2</sup> **PROJECT COST** \$750,000



The lofty, shell-like backyard entry to living areas and upper-level bedroom



Tridente Architects applied its characteristic fine attention to detailing to realise the understated yet highly refined new Cardijn College Music Centre in Adelaide's outer southern suburbs.

Words **Leanne Amodeo** Photography **Paul Bradshaw; Simon Cecere**

# MUSIC TO THE EYES

Music  
Centre

**ARCHITECT**  
Tridente Architects  
**PROJECT**  
Cardijn College Music Centre  
**LOCATION**  
Noarlunga Downs, South Australia



Within the past 10 years, design advocacy has taken on a life of its own in South Australia. Following the recommendations of Professor Laura Lee, the State Government implemented the Integrated Design Commission (IDC) with a view to improving the built environment through a design-led approach. While the Office for Design and Architecture has since replaced the IDC, its goals still remain. So much so, the State now has a Government Architect and its *30 Year Plan for Greater Adelaide* was recently updated to include revised forecasts.

This strategic report provides guidelines for promoting a green liveable city, creating walkable neighbourhoods and protecting natural resources. And if the re-activation of inner-city suburbs such as Bowden is anything to go by, Adelaide has proven itself more than capable of achieving these objectives within a tight timeframe. Urban sprawl potentially needs to be capped to effectively realise the Government's 30-year goals, however there's no denying that some of Adelaide's fastest-growing areas are its outer suburbs.

Self-contained villages make up vibrant hubs of activity that boast more affordable housing opportunities, yet many of these are just a 30- to 50-minute drive from Adelaide's CBD. One such suburb is Noarlunga Downs, in the State's south, where institutions such as Cardijn College clearly reflect the region's development. As Cardijn's business manager Johnny Ioannou explains: "The school's come a long way in the past 15 years and it's changed a lot in terms of building stock. Although the campus was actually established in 1984, it doesn't give you that impression."

A series of planned developments represent positive moves forward for the secondary school, thanks to its longstanding relationship with Tridante Architects. The Adelaide-based multi-disciplinary practice was first engaged

in 2000 by the Catholic Church Endowment Society Inc for Cardijn College to develop a masterplan. The first project to be realised was a new gym (funded through the federal Building the Education Revolution (BER) program), then the new Administration Centre and Language Learning Centre. Another two projects followed and in 2015 the masterplan was completed with the construction of the new Music Centre.

The single-storey specialised facility occupies the previously vacant southern edge of the campus, situated between the two-storey gym to its immediate north and the service road and visitor car park on the boundary side. It may have been the last project built, but the Music Centre plays the most significant role in the school's revitalisation, serving as the new gateway to the College.

Rectangular in plan, with a double-splayed entry and sloping west-east roofline, the 570 square-metre structure is surprisingly compact in scale. Yet its elegantly restrained expression and simplicity of form is what ultimately makes the Music Centre so striking. There's also a story Tridante Architects' director Nick Tridante likes to tell when explaining his thinking behind the building's modest height. "The College's priest at the time used to enjoy sitting up in the gym and looking out at the views of the hills

to the south," he recalls. "So we had to confer with him and guarantee that when the new building went up, his views would remain, which they do."

Budget was a consideration, too, and Tridante – who incidentally was recently appointed South Australia's Associate Government Architect – effectively managed this constraint by paring back his material palette to predominantly feature acoustic plasterboard for the interior and steel and glass on the exterior. By choosing to roof the building with cladding made from ZINCALUME® steel in Revolution Roofing Rev-Klip™ 700 profile and to finish its walls with cladding also made from ZINCALUME® steel in Revolution Roofing Rev-Span™ 700 profile, he made economical choices without compromising quality.

The honesty and robustness of this material appeals to Tridante, he says, as well as the way it references traditional corrugated iron, albeit in a more high-end architectural form. As he notes: "The advantage of this product is that it comes to life with slick detailing, so we spent a lot of time on the corners and flashing. And there's a certain subtle reflectivity with the ZINCALUME® steel that's nice – it's not a painted material that's going to weather such as occurs with, say, timber; it will still look good in twenty years' time." ➤

**"The advantage of this product is that it comes to life with slick detailing, so we spent a lot of time on the corners and flashing"**

The facility's entry alcove with cladding made from ZINCALUME® steel in Revolution Roofing Rev-Span™ 700 profile, chosen for its economy and uncompromising quality

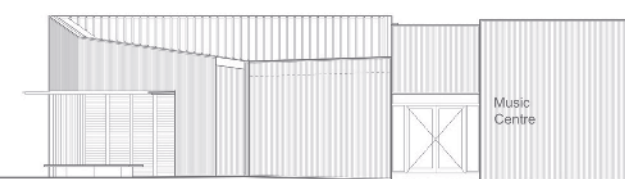


## PANEL SAYS

Balancing the competing demands of practice and performance, this new music centre at a secondary school in Adelaide achieves its beauty via the juxtaposition of solid and transparent faces, in a deceptively simple way. The use of crisply detailed ZINCALUME® steel cladding creates a lightweight and modest exterior, which prefaces the sense of calm restraint that permeates the interiors. From the outset, the architectural intent is clearly defined and legible throughout, and there is nothing superfluous or frivolous about the building. With its emphasis on rigorous planning and organisation, the selection of lightweight and honest materials, and high-quality detailing and construction, the building is worthy of a standing ovation

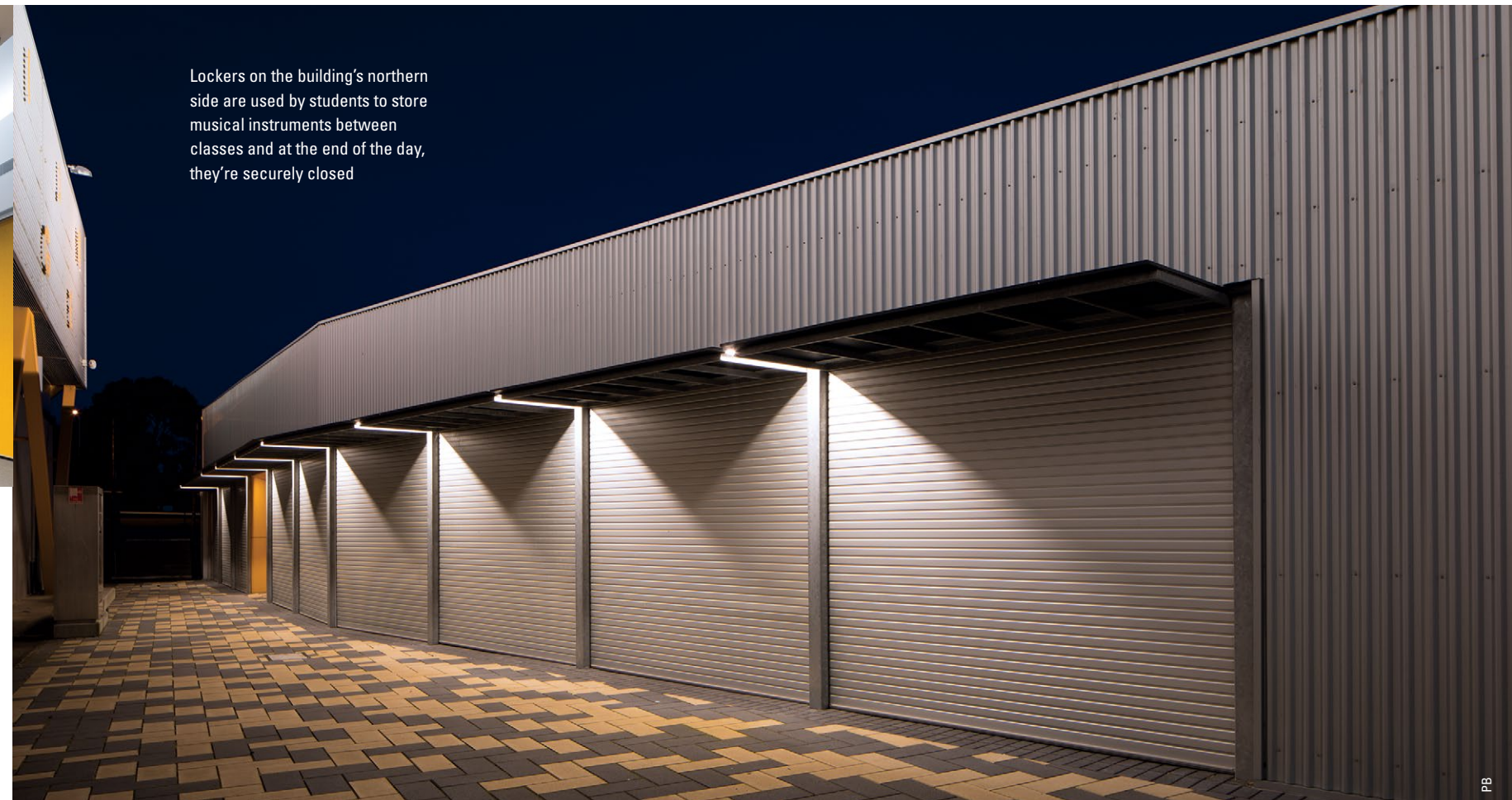
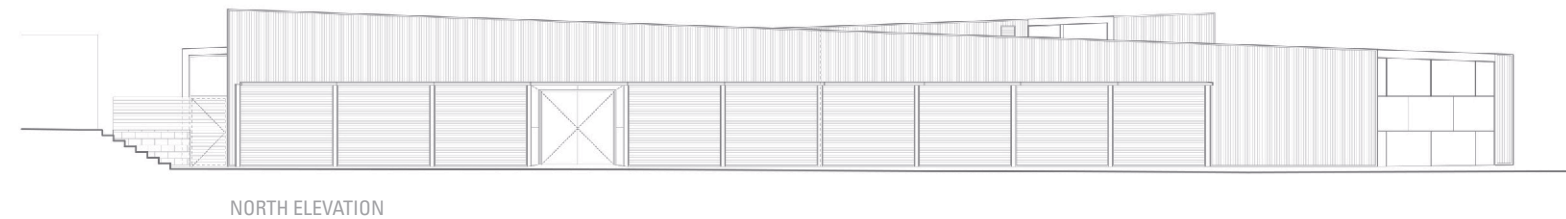
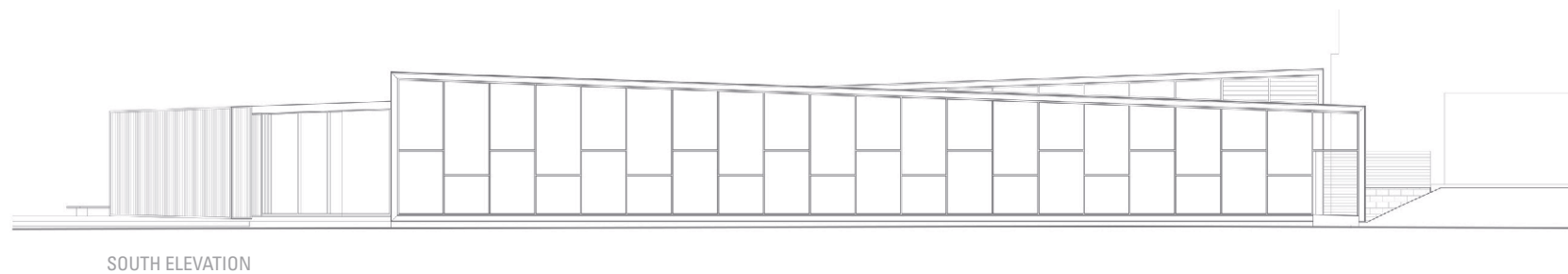


EAST ELEVATION



WEST ELEVATION





ABOVE LEFT: The colour narrative continues inside, where yellow accents inject a playful flourish against the white of the interior walls

ABOVE RIGHT: Rooms on the northern side, including a performance theatre, feature state-of-the-art acoustics

As cladding on the east, west and north elevations, the ZINCALUME® steel lends the building a crispness that's determinedly sophisticated in its lack of embellishment. The slightest flaw would have stood out like a sore thumb, so Tridente and his team indeed ensured every detail was finished with a high level of craftsmanship.

Most importantly, the ZINCALUME® steel complements the masterplan's other new buildings, all of which also feature cladding made from ZINCALUME® steel, however in a different profile, being LYSAGHT SPANDEK®. The resulting sense

as a finish on the sheeting that wraps the facility's entry alcove. This tile feature is actually fixed to a secondary sub-frame that's in turn fixed to structural steel. There are fine strips of light between the joints, adding yet another level of detail to the exterior.

Tridente extended the colour narrative inside, too, where yellow accents inject a playful flourish against the white of the interior walls. Another innovative component of the building is its glazed south wall which lets the outside in, making for a relaxed, casual atmosphere and offering a connection to

this steel support system in black paint, Tridente added an element of finesse to the large expanse of glazing.

While rooms closest to the southern wall receive an abundance of natural light, those on the northern side, including the electronic music learning room, recording studio and performance theatre, can be more closely controlled. Acoustics in these spaces (assisted by carpet throughout the facility) is state-of-the-art and the architects received advice from Resonate Acoustics on the necessary construction techniques to achieve such high performance.

**“The design's all about materiality and how you can achieve a sophisticated outcome with products that are honest and simple”**

of cohesion is testament to Tridente's seamless engagement with context and the thoughtfulness of his overall scheme, which serves to heighten the school's sense of community. It also impacts the campus' entry sequence, where the Music Centre's sloping roof gently reveals the gym's second storey, visually diminishing the distance between the two structures and making them read as one.

The school's yellow sign on the gym's exterior brightly contrasts with the silvery grey colour of the ZINCALUME® steel, and is visible from the service road and car park. The same yellow colour was used for the gym's external structural supports and so was carried over to the Music Centre's entry signage, too. It's also applied prominently

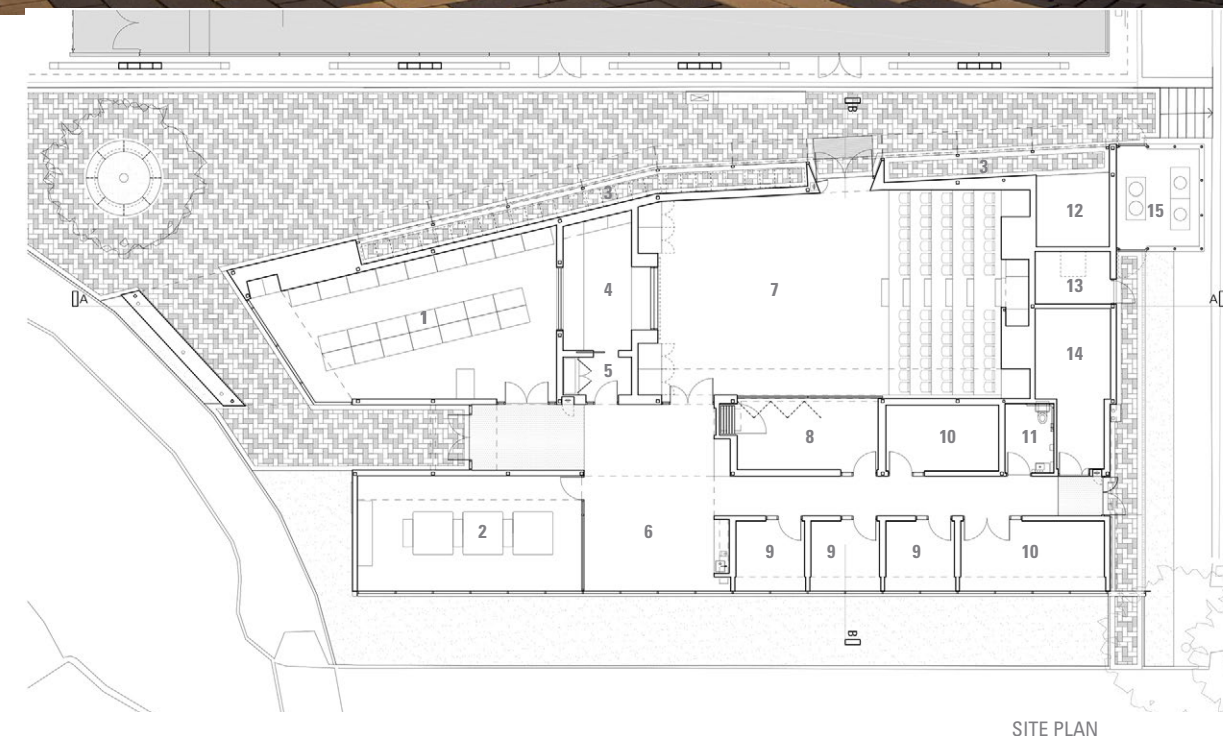
the rolling hills beyond. Parents can also be assured when driving in or out of the school that students are receiving their music tuition, as the small south-side tutorial rooms are in full view.

This glazing reinforces current ideas around pedagogical transparency in promoting an open learning environment, and it's crucial in realising the design's concept. “We deliberately wanted to remove internal clutter so we used the window wall as a column system,” Tridente explains. The wall is a structural component of the building, so in this respect the design couldn't have been realised without the use of steel in the form of frame columns, a perimeter frame and mullions, which are doing all the structural work. By finishing

The Music Centre's functionality is impressive, even providing plenty of outdoor locker space at the rear of the building where Year 8 to 12 students can store their instruments instead of carrying them around between lessons. It may be a relatively small-scale project, but nothing more is needed. The architects eschewed all ostentatious gesture to deliver an understated outcome that's as exacting as it is exquisite in its detailing. And in reflecting on the project, Tridente is characteristically humble. “The design's all about materiality and how you can achieve a sophisticated outcome with products that are honest and simple,” he says. “The main objective was to make a subtle statement at the entrance and I think it achieves that.” **SP**

#### LEGEND

1. Music technology
2. Staff preparation
3. Student lockers
4. Recording studio
5. Airlock
6. Gathering space
7. Performance rehearsal
8. Group music
9. Single music
10. Double music
11. Accessible WC
12. Store
13. Communications
14. Music store
15. Services



**PROJECT** Cardijn College Music Centre **CLIENT** Catholic Church Endowment Society Inc for Cardijn College **ARCHITECT** Tridente Architects **PROJECT ARCHITECT** Paul Boyce **STRUCTURAL & CIVIL ENGINEER** Walbridge & Gilbert Consulting Engineers **BUILDER** Hanson Yuncken: Small Projects Division **STEEL FABRICATOR** ASF Lincoln Engineering **SHOP DRAWING CONTRACTOR** Precision Drafting Australia **CLADDING CONTRACTOR** Metal City Roofing **LANDSCAPE ARCHITECTS** Tridente Architects **PRINCIPAL STEEL COMPONENTS** Cladding made from ZINCALUME® steel in Revolution Roofing Rev-Span™ 700 profile. Roofing made from ZINCALUME® steel in Revolution Roofing Rev-Klip™ 700 profile **PROJECT TIMEFRAME** 13 months (construction) **AWARDS** 2016 Australian Institute of Architects South Australian Chapter Awards, Commendation for Educational Architecture **BUILDING SIZE** 570m<sup>2</sup> **Total Project Cost** \$2.5 million



## PROFILE PROFILES...

The Dutch are famous for reclaiming marshlands and cultivating landscape to support human habitation. Winy Maas, co-founder of MVRDV, aims to harness that capacity and upscale prototypical solutions to tackle global design challenges.

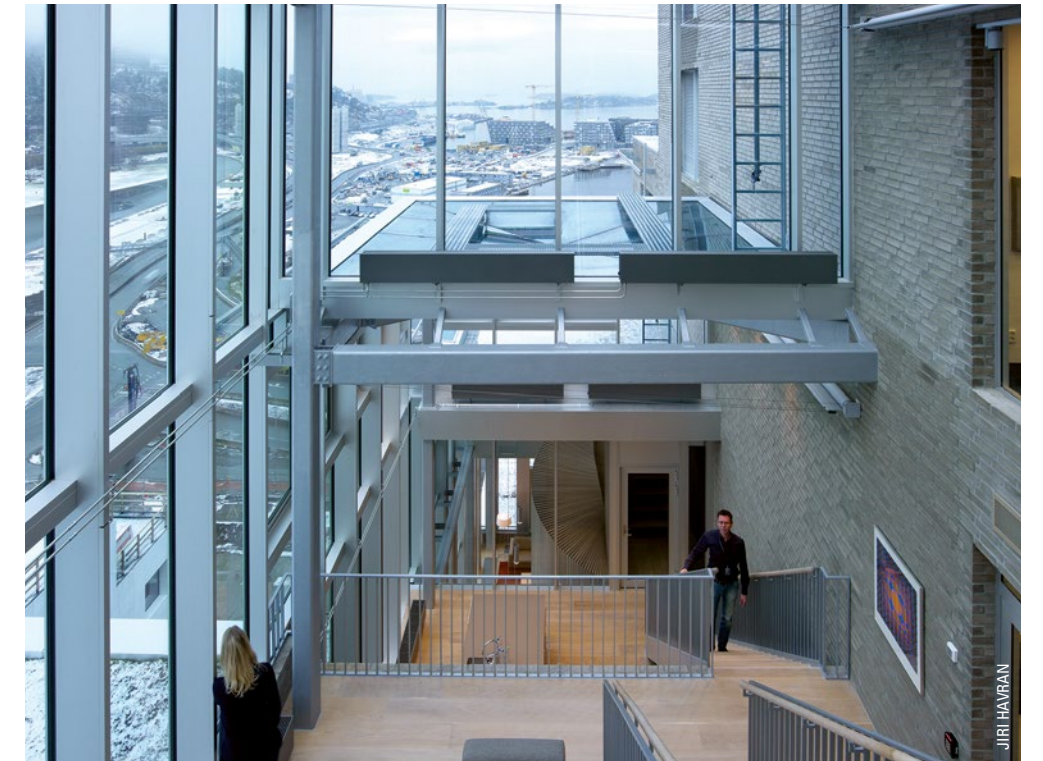
Words **Rachael Bernstone** Portrait by **Peter Bennetts**

# WINY MAAS

**W**iny Maas has been a design practitioner for more than 30 years, but his energy and drive resemble those of a 20-something student. From a young age, he seemed destined to work in landscapes in one form or another, but no-one could have predicted that instead of tending flowers or growing plants, Maas would tackle issues on a global scale, from a broad-based design perspective.

"My mother is a florist, my father is a gardener, so I was expected to take over the gardening business – my brother took over the floral business – but somehow I refused that," he laughs. "I started with landscape architecture and went on with architecture and urbanism, because I thought that combination would be more fruitful and effective, in terms of realising heavier elements with lighter elements."

Maas co-founded MVRDV in Rotterdam in 1993 with fellow architects Jacob van Rijs and Nathalie de Vries. In 2000, he visited Sydney when the firm undertook joint investigative project with the New South Wales Government Architect's Office, resulting in the publication *'Port Cities: Rotterdam Sydney'*.



**"Dutch landscape architects always did a lot to improve the make-ability of our country, so for us, design for the grander scale is in our blood"**



He visited Sydney again to speak at the 2017 Australian Institute of Architects National Conference, Praxis, presenting a selection of recent MVRDV work through a lens that ranged from XXL (including the speculative Sydney project from 2000, which proposed bridges made of shipping containers to link various islands in the harbour) right down to XXS (the Glass Farm, a small museum in his home town of Schijndel).

Speaking with *Steel Profile* before the conference, Maas suggested that MVRDV's projects – which can be found from The Netherlands to South Korea, and which range from private houses to master-planned new cities – share a common "biodiversity".

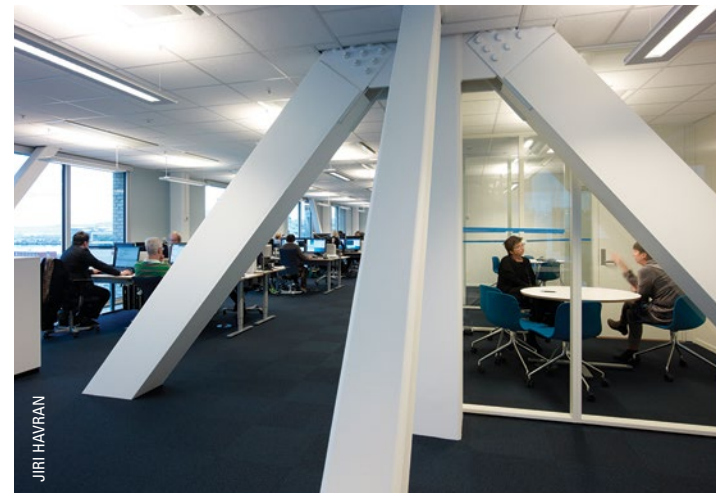
"They are linked together, there is an ecology to the projects," Maas explains. "To define it another way: they are all obsessed by directness and by communication; they are all obsessed by prototypical solutions for a grander scale and to answer somehow to a wider context. And last but not least, they are scaleless: they range from XXL to XXS, perhaps extending further than we thought about even 10 years ago."

MVRDV is firmly focussed on problem-solving for a sustainable future and Maas says that the firm's approach has antecedents in history, particularly in the work of the 17th century Frenchman dubbed the 'father of landscape architecture'. "After [Andre] Le Nôtre, I think that Dutch landscape architects always did a lot to improve the make-ability of our country, so for us, design for the grander scale is in our blood," he says. "In Australia, Glenn Murcutt also produces work that combines landscape and architecture, but he concentrates mainly on the very small scale: I've never seen him designing an alternative for Sydney. 🦘"





LEFT AND BELOW: Drawing on oil-platform construction techniques, the DNB House project features 1600 tonnes of structural steel, which added flexibility to the design process, Maas says



ABOVE: Located in the centre of Rotterdam, the Markthal is a unique hybrid that combines retail, public and residential uses in one iconic form

BELOW: To address the competing objectives of openness and protection from the weather, MVRDV used a flexible suspended steel and glass facade system, which provides maximum transparency with minimal structure

RIGHT: All of the apartments have windows that face inwards to the market, as well as out to the surrounding square and streets



“So that’s where we hope to fill in the gap,” he continues. “It’s not a completely Dutch approach though: there are now other countries or zones dealing with those same issues of scale. China has completely artificial cityscapes, as do other Asian cities such as Seoul in Korea. They are combining small and big to understand what they can do; looking at the two scales.”

This careful balance of macro- to micro-scale – and everything in between – could help to mitigate some of the common fears faced by communities around the world, Maas says. These include concerns about the negative effects of increasing populations on housing, transport and existing amenity in cities; the resulting global strain on resources; and the loss of natural habitats.

“We are fascinated by density, it’s one of the key drivers for saving the planet,” Maas explains. “We want to work out how to make the kinds of environments that you would like to live in.”

Several recent MVRDV projects have explored the qualities of transparency and porosity, which Maas claims are essential elements in liveable cities of the future. “Transparency [in design] is a way of giving a wider perspective,” he explains. “So we like to link interiors more with exteriors which makes it possible to make our cities more open; to combine density with openness. It’s one of our tools to make cities more survivable with greater density.”

A ground-breaking example of MVRDV’s exploration of the notion of transparency can be seen in the DNB House project in Oslo. On a waterfront site, the firm designed a staggered, pixelated office tower – using 1,600 tonnes of steel in the form of 6x6 metre steel-framed cubes – that makes a bold statement about the bank it houses.

“After the Global Financial Crisis [in 2008], there was a general distrust in the banking industry, and DNB wanted to create a system that would allow it to be more transparent, and to build up its internal controls,” Maas says. “They wanted to avoid the risks internally that led to the GFC, so we developed a ‘cockpit’ system, whereby each pixel is occupied by two people, who don’t know each other.

“Each pixel has windows on two sides, and they are connected in different ways,” Maas adds. “We kicked out some by using glass pixels internally to create two vertical streets that run in opposite directions around the building.”

The use of structural steel to construct the pixels was essential for two main reasons, Maas says. “One is that the Norwegians are extremely good with steel – we used an oil-platform builder to build this office building – and the second is that it made the process very flexible. During construction we could easily shift and rearrange the pixels, which, given the financial constraints and the speed of construction, was very useful.”

Concentrating more than 20 facilities into one site, DNB House accommodates 2000 flexible work spaces over 17 levels, with a panoramic canteen on the top level, and a trading room for 250 people. All of these functions are connected by the two vertical streets that meander upwards from reception via a series of stairs and bridges.

Communal areas located off the streets boast a domestic feel with pantries, informal meeting areas, reading-rooms, lounges and even fireplaces.

The streets provide access to outdoor terraces and roof gardens and offer views to the surroundings, as well as transparency into the building from outside. In recognition of the building’s innovative use of steel – across environmental, economic and design criteria – DNB House won the Norwegian Steel Construction Prize and the European Steel Design Award of Merit in 2015.

MVRDV also advocates making buildings in cities more porous, which offers advantages in terms of social engagement and environmental performance, Maas says. “The towers of the city as we know them are Introverted monsters,” he asserts. “They are completely a-social because they don’t want to ‘talk’ to the city, which is absurd.”

MVRDV’s projects go beyond the concept of green walls and roofs to achieve porosity by weaving landscape into, through and around buildings. Doing so breaks down their bulk and mass, thereby increasing density while maintaining active connections with the outside world and surrounding landscapes.

Maas calls this solution “the biggest tennis rackets in the world, to keep the storms out”. It comprises 26 vertical and 22 horizontal cables that are pre-stressed between strong steel boxes embedded and cast into the building’s walls. A single detail – a cast steel node – manages the intersection of the cables and holds each pane of glass in place.

“This type of glass facade was first done on a smaller scale, but this is new in terms of its sheer size,” Maas says. “The glazed wall can move inwards and outwards by 1.5 metres in the wind, and the glazing is screwed on with a clip, so the steel joints are very important, especially in the middle part, which has to be post-tensioned every five years.”

With its striking visual appearance – both inside and out – the Markthal presents a prototype for sustainable mixed-use development: one where food retailing, all-day hospitality and residences co-mingle harmoniously. It’s the sort of blue-sky design thinking that is required to tackle some of the most challenging problems of the modern era, globally.

Even though MVRDV has participated in several design competitions for projects located in Sydney over the past 15 years, it has so far been unsuccessful

## “The steel joints are very important, especially in the middle part, which has to be post-tensioned every five years”

An MVRDV project that used steel to great effect to achieve transparency and porosity is the Markthal project in Rotterdam, a unique hybrid in the city centre that combines retail, public and residential uses in one iconic form.

Shaped like “a bent skyscraper that goes down to the ground”, the Markthal needed to be both open – to attract visitors to its stalls, restaurants and cafes – and protected from the elements. To achieve these opposing objectives, MVRDV employed a flexible suspended steel and glass facade system that provides maximum transparency with minimal structure.

in bringing its unusual blend of Dutch heritage and forward-focussed ingenuity to Australia. But as our main cities grapple with predicted population growth over coming decades, MVRDV’s approach – which places equal emphasis on landscape, architecture and urbanism to increase densities – may find more favour with planners and developers, especially if Australian communities begin to demand better amenities and improved connections to nature as a trade-off for such density increases. **SP**





Deftly responding to a host of contextual challenges, this ski field base building made of steel combines utility, durability and aesthetics into a dramatic and functional launch-pad from which visitors can enjoy the snow.

Words **Lorenzo Logi** Photography **Esther Small; Kyle Mulinder**

# MOUNTAIN PEEK

**ARCHITECT**  
Michael Wyatt Architecture  
**PROJECT**  
The New Remarkables Base  
Amenities Building  
**LOCATION**  
Queenstown, New Zealand



Under the best circumstances, successful projects are built through harmonious collaboration, careful planning and creative problem-solving. Add punishing and unpredictable alpine conditions to the mix, and challenges are escalated by orders of magnitude.

Such was the case in the design and execution of The Remarkables new ski field Amenities Base Building, owned and operated by NZSki, designed by Michael Wyatt Architect and built by Arrow International. Located in New Zealand's Southern Alps in Queenstown, the ski field spans 540 hectares across three slopes at an elevation of just under 2000 metres, offering beginner through to advanced routes.

The client's brief to the architect expanded on his previous work designing ski field base buildings. And it evolved from an original plan to renovate an existing structure into a design for a new build. While accessibility was an especially relevant consideration where ice, snow and wind are involved – and where visitors are frequently carrying heavy, unwieldy gear – the new build also allowed them to relocate away from an avalanche field where the original structure was sited – no doubt, also a reassuring outcome.

With a clean sheet, Wyatt was able to address the challenging demands of the building's users.

"The idea is that you come in at the entrance level and you hire your skis and get fitted up, then you come up a stair and burst out onto the field ready to ski. You ski around the hill and then you may feel like a coffee and a pie so you come in at the top level, all from your ski field." Wyatt says. The arrangement allows a smooth progression for visitors to access the services they need in a predictable sequence, while also keeping the ground floor goods delivery and rubbish pick-up area, with its traffic of trucks and service staff, discrete from guest areas.

Wyatt's design capitalises on the strength of the required materiality to incorporate dramatic planes and support structures, marrying engineering prowess with visual interest. This is achieved primarily via running long spans of Kingspan® Trapezoidal insulated panels for walling and roofing made from COLORBOND® steel in the colour Monument®. The roof is pitched at an angle of only five-degrees, rising gently to where it meets a diagonal steel support column custom-welded by steel fabricators Action Engineering to form a cantilevered angular point draped in glazed glass: the dramatic (and geometric) apex of the structure. This shallow gradient also served the purpose of allowing snow to gently melt and drain from the roof, rather than "suddenly losing its grip and coming off in one big whoosh," Wyatt says, which could be a safety issue. ➔

## Wyatt's design capitalises on the strength of the required materiality to incorporate dramatic planes and support structures, marrying engineering prowess with visual interest

"There are large numbers of people in short times because they all arrive in the window of two to three hours. You might be dealing with 3000 customers," he explains. "The primary purpose of the building was to offer a good experience for the clients and to avoid the frustration of waiting too long for something, or not being able to find something easily."

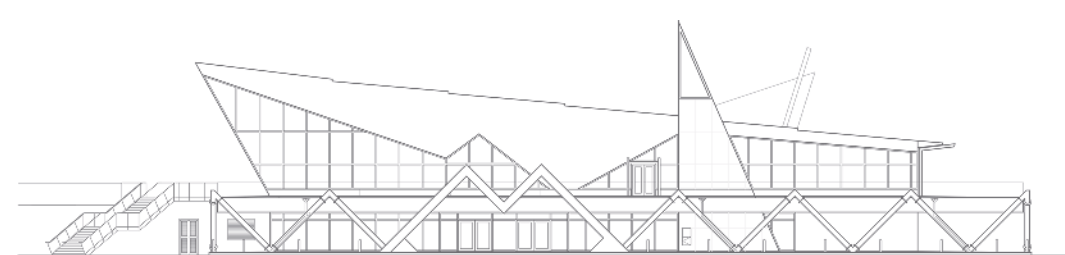
The resulting design is a balance between clean, essential lines that reflect and respond to the surrounding context; robust structure and materiality to weather the harsh conditions; and utilitarian consideration of the building's occupants and functions.

The structure's perimeter is elaborated from a triangular floor plan, which afforded at least one, if not two sides with wind shelter at any given time, while reducing wind load overall. The three-sided arrangement also allows three distinct panoramas to be isolated, Wyatt says. "One towards a lovely view down the valley, another one directly related to the field, and a third one which could be more hidden so that the vehicles that served the building could approach it from that side," he explains.

The building is split over three levels, with back-of-house at the bottom, the formal entrance, guest services, administration offices and ski/board equipment hire in the middle level, and hospitality amenities at the top, which also opens onto the ski field. A drop-off and pick-up carpark is level with the entrance to The Remarkables ski field.



NORTH WEST ELEVATION



NORTH EAST ELEVATION



## PANEL SAYS

This alpine ski resort near Queenstown in New Zealand features an intelligent use of Kingspan® Trapezoidal insulated panels for walling and roofing made from COLORBOND® steel in the colour Monument®, that are well suited to the hostile environment – offering efficiencies in both construction and operational phases. Designed to facilitate the movement of large crowds of skiers over shortened timeframes, the building boasts a logical sequence from its ground-floor service area to the upper-level hospitality zone. Externally, the building is notable for its bold cantilevered triangular form, which sits deferentially among the alpine peaks. Inside, the design allows visitors to take in the full majesty of the setting thanks to the high apex of the roof, which expands the outlook upwards. It's a clever marriage of form and function in a challenging location

TOP AND LEFT: Elevated, and transparent, yet anchored by steel and stone, the base building is at once beguilingly delicate and formidably robust





The balance of strength, span, delicacy and thermal resilience requisite for the design made choosing the Kingspan® Trapezoidal insulated panels made from COLORBOND® steel in the colour Monument® easy



TOP: The topmost level opens directly onto the ski-field, providing comfort and amenity to skiers and visitors alike.

LEFT: Generous volumes and floor-to-ceiling fenestration afford both comfort and prospect, with seating at the 'shark's nose' tip of the building offering an immersive alpine panorama

ABOVE: Layered materiality and bright, warm colours interrupt structural finishes internally, animating and softening hospitality areas

Complementing the subtle play of geometries introduced by the mono-pitch roof, the diagonal steel columns add considerably to the drama of the structure. Wyatt reflects: "I realised that by undercutting the point on the triangle the building would have a purposeful drift that would balance the long, gentle roof slope. The columns support the load down below more easily, and it was given a more poised look, pointing forward like the nose of a shark."

"There were arguments against [the decision to make the columns diagonal]," Wyatt continues, "with a bit of resistance from the engineer, but I managed to get it across the line, and that's really what gives it the edge."

The ensemble of the building's stalwart materiality, brooding colours and crisp angularity resonates with the silhouettes of The Remarkables peaks and the surrounding mountain ranges, evoking the chiselled granite outcrops that punctuate the snow fields, and offering a curiously organic interpretation of what is unmistakably a human-made form.

Internally, spaces are generous, with "Plenty of space for people to mill around while they sort themselves out". Wyatt has been cautious to break the volume into sub-zones of a more human scale, particularly by placing the kitchen in the centre of the upper-level plan. A fireplace set amongst timber finishes also interrupts the 'cooler' materials of the building, a small yet definite allusion to cosy alpine hearths.

Wyatt says the balance of strength, span, delicacy and thermal resilience requisite for the design made choosing the Kingspan® Trapezoidal insulated panels made from COLORBOND® steel in the colour Monument® easy. "It made a lot of sense to make it out of structural steel panels because it meant

that the wall system could be braced, and all of the support with the glazing on top could be attached to that steel grid in a fairly logical and simple way, because it did have to cope with very high wind," Wyatt explains. "At the time, we designed for a wind load of something like 250 kilometres per hour." Another climatic factor that informed the choice of materials was that the Kingspan® Trapezoidal insulated panels deliver an R Value of R5.35, providing the correct level of thermal and structural performance required in this extreme environment. And before the demands placed on the completed building even came into play, constructing with steel allowed individual parts to be pre-made off-site, trucked in and assembled rapidly. This resulted in the build being completed a month ahead of schedule – especially impressive given the nine-month building window (between ski seasons), challenges of building in such cold temperatures and frustrations associated with not being able to build in bad weather at all.

The building has received wide praise, including an award from the New Zealand Institute of Architects' Southern branch in the Commercial category. That jury described it as "A dramatic and elegant wing to the mountains". It also collected the Supreme Award at the New Zealand Commercial Project Awards, where judges described it as "a project like no other". Wyatt is also happy with the outcome, evaluating it as "An appropriate and interesting form that will stick in people's minds as an image that they associate with that ski field". Whilst it is perhaps the building's striking profile that will stay in visitors' memories, the ease, comfort and safety with which they navigate the structure – all of which are unlikely to even be noticed – are just as central to the project's success. **SP**

**PROJECT** The New Remarkables Base Amenities Building **CLIENT** NZSki **ARCHITECT** Michael Wyatt Architecture **LOCATION** Queenstown, New Zealand **STRUCTURAL & CIVIL ENGINEER** Aurecon **BUILDER** Arrow International **STEEL FABRICATOR** Action Engineering **CLADDING CONTRACTOR** Archer Construction **PRINCIPAL STEEL COMPONENTS** Kingspan® Trapezoidal insulated panels for walling and roofing made from COLORBOND® steel in the colour Monument®. Structural steel including custom-welded circular support columns **AWARDS** Commercial award from the New Zealand Institute of Architects' Southern branch; Supreme Award at the New Zealand Commercial Project Awards **BUILDING SIZE** 4470m²



# FABLED STABLE

This country home including horse stables – designed by Casey Brown Architects – sits beautifully in the rugged Snowy Mountains of the New South Wales landscape.

Words **Alex Taylor** Photography **Rhys Holland**

**ARCHITECT**  
Casey Brown Architecture

**PROJECT**  
Crackenback Stables

**LOCATION**  
Crackenback, New South Wales



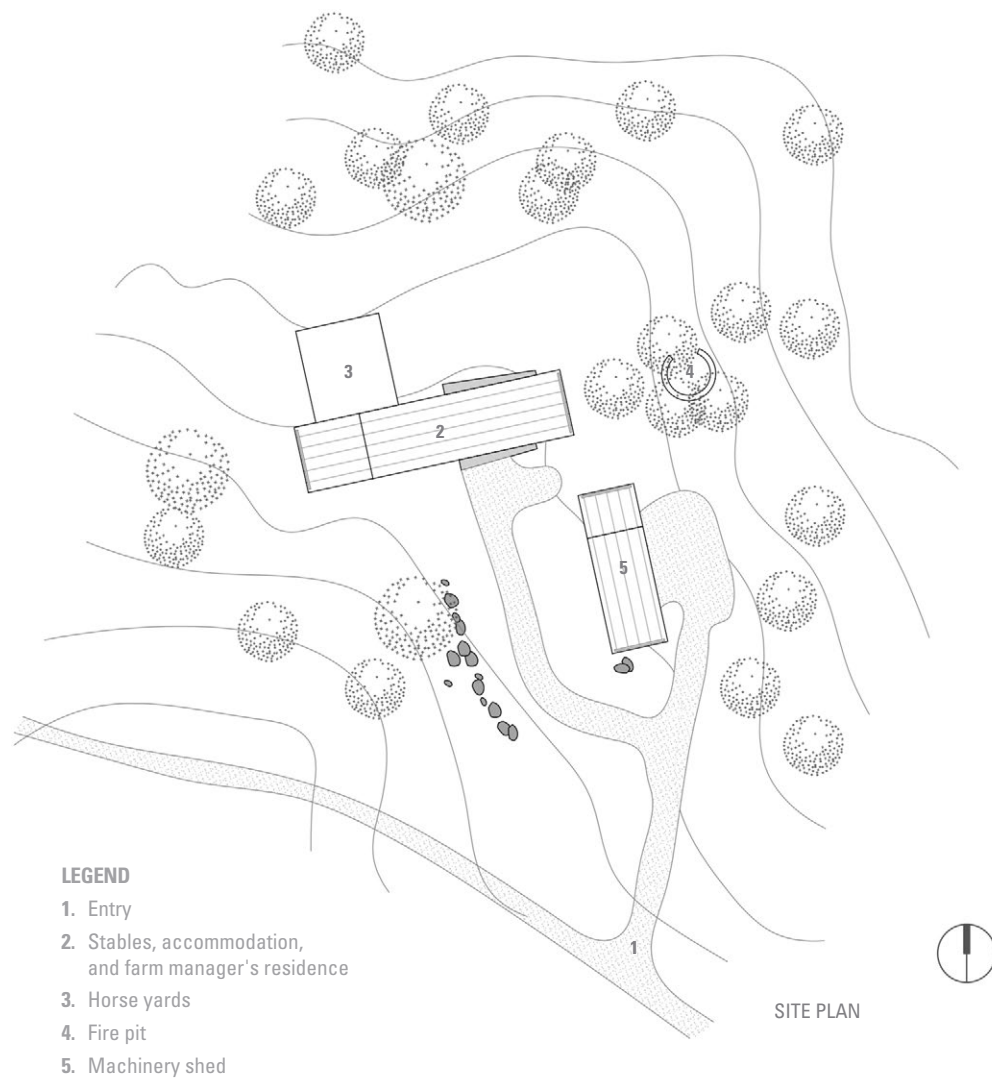
When it comes to building spectacular architect-designed homes in New South Wales, John Fielding, founder and managing director of Bellevarde Constructions, is virtually unrivalled. He's built award-winning homes for Richard Johnson, Peter Stutchbury, Nick Tobias, Virginia Kerridge and Alex Popov, to name a few. It stands to reason then that the stables for Fielding's horses, located on the edge of the Kosciuszko National Park in the Snowy Mountains, was always going to be an exemplar of its type, and it was always going to be clad entirely in steel.

"We've done that three times before," Fielding says. The Magney House by Glenn Murcutt is probably the most well-known forerunner. "It's in my DNA to do things beautifully with economical materials." Fielding adds.

There were other reasons for choosing steel too, says architect Rob Brown of Casey Brown Architecture. "It came from our understanding of a modern vernacular, the collection of water and combustibility in fire-susceptible areas," Brown explains. "It was an obvious solution: we decided very early that the building should be principally steel."

For Brown, who has built many homes with Fielding over the years, the chance to design what started out as a modest farm shed for one of the country's most exacting builders was an interesting commission. "I think we both started with an appreciation of each-others' skills: I admire his amazing ability to realise architects' dreams, and he obviously thought I could come up with something original and different," Brown says. "One of his requirements was that he wanted it to win awards, and it won five [including the Australian Institute of Architects New South Wales Chapter COLORBOND® Award for Steel Architecture, in 2016], so we achieved that."

Even though the project commenced with high aspirations as far as build quality and design detailing were concerned, initially it was intended to only provide accommodation for Fielding's horses and an on-site manager. However during construction, which was overseen by long-time Bellevarde collaborator, architect Vince Myson and employee Steve O'Ryan, it dawned on Fielding that he might like to spend more time at the property than he'd originally envisaged, so the plans for the upper floor were altered.



#### LEGEND

1. Entry
2. Stables, accommodation, and farm manager's residence
3. Horse yards
4. Fire pit
5. Machinery shed

"I probably didn't realise how much I was going to like it," Fielding laughs. "It was only going to be a place for our horses and for us to sleep there occasionally – we planned to generally stay in Thredbo – but as it came together I realised I wanted to stay there more often, so we turned the upstairs area into a two-bedroom apartment."

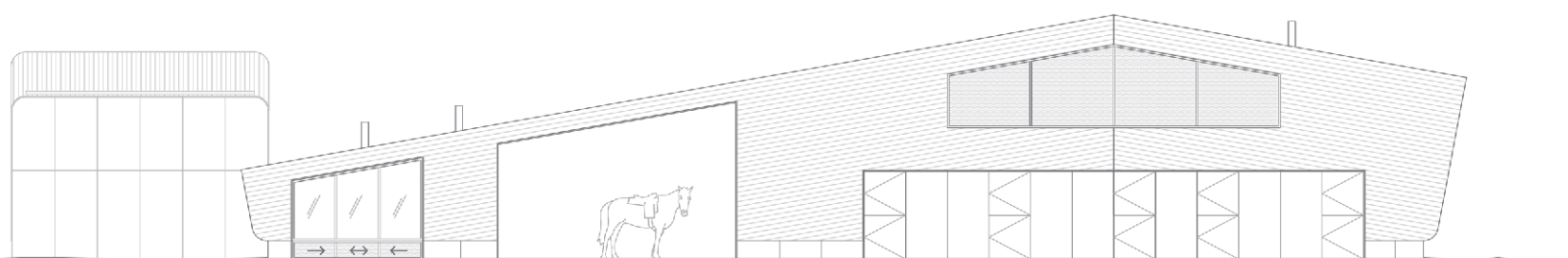
It's the only luxury horse and human accommodation in the area for many miles, but despite its grandeur the building sits comfortably within its bush landscape and highly variable climate. "We were looking at the place as our inspiration, with its cold winter temperatures, potential for bushfires in summer and stunning views over the mountains," Brown says. "I wasn't particularly thinking of other buildings when I set

out to design this, but there is a metal-clad structure at the top of Mount Thredbo that houses the workings of the main lift and a restaurant, and that was in the back of my mind.

"I was also thinking about classic rural buildings such as woolsheds and barns that everybody has seen driving in the country, which are clad in corrugated iron," Brown adds. "They are usually simple in form and shape, and they have no pretence, although they are often quite large in scale: they have a presence in the landscape.

"We combined that understanding of history and the vernacular with the notion that we wanted to do something of that nature, but in a contemporary way that addressed issues of bushfire regulations, and flies, and that would aerodynamically deal with

**"Crackenback Stables is a veritable exploration of the possibilities of steel itself, both as a material of structure and one of immense architectural beauty"**



NORTH ELEVATION



the huge winds and heavy snowfall," Brown says. "It needed to safely withstand the elements: that landscape is not subject to timid conditions – they tend to be extreme – so that knowledge informed the overall premise."

For all those reasons, and in keeping with the ski-lift on the nearby peak, this is a utilitarian structure that is completely at ease in its setting. The building's shell made from ZINC HI-TEN® steel in Stramit® Corrugated profile hugs the ground and protects the occupants from the climate's extreme elements.

The ground floor comprises five stalls for horses and their associated tack and store rooms, and a small apartment for the onsite manager. These two zones are separated by a covered breezeway that is lined with hot-rolled mild steel in grade HA200 and HA250, with 2mm used for the walling, and 3mm for the ceiling. "The resulting auburn colour of the oxidising steel gave us an opportunity to contrast with the silver roofing and walling of the shed, creating a wonderfully rugged and beautifully rich entry portal," Brown says. "The auburn-coloured steel cladding defines that space as different: it protects you from the elements as you are arriving and unpacking, or dismounting from your horse."

Upstairs, Fielding's two-bedroom apartment nestles beneath the sloping roofline, providing a place to relax and unwind after a day spent riding in the mountains. From here, picture windows take in northerly views of snow gums and tussock grass in the foreground, and panoramic vistas of snow-capped peaks in the distance. On the eastern and western elevations a combination of mild steel tilt-up panels and operable steel fly mesh screens work together to allow natural ventilation into the building while excluding flies and insects.

The southern side is punctuated by small square windows, also made from hot-rolled mild steel in grade HA200 and HA250, as are the doors, hinges and much of the concealed structural frame which comprises SHS posts, PFC beams, as well as 6mm mild steel plate. Beneath the cladding there are some blockwork walls in the ground floor that act as a reverse-brick veneer composition (to increase thermal mass, insulation and rigidity).

In the stables, the doors to each stall are compartmentalised with openable parts, designed by Steve O'Ryan and, again, all made from 2mm BlueScope mild steel. A solid lower section is topped with tiers of steel strips made from the same steel, backed by a layer of perforated mesh; the entire construction held fast by a bespoke steel 'horse-proof' locking mechanism.

"Crackenback Stables is a veritable exploration of the possibilities of steel itself, both as a material of structure and one of immense architectural beauty," Brown says. "The building is robust with its metal window frames and metal facade, and it's also low-maintenance. And the steel also gave us the opportunity to experiment with detailing, relative to what's underneath." ➡

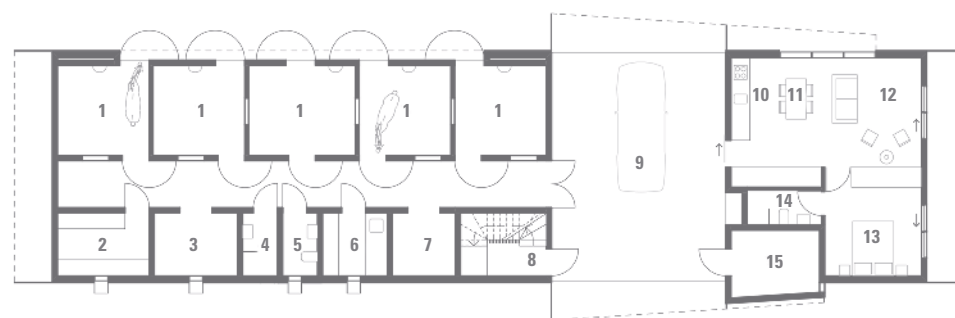
LEFT: Everywhere you look, the project team's commitment and dedication to producing finely crafted steel details using off-the-shelf materials is evident





ABOVE: Rob Brown says the mild steel of the entry portal “Defines that space as different: it protects you from the elements as you are arriving and unpacking, or dismounting from your horse”

TOP RIGHT AND RIGHT: Laying the corrugations in line with the building’s trapezoidal form was a challenge that offered several advantages: rainwater is easily collected via ‘secret gutters’ for storage in underground tanks; the detailing reduces the risk of ember attack in bushfires, and aesthetically, it creates a fine edge to the sky



GROUND FLOOR PLAN

#### LEGEND

- |                  |                          |                       |
|------------------|--------------------------|-----------------------|
| 1. Horse stables | 6. Laundry               | 11. Dining            |
| 2. Workshop      | 7. Feed store            | 12. Living            |
| 3. Tack room     | 8. Entry                 | 13. Bedroom           |
| 4. Shower room   | 9. Covered entry/carport | 14. Bathroom          |
| 5. WC            | 10. Kitchen              | 15. Plant/Boiler room |



LEVEL 1 PLAN

#### LEGEND

- |                     |                  |                                 |
|---------------------|------------------|---------------------------------|
| 1. Master bedroom   | 5. Dining        | 9. Bathroom                     |
| 2. Void             | 6. Kitchen       | 10. Entry                       |
| 3. Ensuite Bathroom | 7. Verandah      | 11. Covered entry/carport under |
| 4. Living           | 8. Bedroom/Store |                                 |

## PANEL SAYS

We’re all familiar with the conventional steel shed in the Australian landscape: it’s a form that has influenced many other building types over the years, from houses to museums. But this project in the Snowy Mountains – a combined stables and two small dwellings – takes the concept of a steel-clad shed to a whole new level, opting for robust forms over romantic ease. With a simple, bunker-like form that hugs the ground – protecting its occupants from rain, snow and fire – the building boasts a no-nonsense clarity and legibility that allows it to sit beautifully in its rugged landscape. Like an echidna with its spiny coat and furry underbelly, the building is protected by its silvery armature made from ZINCALUME® steel, while the main entrance is denoted by the warm and welcoming undercroft lined with oxidised steel coil. With its high-level detailing and exemplary handling of materials, such as the orientation of the steel cladding that amplifies the trapezoidal forms, this is a masterful reinterpretation of an Australian classic

Closer inspection reveals that most of the custom-designed and hand-crafted details are made from steel, from the holding yards at the northern end to the concealed clothesline; and the steel ladder frames that help to achieve the large cantilever awnings.

As the owner and builder of this project, Fielding says he and his construction team were happy to experiment beyond the scope of the company’s quality-control bible – the *Bellevarde Manual* – that can be found at every one of its building sites. This project enabled them to incorporate hand-made details more than is usually possible, he says “because we had no restraints: we didn’t have to get budget approvals”.

“We had the rolled corrugated exterior steel cladding cut on-site, however putting it together perfectly took some time and a good amount of skill,” he says. “Our engineer, Ken Murtagh, deserves a mention here. He and Steve found ways to do things even I thought might be impossible. I’m still impressed with the smart way they concealed the downpipe in the subtle curves at each end of the building.”

Those ‘secret’ gutters and downpipes were hidden within the curving roofline for both functional and aesthetic reasons, Brown says. “They allow us to get rain water off the building using the corrugations that follow the pitch of the roof, to be collected and stored in a tank below, and they also reduce the risk of fire from ember attack,” he says. “From an aesthetic point of view, they allow us to create a very fine edge to the sky.”

There are many more unique steel details throughout the project too, Fielding says. “Steve created some special hinges to hang the heavy steel sheets in the covered entrance area that, with the patina, have almost completely integrated into the form,” he says. “It’s beautiful and ingenious. As a builder, that’s the kind of thing I love.

For Rob Brown, the most satisfying aspect of the building is the way it functions in its setting, and its contribution to our understanding of how people and animals can inhabit such wild locations. “After it was finished, John invited my family and I to stay there for a week in the school holidays,” he says. “We went skiing and it snowed at the

stables too. It was a wonderful building to be in: it works really well and sits in the landscape beautifully. I think it quietly says something about horses, and snow, and vernacular Australian architecture.”

The Australian Institute of Architects New South Wales Chapter Jurors agreed, writing in the jury citation in 2016 that this project reinterprets the genre of the corrugated steel shed, a typology that is “entrenched in our Australian cultural identity”. They said: “This architecture brings joy in its elevation of the utilitarian to become refined objects that enhance the spectacular landscape they occupy.”

The client and builder couldn’t be more pleased with the finished product – an exploration of the capacity of steel to create something uniquely Australian. Fielding says that he and his wife are at their “most relaxed” when they visit Crackenback, and the horses seem to like it too. “It turned out better than I think any of us expected and it’s a credit to everyone involved,” he says. “It’s also managed to win a few awards: not bad for a steel shed.” **SP**

“We had the rolled corrugated exterior steel cladding cut on-site, however putting it together perfectly took some time and a good amount of skill”



**PROJECT** Crackenback Stables **CLIENT** John Fielding **ARCHITECT** Casey Brown Architecture **DESIGN ARCHITECT** Rob Brown **PROJECT ARCHITECTS** Vince Myson and Siobhan Berkery of Myson+Berkery Architects **BUILDER** Steve O’Ryan (foreman), Bellevarde Constructions **STRUCTURAL ENGINEER** Ken Murtagh, Murtagh Bond **STEEL FABRICATOR** GZ Engineering, Jindabyne **STEEL SHOP DRAWINGS** GNZ Design **LANDSCAPE ARCHITECT** Michael Bates, Bates Landscaping **APPROXIMATE SIZE** 369m<sup>2</sup> **PRINCIPAL STEEL PRODUCTS** Wall cladding and roofing: Stramit® Corrugated profile made from BlueScope ZINC-HI-TEN® G550U Z450. Internal linings, awnings, fences: 2mm and 3mm hot rolled mild steel coil, AS/NZS 1594-HA200 and AS/NZS 1594-HA250, from BlueScope Flat Steel Products Sheet Metal Supplies. Doors, windows, details: 2mm hot rolled mild steel coil from BlueScope Flat Steel Products Sheet Metal Supplies. Structural frame: Posts: 90x90x5 SHS; Beams: 250 PFC, Plate: 6mm mld steel, all from OneSteel Metal Centre **AWARDS** 2016 Australian Institute of Architects New South Wales Chapter COLORBOND® Award for Steel Architecture; Residential Architecture – Houses (New) – Commendation



# TIMELESS QUALITY

Inspired by the humble beach shacks of old, this new house opposite the Indian Ocean is the latest member of iredale pedersen hook's family of elevated and elegantly steel-wrapped houses.

Words **Rachael Bernstone** Photography **Dion Robeson**



**ARCHITECT**  
iredale pedersen hook Architects  
**PROJECT**  
Falcon Beach House  
**LOCATION**  
Falcon Beach, Western Australia





The beach and the beach house are etched into our Australian national identity, although the experience of visiting the coast has evolved over the past few decades. Whereas people once used to build and inhabit humble shacks made from inexpensive materials, many of those are now being torn down and replaced by larger and sometimes more ostentatious homes; less like weekenders and more like permanent dwellings.

This home opposite Falcon Beach, 70km south of Perth, wrapped in cladding made from COLORBOND® Ultra steel flies in the face of current trends in coastal housing and harks back to a bygone era;

The houses were built close to the beach, and they were simple: everyone would sleep in bunks. Even the place names of the area – Falcon, Florida, Miami and Avalon – all allude to and aspire to that surf beach dream.”

Iredale started documenting these relics of a past era when he was commissioned to design a beach house for his parents in 2000. “Back then, there were a lot of freaky houses – many of them built as experiments – and they shared a complete rigour of economy, and were mostly delicately placed on the landscape,” he says. “Those homes are disappearing now, as the suburbs extend towards these beaches. We as

“From the beach, the house appears to be sitting within its landscape, but from the street, thanks to its long legs, it appears to float gently above it”

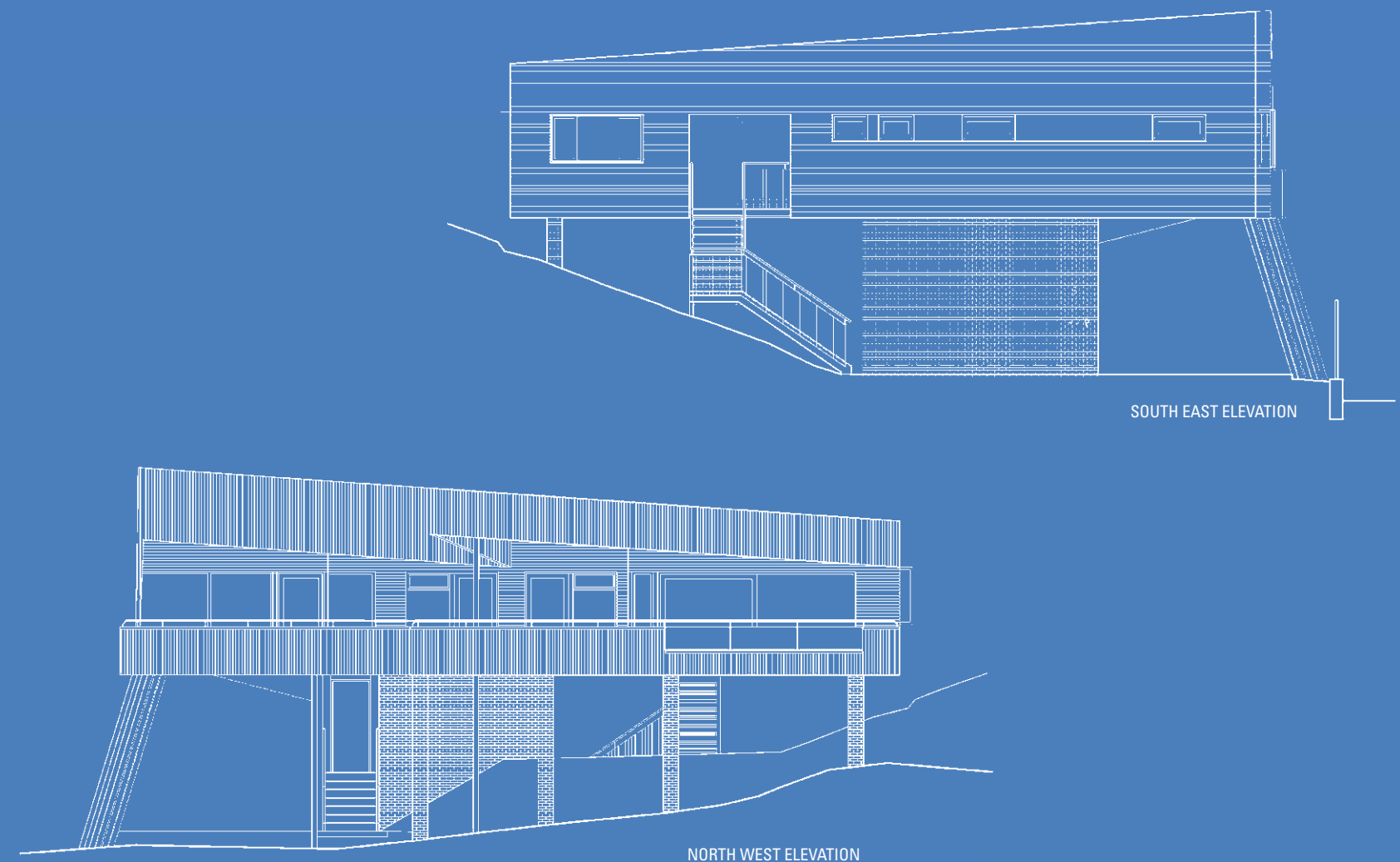
one in which going to the beach involved a stripping back of expectations in order to slip into a more relaxed way of being. The house embraces the spirit of its place and the local vernacular through its economy of materials, modest size and rigorous planning.

“Falcon is one of these fantastic city-fringe weekender destinations that evokes a feeling of a past time, a time that we no longer experience,” Iredale says. “The houses were clearly built as weekenders, and Perth people would go down to stay; there’d be no television, only a radio.

architects have a lot of affection for those older areas that are being surrounded by newer buildings.”

As do the clients who commissioned this house, the newest member in Iredale’s extended family of elevated dwellings with cladding made from COLORBOND® steel. The first – the house for his parents at the nearby Dawesville estuary – was nicknamed ‘Daddy Long Legs’ by architect and writer Stephen Neille. Then came the rural Gidgegannup House (see *Steel Profile* 103), followed by an un-built project at Eagle Bay and more recently the Nannup House, sited at the edge of a forest (see *Steel Profile* 119). ➔

The house has three distinctly coloured layers: the black underbelly with its brick and steel columns, the thin grey divider of the concrete slab, and the white upper level, which is wrapped in cladding made from COLORBOND® Ultra steel in the colour Surfmist®







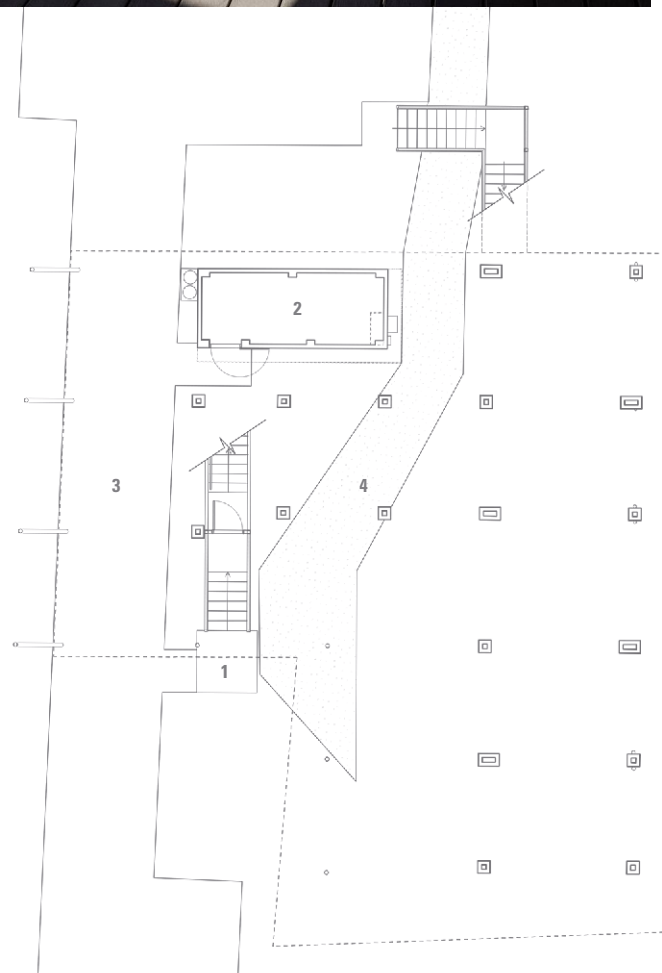
ABOVE: The three colours are most clearly delineated in the front stairwell, where the handrail changes colour to reflect the ascendance from darkness to light

LEFT: The change in orientation of the corrugations – where the polycarbonate meets COLORBOND® Ultra steel – highlights the design's exploration of horizontal and vertical elements

OPPOSITE: The outlook benefits from a man-made hollow in the sand dune created by local surfing pioneer Ray Geary, after whom the nearby surf-break is named

#### LEGEND

1. Entry
2. Store
3. Driveway
4. Stone spalls
5. Bedrooms
6. Ensuite
7. Store
8. Bathroom
9. Laundry
10. Deck
11. Kitchen
12. Living + Dining
13. Balcony
14. Void



GROUND FLOOR PLAN



FIRST FLOOR PLAN

## The tapered edges – like the lid of a chocolate box – subtly peel back to reveal the COLORBOND® Ultra steel within

Iredale refers to this latest offering as 'Daddy Longer Legs': it hovers above its sand dune site to take advantage of views across the Indian Ocean, thereby preserving the sensitive ground plane beneath.

"The house is small by contemporary house standards [at 210m<sup>2</sup> internally] and the idea was to hover it above the landscape," Iredale says. "From the floor up, everything is white – and below that everything is 'black' – including COLORBOND® Ultra steel in the colour Monument® and brick walls and pylons – which helps to turn the world underneath the house into an adventure zone for the clients' grandchildren." Even the handrails reflect the monochrome palette, changing from black to grey to white, as they ascend the stairs.

"You get these unusual aspects at Mandurah where the coast flicks around to allow you to look towards the north-west," Iredale says. "It means you don't have the issue of full-blasting sunlight at sunset when you take in the view."

The steel carapace is made from COLORBOND® Ultra steel in the colours Surfmist® and Monument®, with the roofing and walling in LYSAGHT CUSTOM ORB® profile. The building's front is shrouded by two slices of polycarbonate – one serves as a balcony, the other a 'sun-visor' – that offer the occupants privacy and shelter from wind, afternoon sun and blasting rains.

"At night time, from the street, the whole thing glows like a lantern," Iredale says. "On the deck, you have the impression that the surroundings have disappeared and you are engulfed by the vessel of the house. The double layers of the balcony screens perform like a delicate Japanese *shoji* screen, and the geometry is all about an intense dialogue with the horizon."

The exterior sheeting made from COLORBOND® Ultra steel in LYSAGHT CUSTOM ORB® profile was laid horizontally to reinforce the connection with the distant link between earth and sky, Iredale says. "We used a timber trim along the edges of the horizontal profile to detail up along the cuts. We wanted to detail this project for longevity: that system of horizontal profile trimmed in timber is designed to create a weather-proof system that wouldn't trap salt and sand."

Another carefully considered detail is the tapered edges of the polycarbonate, which – like the lid of a chocolate box – subtly peel back to reveal the COLORBOND® Ultra steel within. "That sense of tension and interruption forces you to measure the horizon, so the architecture actually starts to moderate your perception of the horizon," Iredale says. "And there is a delicate juxtaposition of the Surfmist® colour where it meets the vertical orientation of the polycarbonate at the edge of verandah, that further plays on that exploration of horizontal and vertical elements." ➤

This is not a lightweight construction, despite the appearance of its skin made from COLORBOND® Ultra steel, Iredale says. "It's elevated on a combination of angled circular hollow section columns – which create a wider opening for the driveway – and brick plinths that refer to the local shacks of yesteryear," he explains. "We used a concrete slab, and from the floor up there is a timber frame with steel columns that act as posts at certain points. We added layers of insulation before wrapping up virtually the whole building with an exterior made from COLORBOND® Ultra steel.

The form of the house was conceived as a cube. Eroded on one side to form an L-shape, the cutout is orientated to maximise the atypical orientation.







"On the deck, you have the impression that the surroundings have disappeared and you are engulfed by the vessel of the house"

From the ground level, the house is accessed via a front 'ceremonial' stair and a second stair at the rear that ascends to a small deck that can be secured with a roller door. An internal storeroom at the top of the front stair has the capacity to be repurposed as a foyer in future should the owners decide to install a lift that can be attached to the outside of the rear elevation, if they opt to move permanently to the coast after retirement. "This is a building that will get better in time, as that foyer develops," Iredale says.

Inside, a cruciform plan boasts windows at either end of the NE-SW axis to facilitate cross-ventilation, in concert with the openings on the front and rear elevations. The master bedroom and ensuite bathroom both offer views of the ocean, as do two more bedrooms, while a bunk-room overlooks the back yard. The single indoor living space – combined kitchen, dining and sitting areas – has a raked ceiling and opens onto an oversized deck that wraps around the front of the house. Its generous size means that it can be occupied by distinct groups of people – adults and children, for example – in different ways, at various times of day.

"All of the living spaces connect to the outdoor deck which is big, because we believe that once you've elevated people, you want to give them lots of space to enjoy and connect back to the view," Iredale says.

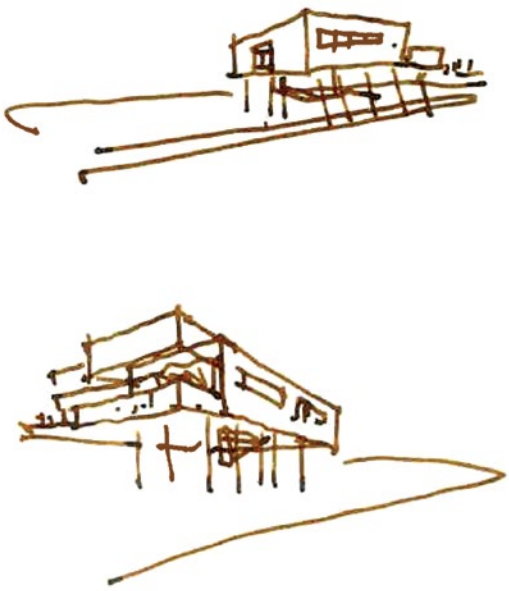
He asserts that the material selection and overall size of the house were kept deliberately low-key

on this project. "Everything is pretty minimal – the clients didn't want to go down there to luxuriate. There's an outdoor shower to wash the salt and sand off, and a triple garage to store all the water sports paraphernalia," he says. "Inside, the design is neutral to exaggerate as much as possible the connection to the ocean and changing colour of the ocean. Being outside on the deck is fundamental to that experience.

In one concession to the site's incredible location, the polycarbonate balcony outside the main living space edging dips down to give a direct view across to the ocean. "The sand dune in front drops down and so it feels like the house sits on top of the dune," Iredale says. The man-made feature was carved out by a local surfing pioneer – Ray Geary – after whom the nearby surf-break is named – who, as a young man, repeatedly drove his car over the dunes to access the waves, unintentionally opening up the view in the process.

"From the beach, the house appears to be sitting within its landscape, but from the street, thanks to its long legs, it appears to float gently above it," Iredale says.

With its smart and sophisticated colour palette, bold geometry and crisp detailing, this new house is a far cry from the few remaining beach shacks that dot the nearby dunes. But in its modesty and lack of pretension, it stands as a fitting monument to the pleasures of the simple life; when sun, sand and salt were all that was needed to enjoy a relaxing holiday at the beach. **SP**



## PANEL SAYS

The latest project from Perth's iredale pedersen hook Architects demonstrates the firm's golden touch when it comes to building with steel. The clean geometric lines of the upper level – clad in COLORBOND® Ultra steel in LYSAGHT CUSTOM ORB® profile, in the colour Surfmist® – appear to hover above the building's darkened base below, and its undercroft soffit cladding made from COLORBOND® Ultra steel directs the occupants' attention outwards to the beauty of the location. The design provides a masterly controlled example of relief and prospect with ample protection from wind, sun and rain, while enhancing connections to the nearby beach and distant horizon. The combination of logical planning and robust materials is enriched by a considered overlay of sophisticated detailing – see the colour-changing handrails, and the arrangement of opaque and transparent ribbed profiles as examples – that add to its sense of delight



ABOVE: The 80m<sup>2</sup> front deck comes into its own at night, when the house glows like a lantern from the street and beach

OPPOSITE AND FAR LEFT: The deck is oversized to cater for different groups of people and different times of day. "We believe that once you've elevated people, you want to give them lots of space to enjoy and connect back to the view," Iredale says

**PROJECT** Falcon Beach House **ARCHITECT** iredale pedersen hook Architects **PROJECT TEAM** Adrian Iredale, Finn Pedersen, Martyn Hook, Mary McAree, Vincci Chow, Jason Lenard, Caroline Di Costa, Khairani Khalifah, Matthew Omodei, Melissa Loong, Penny Anderson, Sinan Pirie **STRUCTURAL & CIVIL ENGINEER** Terpkos Engineering **BUILDER** Hugo Homes **STEEL FABRICATOR** Complete Steel Projects **SHOP DRAWING CONTRACTOR** Complete Steel Projects **CLADDING CONTRACTOR** Carter Roofing **LANDSCAPE ARCHITECTS** Terry Farrell, Nature Based Play **PRINCIPAL STEEL COMPONENTS** Roofing and Wall Cladding made from COLORBOND® Ultra steel in LYSAGHT CUSTOM ORB® profile, in the colour Surfmist®. Undercroft cladding made from COLORBOND® Ultra steel in the colour Monument®. Flashings, gutters, downpipes and trims made from COLORBOND® Ultra steel in the colours Surfmist® and Monument®. Columns made circular hollow section. Balustrade and handrail custom-fabricated locally by Living Iron **PROJECT TIMEFRAME** Completed November 2016 **AWARDS** Shortlisted For World Architecture Festival Awards 2017, To Be Announced In Berlin, 15-17 November 2017 **BUILDING SIZE** Internal: 210m<sup>2</sup>, Deck area: 80m<sup>2</sup>



# DREAM WEAVER

With a finish that blends straight into the red, rocky surrounding landscape, this civic shelter crafted almost entirely from BlueScope XLERPLATE® steel evokes pointy echidna quills and knitting needles, however provides most-welcome comfort in the heat. Words **Glenn Morrison** Photography **Andrew Broffman**

The Rim Walk of Kings Canyon in the Red Centre's Watarrka National Park is perhaps the most spectacular experience in Australia's vast inland. Located between Alice Springs and Uluru-Kata Tjuta National Park, Kings Canyon is also a place where two systems of knowledge intersect: those of settler Australian and Indigenous Australian cultures.

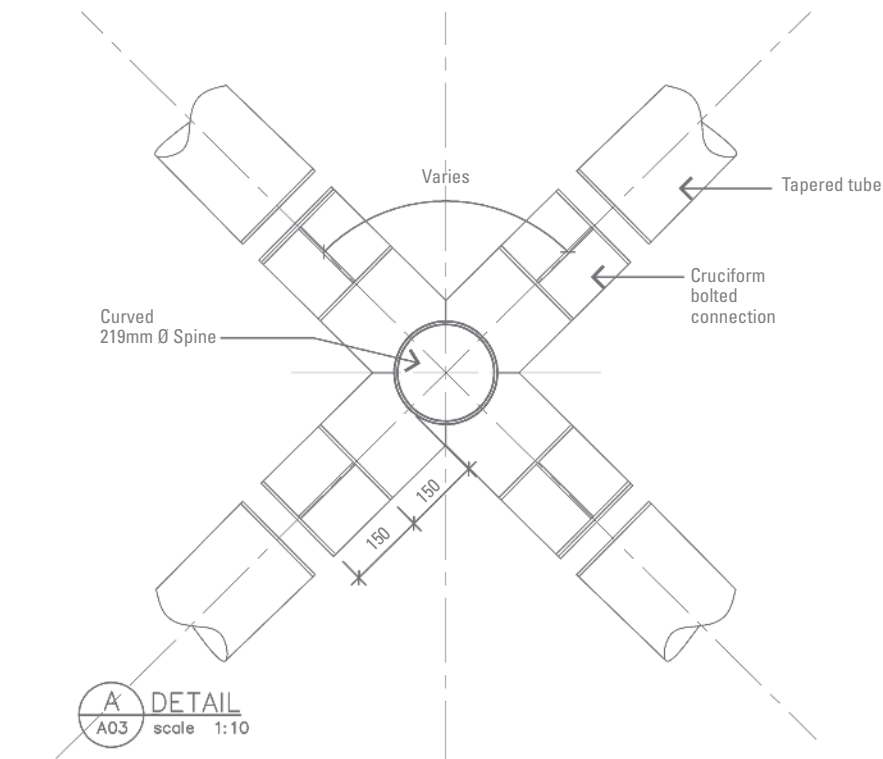
The park is jointly managed by the Northern Territory Parks and Wildlife Commission and its traditional owners, after 1052 square kilometres of land within the park was handed over in 2012. Such cultural contact zones can forge productive creative spaces, where Western and traditional ideas may sometimes fuse.

Nowhere is this more evident than in the highly unique Watarrka Visitor Information Shelter, built between February and November 2016, and sited at the start of the Canyon's walking trails. Providing shelter and information for walkers, the structure reflects traditional and settler forms, its post-and-beam construction echoing a spinifex-clad western desert wiltja as much as an A-framed lean-to more familiar to Western eyes.

Tangentyere Design architect Andrew Broffman started the design by researching local traditional forms of shelter. "The more research you do, the richer a project can be," he says. The fruits of his research were shared with Traditional Owners, in a consultation process that helped to shape the design, especially their image of visitors to the park as being like "little ants" scampering across the landscape. "You often see the nests ants make," Broffman says. "Twigs and sticks, little mounds coming out of the ground: there was an implied structure."

Ants led Broffman to reimagine the quills of the ant-eating echidna as structural elements shaped from steel – wide in the middle, and tapered at the end. These "tall, tapering steel spines" are conventional steel with an artificially weathered finish, crafted in Alice Springs by steel fabricators Ross Engineering. Made mostly from BlueScope XLERPLATE® steel grade 250 in 6mm and 16mm thickness – the members were scored, rolled and welded into lengths convenient for remote transport.

Joints are knuckles of flat plate and bolts, with a central steel spine of circular hollow section broken into portions for efficiency of transport as well as



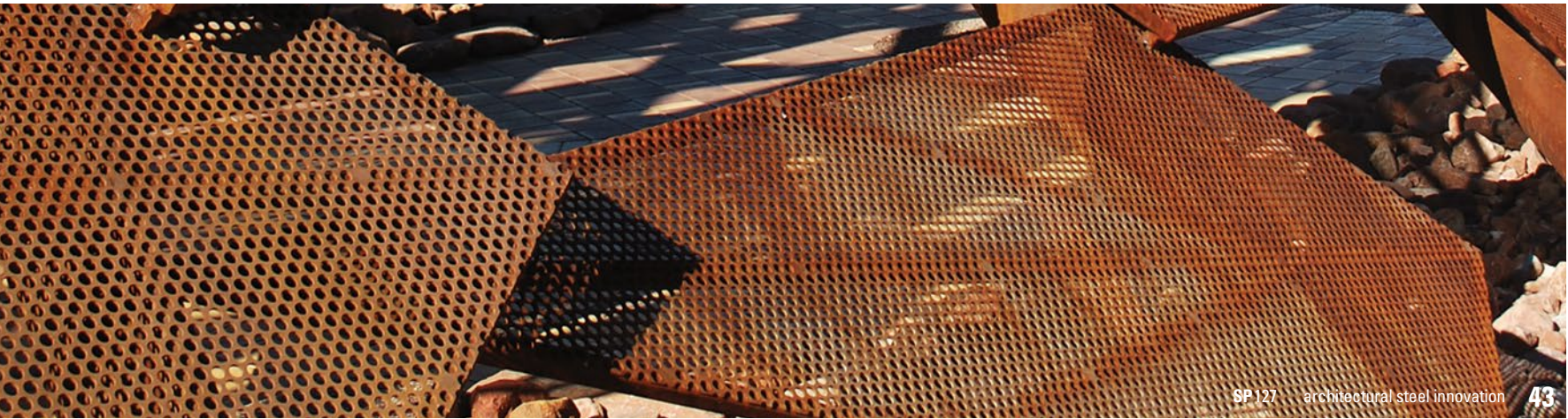
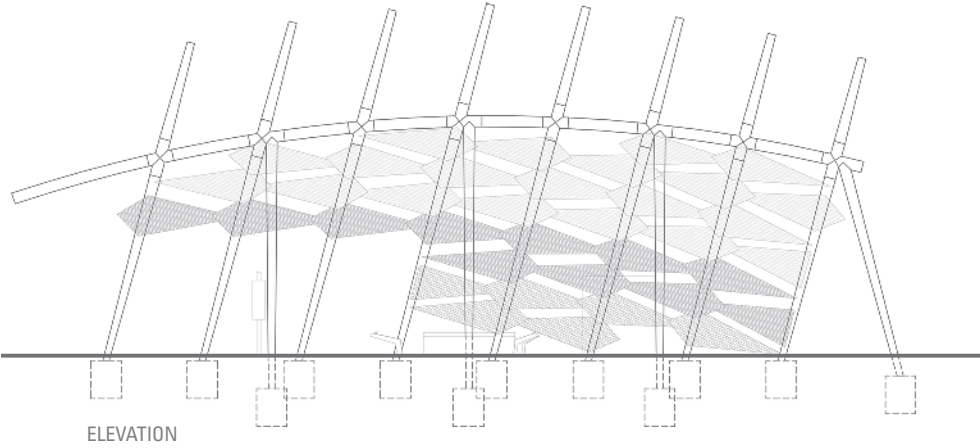
ease of assembly. Bolted to a central steel rib, the frame was clad using perforated steel plates, welded into place.

The project wasn't without challenges according to production manager David Rilstone at Ross Engineering, who produced the 'quills' using a brake press, and also the artificially weathered finish. "Andrew did a great job on the design," Rilstone says.

The completed shelter welcomes up to 50 visitors at a time in larger groups and provides information about Watarrka's different walk options, hydration in the desert – there is an inbuilt chilled water dispenser to promote it – and keeping a safe distance from cliffs. It's syncretic and inclusive form won two awards at the Australian Institute of Architects Northern Territory Chapter Awards in June 2017, including the George Goyder Award for Urban Design and the COLORBOND® Award for Steel Architecture. The jury compared the shelter's 'spiky' structure with a "collection of rusted knitting needles", adding that it: "demonstrated the possibilities for steel in a harsh location". **SP**



Post-and-beam construction echoes a spinifex-clad western desert wiltja as much as a Western A-framed lean-to



**PROJECT** Watarrka Visitor Information Shelter **CLIENT** Parks and Wildlife Commission of the Northern Territory **ARCHITECT** Tangentyere Design **PROJECT TEAM** Andrew Broffman, Sarena Hyland, Riccardo Murani **PROJECT WORKING GROUP** Watarrka Traditional Owners **PROJECT FACILITATOR** Central Land Council **PROJECT MANAGER** Northern Territory Department of Infrastructure Planning and Logistics **STRUCTURAL ENGINEER** NJA Consulting **BUILDER** Scope Building **STEEL FABRICATOR** Ross Engineering **BUILDING CERTIFIER** Central Building Surveyors **QUANTITY SURVEYOR** QS Services **PRINCIPAL STEEL COMPONENTS** BlueScope XLERPLATE® steel plate in AS/NZS 3678-250 grade (2400 x 6.0 x 6000mm) and (2400 x 16.0 x 6000mm) **PROJECT TIMEFRAME AND COMPLETION DATE** August 2015 – November 2016 **AWARDS** 2017 Australian Institute of Architects Northern Territory Chapter Awards, George Goyder Award for Urban Design and the COLORBOND® Award for Steel Architecture **BUILDING SIZE** 180m² ground area. Seven metres in height **TOTAL PROJECT COST** \$590,000





STEEL PROFILE #127



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