

121

SEPTEMBER 2015

ARCHITECTURAL

STEEL INNOVATION

WITH BLUESCOPE

# STEEL PROFILE

**IREDALE PEDERSEN HOOK ARCHITECTS**  
WALUMBA ELDERS CENTRE

**MPH ARCHITECTS IN ASSOCIATION**  
**WITH ARCHITECTUS**  
SUSTAINABLE INDUSTRIES  
EDUCATION CENTRE

**IN PROFILE:**  
GREGG PASQUARELLI OF  
SHOP ARCHITECTS

## EDITORIAL

We are, as always, proud to bring our readers a collection of the finest steel architecture in the country and some insights into the adventurous, creative minds behind it.

It is telling that every major project featured in this issue has been recently recognised with a prestigious award. This includes many 2015 Australian Institute of Architects state Awards and COLORBOND® Awards for Steel Architecture. Congratulations to the architects.

This year saw BlueScope's support for the Australian Institute of Architects as its Principal Corporate Partner reach 30 years, a milestone we celebrated at the National Architecture Conference in Melbourne, which explored the theme of risk.

The architectural profession is compelled to flirt with risk, to be daring and take a leap of faith in design in order to create something special and unique.

We approach risk through the products and product solutions we supply. We recognise we have a key role to play in risk-mitigation, by designing compliant products and solutions that support innovation in the architectural profession and contribute to its advancement.

Please feel free to share your thoughts with us via [info@steelprofile.com.au](mailto:info@steelprofile.com.au)

*Scott Gregory*  
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:



ADAM HADDOW

Adam is a director of SJB Architects NSW. He was awarded the 40th Anniversary Churchill Fellowship in 2006 to study alternatives to conventional models of urban design. SJB Architects recently won two Australian Institute of Architects NSW Awards for Multiple Housing.

More than anything, he loves to design buildings



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



JAMES LODER

James Loder is a graduate architect working at John Wardle Architects. Graduating from RMIT with a Master of Architecture (First Class Honours) in 2012, James was awarded the 2013 BlueScope Steel Glenn Murcutt Student Prize.

His work explores the formal relationships between building and landscape with great consideration given to spatial expression and materiality

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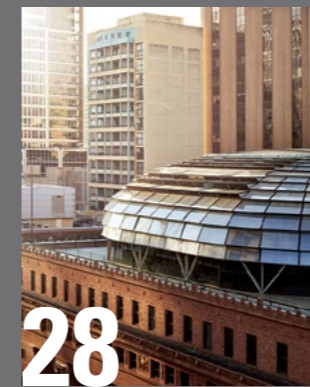
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COVER PROJECT  
Walumba Elder Centre  
PHOTOGRAPHER  
Peter Bennetts

### NUMBER 121, SEPTEMBER 2015

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# AGEING GRACEFULLY

One of the most significant aspects of Aboriginal culture is connection to country. At the new aged care centre for Warmun's Gija people, spirit of the place is embodied in the design.

Words **Rachael Bernstone** Photography **Peter Bennetts**

**ARCHITECT**  
iredale pedersen hook architects

**PROJECT**  
Walumba Elders Centre

**LOCATION**  
Warmun, Western Australia



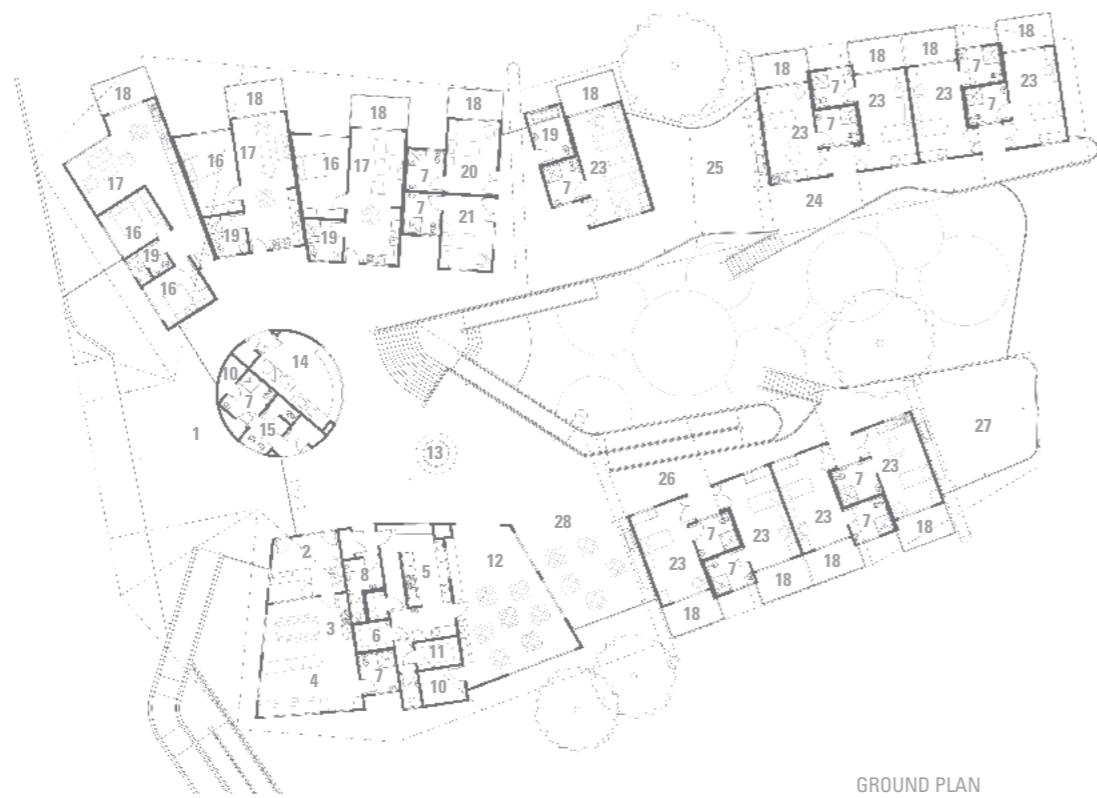
Walumba Aged Care Centre was deliberately located in the middle of Warmun, next to the school, to ensure the elders maintain links with the broader community

Warmun, in the far north-east of Western Australia, is a thriving remote community of about 300 people with one of the most successful aboriginal art centres in remote Australia. Situated on Turkey Creek in the East Kimberley, the entire town was devastated by an unprecedented flood in March 2011 when the creek rose nine metres in a less than four hours.

After the waters subsided the following day, thankfully with no loss of life, the full toll became apparent: 80 per cent of the town's buildings were damaged or destroyed, including houses, the health clinic, aged care facility, school, early learning centre and new art centre. The Great Northern Highway was cut in both directions and the local airstrip was unusable, making road and plane access impossible. Helicopters from Darwin and Broome evacuated 275 Warmun residents to Kununurra, where they were housed in temporary accommodation for four months while their town was rebuilt.

The Warmun Re-establishment Taskforce and the Department of Finance, Building Management and Works engaged Perth-based architects iredale pedersen hook (IPH) to reinstate the facility buildings. The Department of Housing rebuilt the community houses under a series of design and construct contracts, and the catholic school project was managed by Engawa Architects.

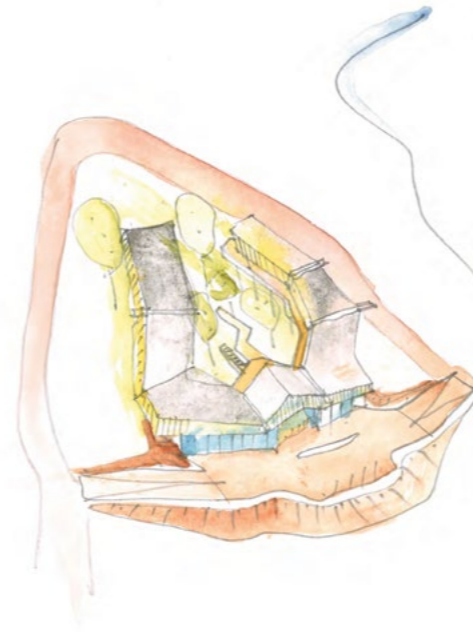
IPH Architects has worked in the Kimberley for 16 years, delivering housing projects, community facilities and, in collaboration with TAG Architects, the West Kimberly Regional Prison and Kununurra Courthouse. Director Finn Pedersen has worked throughout the region for more than 24 years, but this was the first time he had been involved in the reconstruction of an entire town.



GROUND PLAN

LEGEND

- |              |                         |                                |
|--------------|-------------------------|--------------------------------|
| 1. Entry     | 11. Dry store           | 20. Palliative care            |
| 2. Reception | 12. Dining & activity   | 21. Respite care               |
| 3. Meeting   | 13. Fire pit            | 22. Double room                |
| 4. Admin     | 14. Laundry             | 23. Single room                |
| 5. Kitchen   | 15. Female wc           | 24. Womens walkway             |
| 6. Coolroom  | 16. Bedroom             | 25. Womens activity space      |
| 7. UAT       | 17. Staff accommodation | 26. Mens walkway               |
| 8. Male wc   | 18. Balcony             | 27. Mens activity space        |
| 9. Wc        | 19. Bath                | 28. External dining & activity |
| 10. Store    |                         |                                |



The 2011 flood was deemed to be a one-in-200-year event, but its effects had wide-reaching impacts on subsequent town planning. Where possible, new buildings were re-sited on higher ground, or elevated on stilts. The Elders Centre was rebuilt in a new location adjacent to the school. "That site was chosen for several reasons," Pedersen says. "The Gija people wanted their elders to be at the heart of the community – next to the school, where everyone can have easy access – to be able to celebrate their lives. Being in the middle of things means the residents can continue to communicate their lore and cultural knowledge to the rest of the community."

Aged care requirements were balanced against cultural needs around palliative care and funerary practices, which dictate that rooms must be left vacant for a prescribed period of time after a death before being used again. "We had to interpret the national aged care guidelines and design the facility

to be future-proofed, with the potential to offer a higher level of care with more nurses if required. It was a very technical overlay," Pedersen recalls. "That's one of the reasons we used breezeways to separate each discrete section. It provides the perception of separation from the rest of the centre for those palliative care and high-care rooms, supports cultural gender separation and provides privacy for staff and residents."

The building also responds to the site's topography and climate: it is anchored to a newly created 'beach-head' at the western end, with two eastern wings that extend and hover above the landscape like floating piers. "The shape of the building is driven by the fact that the site is still in the flood zone," Pedersen says. "The platform is three metres above the ground at its highest point, which is interesting when you need to deal with issues of universal access."

"The shape of the building is driven by the fact that the site is still in the flood zone"

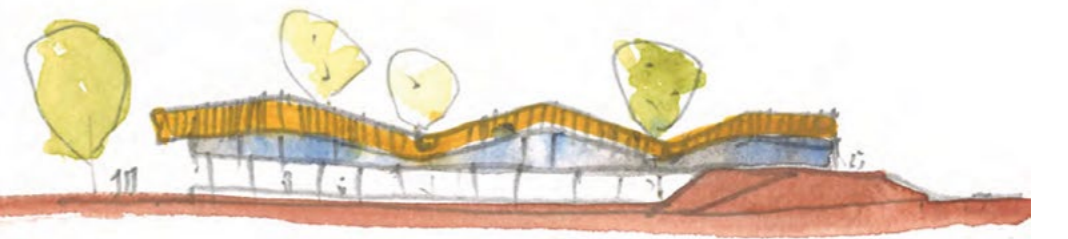
"We've done lots of remote area work and projects in the Kimberley: we know the place very well," Pedersen says. "We know how to work closely with communities, and we are aware of the tensions and difficulties in providing solutions in the context of people wanting different things. We can navigate through the funding models and assist with that process."

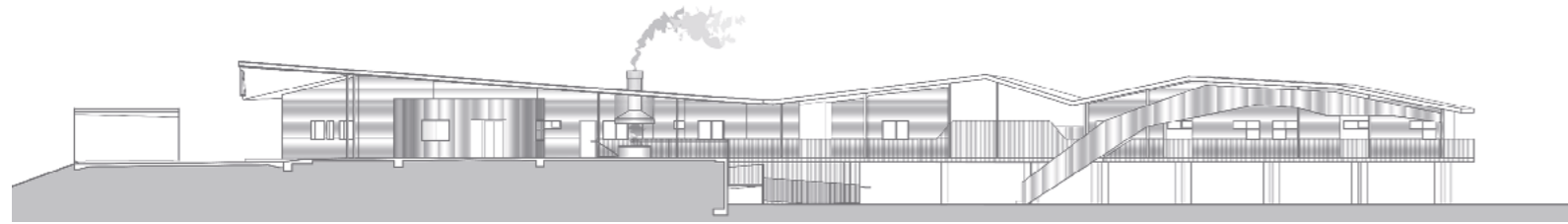
Reconstruction took place over three stages, with housing and essential services – power, water and wastewater – taking first priority. Residents returned to Warmun in July 2011 – 15 weeks after the flood – to find 20 refurbished homes, 17 new houses and a temporary village, including aged care. Construction of 56 new houses occurred in stage two, with community and infrastructure buildings making up stage three. A new aged care facility – the Walumba Elders Centre – was the final project to be completed in December 2014.

"We renovated a lot of the existing facility buildings – we couldn't afford to replace them all," Pedersen says. "We carried out a 'wet flood renovation': a refit that assumes a flood could come through again. Instead of plasterboard walls we installed LYSAGHT PANELRIB®, and we used compact laminate for skirtings, architraves and cabinet work, and closed-cell foam for insulation. In the event of another flood, you can hose all those materials off, and take off the skirtings and architraves to dry out the walls with fans."



The building's northern and southern wings enclose a central courtyard with an existing mahogany tree





SOUTH ELEVATION



At dusk, the building appears to hover above the flood plain, glowing like a lantern. Soft lighting allows residents to move around safely in the cooler night air

"It's like a lot of our projects in the north-west," he adds. "It's a pavilion on a platform, with breezeway spaces between them, and a big hat in the form of a steel roof that sits over the top and makes it very liveable."

The 'platform' consists of a blockwork retaining 'hill' and concrete columns, topped with a concrete slab. The 'pavilion' is framed with studwork wells made from 92mm BlueScope cold rolled steel, and CHS, RHS beams and SHS columns which are clad with Stratco CGI made from COLORBOND® steel in the colours Cove™, Paperbark®, Evening Haze®, Shale Grey™ and Dune®.

The undulating form of the 'hat' – topped with Stratco Smartspan® made from COLORBOND® steel in the colour Surfmist® – comprises a series of sliced gable roofs linked by six oversized 6mm steel box gutters. These were carefully placed to distribute rainfall evenly around the building: in heavy downpours they create artificial waterfalls.

"The roof works in several ways to keep the rain out and the sun off," Pedersen says. "That's one of the innovations of steel: it allows us to do big spans – this is not a cyclonic wind region – to create a strong architectural element."

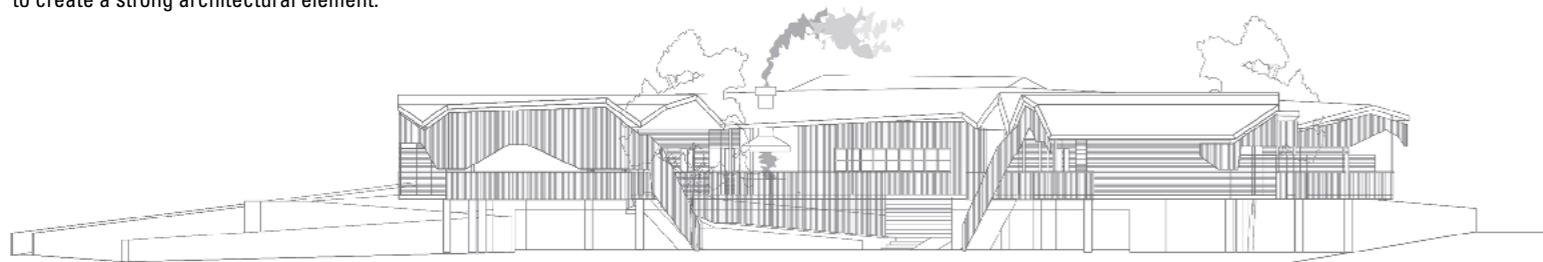
Underneath the 'hat', the distinctive soffit – Stratco CGI made from COLORBOND® steel in the colour Headland®\* – connects all of the verandah spaces so that the building seems to recede into the landscape. "Headland® is a beautiful colour, and is really great to use in the north-west because it matches the pindan colours," Pedersen says. "The big roof becomes like a natural element in the landscape, because you are looking out into the treetops. It's very green and welcoming; very dramatic."

At ground level, the perimeter is fenced and access to the facility is via a ramped driveway for elders and a ramped walkway for visitors. The ramps land at a "porte-cochère" outside reception: a generous open space that seems to both hover above the flood plain and be firmly anchored to the ground, thanks

to the full-height cylindrical drum that contains the laundry and public facilities. To the south, the commercial kitchen (where meals for residents and meals-on-wheels for home delivery are prepared) sits alongside a communal dining and activities area. It leads to a large verandah where residents can socialise, create artworks, or cook and eat outside.

The building's wings create a central courtyard that is dominated by an existing mahogany tree. "Shade is vital in this climate, and trees create their own microclimate in the ground: they de-water the ground and help to stabilise the ground during floods," Pedersen says. "We added new trees in the landscaping, including snappy gum trees, whose leaves are used by the elders for smoking ceremonies." ➔

**"The big roof becomes like a natural element in the landscape, because you are looking out into the treetops"**



EAST ELEVATION



ABOVE: The courtyard can be accessed via ramps or stairs, and contains firepits for cooking and socialising

BELOW: The striking central drum at the entrance contains reception and the centre's laundry



“As for the roof, cladding and soffit, steel cladding is easy to cut and adapt to shape, it’s very durable, easy to maintain and very cost-effective, so it’s still our material of choice for regional and remote area work”

The centre features two outdoor fire pits – one in the courtyard and another on the verandah. “The fire pits are made from concrete soakwells full of river sand, so that elders and their families can cook a kangaroo, bush turkey or lizard,” Pedersen says.

Staff accommodation and a suite of rooms that can be flexibly adapted for high-care, palliative or respite care, occupy the north-west corner. Taking into account cultural sensitivities about gender separation, men are accommodated in the northern wing, and women in the southern side.

“We included plenty of open verandahs and breezeway spaces between the enclosed areas, and while all of the rooms have air conditioning, they are designed for natural cross-flow as well,” Pedersen says. Bedrooms also feature private balconies that look out into the tree canopy and landscape.

Understanding the microclimate is vital to getting the breezeways in the right place, Pedersen says,

because the climate is like a desert in the dry season, with cold winter nights, but also subject to torrential rains in the wet. “We did a lot of 3D modelling with CAD models, using ray tracing to identify the warm spots in winter and to make sure there was always a place in the shade in summer,” he says. “We also had to consider breezes and dust, because respiratory illnesses are quite common among the elders.”

External communal spaces such as verandahs and walkways are partially shielded from the environment by polycarbonate sheeting – attached to the SHS frames – that block the sun’s heat while allowing daylight to filter through. After sunset, when the temperature drops and human activity increases, the screens are backlit with LEDs.

“One of the concerns with the elders is the issue of failing eyesight – a lot of the residents have impaired vision,” Pedersen says. “The screens allowed us to keep the light levels up effectively and cheaply, and at night they provide an ambient glow throughout the facility.”

Quite by chance, Pedersen says the shape of the screens against their steel frames echoes some of the forms in paintings by the town’s most famous artist, Rover Thomas. “They are elegant but abstract forms that play with strange geometries that were driven by our solar models,” he explains.

Reflecting the ebb and flow of water in the landscape, the verandahs and ramps feature serpentine steel balusters topped with brass handrails. Brass was chosen for its natural anti-bacterial properties and the patina that will develop over time.

As the final project to be delivered under the re-establishment program, the Elders Centre had the longest timeframe, Pedersen says. “The documentation and tender period was tight, but the construction phase dragged out a little,” he explains. “Some of the steel framework was made in Darwin and some was made in South Australia, because there was a backlog in Darwin at that time. That’s one of the flexibilities



The roof made from COLORBOND® steel in the colour Surfemist® performs like a broad-brimmed hat, while the dramatic soffit in the colour Headland® links the spaces beneath to help the building blend into its landscape



ABOVE: The verandahs, circulation spaces and outdoor common areas are shaded using timber slats and polycarbonate screens mounted on steel frames, which create abstract patterns that reference local artworks

LEFT: Local kids enjoyed playing in the waterfalls that cascaded off the roof from six strategically-placed box gutters during the 2014 monsoon rains

of working with steel, you can make it anywhere, and because of the flat-packing nature of steel studwork and structural steel framing, you can fit a lot on a truck to transport easily.

“As for the roof, cladding and soffit, steel cladding is easy to cut and adapt to shape, it’s very durable, easy to maintain and very cost-effective, so it’s still our material of choice for regional and remote area work.”

The building was handed over to the community in December 2014, just as the seasonal monsoon arrived, and Pedersen was thrilled to see children playing in the waterfalls, just as he’d envisaged. “The 2011 flood had a very traumatic impact on the community, so the completion of this building was a seminal point in the recovery program, giving the opportunity to bring the elders back home,” Pedersen says. “We are always in a privileged position to work with our clients, but particularly in a client group like this one, that has lived through a disaster.”

He’s extremely happy with the building’s appearance and performance, especially the way that outdoor spaces connect with the landscape. “I see aged care as being a chance to celebrate people’s lives, and to learn lessons about culture, knowledge and history,” he says. “These are all ideas that we would like to take to another community or to the non-indigenous community.

“If I ended up in a place where I needed care, I wouldn’t want to be a burden to my family, but I would like to have the ability to share stories and continue to engage with people. A lot of aged care centres are not necessarily very nice places, but this doesn’t feel institutional,” Pedersen continues. “It’s an elder’s centre: a place for the whole community to gather and celebrate their elders. The building is lyrical and unusual looking: it reflects the community it was designed for.” SP

*\*Some colours within the COLORBOND® steel range require longer lead-times and in some instances larger minimum order quantities. Please speak with your local supplier for more information around availability.*

## PANEL SAYS

iredale pedersen hook provides an inspiring example of ‘outback architecture’ in the Walumba Elders Centre at Warmun. The buildings are framed and clad using steel products: utilitarian materials that are easy to pre-fabricate and build with in remote locations. In this case, though, they are skillfully arranged and detailed to create a controlled plan of overlapping and staggered forms that express playfulness and joy. From the courtyard staircase to the covered walkways, from the brilliant red soffit to the vast roof plane (the latter two created using COLORBOND® steel), this stilted structure manages to hover above and be a part of the landscape. The story of the design is illustrated beautifully in the early watercolours, and is just as evident in the realised building

**PROJECT** Walumba Elders Centre **CLIENT** Warmun Community, The Western Australian Government, Department of Finance, Building Management and Works **ARCHITECT** iredale pedersen hook architects **DESIGN ARCHITECTS** Finn Pedersen, Adrian Iredale, Martyn Hook **PROJECT ARCHITECT** Joel Fuller **PROJECT TEAM** Jason Lenard, Nikki Ross, Caroline Di Costa, Khainani Khalifah, Mary McAre, Jonathan Alach, Rebecca Angus, Melissa Loong, Drew Penhale, Matt Fletcher **BUILDER** Norbuilt **STRUCTURAL ENGINEER** Pritchard Francis, Gareth Jenkins **STEEL FABRICATOR** TALI Engineering and PDQ Enterprises **STEEL SHOP DRAWINGS** SteelDraft NT, Josh Edwards **STRUCTURAL STEEL ERECTION, METALWORK AND BRASS** Blue Sea Cranes **MECHANICAL / SERVICES ENGINEER** Stevens McGann Willcock & Copping (SMW&C) **LANDSCAPING** iredale pedersen hook Architects; Tim Willing, consultant horticulturalist **PRINCIPAL STEEL PRODUCTS** Roofing: Stratco Smartsan® made from COLORBOND® steel in the colour Surfemist®; Wall cladding: Stratco CGI made from COLORBOND® steel in the colours Cove™, Paperbark®, Evening Haze®, Shale Grey™, Headland® and Dune®. Structural steel using CHS, RHS beams, SHS, PFCs, and gates, screens and balustrades from hot rolled steel plate. PDQ Enterprises (fabricated part of the north wing): products as above, and 6mm box gutters. Rondo cold-rolled 92mm studwork from Kimberley Plaster Supplies **AWARDS** 2015 Australian Institute of Architects Western Australia Awards: The COLORBOND® Award for Steel Architecture, Commendation for Public Architecture, Commendation for Residential Architecture - Multiple Housing. Building Product News Sustainability Awards - Shortlisted (announced in October 2015). The Plan Awards, Health Category 2015, Milan Italy - Honourable Mention. World Architecture Festival Awards 2015, Singapore - Shortlisted (announced in November 2015) **APPROX COST** \$9.6 million **APPROX SIZE** Total 1690m<sup>2</sup> (internal 790m<sup>2</sup>, external 900m<sup>2</sup>)

# THE GOOD LIFE

A new house by Max Pritchard on South Australia's Fleurieu Peninsula combines the best aspects of his clients' expat experiences with local materials and forms that complement the stunning location.

Words **Alex Taylor** Photography **Sam Noonan**



**ARCHITECT**  
Max Pritchard Architect  
**PROJECT**  
Robertson House  
**LOCATION**  
Fleurieu Peninsula, South Australia

Recent retirees Arthur and Shirley Robertson travelled the world during the course of their marriage. They set off from their home city of Melbourne with their two young children and lived in the Solomon Islands, Fiji and Papua New Guinea. In Australia, they resided in Sydney and Brisbane before coming to a stop in Adelaide.

With their children now grown up, and their working lives winding down, the Robertsons sought a fresh start. "Wherever we've lived, we always looked for land," Arthur says. "We dreamed of buying acreage and wanted to build our own house."

The couple explored the Adelaide Hills, up and down the coast, and the state's famous winemaking regions before finding a small piece of paradise on the Fleurieu Peninsula. About one hour south of Adelaide,

down a dirt road that leads to a small, isolated beach, they discovered a block of land for sale.

On the north-facing side of a steep slope, it offers incredible views across rolling hills. In the distance, bays and beaches curve around to the right, with Mount Lofty rising above the sweeping Gulf of St Vincent coastline. "When I saw this place, I just knew this was it," Shirley recalls.

Just as the couple had carried out extensive research to find their magnificent site, their search for an architect was equally meticulous. "Before we even thought about building our own house, we saw the Balhannah House designed by Max Pritchard – which was for sale at the time – and we really liked it," Shirley says. "But we interviewed other architects as well, before deciding to engage Max."

The brief they gave Pritchard was informed by their peripatetic lifestyle, particularly their memories of a favourite house they'd occupied on the Solomon Islands. "We lived in a house that overlooked the ocean, and it was oblong-shaped with a massive chef's kitchen, and a wall of glass that opened on the sea side," Arthur says.

"We envisaged this as a long house with a flat roof, and a wall of glass," Shirley says. "We also wanted high ceilings, a big family room and an open fire. To us the bedrooms were secondary, although we wanted enough space for our children and friends to be able to come and stay."

Pritchard says his design started as a simple linear plan. "We were lucky that the view and the solar orientation were in the same direction, but I wanted to angle the plan towards the view across that adjacent valley, too," Pritchard says, pointing towards the hills in the east. "The triangular roof point developed from that decision."

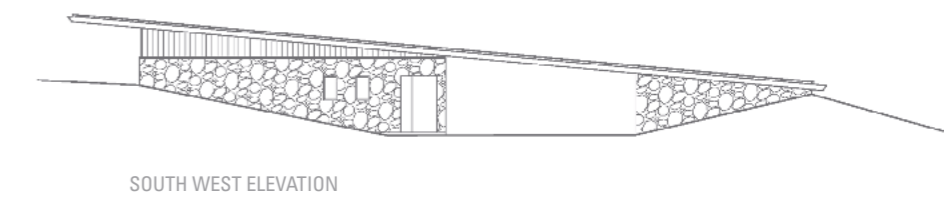
The unusually shaped roof – it resembles a folded pocket square, with its longest side facing the coastline – covers the house, an adjacent carport and elevated

timber deck, and a small storage cupboard. It is one of the home's most dramatic features, stretching upwards from a single point that rests on a newly constructed berm at the southwestern corner, expanding out and beyond the northern elevation. A sweeping seven-metre cantilever provides a strong, steady gesture at the roof's highest point, contrasting with the dynamic landscape of the surrounding hills.

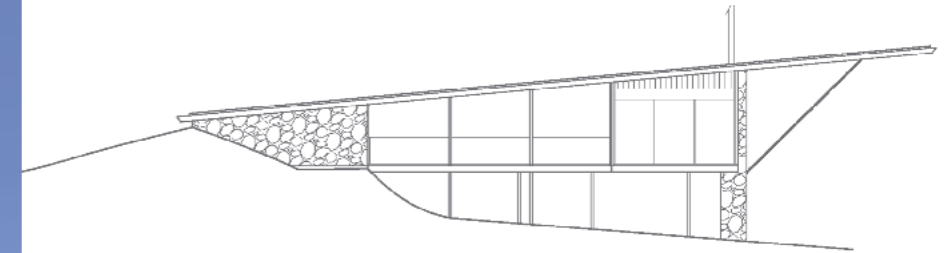
For Pritchard, this roof was always going to be made of steel, and it had to be as spectacular as the site itself. He specified the locally roll-formed Revolution Roofing True Oak™ Superior Corrugated 'Deep' 21mm profile, made from COLORBOND® steel in the colour Windspray®, for several key reasons.

"True Oak™ Deep has a more regular pitch than other corrugated profiles – it's closer in shape to traditional steel roofs – and it creates more dramatic shadows," says Pritchard. "This is a dramatic site with the rolling hills in every direction, and I wanted this roof to reflect that drama. Where the roof terminates in the berm, the slope echoes the gradient of the next hill in the background, so the plane of the roof allows the house to sit beautifully in the landscape." ➤

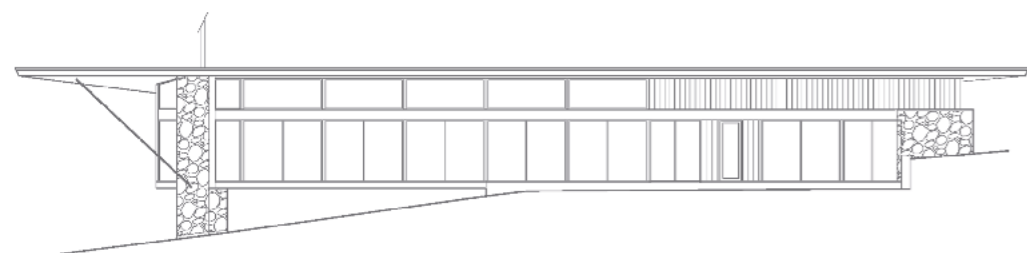
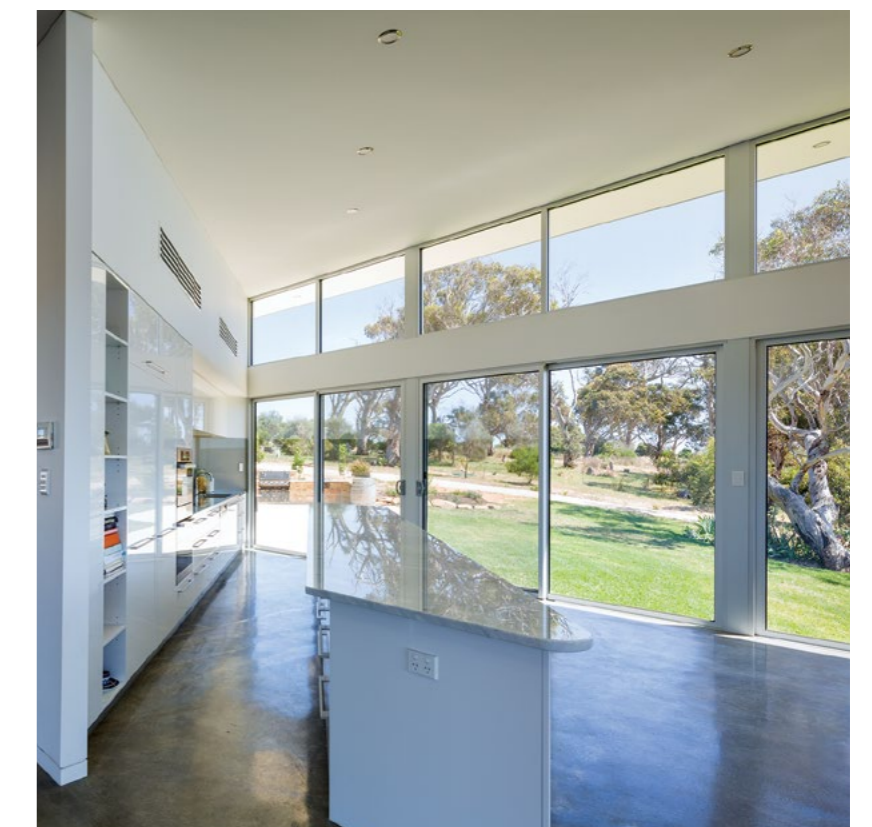
"This is a dramatic site with the rolling hills in every direction, and I wanted this roof to reflect that drama"



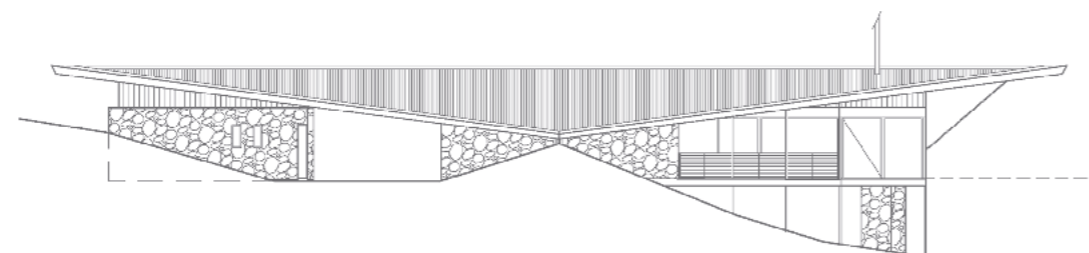
SOUTH WEST ELEVATION



SOUTH EAST ELEVATION



NORTH ELEVATION

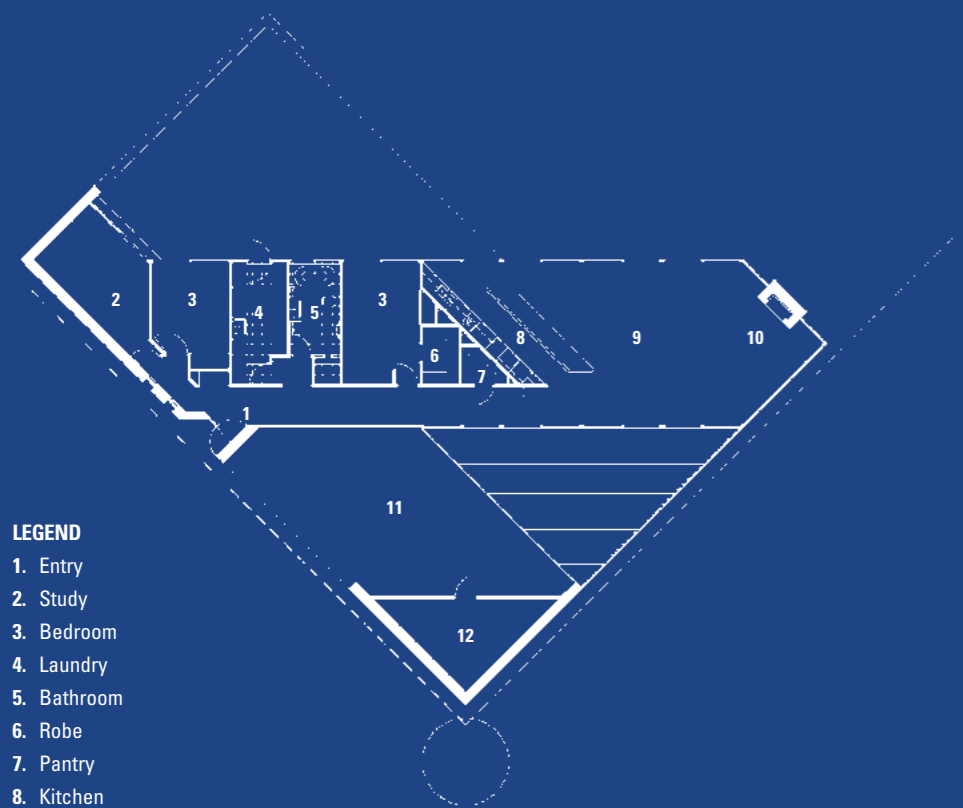


SOUTH ELEVATION

ABOVE (plan): The house is anchored to the brow of the hill at the western end and cantilevers above the slope to the east

RIGHT: The main living area (top) comprises sitting and dining areas. The kitchen (bottom) provides 180-degree views thanks to the triangular geometry





**LEGEND**

- 1. Entry
- 2. Study
- 3. Bedroom
- 4. Laundry
- 5. Bathroom
- 6. Robe
- 7. Pantry
- 8. Kitchen
- 9. Dining
- 10. Lounge
- 11. Carport
- 12. Storage

Designed to be admired from a distance – the roof creates a distinctive marker in the countryside as one winds down the dirt road towards the property – it is equally impressive up close. Climb to the top of the berm and you can look down upon the point where the right-angled corner drops into a single catchment point. Walk alongside one of the triangle’s shorter edges and you can appreciate the roof’s unusually textured appearance.

“I like seeing the edges of the steel, rather than a gutter,” Pritchard says. “I sometimes deliberately set down the gutter so that you can read the ripple of the COLORBOND® steel.” To emphasise that effect, Pritchard capped the fascias with COLORBOND® steel, also in the colour Windspray®, to create a crisp silhouette and minimise the need for ongoing maintenance.

The Robertsons have plenty of tasks to keep them busy in retirement without worrying about looking after the house. Since they bought the property

six years ago they have established a fenced orchard and vegetable garden, where they grow apples, citrus and stone fruits, and almonds and walnuts, and keep chickens for eggs. In a modern day story of self-sufficiency, they collect their own firewood from fallen trees, and generate solar power from a five kilowatt photovoltaic system mounted on the shed roof.

They have embraced sustainable land management practices too, taking advantage of a local scheme – the Adelaide and Mount Lofty Ranges Natural Resources Management Levy – to re-vegetate the former farmland by planting thousands of new trees and shrubs.

All of those activities require plenty of water, and to that end, the striking roof – which covers an area of about 420 square metres – plays an important functional role, because the property is not connected to mains water.

“Every 10 millimetres of rain that falls produces approximately 3000 litres of water for our tanks. To us, the size of the roof was a material issue: it became a critical item in the design,” Arthur says. “It’s a great roof to sit underneath and listen to the rain: I’d never have a tiled roof again.”

Rainwater runs off the corrugated profile into two 820mm-wide steel valley gutters. Its passage is slowed by two sections of equal angle steel near the base, which prevent overflowing. The water then passes over a leaf-catcher into two large pipes that feed a 5000-litre tank set within the berm. “There is some logic in concentrating the water into two pipes, because these edges act like a valley,” Pritchard explains. “It will never become blocked.”

Rainwater is then diverted to a 80,000-litre liner tank, made by Rhino Tanks using COLORBOND® steel, located just beyond the driveway and pumped to two 25,000-litre tanks further away which can gravity-feed back to the main tank if need be.

Despite the over-scaled nature of the roof, the house beneath it is of surprisingly modest proportions. It has three bedrooms, one bathroom and a single large open-plan living area. It may be compact but it’s not timid: the entrance and bedroom wing are framed with warm-coloured roughly shaped local stone.

Like South Australia’s early settlers – who were forced to build with local stone due to a scarcity of timber – the Robertsons collected all of the stone used in their house on the property. Evidence of their back-breaking effort takes centre stage in the living room, where a heroic single column anchors the house to the slope, in a space where walls of floor-to-ceiling glazing recede to accentuate the view.



“Every 10 millimetres of rain that falls produces about 3000 litres of water for our tanks. To us, the size of the roof was a material issue: it became a critical item in the design”

OPPOSITE LEFT: The triangular-shaped roof lifts up to the north where a wide eave provides shade in summer and solar access in winter

ABOVE: On approach, the spectacular roof is clearly visible in the landscape

BELOW: Pritchard incorporated a recessed gutter to deliberately expose the rippled edge of the roof made from COLORBOND® steel

“Max gave us instructions to collect the stone, so Shirley was the digger – she would loosen the stones with a crowbar and roll them down the hill,” Arthur says. “I’d then pick them up with my toy tractor and bring them up to the designated building site. We did that together for three years.”

Having put in years of hard work to find their ideal location, select an appropriate architect, toil the land for food, and quarry their own stone, the Robertsons couldn’t be happier with their new house, which makes the most of their bucolic surroundings from every angle. They credit Pritchard with turning their vision of retirement – which they confess they had refined and discussed over numerous glasses of

wine over many years, in many different cities and countries – into an enjoyable and sustainable reality.

“Our house is small but perfectly formed,” Arthur declares. “We watch *Grand Designs* and we wonder where people should stop, in terms of being practical about where you live. Not for a moment have we ever thought that this house was impractical for us.”

“It’s such an easy house to entertain in,” says Shirley. “We can sit outside in the sun or in the shade out of the wind, and if it’s too cold for that we come inside and still feel like we are outside anyway. We just love it here.” SP



**PANEL SAYS**

On the brow of a hill with spectacular views across coast and countryside, this house is carefully positioned in its landscape. The stone-clad western end is embedded into the earth, while the living rooms at the eastern end hover above the slope, on a cantilevered structural steel frame. The house’s unusual triangular geometry creates multiple viewpoints that vary the composition of water, land and sky, whilst a narrow plan amplifies the views from every room. The skilful treatment of plan and section is surpassed only by the magnificent singular roof, which assures that COLORBOND® steel is the highlight of this project, taking centre stage among a strong field of thoughtfully weighted design elements

**PROJECT** Robertson House **CLIENT** Arthur and Shirley Robertson **ARCHITECT** Max Pritchard Architect **PROJECT TEAM** Max Pritchard **STRUCTURAL & CIVIL ENGINEER** PT Design **BUILDER** Hocking Constructions **STEEL FABRICATOR AND SHOP DRAWING CONTRACTOR** Structurally Sound Engineering **CLADDING CONTRACTOR** Mayline Roofing **PRINCIPAL STEEL COMPONENTS** Revolution Roofing True Oak™ Superior Corrugated ‘Deep’ 21mm profile, made from COLORBOND® steel in the colour Windspray®; Structural steel: 89x89 SHS columns and roof struts, and 200PFC & 50PFC floor beams and roof beams **PROJECT TIMEFRAME** May 2012 to March 2013 **AWARDS** 2015 Australian Institute of Architects South Australia Award for Residential Architecture – Houses (New), SA HIA Awards 2014 Custom Built Home \$500,001 to \$750,000 **BUILDING SIZE** House 188m<sup>2</sup>, carport 80m<sup>2</sup>



# GREGG PASQUARELLI

New York's SHoP Architects combines an ambition to improve architectural practice with a desire to change the world. Rachael Bernstone met co-founding partner Gregg Pasquarelli in Melbourne.

Words **Rachael Bernstone** Photography **Peter Bennetts (portrait)**



The giant oculus at Barclays Centre, was SHoP's first large-scale project

BRUCE DAMONTE

**S**HoP Architects' co-founding partner Gregg Pasquarelli had another career before he decided to become an architect. When I meet him at the Risk Conference in Melbourne he laughs when recalling the mid-life crisis he suffered at the tender age of 25. "I was working in investment banking and I spent hours each day drawing on photocopier paper," he says. "One day I pulled all the drawings out and looked at them, and 90 per cent were of buildings, so I quit the next day."

His parents were horrified that he planned to give up a potentially lucrative career in finance to spend five years studying so he could become one of the lowest paid professionals in the property development industry, but it's not a decision he regrets. He studied architecture at Columbia University in New York, where he remembers that undergraduates were asked to choose whether they would pursue careers in practice or academia.

The architects who founded SHoP in 1997 – Pasquarelli and his wife Kimberly Holden, twin brothers Christopher and William Sharples and William's wife Coren Sharples (the name represents initials from their surnames) – were determined to do both, simultaneously.

Partner Vishaan Chakrabarti joined in 2012, while former partner Jonathan Mallie joined in 1999 and left to set up his own consultancy in 2015.

Collectively they came from backgrounds in art history and fine art, real estate and development, planning, science and engineering, and as practitioners they continued to engage with academia through teaching positions at universities around the world.

**"We are incredibly interested in technology and finance, and all the things that go together to actually get a building built"**

"We founded the practice basically on the premise that we could be both academics and an architectural firm: that we could continue to do research and push the boundaries of design," Pasquarelli says. "So we are incredibly interested in technology and finance, and all the things that go together to actually get a building built."

SHoP functions like the extended family that it is, with a horizontal structure that sees partners and employees eating lunch together. The firm uses consensus decision-making techniques, which are underpinned by the partners' shared Quaker beliefs.

Their diverse former careers mean that SHoP architects look at architectural problems from multiple perspectives. "That gave us the means to freely adapt other methods of problem-solving from other industries and try to bring them to architecture," Pasquarelli says.

Thanks to this approach, the firm has reclaimed some of the power many architects have inadvertently given away – thanks to the rise of project managers and the increasing use of contracts that disconnect architects from clients and end-users. SHoP has adopted some of the risks of financing, development, construction, marketing and sales functions, in addition to its central role of architectural design.

However, experimenting with new business models hasn't always paid off: the firm lost money on investments – and many of its fee-paying clients – during the global financial crisis. At other times, they have paid off: when the Porter House project in Manhattan was a success, the firm – which took equity in the development rather than architectural fees – shared the spoils. ➤



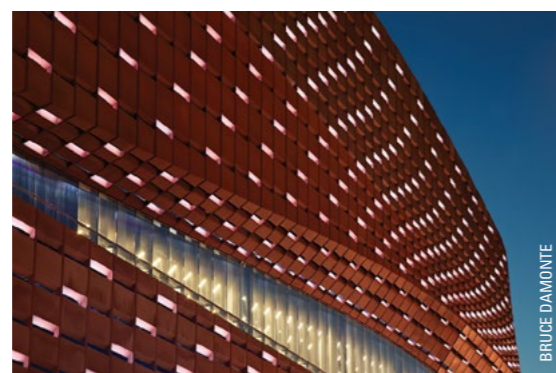
Another method SHoP used to differentiate itself was to abandon conventional representations of design. "Fifteen years ago we started getting rid of the idea of using plan, section and elevation as a way to build buildings, and we were fully modelling our projects instead, where every single piece was in the model," Pasquarelli says. "We used drawings to tell the computer what to fabricate, and drawings that showed how to assemble those pieces. What we didn't realise is that we were doing *BIM* (Building Information Modelling) before we even knew what *BIM* was, and we worked closely with the development of *Revit* (a building design software tool)."

Yet another tool simplifies and speeds up the process of development, from acquisition of the site to projecting financial outcomes. "In NYC, the zoning code is 1000 pages long: it's 400 pages of rules and 600 pages of exceptions to those rules," Pasquarelli says. "The first thing you do on a new building is pay a very expensive and smart zoning attorney or architect, and it takes six to eight hours to get the first massing model."

"We developed a product called *Envelope*, where you enter an address, it prompts you with a series of possible things that you're allowed to do on that site, and within 60 seconds it will mass your building," he explains. "You can output the model to *BIM* or *Excel* to run financial models, and you can click and play with options, and produce many versions in several minutes."

*Envelope* will soon be rolled out to other US capital cities with the use of venture capital funding. This ability to incorporate lateral thinking and new technology was particularly useful when SHoP won its first large-scale project, the Barclays Centre in Brooklyn. Architect Frank Gehry had previously drawn up plans for the site, known then as Atlantic Yards, but they were shelved in 2008 due to budget overruns and the global credit crunch.

Stadium experts Ellerbe Becket delivered off-the-shelf plans for a multipurpose arena that could be built in a short timeframe, to enable the project to break ground before federal funding was due to



BRUCE DAMONTE



BRUCE DAMONTE

TOP: SHoP's Barclays Centre in Brooklyn features two bands of weathering steel that contribute to the civic realm and link the stadium to the neighbourhood's past

ABOVE LEFT AND RIGHT: When SHoP took on the task of redesigning the stadium, the architects weren't aware that the order for structural steelwork had already been placed. Their redesign took just seven weeks, and the construction program was also fast-tracked despite the need to prefabricate, pre-weather and assemble 12,000 steel panels, none of them being identical

expire at the end of 2009. In March of that year, SHoP was engaged by the City of New York to redesign the facade, not realising how advanced the project was.

"We didn't know they had ordered the steel, and then we said: 'We are not doing a skin job on your building'," he recalls. "But we had a great conversation with them, and said we'd think about it. My partner and I went out that night and started sketching and we thought: 'Is there something we can do to pull this box apart and solve the problem?'"

SHoP's redesign aimed to better connect the arena with its surroundings, both in plan and use of materials. "We aligned the concourse with the sidewalk, and added glass for a sense of connection. We then built a band of steel in the middle to connect with the height of the neighbouring brownstone buildings, and a second band of steel at the top, which becomes the floating iconic element on the skyline," he says. "It has a grand civic gesture, thanks to the cantilevered tensioned portico that we liken

to the arms of (Roman Baroque architect) Bernini, but it's hip-hop style, because this is Brooklyn."

The building was redesigned in just seven weeks, and the arena opened in September 2012: a rapid construction program given there are 12,000 weathering steel panels in the facade, none of which are identical.

"It was modelled in (3D software) *Catia*. We set up cameras onsite at multiple locations to see the building from different perspectives, so we could sculpt and move parts," Pasquarelli explains. "We formed a joint venture with a facade manufacturer, and took on the risk of working out how the panels went together."

Fabricated at a factory in Indianapolis, the panels were subjected to 15 wet-dry cycles a day for four months, to put 10 years of weathering on the building from the outset. "In the design cycle, every single panel was numbered and tagged so that we could keep hold of

the process," he says. "We wrote our own iPhone app that allowed anyone from the CEO to the guy with the wrench to scan any panel to see where it was in the weathering process, which mega-panel it went on, when it was going to be shipped to New York, and where it was going to be attached to the building."

"Taking on that risk, and working with that kind of clarity and openness, was what enabled that project to get done."

Like the accelerated ageing process that the weathering steel was subjected to, SHoP has undergone a rapid evolution as a business, and is now working on four of 11 new towers that will alter the skyline of New York City. That shift from boutique firm to major player was one of the factors cited by *Fast Company* magazine when it named SHoP as the most innovative architecture practice in the world in 2014 (and #33 in its list of the world's most innovative companies, alongside Google and Apple).

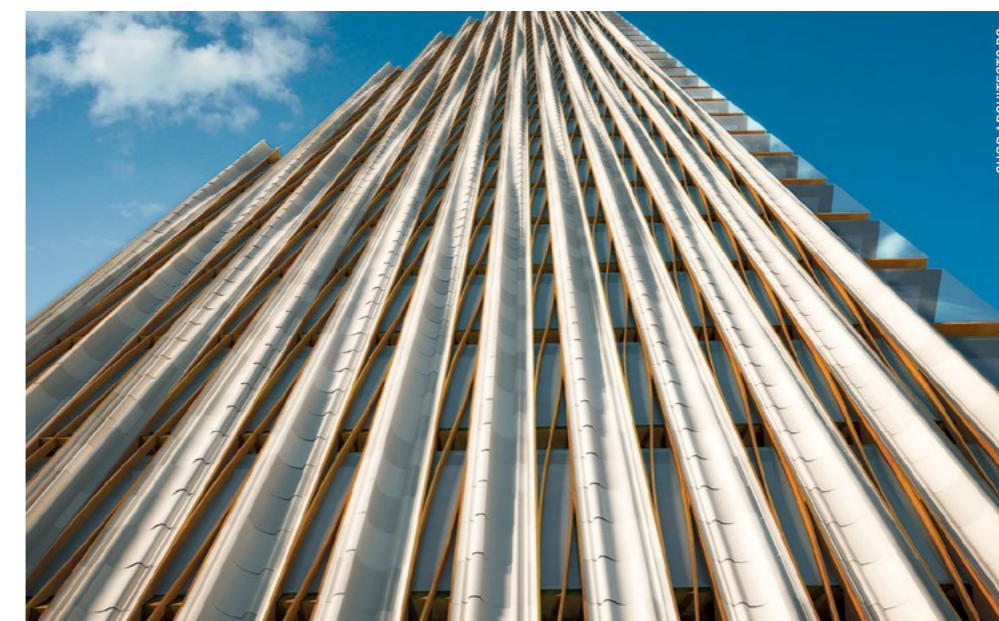
"Of course, it feels like forever, and I'm really 75," Pasquarelli laughs, adding that he may have another

**"Architecture is the last great generalist profession: what we're so good at is taking a variety of things, to coalesce them and bring them together"**

career change in him yet. "Seriously though, the best part of being an architect is that you are young until you're 50, and I turned 50 two weeks ago, so I don't know what I'm going to do next. We live so long now, but I do know that I'm not going to play golf."

The *Fast Company* accolade was helpful because it restored architecture to its central place in development, in what Pasquarelli calls "a challenging political environment". "Architecture is the last great generalist profession: what we're so good at is taking a variety of things, to coalesce them and bring them together," he says. "Yet somehow, we try to make ourselves image-makers."

"I believe we have so much more to give. We've got to engage those other things – technology and finance and politics and all the other elements – because if we don't, we don't have a seat at the table," he concludes. "I believe in architecture, I believe in design, and I think that we have an incredible moment to really make a difference in our cities around the world." SP



SHoP ARCHITECTS PC

LEFT AND BELOW: 111 W 57th Street will be the most slender tall building in the world when completed. It's one of four towers that SHoP is currently designing in New York City, all of which will be taller than the Empire State building



SHoP ARCHITECTS PC

# SLICED, DICED & DELICIOUS

A purposefully fragmented steel shell is the hallmark of an idiosyncratic house in the heart of Melbourne's western suburbs.

Words **Peter Hyatt** Photography **Peter Bennetts**



**ARCHITECT**  
Andrew Maynard Architects  
**PROJECT**  
Cut Paw-Paw House  
**LOCATION**  
Seddon, Victoria

The first stroke on paper, or computer keyboard, can strike fear in the heart of an architect. Unless resorting to the refuge of formula, or old habits, truly inventive solutions can be daunting. How to grasp the end when you're unsure of how or where to begin? Architecture is so often a game of snakes and ladders – with an overlay of chess just to keep the players fully alert.

Problems come thick and fast – all demanding the right moves. Melbourne architect Andrew Maynard finds the big answers less in complex theory than relaxed client conversation.

Despite a body of work charged with frisson and energy, Maynard says it is his clients who inform his designs rather than a preconceived intent or, worse still, dogma. He has witnessed clients experience life-changing liveability rather than glib, superficial

change. It's an appreciation that verifies that architecture, at its best, can affect lives profoundly.

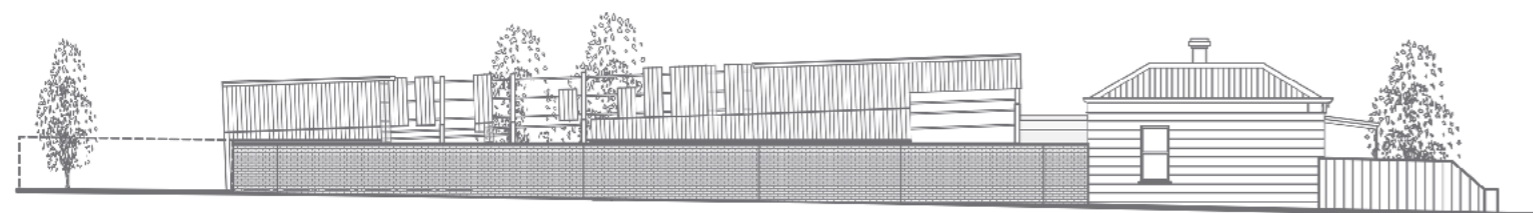
"We had very playful clients here and so the narrative of their story and this house began from conversation," Maynard says of the Cut Paw-Paw House. "We even encourage clients to grab a pen and start drawing, to the point where we feel very familiar with them and what they like and the reasons why. From that point, we go for it."

Clients drawing for their architect might sound zany, but it's one novel way of helping architect and client get onto the same proverbial page.

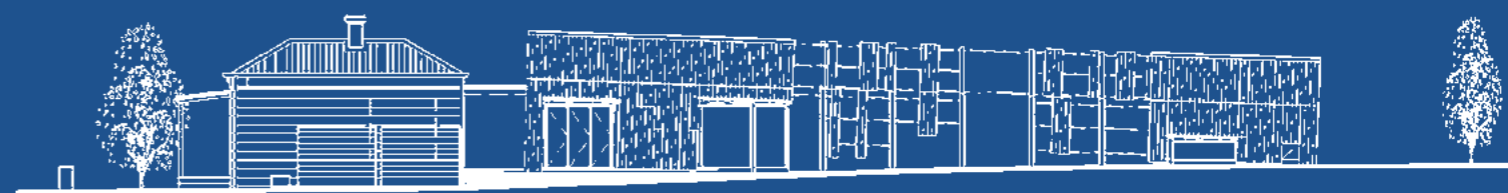
His client's brief for an addition to an original timber cottage asked for a solution that was "ridiculously inside-out". It offered a perfect brief for Maynard and his team, including project



The industrial tent of skeletal incompleteness frays openings and boundaries



SOUTH ELEVATION



NORTH ELEVATION

architect, Mark Austin. Even the name of this evocatively titled dwelling suggests an object of desire, ripe for the fruit salad bowl or dining table. Broken into a delicate structural rhythm, the addition flows from the original timber cottage to resemble a series of lightweight steel pods, or encampments, that reach deep into the backyard.

"Importantly we left the building incomplete," Maynard enthuses. "The central space, between the dining area and the studio, is an unclad frame within and surrounded by a garden. It is both inside and outside, a new building and an old ruin, garden and home."

"We're very interested in materiality and a return to craftsmanship that's possible with prefabrication and steel"

Maynard himself is a juxtaposition, perhaps even enigma, like so much of his architecture. Serious yet playful, driven yet calm, his designs contain enough ambiguity to constantly challenge perceptions and allow for occupant interpretations. His big constant is curiosity. Even his website reminds the cyberspace traveller how architects must leave their burrows to absorb, engage and generate.

While the firm's work – he and co-director Mark Austin work with a small clutch of staff – is in general resistant to replication, it becomes a more thrilling high-wire act with the safety net abandoned. Such work eludes easy categorisation.

"As a practice we often imagine what a finished building will become, but," he laments, "the magic of construction sites invariably ends in disappointment. Once houses are clad, the beautiful skeleton that held such potential and stirred the imagination is buried."

In contrast, the Cut Paw-Paw House retains a skeletal incompleteness that blurs at the edges and dissolves into its backyard setting, thanks to the exposed steel frame and the simple steel skin that punctuates its length.

The expressed steelwork of galvanised steel I-beams supports a cloak for all roofing and walls made from COLORBOND® steel in the colour Surfmist®, in LYSAGHT LONGLINE® 305 profile.

Off-site pre-fabrication involved workshop welding and bolting of various steel frames and components together, before dismantling them in the workshop and erecting them again onsite on a concrete slab and footings.

Maynard relishes steel's ability to stretch with his imagination. "From a detailing viewpoint we loved the long span and 0.7-millimetre industrial profile of LYSAGHT LONGLINE® 305. We're very interested in materiality and a return to craftsmanship that's possible with prefabrication and steel," he says. "That was really fun and executed beautifully at Cut Paw-Paw," adding that he is especially pleased with the roof which he says was beautifully installed. ➤



## PANEL SAYS

This is an incongruous structure that deliberately blurs the boundaries between interior and exterior, house and garden, refuge and prospect. The extension to a modest double-fronted weatherboard home resembles a house within a greenhouse – an inexpensive and robust steel-framed and COLORBOND® steel-clad pavilion. Part of the delight arises from the unpredictable quality of the singular roof and wall cladding – which folds and is cut away in stepped sections, or simply isn't there. It may seem erratic at first, but the carefully controlled plan and material use combines to create a series of beguiling and enchanting 'rooms'

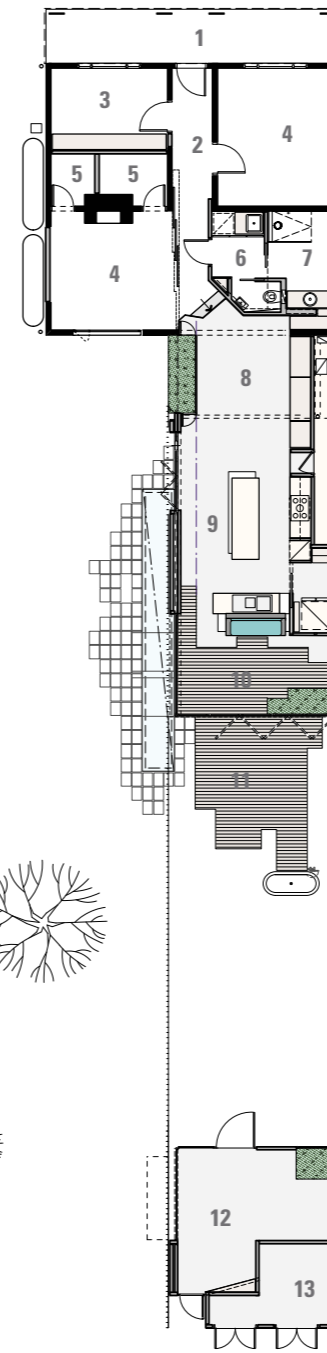


TOP: Structural steel ribs are mostly all that exist between outdoor bathing and a big sky

ABOVE LEFT: A simple palette of robust materials contribute to a unified whole

ABOVE RIGHT: Sliding walls enable rooms to be zoned or expanded as need dictates

LEFT: A humble Victorian frontage is retained for sustainability and as understatement of what lies beyond



### LEGEND

1. Verandah
2. Hall
3. Study
4. Bedroom
5. Walk-in robe
6. Laundry
7. Bath
8. Living
9. Kitchen
10. Dining
11. Decking
12. Studio
13. Ext. Store

"Sustainability," says Maynard, "is at the core of Cut Paw-Paw. Rather than simply extruding the existing structure we have run the new form along the southern boundary so it is soaked with sunlight. The openings and windows are optimised for passive solar gain, thereby reducing demands on mechanical heating and cooling. All windows are double-glazed and the light-coloured roof helps reduce demands on active air-conditioning and its contribution to the surrounding urban heat sink (which is summarised as the rise in temperature of built-up areas, when compared with a natural landscape)."

Maynard considers steel a vital part of his material palette, in keeping with his view of lightweight frame, flexible skin and environmental values. "There is an urban heat sink in our cities, including Melbourne, where in many parts there aren't enough trees and this has altered the local climate," Maynard explains.

"White roofs reduce this urban heat sink, so we have started doing a few projects with COLORBOND® steel in the colour Surfmist® and similar colours that are highly reflective to heat, rather than letting the heat soak in."

appearance to the project," Maynard continues. "When the plants eventually consume the central part of the building, there's going to be a really lovely connection between that galvanised steel and the plants as they grab onto to it. The way the steel and the greenery will co-exist is going to become a beautiful little dance."

The method of attaching the extension to the existing house required careful thought and planning, too, Maynard says, describing the junction between old and new as a steel and glass sleeve. "We didn't want to smash or crash new architecture into an existing building, so one sits next to the other with the steel and glass gently connecting the two eras."

Informed risk-taking rather than the reckless variety is always a good starting point for those seeking the idiosyncratic. The Cut Paw-Paw House reveals a distinctive, original voice: one that is emphatic but never dogmatic. There is no shortage of architects from diverse style tribes who would benefit from recognising this difference. SP

**"The way the steel and the greenery will co-exist is going to become a beautiful little dance"**

Obviously in this case, the clients' initial idea was the starting point for a journey that led to a thrilling result. "I'm most proud of accepting and, I think, fulfilling the challenge Derek and Angela presented of making it 'ridiculously inside out'," Maynard says. "When we heard them say that we thought: 'Well, we're not just going to do a big sliding door onto a deck and say, the wall has disappeared.'

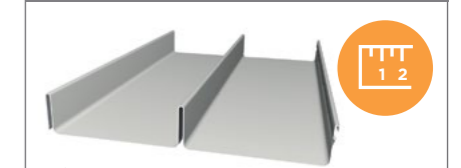
"'Ridiculously inside out' meant it's actually challenging us to really blur those boundaries," he adds. "A lot of people talk about blurring boundaries so I'm proud because I think that we nailed that one."

This point was emphasised when the house appeared on a popular design blog recently. "One reader's comment said it was irresponsible not to have weather protection between the kitchen, dining area and outside and that it needed walls or windows at some point," Maynard recalls. "They had completely missed the lines where a sliding door comes down and meets the ground. They just assumed that there was no barrier, so that confusion is a small badge of honour for us."

"We really enjoyed responding to the idea of 'ridiculously inside out', and giving that unfinished



View a video of the project architect, owner and builder discussing this house at [steel.com.au/steelprofile](http://steel.com.au/steelprofile)



LYSAGHT LONGLINE® 305 profile

CAD files, textures, technical drawings and product brochures are available at [steel.com.au/steelprofile](http://steel.com.au/steelprofile)

**PROJECT** Cut Paw-Paw House **ARCHITECT** Andrew Maynard Architects **PROJECT ARCHITECT** Mark Austin **PROJECT TEAM** Andrew Maynard (design architect) **STRUCTURAL ENGINEER** Maurice Farrugia and Associates **BUILDER** Mark Projects **STEEL FABRICATOR** RA&DA Scott **CLADDING AND ROOFING CONTRACTOR** Kel's Roofing **PRINCIPAL STEEL COMPONENTS** Roofing and wall cladding made from COLORBOND® steel in the colour Surfmist®, in LYSAGHT LONGLINE® 305 profile. LYSAGHT® Cee purlins made from GALVSPAN® steel. Structural steel including welded galvanised I-beams **PROJECT TIMEFRAME** Design & documentation: eight months; construction: 10 months **AWARDS** 2015 Houses Awards – Outdoor and House Alteration and Addition under 200m<sup>2</sup> – Commendation **BUILDING SIZE** 147m<sup>2</sup> **TOTAL PROJECT COST** \$700,000

Steeped in Australian banking and design history, and possessing unrealised potential, this landmark building has been reinvigorated to facilitate its new custodian's innovative workplace culture. Crowning the achievement is a meticulously resolved steel and glass addition.

Words **Micky Pinkerton**

Photography **Peter Bennetts (PBB)**,  
**Paul Bradshaw (PMB)**; **Brett Boardman**

# UNDER THE DOME

**ARCHITECT**  
Johnson Pitton Walker  
**PROJECT**  
50 Martin Place  
**LOCATION**  
Sydney, New South Wales



rich architectural legacy of the original building was part of the appeal of taking on the brief to adapt it for modern use.

"We have always loved the rigour and the intelligence of this building," explains JPW director Paul van Ratingen. "There is innovation in its materiality, in its construction, its execution, its services and its thinking. It really is an exemplary building."

JPW first became involved with new plans for the building when the previous owner engaged the practice to develop concepts for updating the 10 levels of existing office space. At that stage there was no dome on the drawing board, but when the building was sold to Macquarie Group in 2012, the architects were given an opportunity to discuss the proposals they had developed, and consider how they might re-shape them to meet the additional expectations the new owners had of the building.

The architects started with context. This building had once been one of the tallest in the city but was now dwarfed by the office block towers around it – many of which house Macquarie's clients. Looking up at the facade from street level was impressive in 1928 and continues to be so today, but looking down on the building was a non-descript experience. JPW reasoned that the view from above had to be equally as striking as the visual narrative at ground level.

The dome had its genesis in those discussions: a lightweight structure clad in glass, a Beaux Arts-inspired addition which was sympathetic to the old, but made a confident and innovative statement about the future. The simplicity of the shape also provided a unifying motif for a space that was intended to accommodate a multiplicity of functions.

"Once we had established the form, how the building was going to be built was so important," says van Ratingen. "We did look at concrete and timber and composites, but in the end steel was the most rational from the perspective of cost, serviceability, member size, logic, and legibility of a heritage building and a new addition." ↗

Staff entering Macquarie Group's new global headquarters in Martin Place, Sydney, do so via a lobby which has retained the original barrel-domed ceiling of the former Government Savings Bank of New South Wales' Grand Hall. If they care to look up – and it's hard not to – they see a series of figurative stained glass panels depicting the industries that contributed to the country's wealth in the early 20th century, from stonemasons to stevedores.

While Australia's economy has changed markedly in the intervening years, the message hasn't, and the building remains a powerful symbol of the integral place of our banking system in nation-building.

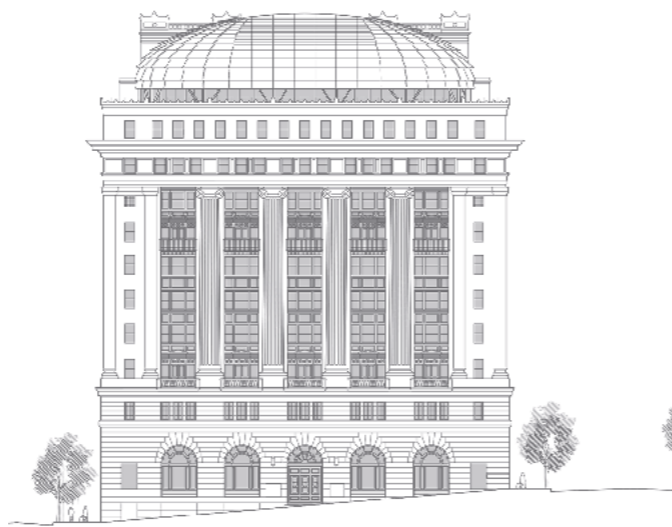
At the time, architects Ross & Rowe expressed this message not only in the decorative elements of the building, but in its function as well. Built between 1925 and 1928, the building was considered to be at the cutting-edge of office design and construction, and survives today as a rare example of Australian inter-war Beaux Arts architecture. For architects Paul van Ratingen and Matthew Morel, of Johnson Pilton Walker (JPW), the opportunity to explore the

FAR LEFT: The design of the dome started with the premise that the view from above had to be as impressive as the view of the building from street level

BOTTOM LEFT: The rooftop houses a multiplicity of functions, from meeting rooms and an auditorium, to a business centre and outdoor entertaining areas for clients and staff

BOTTOM RIGHT: A life-sized prototype of a corner section of the dome (depicted as constructed, below) was built off site to test and refine how the structure, and in particular the tri-columns, would be fabricated

OPPOSITE: The addition continues the original Beaux Arts building's tradition of craft and innovation. The exposed fabricated steel structure supports a faceted and shiplapped skin, glazed with an interstitial expanded mesh



SOUTH ELEVATION



JPW reasoned that the view from above had to be equally as striking as the visual narrative at ground level





TOP LEFT: Two bespoke steel and glass lifts link the lobby with the rooftop, providing a signal within the heritage ground floor of the innovative and contemporary spaces above

TOP RIGHT: The original atrium was widened by 70 per cent to allow natural light to filter through to the nine levels of workspaces



ABOVE: Columns and rafters incorporate XLERPLATE® steel made by BlueScope. The laser-cut and hand-welded steel achieves a beautifully detailed edge

LEFT: The steel rafters, columns and facade integrate with mechanical and fire services, hydraulics and storm water drainage, as well as being reticulation routes for wiring for the speakers, audiovisual equipment and a bespoke blind system

It is arguable that much of the same judgment was applied in 1925 in the design decisions that led to the use of concrete-encased steel to achieve the required proportions for the vast columns in the ground floor banking chamber. A less overt link to the past is evident in the architects' desire to reference the hand-crafted nature of the original building in the finishing of the new structure. The columns and rafters incorporate XLERPLATE® steel, manufactured by BlueScope, which was laser-cut and then hand-welded to achieve a beautifully smooth edge. The need for such attention becomes apparent once inside the space, where the tangibility of the dome is exposed.

"The steel used in the structure is brought into the character of the spaces rather than being a structure that is high above you," explains JPW associate Mathew Morel. "Here you can walk right up to the structure, you can touch it in some of the building's most important spaces."

In getting so close to the structure, one can appreciate the exceptional planning and collaboration that went into this project. Its clearest expression is evident in the way the steel frame integrates with the glazing system. Span sizes were designed so that glass sheets could reach from one steel rafter to the next, thereby avoiding the need for a secondary glazing system on top of the primary steel members. As a result, the overall structural efficiency is particularly high, using less steel per metre than some hardware store sheds. However, that efficiency meant the steel had to be erected to meet the super-fine tolerances associated with glass, not to mention taking into account the cambering of the structure under the load of the glass itself.

A less observable expression of the planning involved – and that was precisely the intention – is that the steel

rafters, columns and facade integrate with mechanical and fire services, hydraulics and storm water drainage, as well as being reticulation routes. The absence of conduit speaks of the complexity of the design and the amount of coordination that occurred to achieve such a simple, light and clear envelope.

To achieve this clarity, the construction team built a life-sized prototype of one of the corner sections of the dome, which was then used by consultants and trades to test and refine methods of fabricating, transporting and building the dome within a tight program.

"The builder had to hit the ground running because of an immovable completion date, so Brookfield Multiplex became involved very early on – before the DA was lodged – and they very quickly brought their own in-house steel specialists to the meetings and workshops," says Morel. "It was a highly collaborative process and within about a month the shop drawers started to attend the workshops, and then the fabricators, so everyone was involved as early as possible. Everyone worked very hard to develop these details and celebrate how the steel members came together."

**"The steel of the structure is brought into the character of the spaces rather than being a structure that is high above you"**

Although a temporary roof deck was formed so that interior work could progress in parallel, the assembly of the dome was nonetheless on the critical path of the project.

While the roof was being constructed, two additional insertions to the heritage building were taking shape below: the widening of the atrium by 70 per cent, to improve natural light and circulation to the workspace areas below; and the design of two remarkable circular glass lifts, which link the lobby with the rooftop and provide clients with a memorable arrival moment.

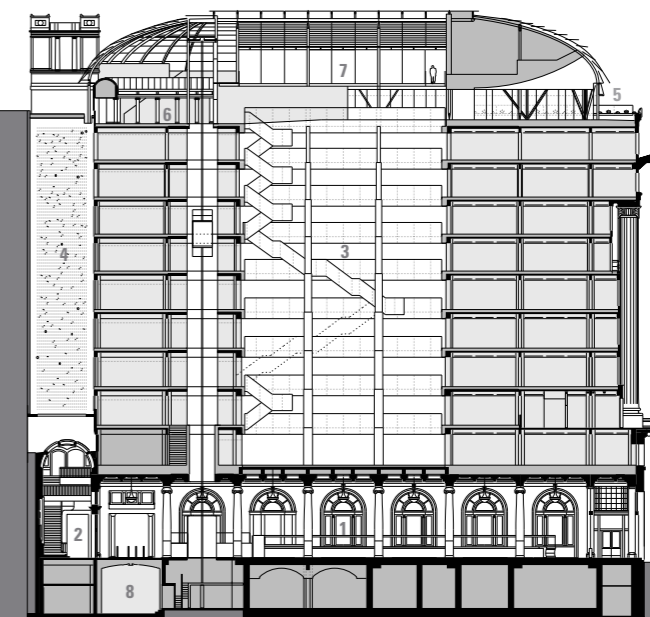
The project has attracted much praise. It won a swag of 2015 Australian Institute of Architects New South Wales chapter Awards, including the COLORBOND® Award for Steel Architecture, the Sir Arthur G Stephenson Award for Commercial Architecture and a Commendation for Sustainable Architecture.

The most important endorsement, though, has come from Macquarie Group itself, with feedback indicating both staff and clients enjoy the building and that it successfully reinforces the company's brand in a physical way.

Banking practice and workplace attitudes have changed so materially since 1928 that Ross & Rowe might struggle to comprehend the cross-group collaborative and entrepreneurial culture of the new owners of 50 Martin Place. As architects, however, they would appreciate that hard work and opportunity can be enhanced by design, and that the cumulative effort of many can produce something exceptional. This has ultimately restored their building to the status it enjoyed when it first opened: an innovative project at the forefront of contemporary commercial design. **SP**

## PANEL SAYS

In modernising this iconic 1928 Beaux Arts-style bank headquarters for Macquarie Bank, Johnson Pilton Walker has retained the exotic ground-floor banking chamber while removing the building's 'lid' to give it a new lease of life. The installation of a steel-framed glass dome is a minimal, innovative and elegant solution. It fills the new atrium with natural light and opens up the interior to create opportunities for vertical circulation and visual connection. On the roof, the thin lightweight members of the exposed steel structure contrast perfectly with the original heavy masonry facade. Following our publication of the White Bay Cruise Terminal in SP#116, this is another example of JPW's ability to transform old buildings into contemporary spaces



### LEGEND

1. Banking Chamber
2. Grand Hall
3. Atrium
4. Northern lightwell
5. Roof terrace
6. Colonnade
7. Meeting rooms
8. Safety Deposit Vault

SECTION – NORTH SOUTH

**PROJECT** 50 Martin Place **CLIENT** Macquarie Group Limited **ARCHITECT** Johnson Pilton Walker **PROJECT TEAM** Project Director – Paul van Ratingen; Project Associates – Matthew Morel, Peter Blome; Project Architects – Richard Johnson, Matteo Salval, Walter Brindle, Brent Alexander, Mark Rostron, Gareth Jenkins, Natalie Minasian, Davide Galli, Michelle Vassilou, Brendan Murray, Sisi Wang, Yi-jan Lien, Tomek Archer, Paolo Stracchi **INTERIOR** Fit-out office levels 1-9 BVN Donovan Hill, Clive Wilkinson Architects **HERITAGE ARCHITECTS** TKDA **STRUCTURAL ENGINEER** TTW Taylor Thomson Whiting **MECHANICAL ENGINEER** ARUP **BUILDER** Brookfield Multiplex **STEEL FABRICATOR** Pacific Steel **SHOP DRAWING CONTRACTOR** 3D Accudraft **CLADDING CONTRACTOR** Sharvain Projects **PRINCIPAL STEEL COMPONENTS** 200 and 100 section fabricated from plate steel, including XLERPLATE® steel from BlueScope **AWARDS** 2015 Australian Institute of Architects New South Wales chapter Awards, including the COLORBOND® Award for Steel Architecture, the Sir Arthur G Stephenson Award for Commercial Architecture and a Commendation for Sustainable Architecture **PROJECT TIMEFRAME** 2012–14 **BUILDING SIZE** 26,000m<sup>2</sup>

# GREAT BONES

Adelaide's new flagship TAFE at the Sustainable Industries Education Centre breathes new life into a proud remnant of the city's industrial past.

Words **Alex Taylor** Photography **David Sievers**

**ARCHITECT**  
MPH Architects in Association with  
Architectus

**PROJECT**  
Sustainable Industries Education Centre  
– Tonsley TAFE

**LOCATION**  
Clovelly Park, South Australia



The grand main street – looking south – imparts a civic scale to the project. The yellow gantry crane is a remnant from the Mitsubishi Assembly Building's former use



Six new buildings and a series of workshops were arranged throughout the former manufacturing building, pivoting off the central open staircase

The new Sustainable Industries Education Centre (SIEC) at Clovelly Park in Adelaide is an exemplar in so many ways. It showcases adaptive reuse and urban regeneration, collaborative teaching methods across multiple disciplines, the durability and adaptability of steel construction, and straightforward building techniques that demonstrate the craft for students, yet it still manages to appear modest in photographs. It's difficult to appreciate the massive over-scaled quality of its internal streets, lanes, teaching spaces and workshops – all sheltered inside an oversized industrial shed – without experiencing them first-hand.

The South Australian government acquired this 64-hectare site after the Chrysler/Mitsubishi factory stopped producing cars in 2008, and committed \$253 million to its renewal with the aim of driving private investment across four key industries: mining and energy, clean technology, green construction and medical technologies. The SIEC occupies the southern end of the former plant's motor assembly building (MAB), with a new tower for Flinders University bookending the northern end. The central section is currently being transformed into the precinct's new town square.

"The MAB was reportedly the largest building of its kind in the southern hemisphere at one point, and it was synonymous with Chrysler and later Mitsubishi," says Tony Materne, design director and principal at MPH Architects, who designed this project in association with Architectus. "It formed the core

of Adelaide's industrial past and the demise of car manufacturing hit the state hard, psychologically. In taking on this project, we wanted to preserve that industrial heritage in a building that embodied confidence in the future.

"I saw this project as an opportunity to celebrate the past, and didn't want to strip the building of its industrial infrastructure," Materne continues. "I'd only been on the job for three days, but I saw a lot of things worth salvaging – such as the grid references on the steel columns, which to me were useful and endearing – and I was able to convince our client to keep the last of several yellow steel gantry cranes, which now forms a striking feature in the main atrium."

Images of this impressive central spine don't adequately convey the immense height and breadth of the original steel columns and beams, which can still be seen marching across the old factory floor in regimented rows, nor the simple beauty in the repetitive geometry of the soaring sawtooth roof profiles, framed with delicate steel trusses. These were some of the attributes that Materne was keen to preserve and reveal in his design for the new centre.

He readily admits that the rational and unadorned skeletal steel frame of the MAB set the functional and aesthetic tone for the entire project, with the new insertions carefully slotted into the frame without obscuring the rigorous order.



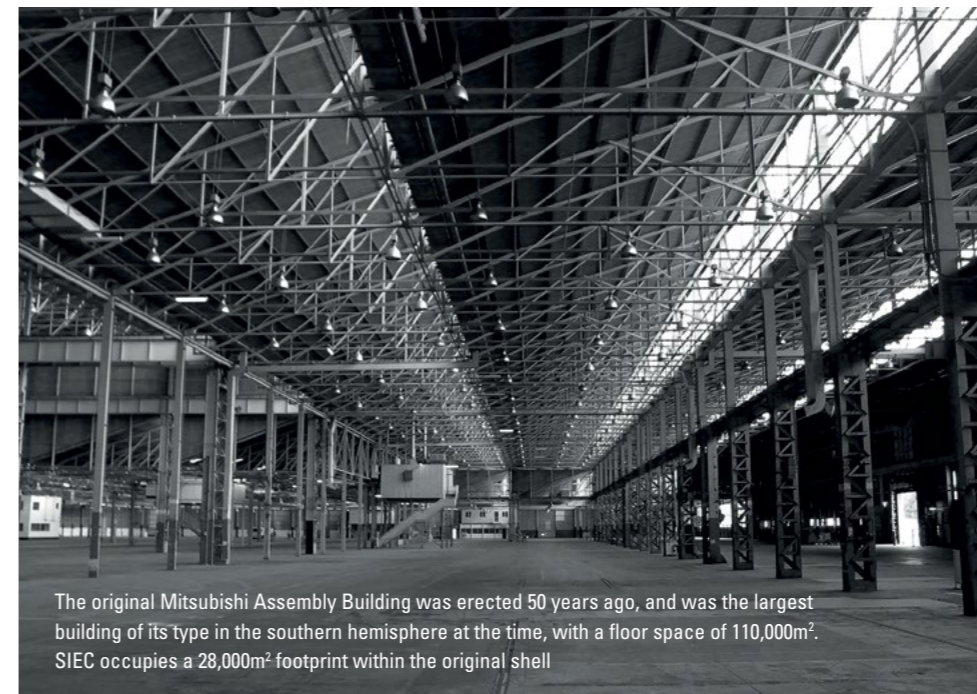
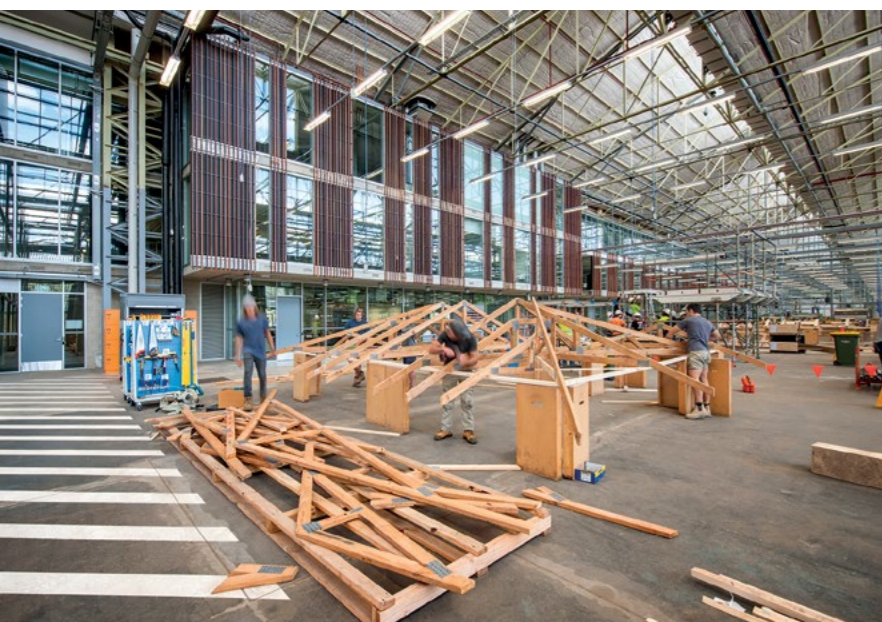
NORTH-SOUTH SECTION THROUGH STREET



SOUTH ELEVATION

BELOW: On the ground floor of each new building, communal student spaces provide room to study, collaborate and conduct research via the virtual library. The provision of lockers, kitchen facilities and bathrooms all help students transition from work to study mode





The original Mitsubishi Assembly Building was erected 50 years ago, and was the largest building of its type in the southern hemisphere at the time, with a floor space of 110,000m<sup>2</sup>. SIEC occupies a 28,000m<sup>2</sup> footprint within the original shell

“I saw this project as an opportunity to celebrate the past, and didn’t want to strip the building of its industrial infrastructure. I saw a lot of things worth salvaging such as the grid references on the steel columns”

“We like grids in Adelaide,” he laughs. “We undertook an enormous amount of work to get the new grid to work within the framework of the existing steel skeleton.”

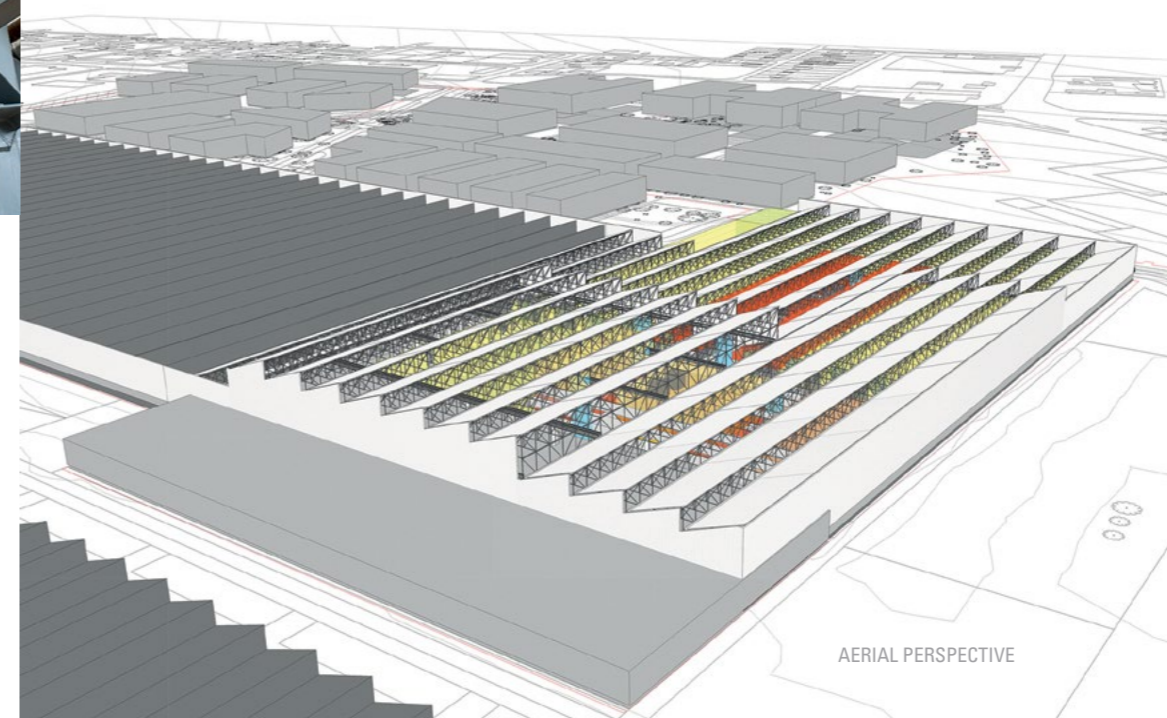
His starting point was the original green painted steelwork – 90 per cent of which was retained, some of it still bearing engraved graffiti dating back to 1964 – and left just as it was, apart from locations where it could come into contact with people. In those cases, the steelwork was finished with an inorganic silicate paint, which was also used to demarcate the new steel members that were inserted into the skeletal frame, including PFCs, RHS and angles. These stiffen and brace the existing structure and support new suspended services throughout the building. They also conform to earthquake zone building codes.

Externally, the building’s original asbestos cladding was removed and replaced with a glazed facade at ground level and on the southern side – which will eventually become the centre’s main entrance. A black ribbon of Fielders Shadowline™ 305 profile made from COLORBOND® steel in the colour Monument® – combined with black painted angles over glazed sections – encircles the building to define SIEC within the overall MAB skeleton. The parapet between the glazing and roofline was clad with a new skin of Fielders Shadowline™ 305 profile made from COLORBOND® steel in the colour Surfmist®. LYSAGHT KLIP-LOK 700 HI-STRENGTH® made from COLORBOND® steel in the colour Surfmist® was used on the roof.

Inside, the \$110 million TAFE brings together 26 construction trades that were previously scattered across six campuses throughout Adelaide, and delivers teaching and learning for the digital age. With no physical library onsite, students can access resources via the building’s wifi network, including lectures and course notes, and use online forums and groups to share information and projects among their peers.

Catering for about 6500 students a year, with up to 800 on campus each day, course delivery has been flexibly tailored to suit a range of student circumstances, including people working full-time or living remotely, and to provide life-long learning from apprentice level to advanced diploma. With a focus on green construction methods, the TAFE offers two new courses in renewable energy and water operations alongside the traditional trades of electrical, refrigeration and air-conditioning, plumbing, carpentry and joinery, furnishing and building, interior design and drafting, painting and decorating, bricklaying, and plastering and tiling.

Balancing the different requirements of these disciplines – which include dust and noise separation, wet and dry workshops, and a carefully considered process for the delivery, storage and distribution of construction materials – was one of the key spatial planning challenges for the architects. With a total floor area of 43,000m<sup>2</sup>, including a footprint of 28,000m<sup>2</sup>, this project has a greater floor space than the tallest skyscraper in Adelaide’s CBD, a fact not lost on Materne. ➔



AERIAL PERSPECTIVE

TOP LEFT TO BOTTOM RIGHT: A black steel ‘ribbon’ wraps around the building to define SIEC within the MAB. Flexible student common areas create a vibrant hub on the ground floor of each building. The workshops including carpentry (middle right) and furniture-making (middle left) are arranged by trade to limit the transfer of dust and noise between the various spaces. The original building has three roof heights, which impacted on the arrangement of spaces below. Ninety per cent of the original green-painted steelwork was retained, along with the original grid reference signs, which were used for way-finding. Newly defined ‘streets’ use a New York-style naming system with East and West numbered streets to make sense of the oversized campus



## PANEL SAYS

This impressive adaptive reuse project is of a completely different scale and character to 50 Martin Place (page 28), but once again it demonstrates the durability and versatility of steel construction. The 50-year-old steel-framed shed was once a paragon of industry – first as the Motor Assembly Works for Chrysler, then Mitsubishi, but it was mothballed in 2008 when the car factory closed. By carefully inserting five new buildings and a network of streets and lanes within its gargantuan shell, MPH Architects has provided this enduring steel skeleton with new clothes. The ‘shed’ is now more spectacular than ever: an exemplar of green building best practice for the next generation of construction industry workers



The rigid geometry of the original structure, and its different roof heights ranging from six to 15 metres, dictated the dimensions and placement of the new workshops (top), teaching spaces and offices (bottom left), and main circulation spaces (bottom right) within the existing envelope



“In thinking about how to tackle this project, we had to start with an urban language,” he explains. “We carved out a new ‘main street’ through the middle of the MAB, with the grand double staircase marking the central hub, then we sited six separate ‘buildings’ off it, with smaller ‘laneways’ providing access to student learning spaces and social areas.

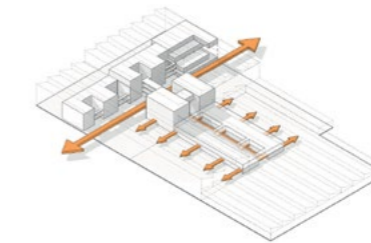
“There is a high level of rigour across the space planning, structural systems and building services,” Materne continues. “Once we established the planning and design rules, they applied to 80 per cent of the building. So after the first typical bay was designed, we were able to apply that bay across the site, on every level. We then custom-detailed those areas that provided exceptions to the rule.”

Three different sawtooth roof heights – of 15, 10.5, and six metres – dictated the types of spaces that could fit below them, with glass-fronted workshops beneath the lower roof and the unique building services installation (BSI) module occupying the tallest section. “The BSI was developed as a bespoke item for our TAFE client,” Materne says. “It’s a vertical workshop that simulates working at heights, to teach multi-storey construction skills to all of the trades.”

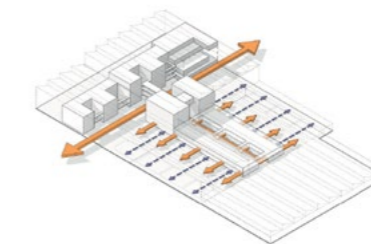
Working in trenches below ground level, students can plan and coordinate services for water, waste, power, communications and gas, which can then be installed and commissioned over four floors in a controlled learning environment.

Bringing all of the trades together in a purpose-built facility under one roof offers better opportunities for interdisciplinary cooperation than ever before, and mimics the dynamics of real construction sites, Materne says. “There is a level of transparency and communication between different trades, and different types of learning – formal, semi-formal and applied – that aims to break down the stereotypical barriers that exist between various construction trades, and to simulate the collaboration that goes on in the workplace,” he explains.

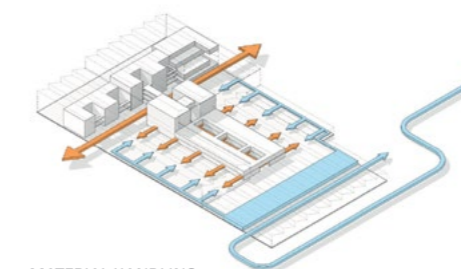
Another key aspect of the design was the notion that the entire building would act as a working model for the students within it. “This building itself acts as a demonstrator because we consciously decided to expose the structure and limit the finishes, so that students could see how the building was put together and how the systems work in harmony,” Materne adds. “It’s also a model of sustainability because we’ve applied an overlay of design awareness between the various trades, to foster best practice and to demonstrate the practicality of sustainable ideas and initiatives.”



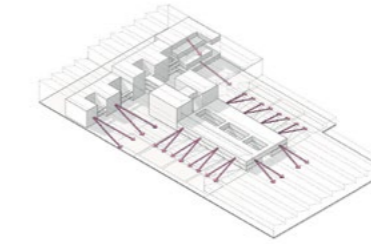
PEDESTRIAN CIRCULATION



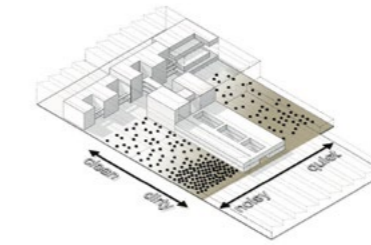
STUDENT CENTRED LEARNING



MATERIAL HANDLING



VISUAL CONNECTIVITY



WORKSHOP PLANNING

Mechanical and electrical services are arranged in a logical way throughout the Centre, in a repetitive and regular manner – off-grid and on-grid respectively, and at different levels – to avoid potential clashes. “That level of detailing maintains flexibility should the client’s needs change in the future, without disrupting the rigour of the design,” Materne says.

These qualities were praised by South Australia’s Australian Institute of Architects Jury in 2014, who said they were excited by the capacity of this project and the SAHMRI building, also in Adelaide (see *Steel Profile* 120) to show “the full potential of South Australian-based Architectural firms delivering world-class projects”.

“The architect’s appreciation of the existing structure is obvious,” the Jury said. “The result is a fitting marriage between the existing robust industrial fabric where assembly once took place, and the teaching of functional building trades. Finishes, fixtures and furniture are all as they should be – robust, flexible, honest and appropriate. Nothing is superfluous or frivolous. The design is confident, but not self-conscious.”

In crafting and creating a building that pays respectful homage to its previous incarnation while managing to establish its own powerful identity, Materne and his team have produced a facility that is sure to inspire and inform future generations. The original steel structure – whose influence on the new building is unmistakable, in both spatial planning and in the patina and character it lends to the spaces – plays a vital role in linking Adelaide’s proud manufacturing past with the TAFE campus of the future. The strength and clarity of the existing steelwork has been taken to its logical conclusion in the architect’s vision for SIEC, garnering praise from all quarters.

“I’ve been overwhelmed by the extraordinarily positive reactions I get from anyone who walks through this facility. I’m gob-smacked, frankly,” says Materne. “The industry feedback – from our peers both locally and internationally, as well as the students who use the building – has been incredible. People can be indifferent to the spaces they occupy but this project generates a passion for the building. And because it’s so big, it touches so many people’s lives and will have a major impact on the renewal of this whole area. The depth and breadth of the project’s reach has been astounding.”

It’s an impressive result, for what is essentially a new TAFE campus in a big old steel shed. **SP**

**PROJECT** Sustainable Industries Education Centre – Tonsley TAFE **CLIENT** Department of Further Education, Employment, Science and Technology (DFEEST) **ARCHITECT** MPH Architects in Association with Architectus **PROJECT TEAM** Tony Materne (partner in charge / design director), Peter Hoare (project leader), Vicki Jacobs, Thomas Hansen, Carlo Pennino, Tonia Mudie, Matt Spinaze, Daniel Pike, James Jones, Sally Bostock, Maureen Fry, Diana Thompson **EDUCATION CONSULTANTS** Rubida **STRUCTURAL & CIVIL ENGINEER** GHD **RISK MANAGER** DPTI **SERVICES ENGINEERING** WSP **QUANTITY SURVEYOR** Rider Levett Bucknall **ACOUSTIC CONSULTANT** AECOM **ENVIRONMENTAL CONSULTANT** AECOM **BUILDING SURVEYOR** Davis Langdon **BUILDING CERTIFIER** Katnich Dodd **BUILDER** Lend Lease **STEEL FABRICATORS** Samaras Group and Plympton Steel **SHOP DRAWING CONTRACTOR** in house by steel fabricators **ROOFING CONTRACTOR** McMahon Services Australia **LANDSCAPE ARCHITECTS** Aspect Studios **MANUFACTURERS/SUPPLIERS** Woodform Architectural **PRINCIPAL STEEL COMPONENTS** Cladding: Fielders Shadowline™ 305 profile made from COLORBOND® steel in the colour Monument®. Parapet: LYSAGHT LONGLINE 305® profile made from COLORBOND® steel in the colour Surfsmist®. Roofing: LYSAGHT KLIP-LOK 700 HI-STRENGTH® profile made from COLORBOND® steel in the colour Surfsmist® **STRUCTURAL STEEL:** Including flat bar plate for external facade. Miscellaneous internal steelwork using SHS, including for earthquake strengthening **PROJECT TIMEFRAME** Two years (completed October 2013) **AWARDS** Australian Institute of Architects Awards 2014: National Award for Interior Architecture. South Australia Australian Institute of Architects Awards 2014: Interior Architecture – Award; COLORBOND® Award for Steel Architecture – Commendation. **INSIDE** World Festival of Interiors 2014 – Creative Re-Use Category. Council of Educational Facility Planners International (CEFPI) Category 1 (2014): New Construction: Entire New School. Australian Steel Institute – Steel Excellence in Buildings 2014 – Large Projects – High Commendation – South Australia. Australian Institute of Building – Professional Excellence Award 2014 – Commercial Construction \$100 Million plus – South Australia **BUILDING SIZE** 43,000m<sup>2</sup> **TOTAL PROJECT COST** \$130 million

# BAR RAISER

The almost viscous form of this unique bar belies the solid nature of its materials.

Words **Nick Green** Photography **Paul Bradshaw**



In the unassuming south-western Sydney suburb of St Johns Park, a finely crafted bar is the focal point of a two-year redevelopment of the local bowling club.

Uniquely cranked and folded in two and three-dimensions, the bar is sculpted from BlueScope XLERPLATE® steel that drapes across an off-form concrete base.

Both steel and concrete have deliberately been left in their raw state. Blasted, ground, burnt and heated, the blue/grey of the steel proudly displays the marks earned during its journey from 6mm XLERPLATE® steel sheet to an eclectic, free-form piece of furniture.

A coat of wax applied each week insulates the steel from the rigours of patrons who attend the bar which is (virtually) always open.

With 16 metres of serving space (eight at the front and four on either side) the bar wraps around a full-height clear glass cabinet, also designed by Cullinan Ivanov Partnership, creating a lantern-like effect.

The bar's 27 individual laser cut-outs are softly illuminated by concealed LEDs, furthering the intended impression of the steel oozing over its concrete base like so much melted chocolate.

Commissioned to design a number of spaces in the wider transformation of the club, Cullinan Ivanov Partnership set out to design and create a bar unlike any you would expect to find in a traditional bowling club.

"Bars can be a very standard thing in clubs – mostly functional rather than aesthetic, and 'chopped and changed' to accommodate more or less beer fonts, cashier points or meat-pie warmers," says Cullinan Ivanov Partnership director, Vladimir Ivanov.

"We didn't want to do a standard bar with a footrest, we wanted something that would last. We chose steel and concrete because they are solid, unyielding materials but we also tried to soften them so the bar would be like a beautiful sculpture."

Steel fabrication for the project was undertaken by Ox Engineering.

"The hardest part was understanding how metal will move during bending and controlling that distortion," says Ox Engineering owner Terry Tisdale.

"We made an extended prototype of the bar using our 3D modelling software, creating a whole corner section of it to ensure we could leave it in a raw finish."

**"It pushes the boundaries of taking raw metal materials and traditional square cutting... turning a bar into a free-form piece of furniture"**

3D scanning capabilities allowed Ox to ensure that the installation of the project would be millimetre-correct and straightforward.

The XLERPLATE® steel was then folded and cranked using a 1000-tonne press. The unique cut-outs were produced with a nine-metre laser cutter before hard edges were removed with hand tools.

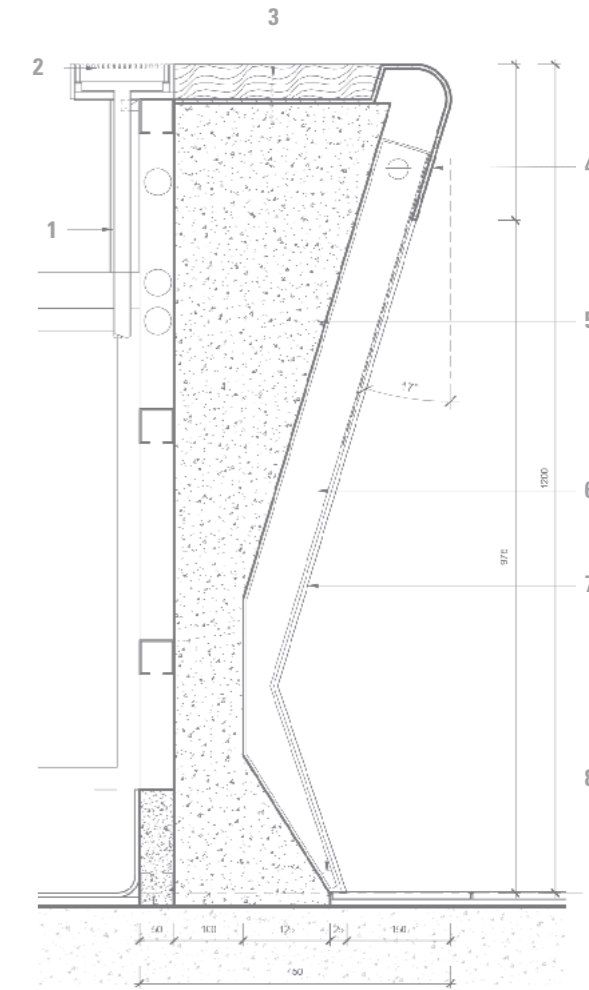
"Because of its compounding angles, it was fabricated in a number of different pieces and then welded together on site. It has quite a bit of bracing behind the scenes to keep it in place and ensure it is nice and square."

The steel was built in two-metre sections and bolted to the top of the concrete. "They aren't actually connected, as we didn't want to hide the joints, and you can see each panel with a 5mm gap," explains Ivanov. "The steel goes all the way through and gets bolted to the top of a fin that has been cut into shape and slotted into drilled concrete.

"It was a very difficult fabrication, but it is one of the best things we have ever done."

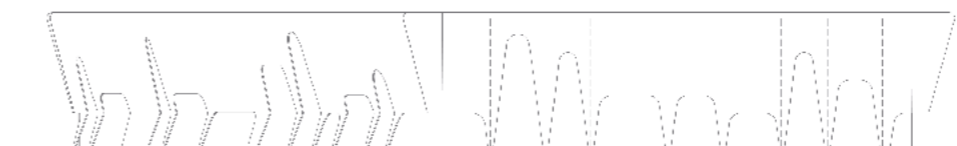
Tisdale is also proud of the result. "It pushes the boundaries of taking raw metal materials and traditional square cutting and turning a bar into a free-form piece of furniture."

Both Cullinan Ivanov Partnership and Ox Engineering report positive in-situ testing. The bar is also a hit with patrons. "I love it and often you can barely see the bar from the amount of people there. Unfortunately it's not in the city or I'd have drinks at 'my' bar more often," says Ivanov. **SP**



**LEGEND**

- 1. Drain pipe
- 2. Drip tray
- 3. Timber fixed through to concrete
- 4. Lighting
- 5. Off-form concrete base
- 6. 6mm steel fin
- 7. 6mm folded steel plate – with laser-cut openings – as bar front and top. Panels are secret pin-fixed to concrete base
- 8. Concealed fixing



ELEVATION



**PROJECT** St Johns Park Bowling Club Bar **CLIENT** St Johns Park Bowling Club **ARCHITECT** Cullinan Ivanov Partnership **PROJECT TEAM** Richard Cullinan, Vladimir Ivanov, Jonathan Cullinan and Carol Leung **STRUCTURAL & CIVIL ENGINEER** Partridge Partners **BUILDER** Rohrig **STEEL FABRICATOR AND SHOP DRAWING CONTRACTOR** Ox Engineering **PRINCIPAL STEEL COMPONENTS** BlueScope XLERPLATE® steel **PROJECT TIMEFRAME** Three months



STEEL PROFILE 121



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