123
JUNE 2016
ARCHITECTURAL STEEL INNOVATION
WITH BLUESCOPE

STEEL PROFILE

COX RICHARDSON ARCHITECTS
SUSTAINABLE BUILDINGS RESEARCH CENTRE – UNIVERSITY OF WOLLONGONG

SCOTT CARVER
NETBALL CENTRAL

IN PROFILE:
IREDALE PEDERSEN HOOK

PAUL BRADSHAW

EDITORIAL

Welcome to *Steel Profile* 123.

We are, as always, proud to bring you a profile of Australia's most remarkable steel buildings and some insights into the inspired minds behind them.

For 35 years *Steel Profile* has tracked the accomplishments of Australia's foremost steel-inspired architects. Over that time one constant has been our relationship with architects, which is fundamental to ensuring that the finest examples of steel-based architecture reach our pages.

If you have a project that befits *Steel Profile* we would appreciate hearing about it via our website – www.steelprofile.com.au – or you can let us know about a project in the wind via info@steelprofile.com.au

Our magazine is also made free to the industry so if you're not on our mailing list and would like to subscribe please get in touch with your professional credentials and contact details via steeldirect@bluescopesteel.com

I very much look forward to hearing from and collaborating with you.

Tanya Tankoska
BlueScope editor

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

PENNY FULLER

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

MATTHEW HYLAND

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

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

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COVER PROJECT
Sustainable Buildings Research Centre

PHOTOGRAPHER
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The new Sustainable Buildings Research Centre at North Wollongong is a proud emblem of green design that showcases new ways of tackling difficult issues.

Words **Rachael Bernstone** Photography **John Gollings; Paul Bradshaw; Richard Glover**

LEADING BY EXAMPLE

ARCHITECT
Cox Richardson Architects

PROJECT
Sustainable Buildings Research Centre

LOCATION
Fairy Meadow, New South Wales

Rather than being limited or constrained by the significant challenges facing the design and construction industry – to make buildings that consume less water and energy, connect more readily with the natural environment, and provide comfortable and inviting places to live and work – the Sustainable Buildings Research Centre (SBRC) at Fairy Meadow, north of Wollongong, uses evidence-based research to boldly point towards a new green future.

Part of the University of Wollongong and located at the Innovation Campus, the SBRC is a multi-disciplinary facility that counts Illawarra TAFE Institute and industry partners BlueScope, GeoExchange and Energy Matters among its key stakeholders. Sheltered beneath a large COLORBOND® steel-clad canopy which broadcasts its presence across the greenfield campus, the SBRC opened in November 2014. Tasked with shaping "the buildings of tomorrow", the Centre's researchers and students develop, prototype and test sustainable building technologies and designs for residential and commercial applications.

While many of Australia's green building endeavours to date have focused on the development of rating tools and design solutions for new buildings, the SBRC has a strong focus on developing technologies and tools that will improve the efficiency and performance of existing buildings, especially housing. It aims to deliver "advanced retrofit technologies, integrated component testing, skills training and [to] research the impacts of day-to-day behaviours of building occupants".

Architects Cox Richardson won the project in a limited design competition, and director Joe Agius says the team's approach was strongly influenced by the natural world and theories of biophilia, as espoused by SBRC director Professor Paul Cooper.

"Paul constantly encouraged us to observe the operation of nature, and to use those principles to inform the building design," Agius says. "He was endlessly sending us images of shells he'd collected on the beach or leaves he'd picked up on the site. While we didn't incorporate those ideas literally, we were keen to explore issues around structural integrity and geometry, and the wholeness of the way nature conceives of itself, and then allow those principles to inform our thinking."

Those influences can be easily observed in the building, which breathes like a living organism by drawing in cool air near the base of its walls, and expelling warm air out through two rows of windows near the ceiling. Like a butterfly or moth, it comprises two parallel wings arranged in an H-shape – one houses a high-bay laboratory, the other teaching and learning spaces on the ground floor and offices on the upper floor, where every workstation has equitable access to daylight and views of the surrounding landscape.

The east-west orientation makes the most of solar exposure for the significant collection of different photovoltaic systems and other roof-top testing equipment, and helps to embed the building in its immediate environment, which includes the Fairy/Para Creek system of riparian corridors to the west and coastal wetlands to the east.

"A lot of the buildings at the Innovation Campus could have been built anywhere, but Paul was keen that we speak to the natural environment in a direct way, and introduce a kind of humanity to this building," Agius says. "Our design therefore tried to respond to that place, not only in terms of its character but also its harshness. It's a highly corrosive environment that is very close to the ocean, so we used a lot of strong textural materials to respond to that."

The choice of materials was also driven by the client and architect's decision – taken part-way through conceptual design – to pursue certification using a notoriously hard-to-achieve green building tool. Not content with meeting and exceeding the most stringent sustainable design scheme in Australia – this is the Illawarra's first six-star Green Star building – they signed up to the Living Building Challenge (LBC) as well.

Developed in North America, the LBC is a rigorous performance standard that aims to push the envelope of green building and "rapidly diminish the gap between current limits and the end-game positive solutions we seek". The SBRC was the first Australian project to seek certification.

Fostering blue-sky thinking, the LBC comprises seven performance categories, or 'Petals' – Place, Water, Energy, Health & Happiness, Materials, Equity and Beauty – that are subdivided into 20 mandatory imperatives. According to Project Architect Michael Bradburn, "there are very few exemptions to the imperatives, so while the LBC is not quite as prescriptive as some other rating tools, it is very hard to meet".

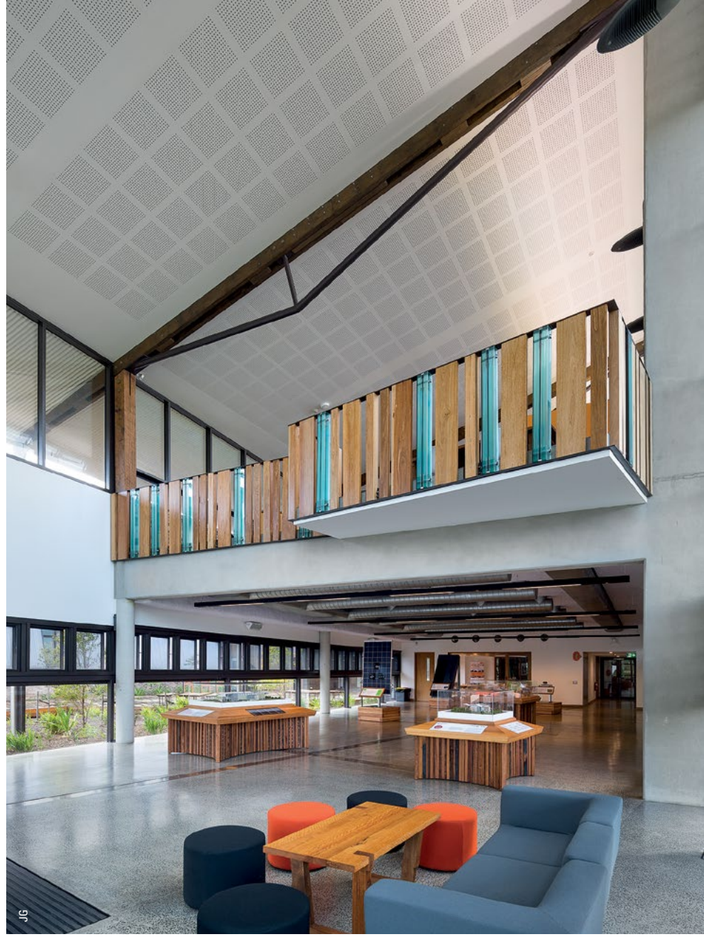
"By far, the hardest category to conform to was Materials," Bradburn says. "Within that category are criteria such as appropriate ↗

> "We were keen to explore issues around structural integrity and geometry, and the wholeness of the way nature conceives of itself, and then allow those principles to inform our thinking"

OPPOSITE: The steel framed and clad entry portal extends across the main pedestrian avenue: a bold gesture that announces the building's presence on campus, and invites visitors to enter and explore

RIGHT: The ground floor foyer is open to the public and acts as a showcase for the building's innovative design credentials. It's also used for gatherings and functions

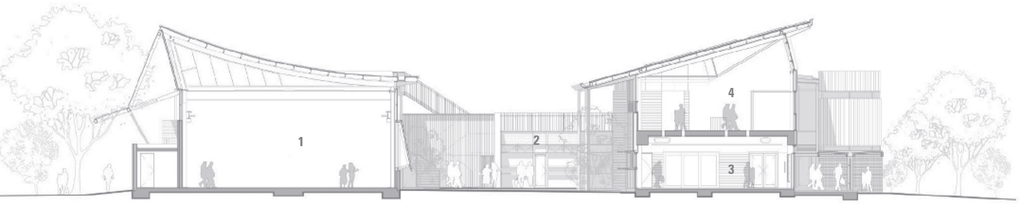
BELOW: The office area on level one has a deliberate domestic atmosphere, with plenty of natural light, fresh air and visual connections to the surrounding landscape



GROUND FLOOR PLAN

LEGEND

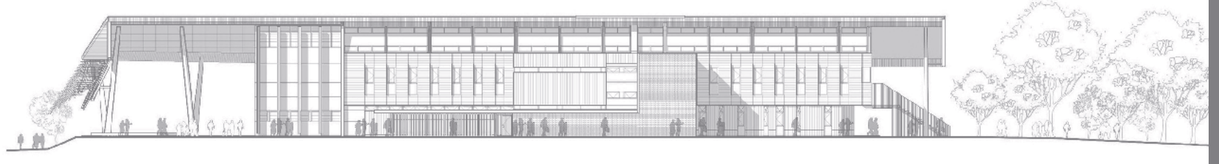
1. Entry
2. Covered outdoor exhibition area
3. Exhibition space
4. Seminar
5. Labs
6. Lab support
7. High bay testing areas
8. Covered bike parking
9. Circulation and break-out
10. Dentention base
11. Open deck



SECTION

LEGEND

1. High bay tesing area
2. Open deck
3. Exhibition area
4. Office



SOUTH ELEVATION

PANEL SAYS

This research facility has a dramatic arrival portal – thanks to the great steel canopy – that combines the aesthetics of a casual office space with a big vernacular Australian shed, a motif that seems fitting given its unique location between coast and bush. The design makes a bold statement about material selection and usage with its various wall treatments – including recycled bricks, sustainable timber cladding, insulated steel panels and steel railway tracks – which impart a hand-made quality to the buildings. The two wings of the hard-working roof accommodate cutting-edge technologies such as photovoltaic test arrays and a pioneering transpired solar collector system. The makeshift and improvised character of different elements is unified by the use of COLORBOND® steel, which provides visual cohesion

sourcing, so that local businesses and communities benefit from local procurement – which mandates that building materials must be sourced within certain radii based on their weight – and avoiding the 14 'red list' chemicals, which can't be used in the building at all. Unfortunately, these 14 components are the most commonly used chemicals in construction materials, including formaldehyde – which is in most adhesives – and PVC."

The Materials category also assesses embodied carbon footprint, so the use of steel throughout the project was carefully scrutinised. The architects specified slender, high-strength structural steel for the building's frame (integrated with laminated timber in some sections); recycled steel railway tracks as external pillars for the roof's outer extremities; and lightweight steel cladding for roofing and some upper level walls. A combination of operable glazing, locally sourced recycled bricks, and recycled and FSC-certified timber, rounds out the material palette.

Steel was chosen for multiple applications for several key reasons: firstly because there are no 'red-list' chemicals found in the material and secondly it is made locally to the building, at BlueScope's Port Kembla Steelworks.

"Researchers at BlueScope helped us to review the roofing specifications to determine whether we should use standard COLORBOND® steel, COLORBOND® Ultra steel, or COLORBOND® Stainless steel – because the building is only 400 metres from breaking surf," Bradburn says. "On lifecycle cost, due to its location, COLORBOND® Ultra steel was deemed to be more efficient than stainless steel in this case."

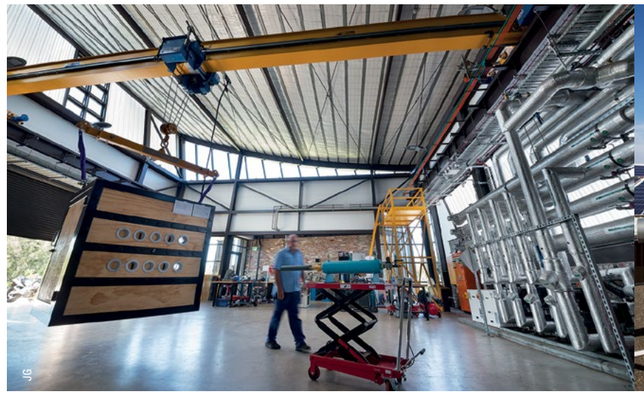
The roof also incorporates Australia's first large-scale Building Integrated Photovoltaic Thermal (BIPVT) system. Developed in partnership with BlueScope and the Australian Renewable Energy Agency, it integrates energy-producing photovoltaic panels atop air chambers within the roof sheeting made from COLORBOND® steel to heat and cool the ambient air for use within the building.

On the high-bay lab, the roof is divided into two discrete sections. Each bears a different colour

ABOVE AND RIGHT: The high bay laboratory has a curved roof that allows light to enter the adjacent office building. It was framed using slender steel sections and clad with COLORBOND® Ultra steel in the colour Surfmist® alongside COLORBOND® Coolmax® steel in the colour Whitehaven®, allowing researchers to compare the thermal performance of each product

OPPOSITE PAGE TOP: To the west, the office building looks towards the Fairy/Para Creek system of riparian corridors and the Illawarra Escarpment

OPPOSITE PAGE BOTTOM: The east-west orientation maximises solar exposure for roof-top testing equipment on the high-bay wing (left) and various photovoltaic systems on the office building (right)



"A centre like this... attracts a certain type of person. People who are driven towards sustainable solutions tend to see it as an inspirational place to come and do their research "

yet both colours were chosen for their high solar reflectance and thermal efficiency. The first bears roofing made from COLORBOND® Ultra steel in Fielders KingKlip® 700 profile in the colour Surfmist®, and the other section is made from COLORBOND® Coolmax® steel – also in Fielders KingKlip® 700 profile – in the colour Whitehaven®. Placing these two materials side-by-side under the same conditions will enable researchers to compare the thermal performance of each product.

The office building bears a distinctive soffit which is shaped to resemble a reverse bull-nosed verandah – a contemporary twist on a classic Australian vernacular detail – and features cladding made from COLORBOND® Ultra steel in LYSAGHT CUSTOM BLUE ORB® profile, in the colour Surfmist®.

"Obviously performance, location of the manufacturer and efficiency of the product versus its mass were key considerations," says Joe Agius. "Yes, we could have used an alternative material for the soffit, for example, but we wanted to achieve a clean soffit, cost-effectively, and one that minimised embodied energy, but it also needed to be easily maintained and durable, so we chose COLORBOND® Ultra steel for that application."

"Structurally, there were several places where we could have used timber, but we instead opted for steel," Bradburn says. "We had originally designed a timber diagrid structure with steel connectors for the curved roof on the high-bay lab – which was shaped like that to allow natural light into the adjacent office building – but budget constraints motivated us to use slender steel sections."

Inside the office building, where the sloping roof accommodates many of the photovoltaic panels that power the Centre, various RHS, UB and UC steel sections supplied by OneSteel team with Zed and Cee section purlins and girts made from GALVASPAN® steel supplied by LYSAGHT. The steel works in concert with laminated timber structural beams and some concrete columns to achieve the required height and span. Most of the steel connections were bolted rather than welded, as the building was deliberately designed to be disassembled at the end of its life, if required, and the as-built details have been kept on file so that steel members can be re-used to their greatest advantage after disassembly.

"The upper level windows in that building are inclined to allow ventilation. To achieve that structure with timber would have required massive columns with difficult detailing, so steel provided an efficient alternative in that case," Bradburn says.

"If we were to do an LBC project again, the number one piece of advice I would give is to define the material palette at the outset – taking into account the environment and setting, choosing materials that are fit-for-purpose and comply with the architectural intent, the imperatives of the LBC Materials Petal and of course the project budget," Bradburn says.

"We had a very dedicated client on this project but most projects require a lot of early procurement: if you are using a piece of bespoke railway track, or recycled timber – which is becoming scarcer and more expensive now – you have to factor in their procurement at the design stage, well ahead of construction," he adds. "We tried to select materials in design that would be readily available at the time of building."

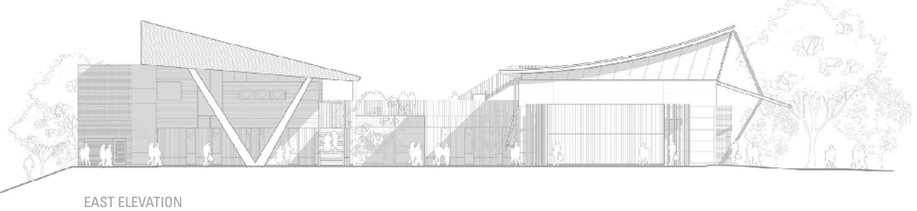
Working through the LBC's difficult-to-resolve and sometimes conflicting imperatives naturally added to the complexity and cost of the design and construction process in comparison with a regular building of the same size and function, according to Agius. "We like to think of the building fabric as a kind of 'bricollage', where we made good use of found objects and materials that were readily available," he says.

Although the final audit process determining whether the building is in fact carbon-, energy- and water-neutral has not yet been completed, initial data suggests that energy-wise, it is performing net-positive (as of late 2015), and that it is almost water-neutral, albeit with an exception on potable water use. In addition, the SBRC has already achieved preliminary certification under the LBC, suggesting that the team's hard work and dedication to sourcing and using green materials to create a passively cooled and heated workplace has paid off.

Not only is the SBRC a showcase for the most cutting-edge sustainable design thinking in Australia, the building also acts as part of the Centre's own research toolkit, offering the ability to link ongoing research projects with the building's energy, water and mechanical systems through a simple "plug-and-play" interface.

Most of all, it's an exciting and stimulating place to work that attracts people at the leading edge of their respective fields. "One of the beauties of having a centre like this is that it attracts a certain type of person," says Dr Duane Robinson, a senior lecturer in the School of Electrical, Computer and Telecommunications Engineering. "People who are driven towards sustainable solutions tend to see it as an inspirational place to come and do their research," he says.

Agius concludes that while the project was complicated and challenging at times, the final result is a great piece of architecture and a fitting exemplar of green design that is responsive to its surroundings, and comfortable to inhabit. "We tried to create an almost domestic feel to the workplaces – to design lively, engaging spaces that are well day-lit, that offer good visual connections to all of the wonderful surrounding landscapes and that encourage people to engage with each other socially," he says. "People are not wedded to their workstations – they can sit outside on a long bench under the roof with their laptops. The building looks like it belongs: we definitely tried to produce a building that is of the Illawarra." **SP**



EAST ELEVATION

ABOVE: At the building's eastern end, stairs from the office area lead down to landscaped gardens where native plants are interspersed with raised beds that contain kitchen gardens, which are cultivated and enjoyed by the building's occupants

PROJECT Sustainable Building Research Centre **CLIENT** University of Wollongong **ARCHITECT** COX Richardson Architects and Planners **PROJECT TEAM** Joe Agius, Michael Bradburn, Andy Marlow, Andrew Noonan, Anna Brown, Andrew Hosking, Tony Lam **STRUCTURAL & CIVIL ENGINEER** TLB Engineers **BUILDER** Lend Lease **STEEL FABRICATOR** Allmen Engineering **SHOP DRAWING CONTRACTOR** Fynever **CLADDING CONTRACTOR** Quality Carpentry **ESD CONSULTANT** Cundall **LANDSCAPE CONSULTANT** Taylor Brammer **PRINCIPAL STEEL COMPONENTS** Roofing: made from COLORBOND® Ultra steel in Fielders KingKlip® 700 profile in the colour Surfmist® and made from COLORBOND® Coolmax® steel in Fielders KingKlip® 700 profile in the colour Whitehaven®. Soffits: made from COLORBOND® Ultra steel in LYSAGHT CUSTOM BLUE ORB® profile in the colour Surfmist®. Loft cladding: made from COLORBOND® steel in LYSAGHT CUSTOM ORB® profile in the colour Shale Grey™. Structural steel: various RHS, UB and UC sections supplied by OneSteel. Zed and Cee section purlins and girts made from GALVASPAN® steel supplied by LYSAGHT® **PROJECT TIMEFRAME** October 2009 to September 2013 **AWARDS** Australian Institute of Architects NSW Awards 2015: Milo Dunphy Award for Sustainable Architecture; Education Architecture – Commendation. Australian Institute of Architects National Awards 2015: Sustainable Architecture - Commendation **BUILDING SIZE** 2,600m² **TOTAL PROJECT COST** $18 million

BRAVE HOUSE

David Luck's big-thinking design for this house on a tiny site elevates planter boxes made from weathering steel to insulate and characterise the building without alienating its neighbours.

Words **Peter Hyatt** Photography **Peter and Jenny Hyatt**

ARCHITECT
David Luck Architecture

PROJECT
The Grass House

LOCATION
North Fitzroy, Victoria

Architecture as smart-Alec is often quirky, eccentric. It can attract those who want to witness the high-wire act gone wrong; but so much the better when the high-wire act goes right. Which is why the latest house by Melbourne's David Luck is so deserving of attention.

His design in a narrow Victorian-era side-street of Melbourne's inner-urban North Fitzroy might go unnoticed, except for some big thinking and problem-solving on an absurdly small site – 11m x 4m to be precise. Many would view such dimensions as pretty useless for much at all – storage shed perhaps – and yet Luck has managed to create space, slenderness and delight.

What might have been claustrophobic in lesser hands feels vibrant and tree-house-like. Crisp edges formed from a stepped roof garden made from faceted HW350 grade TRU-SPEC® steel weathering steel dramatically expands the idea of the pot-planted balcony to bring the outside within tantalising reach of the interiors. Large, sliding slot windows open to the street in loft-style, with a cool green fringe framing views across the adjacent terraces. Rather than have a garden bed around the building base, why not elevate it as a form of cooling, beautiful hat or head-dress? Why not indeed?

Luck's achievements offer both spatial reward and 'decoration' intrinsic to his material selection. The house in all of its burnished, metal glory appears to fully belong among the neighbourhood bricolage of Victoriana, corrugated steel sheds, fencing and bluestone lanes.

BlueScope's weathering steel has a patina of convincing authenticity and ring of belonging in this setting without any hint of upsetting the old. Add to this charcoal-toned external walls clad in flat sheet made from COLORBOND® steel in the colour Monument® to subtly differentiate and underscore the sunburnt patina ridge-lines above. It's an industrial, modernist vernacular without any hint of the old Brutalism, or vulgar new. In short, this small package has that real deal quality: intensely inviting and full of intrigue.

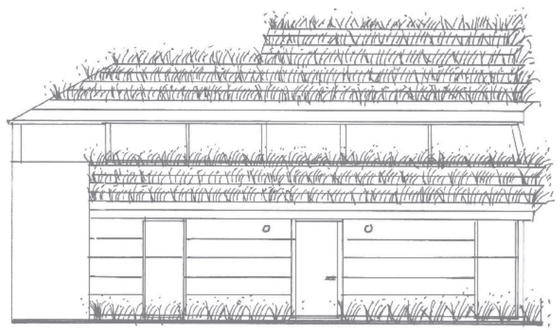
Luck's idea for an inner-city oasis rimmed with soft, tussocky grasses spills and cascades down the burnt biscuit weathering steel skin. It's beguiling and brilliant. Spatial planning and daylight are critical ingredients to the liveability with such constraint and restriction. The options are pretty straightforward here: two bedrooms and bathroom comprise the ground-floor, with kitchen and living area upstairs. Within this simplicity is clerestory strip-lighting in all rooms to engage the day and night sky – thus making it possible to observe the star-lit heavens. Living areas also receive veiled daylight during the sun's high arc. In addition, large landscape-format sliding glass windows capture cross-ventilation and allow access to the planter boxes for maintenance. There is also a swing door from the living room which leads out to a small side deck.

In all, it's a linear experience and, upstairs, something of a floating pavilion that sucks light and views right along its length. Such compression is essentially about distilling and sharpening ideas. Of this Luck says: "It's paring away to the essentials at all times. You identify the contextual to make such designs friendlier. Although the roof form might appear strange from some angles, it resembles many garden sheds, or modest two-story dwellings. Its a hybrid of influences composed of some dynamic internal spaces."

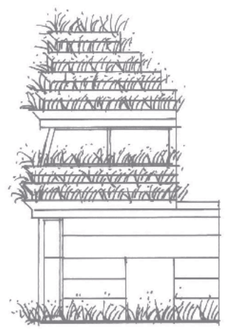
Technology, systems, materials and products are all important, says Luck. "But our skills historically have been about shape and geometry. That's what interests me. That is the power of what we do. That is really the message, that we can communicate with our art, and that interests me. The power of a simple geometric building, with genuine environmental concerns, is what really engages me."

Luck sees the signature role of weathering steel as rustic, yet highly contemporary and timeless: "not as camouflage, but a deliberate process to contextually fit the streetscape".

"It's about trying to make that tiny site feel a lot larger, and steel still gives you the artistic methodology and its thinness to provide those fine edges, those long spans and those large internal volumes"



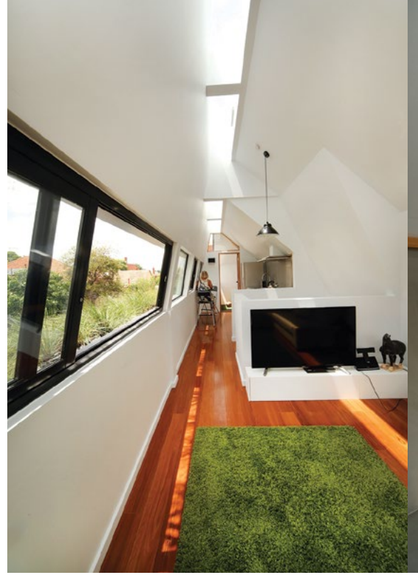
NORTH ELEVATION



WEST ELEVATION

ABOVE: A new slant on planter boxes. Not the quaint window ledge variety but fully integrated for function and appearance

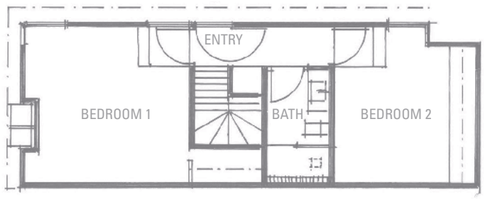
RIGHT: Stepped steel planters overflowing with native Lomandra grasses provide a cool wall merging as roof



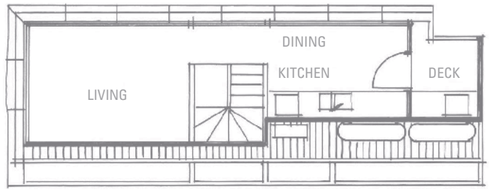
PANEL SAYS

Presenting like a small slice of Japan in Melbourne's inner city Fitzroy, this tiny dwelling on a minuscule site turns the notion of a house surrounded by garden on its head. Wrapping the garden around the dwelling in two layers of planter boxes – made from weathering steel – offers many advantages, including cooling the building, providing a verdant outlook from indoor spaces, and greening the neighbourhood, all without taking up precious space on the ground. This may be a modest sized project, but it's big on ideas: an exemplar for infill development that pays equal respect to architecture and landscape

LEFT: Inclined walls lend a slightly nautical air of rigorous spatial control. Sliding windows encourage ventilation in warmer months and an intimate connection with the unique wall planters



GROUND FLOOR PLAN



FIRST FLOOR PLAN

"Steel," he reflects, "facilitated the use of the garden bed as a super-insulator by supporting the mass of soil and grass. That's one of the critical design elements.

"We have never done a rammed earth building," he continues, "but this is a form of one. And we haven't designed a log-cabin, but here we are making 'logs' from this steel with soil-filled steel planter trays. It's a strange hybrid building that evolved from a number of traditions."

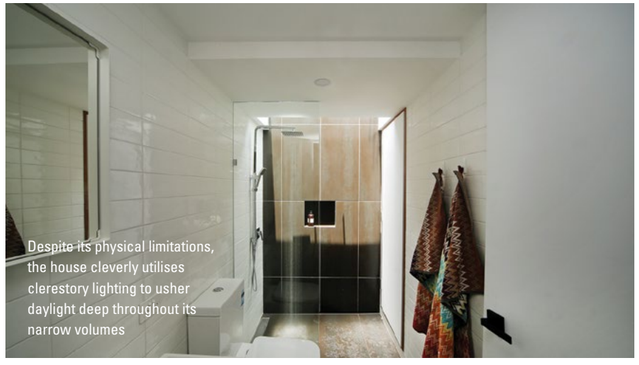
All planter boxes were lined with an acrylic-based waterproofing membrane before planting, to avoid soil and water contact with the steel.

The planter boxes are irrigated from tanks located at the property's rear that flow to an inlet in each box. Overflow and oxidised water run-off from the external surface feeds down to the planter below, before reaching a final overflow discharge point in a side laneway.

Considering the house in isolation, without any context, it appears deceptively large, Luck concedes. "Then you see the neighbouring Victorian-era houses with their high ceilings, and this suddenly appears very modest," he says. "We played with ceiling height to act like a diaphragm, and orchestrate space to open up and close down. The elevation treatments were about human scale, so they don't really compromise the composition."

Ceilings and high windows are typically important in Luck's residential design, and it's no coincidence that, rather than a sheet of plasterboard and a sprinkling of down-lights, he steals the glimpsed view from this unlikely prospect. The artfully sited, carefully composed window appears so serendipitous as to be entirely natural and logical.

"Steel provides an opportunity to open up with a series of slot windows. It's an opportunity to suspend plant trays between 150 UC portal frames, which we set at three metres and between which are cold-rolled Cee sections. It's about trying to make that tiny site feel a lot larger, and steel still gives you the artistic methodology and its thinness to provide those fine edges, those long spans and those large internal volumes," he says. "Upstairs is quite a large space. Then there's a skylight through the middle of the living room. The 3mm HW350 grade TRU-SPEC® steel weathering steel allowed for substantially thinner walls than we could have achieved in some other alternative materials."



Despite its physical limitations, the house cleverly utilises clerestory lighting to usher daylight deep throughout its narrow volumes

Such a house defies lazy design and demands such stringency and economy as to make the idea of reckless architectural spending so much more myth than fact. "You might escape with it on a much larger allotment where there is the opportunity for concealment, but we had millimetre tolerances in mind here," Luck muses.

"The relationship of the bedrooms to pavement is important. Those are really niche, private spaces and so there are subtle setbacks of just 400mm for a garden bed, to soften and separate the building and footpath." Early planting of star jasmine creeper will gradually assist in the further 'greening' of the house too.

"The idea was that it became a garden bed, flipped vertically, because there there's no private outdoor space," Luck asserts. "Without a canopy or trees, the form is softened by the Australian-native Lomandra grass in the weathering steel planter boxes bolted to the steel frame."

Luck wanted a simple material palette. "Keeping it to a couple of major steel components, you're getting that innovation in two parts: the top and the bottom. Sometimes you can make a building too complicated with too many competing materials and elements." The Zen moment of simplicity isn't lost on Luck who happens to be a great admirer of calm, distilled expression.

Luck agrees with the paradox that steel has an impression of being a tough skin with an industrial vernacular that can also appear very soft and domestic. "It's like clay. It's like ceramic. In a strange way these planters are ambiguous and of course made of steel but reminiscent of terracotta.

"They are also carefully profiled to give shadow effects with the grasses in them. It is almost a landscape on the front elevation. The richness of colours is evocative. We were going for the terracotta red of the steel which develops over time, the deep green of the grasses and then the shadows that would play on the folds and depth of the planting."

From the starting point of a minuscule plot of leftover inner-city land, Luck has turned the site's limitations into opportunities. "This site didn't provide any opportunity for landscape. Therefore how can you then assume landscape? How can you then locate landscape within the concept of the building? That's what we've done here. We've said: 'Well hang on. Maybe the building is the landscape.' It is a building that shifts in the wind. It is that poetic thing of everything that's growing, everything that does move. It's a very sensuous thing. It's really more influenced by traditional Japanese architecture than anything contemporary, if at all.

"The landscape idea will change over time. I'm looking forward to a day in the future, say in 30 years' time, when the owner will encourage something that becomes an even more native landscape – less of a manicured garden, less of a European-style garden – more of a garden of opportunity, with bugs and butterflies."

Luck distances himself from much of the green design movement that he says has hijacked or distorted the higher aims of the original intent. "Too many vertical gardens are fuelled on the equivalent of steroids and chemicals and are inundated with water. One of my hobby-horses is to combine form and geometry to express a deeper green sentiment and architecture with a belief system. "It can have a mission to say: 'Well hang on, we can live with natural systems in a poetic way, instead of just being bolted, or tacked on'. It can go right to the root of our building systems and to the root of our form-making.

"That's my latest band-wagon," Luck laughs to acknowledge architecture as a hard-won rite of passage with warning shots from all directions. "You need to be able to defend your position," he adds of this poetic little big house informed by history, imagination and common sense. In another time and place this might be the Geronimo House, after the fabled Native American Indian whose courage and resplendent feathered head-dress stood as tall as the native grasses planted right here in this ordinary inner-city back street. So think of this as the brave house; the eco-warrior house. SP

"The 3mm HW350 grade TRU-SPEC® steel weathering steel allowed for substantially thinner walls than we could have achieved in alternative materials"

PROJECT The Grass House **ARCHITECT** David Luck Architecture **PROJECT TEAM** David Luck, Tilde Sheppard **PROJECT MODEL** Jack Coe, Edinburgh College of Art **PROJECT MANAGER** Richard Andrew **BUILDER** Raphael Builders **STRUCTURAL & CIVIL ENGINEER** Keith Long and Associates Civil Engineers **STEEL FABRICATOR** Eliott Engineering **STEEL SUPPLIER** Impact Steel **PRINCIPAL STEEL COMPONENTS** Cladding: BlueScope HW350 grade XLERPLATE® weathering steel; flat sheet made from COLORBOND® steel in the colour Monument® **PROJECT TIMEFRAME** Design and development: May 2010 to December 2011; Construction: April 2013 to Oct 2014 **BUILDING SIZE** Site: 44m²; building: 64m²

PETER BENNETTS

IREDALE PEDERSEN HOOK

With offices in Melbourne and Perth, and built works across the country, iredale pedersen hook architects combines diverse skills to create locally responsive buildings.

Words **Rachael Bernstone**

LEFT TO RIGHT: Adrian Iredale, Finn Pedersen and Martyn Hook

Borrowing a motto from a comedy trio – "We Do Anything, Anytime" – is not standard practice in architecture, but iredale pedersen hook architects (iph) is no ordinary architecture firm. Adding "anywhere" to their mandate, these architects have created an enviable partnership and a varied collection of built works across Australia.

Adrian Iredale, Finn Pedersen and Martyn Hook share many common attributes apart from being architects. Two were born in Britain and they all grew up in Perth, one of the most isolated cities in the world at the time. They studied at Curtin University together, where they maintained a friendly rivalry. But they exhibit a lot of differences too – in personality, interests and temperament – and when they graduated, they all headed off into the wild blue yonder to pursue their own passions.

Adrian went into architecture with an artist's sensibility, although he didn't study art at high school, choosing to focus on technical drawing instead. "I was sketching all the time, particularly sketching buildings, and it was a natural progression to go from sketching buildings and drawing buildings to designing them," he says. "Being able to sketch connected to me to my artistic side." His watercolours still inform the firm's work at conceptual stage. After completing his degree, Adrian undertook post-graduate studies in architecture at the famed international art academy The Stadelschule in Frankfurt, Germany, under luminaries including Sir Peter Cook and the late Enric Miralles.

Finn Pedersen also came to architecture via an interest in art: for five years during high school, Finn participated in a special art program that included classes after school and on Saturdays. When he was considering a career path, Finn followed the advice of a favourite Danish uncle, a structural engineer who specialised in building bridges. "I really loved the tectonics of construction, particularly of large construction objects, but my uncle discouraged me from engineering because I had a romantic view of beautifully engineered bridges," Finn recalls. "He said there was very little art and aesthetics in engineering, but I could do architecture because it would satisfy both realms." After university, Finn travelled north to Western Australia's remote Kimberley region, where he dirtied his hands designing and constructing buildings in rugged conditions.

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The West Kimberley Regional Prison project with TAG Architects won plaudits worldwide for its sensitive design

"When we started, we thought we were the Beastie Boys, but now we are probably more like *The Goodies*"

In contrast, Martyn Hook's father and grandfather had both worked in aircraft factories in Britain, and there were architects in the family's social circle, so design and building were highly influential during his formative years. "Whether there was a blinding moment where I knew I wanted to be an architect, I'm not exactly sure: in year 11, I wanted to be a marine biologist," Martyn laughs. "I kind of landed in architecture – not necessarily by design – it was something that emerged in the final year of high school, the idea of being able to push these two interests of design and building together. When I was in first year, I was actually surprised that I enjoyed architecture so much." Once he'd finished his undergraduate degree, Martyn returned to England to complete a Master of Science in Architectural Design at the Bartlett School at University College, London.

The trio regrouped and established iph in 1999 with offices in Melbourne and Perth and, like a lot of young people, they had tickets on themselves in those early years. "When we started, we thought we were the Beastie Boys, but now we are probably more like *The Goodies*," Martyn laughs. "There's the guy in the tweed (Adrian), the guy with the wacky hair (Finn) and me, the guy in the suit. There are various ways that we play that up, because it was a nice narrative when the practice began, but these days it's far more complex in the way in which the complementary skills actually begin to interface."

If *The Goodies* stereotypically identified themselves as working class, middle class and upper class, a cursory characterisation of iph's principals might be dreamer, doer and thinker. Or surfer, bushman and city-dweller. But over time, their roles have

shifted and morphed as their individual and collective skills have evolved, and they've gained more crossover in their experiences so that it's impossible to easily pigeonhole them now after 15 years of joint practice.

"Unlike other triptych practices – where there's the guy who does the accounts, the guy who can talk, and the designer – we don't do that," Martyn says. "It used to frustrate people that they didn't know which iph director they were going to get, depending on who picked up the ball. Were you going to get the 'straight' one, the wacky one or the sensible one? I think that continues to click through the work."

Their output so far certainly suggests that they are interested in exploring and developing certain themes and types – remote buildings, aboriginal projects, beach houses – but the practice can equally turn its attention to hospitality projects, civic buildings or their most recent challenge – Perth's new public realm, Yagan Square.

Despite their different approaches and the fact they live in different cities on opposite sides of the country, as well as Martyn's full-time role in academia, they


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as the Dunedin Street and Swan Street Houses, which aim to find a way to integrate into an old Federation-style building. The pitched hip valley roof is used as a catalyst to find a new form of space, where the space is reflective of the folding roof, so the two work together.

"The beauty of steel is that it enables us to achieve complex experience and form," he continues.

"The trick is to bend the right bit," Finn laughs. "If you have a curved wall in plan in a steel-framed building, it is of course more difficult to achieve than a straight wall so becomes less economical, but if you can curve steel by bending or folding a roof or column it's a low-cost thing to do and it adds delight, and expresses the capacity of steel."

Their ongoing curiosity about materials, detailing, design and the nature of practice – and the inner workings of their own practice, specifically – led all three to complete further studies by invitation under Leon Van Schaik at RMIT in 2008: Martyn attained a PhD while Finn and Adrian both earned Masters of Architecture qualifications.

Running a dual-city practice has always necessitated a lot of plane travel, although the introduction of smartphones made communication much easier: the partners talk to and email each every day. "Those advances in communication technologies mean that Perth is not so isolated anymore. You don't have to make such an effort to keep in contact. Also, the iPhone® is a good tool for collaborating, and we use the time on planes to sketch and draw," Adrian says.

Breaking down that isolation means that iph's work has begun to attract the attention of a broader audience in recent years: the West Kimberley Regional Prison (completed in association with TAG Architects) won several Australian Institute of Architects National awards in 2013, including a Public Architecture Award, and garnered international acclaim for its humanist approach.

At the 2015 WAF awards in Singapore, the firm's Walumba Elder Centre at Warmun in WA [see *Steel Profile* 121] won the Health category award, adding to a slew of gongs collected in Australia.

Naturally, as the practice has grown and matured, the partners have shed some of the friendly student rivalry that initially brought them together, and of course their boyish enthusiasm has mellowed with age and experience. But their shared curiosity about the world – and underlying respect for different viewpoints – continues to shape and define their work.

As a result, every project – whether it's a new courthouse in Kununurra, a beach house down south, or a major civic square in the heart of Perth – is unique and profoundly responsive to its brief, site, climate and end-users. Like *The Goodies* – three comics who played up their individual differences to create a convincing collective entity – the iph partnership thrives on diversity. SP


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SHANNON MCRATH


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OPPOSITE, TOP: At the Roeburne Children and Family Centre, delicate bent steel columns give the building a playful appearance

OPPOSITE, BOTTOM LEFT: The Swan Street House (left) features an angular two-storey addition, while the Reynolds House (right) boasts softer curves: both are wrapped in COLORBOND® steel

THIS PAGE, LEFT: The Walumba Aged Care Centre at Warmun won multiple awards, in Australia and overseas

BELOW LEFT: The Dunedin Street House addition is an early example of a folding steel roof

BELOW RIGHT: The steel roof of the Kununurra Courthouse responds to folding ranges visible from the town centre

agree there is an underlying quality that underpins the practice. When interviewing Adrian and Finn together in Perth, before speaking with Martyn later at the Royal Melbourne Institute of Technology, all three asserted that the foundation of their practice is "mutual respect".

"From day one we respected each other as designers," Martyn says.

"At the early stages of a project, it's very dynamic. Ideas are flicked around among all three of us and at that stage the field of ideas is very open," Finn says. "Then there comes a point to lock down, to meet the milestones.

"That's when we decide which director will take charge of the project," Adrian adds.

"But there is still a horizontal strata within the design process in terms of ownership and ideas," Finn says.

Martyn compares their method to a bicycle peloton in a race such as the Tour de France. "There will be a point in time [in the early part of a project] when we know that one of us really wants that project," he explains. "A good example was our competition entry for the Cottlesloe Surf Life Saving Club.

"We kicked around a series of ideas and it became obvious that Adrian wanted to lead," Martyn recalls. "It's almost as if a mutual decision is made, then we fall into a trajectory whereby we follow and pursue that agenda, and speculate along the way as to how it might begin to shape or evolve as a project."

"So many of our projects end up with a particular quality of a twisted roof or curved roof, but each one finds its logic through different circumstances"

The firm has explored the use of steel across many of its projects, and the material appears equally at home in holiday houses in bush settings (see Nannup House in *Steel Profile* 119) or at a prison in the desert (West Kimberley Regional Prison in *Steel Profile* 116).

"So many of our projects end up with a particular quality of a twisted roof or curved roof, but each one finds its logic through different circumstances," Adrian says. "For example, in Perth suburbia we've produced a range of twisted and folded roofs, such


SHANNON MCRATH

PETER BENNETTS

The Moonah Arts Centre in Hobart celebrates the honesty of its materials, allowing steel components to define its character without any ornamentation.

Words **Paul McGillick** Photography **Ray Joyce**

MATERIAL IMAGINATION

ARCHITECT
Morrison & Breytenbach Architects

PROJECT
Moonah Arts Centre

LOCATION
Hobart, Tasmania

Moonah may not traditionally be one of Hobart's more fashionable locations but it is fast becoming a major focus for the arts in Tasmania. The Derwent Entertainment Centre is more than 20 years old. Then came the extraordinary Museum of Old and New Art (MONA) on the Berridale Peninsula (2011) followed by the Glenorchy Art and Sculpture Park (GASP) in 2013, being directly across the bay from MONA (see *Steel Profile* 119).

In 2014, the Moonah Arts Centre (MAC) – which operated for more than 20 years in an old church – re-located to a purpose-built facility on a former parking lot. Just a stone's throw from MONA and GASP, MAC is also close to Main Road which changes character as it leaves the commercial heart of the CBD: into a café strip in North Hobart before stretching further north, where it retains its raffish mix of commercial and retail outlets within a broader semi-industrial context.

The Moonah Arts Centre was conceived very specifically as a community amenity, so, for Morrison & Breytenbach Architects, this context was crucial. As a result, the building conforms in scale to the two-storey rectilinear typology along Main Road.

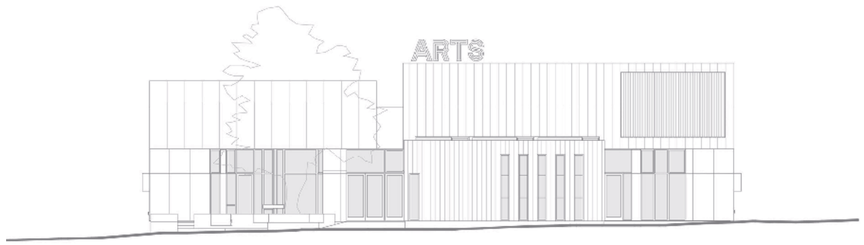
But suburbia starts immediately on the other side of MAC, so in form, scale and performance (especially acoustically), the building needed to respect its residential neighbours while opening up in a forecourt (what architect James Morrison calls a "mini-piazza") to Main Road. In fact, a shop window display space has been designed into the wall facing Main Road, providing the opportunity for quirky installations advertising the presence of MAC to the passing trade. As Morrison puts it: "We see ourselves as the local community aspect of MONA – complementing it."

The design emphasises functionality, flexibility and economy. As far as the architects were concerned, the building should be "neutral" and not impose itself on its context, simply aiming to provide a space where things could happen. In fact, there are four spaces that drive the formal organisation of the centre: a performance space (about sound), an exhibition space (about light), a making space (for the creation of objects) and a social space, consisting of the forecourt and courtyard which open up to engage with the urban context.

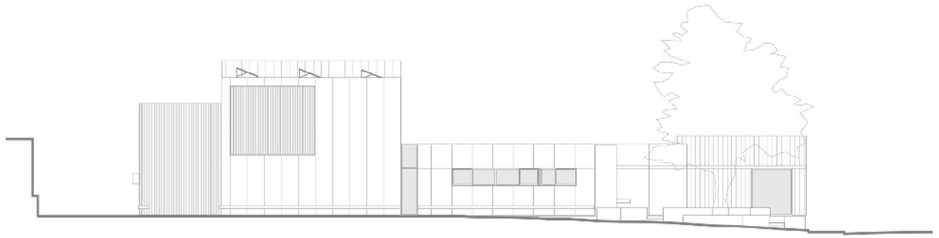
"The design emphasises functionality, flexibility and economy"

Without any heritage issues the main constraint was space, which demanded agile planning especially as the architects decided early on to keep the building to one level for reasons of permeability and accessibility. Given the context, a modest budget and the role of the facility as a community amenity, it was also decided to keep the materials simple and honest – largely 'off the shelf'.

The character of the building is derived from the materials used and from its formal composition. The whole strategy was supported by good solar orientation – the building faces north, so by

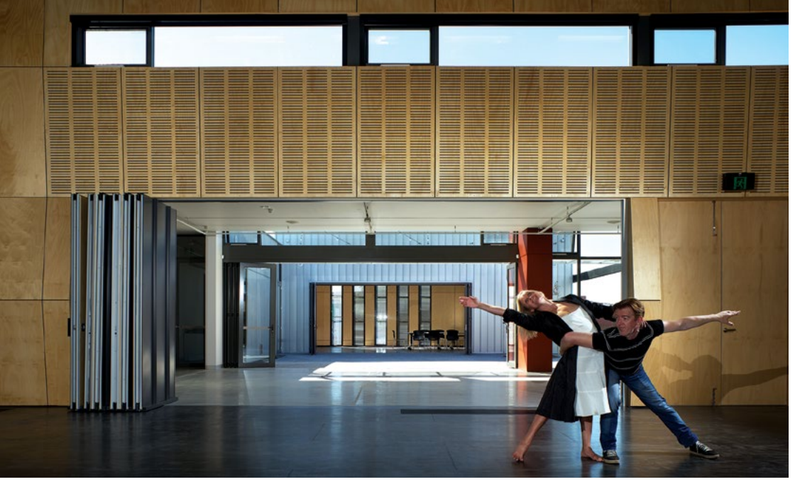


NORTH ELEVATION



EAST ELEVATION

BELOW: A landscaped arrival sequence leads the visitor past the 'jewel box' and the forecourt to the entry



LEFT: The black box opens up to the foyer and past the forecourt to the 'jewel box'

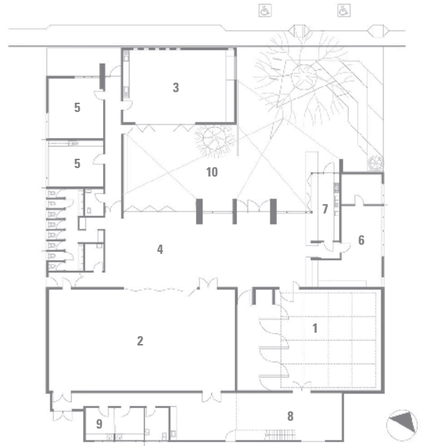
BELOW: With the folding glass doors pushed back the foyer merges with the forecourt, the connection emphasised by the russet-coloured fins

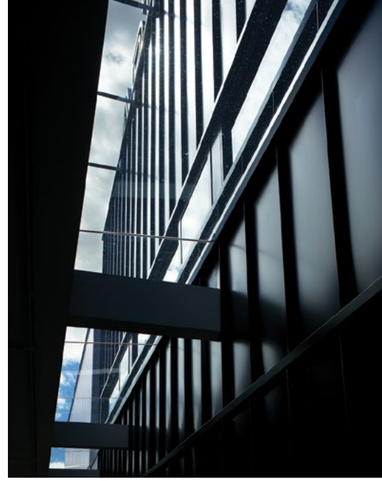
OPPOSITE TOP: A skylight separates the foyer from the black box and acts as a hidden source of light

OPPOSITE BOTTOM: The black box's industrial facade is achieved with cladding made from COLORBOND® steel in LYSAGHT KLIP-LOK® 406 profile, which was chosen for its finish and slender flashings

LEGEND

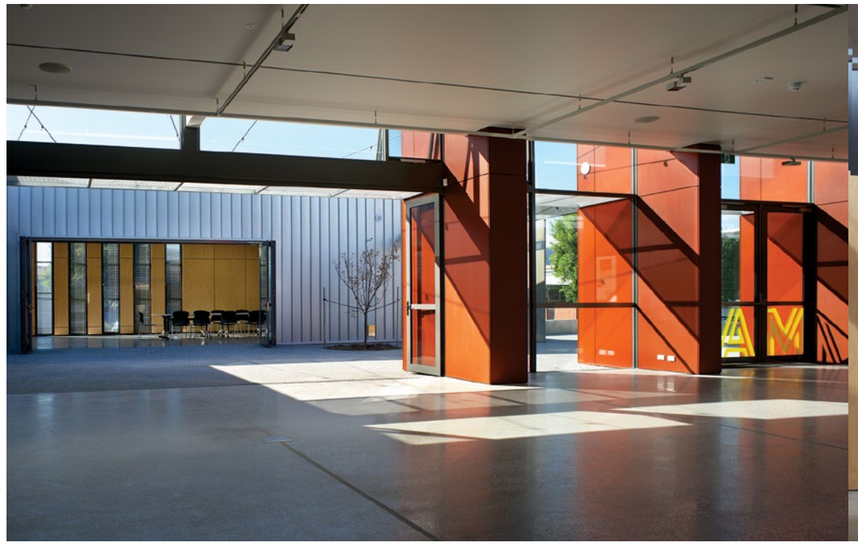
1. Exhibition
2. Performance
3. Making
4. Foyer
5. Meeting
6. Administration
7. Cafe
8. Storage
9. Change room
10. Court yard

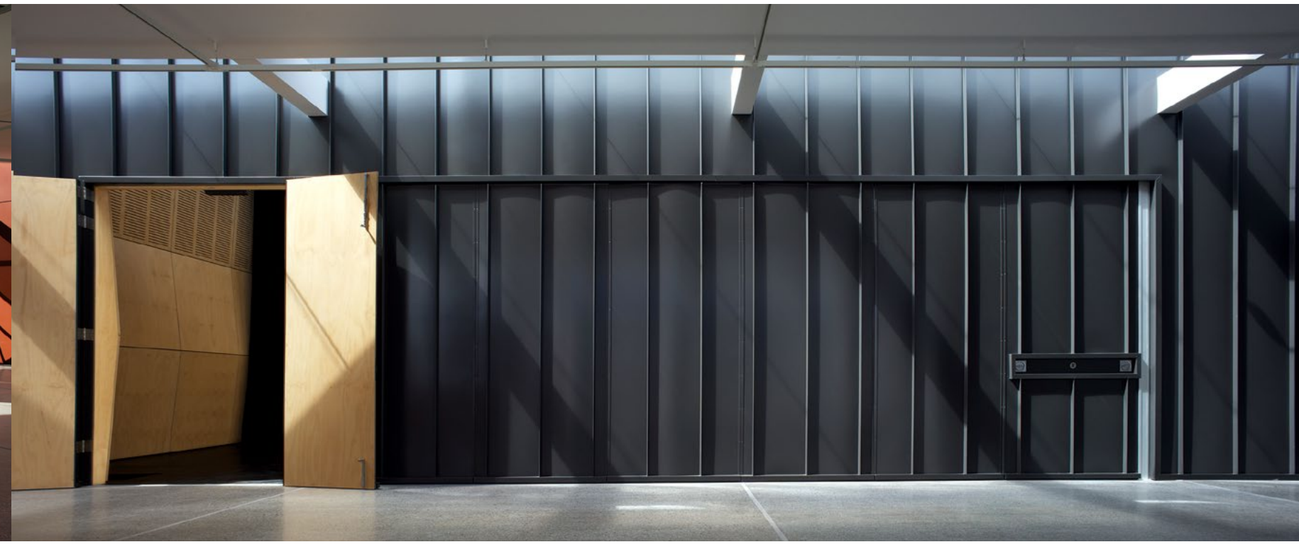




PANEL SAYS

This community arts centre in a suburb of Hobart demonstrates a deft use of fine grain elements that combine to create a cohesive village-like entity that buzzes with life. Several pavilion structures with different internal functions are cleverly arranged in volume and plan to create useable public space within the forecourt. The various cladding treatments applied to each structure – including COLORBOND® steel and ZINCALUME® steel – imbue the project with a character that accents the interstitial spaces between the buildings. Large openings extend indoor spaces into the courtyard, making this a very flexible and welcoming public asset for the celebration of the community's artistic endeavours





planning the arrival sequence through the open square and past the courtyard, generous natural light is drawn in: not just to the foyer, but deep into the entire building.

The four spaces present as a family of volumes coordinated by the open space of the forecourt and courtyard. The courtyard connects physically with the foyer by way of a large glass folding door, and visually through the burnished russet-coloured 'fins' that extrude out from the foyer. Initially, some consideration was given to a timber frame for the building, but Morrison says steel was chosen because he believed timber would have required a larger expression of structure, which the architects deemed inappropriate, and was more economical by volume.

The 'jewel box' containing the making space occupies the street elevation. Cladding made from ZINCALUME® steel in Fielders Nailstrip 265 profile is a subtle reference to the local Electrolytic Zinc Works. But as Morrison points out, it was a very cost-effective material to use and its "slightly opalescent feel," as he puts it, "also seemed just right for the building".

The roofing is made from COLORBOND® steel in LYSAGHT KLIP-LOK® 406 profile, in the colour Monument®.

Morrision says he chose the material for its finish and slender flashings because "the edges of the building are very important". The cladding was also brought inside, giving the building a satisfying coherence.

Rising behind the 'jewel box' is the tower of the performance space where cladding also made from ZINCALUME® steel in Fielders Nailstrip 465 profile provides a finish that contrasts with the polycarbonate wall of the neighbouring exhibition space.

In fact, once inside the foyer it is revealed that the black box of the performance space is separated from the main space by a skylight. This emphasises the self-contained character of the black box, but also draws in light and generates drama in the foyer. The space itself is multi-functional and its acoustics have been designed for both music and theatre, along with a sprung floor for dance. The articulated walls are made from standard ply with a clear finish.

These are key to the adaptive acoustics of the space, as well as adding warmth to the palette. These zig-zagging walls double as folding panels that can be opened to form a continuous space with the foyer.

One of the features of both the performance and exhibition spaces are the perforated 'solar' walls that form part of an extended sustainability agenda, which also incorporate double-glazing, sun-shading and cross-ventilation. Taking advantage of the northern orientation, these metal walls heat up as warm air is drawn in through the perforations. The air is then pumped through the building with a self-regulated fan switching the system on and off. In summer, the system disables itself and the building relies on cross-ventilation for cooling.

The exhibition space is highly flexible which, on sunny days, enjoys a soft, even light that is diffused through a polycarbonate north-facing wall. The exhibition zone is defined by the suspended light grid which presents like a false ceiling. It disguises the services above while having its own abstract elegance. The key to this space's flexibility is the innovative customised screen system.

The large screens used in galleries and museums to divide spaces and mount pictures are typically very heavy and take time and several people to move around. MAC, however, has a sliding track system where all the panels are stacked and stored in a space at the back of the black box. They are slid into the exhibition space through a single narrow slot just wide enough for the panel and can then be moved on a track to wherever they are needed by just one person. Once again, it is an innovative use of standard products. "It is basically off-the-shelf components," says Morrison, "but it is how it is put together".

If the key to any community facility is flexibility, then MAC is a standout with all of its spaces, including the making space – and even the stylish unisex toilets – multi-functional. But equally it needs to grow organically out of its context to ensure that people are drawn to it and feel welcome. MAC opens up to the main shopping strip and then unfolds in an easy and fluid circulation through the landscaped forecourt past the courtyard (with its striking perforated aluminium sliding screen gate designed by Michael Schlitz) and into the foyer. The foyer opens on to the courtyard, as does the making space, to provide an enhanced social space.

MAC is a poised marriage of form and function. It is also a sophisticated example of how the creative use of standardised products can result in a building that is not only cost effective, but also has a strong if unassuming aesthetic character. The use of standardised products, steel in particular, makes MAC an affordable and easily buildable project, which was delivered on time and within budget.

In contrast to MONA's grand architectural gesture and the expansive design intervention at GASP, this 'once-in-a-lifetime' investment in community arts is a modest vessel for the experiences, memories and artworks that take place within it. At MAC, an ever-changing array of ephemeral performances and objects add a rich layer of embellishment to the built form. SP

PROJECT Moonah Arts Centre **PROJECT CLIENT AND OWNERS** Glenorchy City Council **ARCHITECT** Morrison & Breytenbach Architects **PROJECT ARCHITECT** Christopher O'Brien **DESIGN ARCHITECTS** James Morrison, Yvette Breytenbach **BUILDER** VOS Construction and Joinery **BUILDING SURVEYOR** Castellan Consulting **CONSTRUCTION MANAGER** Josh Mulcahy **STRUCTURAL CONSULTANT** Aldanmark Consulting Engineers **CIVIL CONSULTANT** Aldanmark Consulting Engineers **ELECTRICAL CONSULTANT** Engineering Solutions Tasmania **MECHANICAL CONSULTANT** Aldanmark Consulting Engineers P/L **HYDRAULIC CONSULTANT** Aldanmark Consulting Engineers **LANDSCAPE CONSULTANT** Lindsay Campbell Landscape Services **ACOUSTIC CONSULTANTS** Vipac Engineers & Scientists **COST CONSULTANT** Matrix Management Group **FIRE CONSULTANT** SEMF **ACCESS CONSULTANT** Michael Small Consulting **TRAFFIC CONSULTANT** Pitt & Sherry **GRAPHIC DESIGN** Before Creative **PRINCIPAL STEEL PRODUCTS** Roofing and some internal wall cladding: made from COLORBOND® steel in LYSAGHT KLIP-LOK® 406 profile, in the colour Monument®; Cladding for Performance and Screen Studio: made from ZINCALUME® steel in Fielders Nailstrip 465 profile; Cladding for Workshop: made from ZINCALUME® steel in Fielders Nailstrip 265 profile; Cladding and 'garage' door for Store: made from COLORBOND® steel in LYSAGHT CUSTOM ORB® profile in the colour Shale Grey™ **BUILD BUDGET** $3 million **SITE AREA** 1941m² **BUILT AREA** 950m² **TIME TO COMPLETE** Design/documentation to finished construction: 14 months

ON THE TUBE

With a design drawing inspiration from the original use of the site, this project incorporates standard steel components to produce a children's playground that is anything but ordinary.

Words **D'Acier Drake** Photography **Don Brice**

ARCHITECT
ASPECT Studios with Mulloway Studio

PROJECT
Hart's Mill Surrounds

LOCATION
Port Adelaide, South Australia

ABOVE: The playground is located in an area of Port Adelaide previously devoted to the flour trade and the design references this history, most notably in the tubular steel environmental graphics relating to key steps in the flour production process

OPPOSITE: The 19th Century Hart's Mill and the 1930s Adelaide Milling Company buildings overlook the site, patiently awaiting adaptive re-use. In the meantime the playground and farmer's markets are two of a number of Council initiatives to activate this area of the Port

LEGEND

1. Play space themed around milling process
2. Shelter with BBQ facilities & seating
3. Market and event space
4. Raised turf area for passive recreation or events
5. New car parking area with raised steel tree planters
6. Raised concrete tree planters with seating
7. Timber boardwalk
8. Public toilet
9. Cafe / restaurant

Over the past 30 years sizeable sections of Port Adelaide have fallen into disuse, like many other industrial maritime precincts around Australia and indeed the world. Whether the buildings are empty owing to economic downturn, or simply superseded by modern improvements in freight handling, the net result has been an unusual collection of built assets on the SA State Government's books patiently awaiting adaptive re-use.

The Gawler's Reach area of the Port that was previously devoted to flour production and trade is typical. Comprising three separate buildings, only the holding shed has been retrofitted to be used as event space. On either side of it, the 19th Century Hart's Mill building lies dormant with a giant stone grinding wheel taking up the majority of the building, while the tall towers of the 1930s Adelaide Milling Company Building have large voids which present compliance issues to even the most committed, lateral-thinking designer.

It is a credit to Renewal SA that while deliberations continued as to how these important elements of the local built fabric might be transformed for a 21st century user, the organisation just got on with finding other ways to create a more amenable environment to attract investment in the area.

Enter ASPECT Studios. With an established practice in landscape and urban design, the firm was engaged by the client to design a small play area in front of the mill buildings. They work-shopped ideas with a heritage architect who had previously done a cultural mapping project on the port, and this led to an early desire to create a design that had a light touch on the ground, but by the same token had some reference to the site's history. As a result the workings of the flour mill became a key design direction.

Sensing that it might take a little while for the mill buildings to find sympathetic and deep-pocketed svengalis, ASPECT Studios reasoned that the precinct would benefit from a more substantial 'destination' play area to attract visitors, as landscape architect Tim Conybeare explains.

"Our conversation with Council was: 'Hang on, if you are going to make a space that is going to work really well, the play space is the thing that is actually going to attract people'," he says. "So we turned the whole project around by making the play space a much more dominant component of the project. It needs to be the reason people go there, but not forgetting that it's surrounded by these spin-off sites that will eventually be developed to create more of a rounded experience."

Having firmed up the expanded brief, and fleshed out the design intent, ASPECT looked at materiality and drew on a recent past project in which the firm's environmental graphics team had used tubular steel for the way-finding strategy on a Victorian motorway. The material's proven durability in an infrastructure situation, where it was exposed to the elements and had to stand up to possible vandalism, mirrored the needs of the Hart's Mill playground.

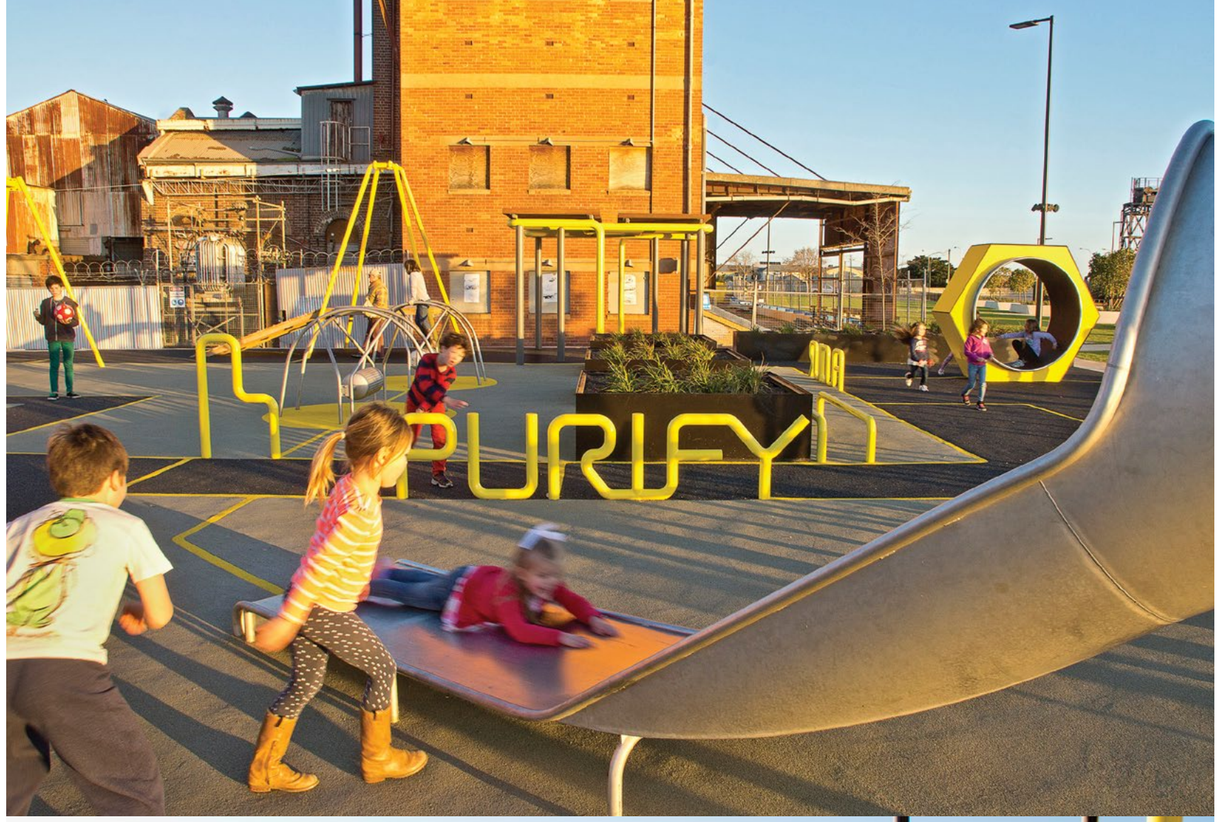
"Tubular steel… was a natural choice because of the forms we were wanting to generate"

"The good thing about tubular steel, and we'll certainly be using it again, is that it is such a flexible material," says Conybeare. "It was a natural choice because of the forms we were wanting to generate so we used Orrcon Steel tube and pipe steel sections in various diameters. It also tied in with the off-the-shelf play elements that we had selected specifically because they had the same form as the custom steel-work.

And the resulting custom forms respond admirably to the design intent. Circular Hollow Section steel can be found throughout the project, looping up, down and sideways in a series of shapes that easily recall the elements of factory assembly line or conveyor belt process: wheel bends, guide rails, overhead racking, rollers and reels. Whether it's in the smaller hairpin loops, the larger shelter structures or the word-sculptures, this simple and efficient material is used to maximum effect to create a production line, literally, for play.

The custom and off-the-shelf elements are all linked at ground level by a continuous yellow thread, reinforcing the idea of a process occurring, but also acknowledging the simple joy that children get from just following a line on the ground. A cheerful yellow coating was selected to contrast against the starker greys and browns of the port setting. It's also a subtle reference to the 'safety yellow' that is often the only pop of colour in an industrial environment.

Fabrication and installation of the custom steel elements was straightforward and the design did not need to be adapted to suit buildability. The forms were documented first in *SketchUp* and then *Autocad*, and produced off-site.



TOP: The custom steel forms and off-the-shelf play elements are linked at ground level by a continuous yellow line. The effect recalls a factory assembly line or conveyor belt process

ABOVE: The Circular Hollow Section steel lends itself well to the generation of custom 'word' forms, but was also chosen for its proven durability in exposed environments

The playground has been enthusiastically received by the community, becoming a destination in its own right

Conybeare cannot recall any construction problems other than a bit of wriggling – nothing that a pinch bar couldn't fix – to get the flanges of the180mm-diameter members in the larger shade structures to match up on site. The main challenge of the project was the sub-base material, which the engineers described as 'soup', consistent with typical reclaimed landfill.

"We went to put structures up and the holes just completely caved in and created voids that were three times the size that we specified, so we ended up having to mass-fill some areas with concrete to put the foundations on," explains Conybeare. "We also knew that contamination would be an issue so we had to raise elements 300-400mm above ground, such as the large grass platforms, to minimise the amount of excavation and avoid footings being required."

Steel makes a further appearance in the sleek planter boxes within the playground. Made from 5mm-thick BlueScope HW350 TRU-SPEC® steel with a structural steel frame made from 50x50x5mm SHS, the boxes were lined with bitumen before soil was added to protect the material from corrosion. While the planters represent the understated use of steel in this project, the tall shelters are a showy high-note.

It's refreshing to see scale in a playground, for those of us nostalgic for those precipitous monkey bar experiences of by-gone days. It is a testament to the designers that everything meets Australian Standards but the end result is an environment which is large and physically challenging enough for kids to feel they have accomplished something. To paraphrase the architects, kids get bored in a sanitised environment and this one is a far cry from the usual half-sunken pirate ship. Conybeare's favourite aspect of the completed project is its versatility.

"It's a multifunctional space, not just a play space," says Conybeare. "There's a park which is a reasonable size, there's a large grassed area which is great for gatherings and picnicking or events, there's the long shelter which works well with the greater park. It creates a good all-round place to go and spend some quality time. And the feedback from the community has been massively supportive. A lot of people from around Adelaide who have had no reason to go to the port have suddenly got this excuse to go, it's become a real destination in its own right. A small cafe has opened up and there are markets in the area next to the play-space. The area has definitely been activated."

Hart's Mill Surrounds is a playground that delivers on two key fronts: it's a fantastic place for children and families to enjoy time outdoors, and it's the first in a line of adaptive reuse projects that aims to transform the former port into a vibrant place for the community. SP

PANEL SAYS

It's rare that *Steel Profile* features a project that is purely landscape architecture, but this striking playground at a former industrial area in Port Adelaide captured our attention with its playful yellow forms. Bent and curved tubular steel combines with steel plate to create shapes that are reminiscent of the site's former flourmill history. In a part of the city that was previously derelict and forgotten, this renewal project embodies a spirit of high energy and cheerfulness. It's an attractive outdoor space for children and adults alike to congregate, explore and have fun

PROJECT Port Adelaide Renewal: Hart's Mill Surrounds **CLIENT** Renewal SA **LEAD CONSULTANTS AND LANDSCAPE ARCHITECTS** ASPECT Studios **HERITAGE ARCHITECT** Mulloway Studios **PROJECT TEAM** Tim Conybeare, Anthony Coupe, Ben Birdseye, Ying Qian, Esther Chew, Kate Luckraft **CIVIL AND STRUCTURAL ENGINEERS** SMEC Australia **LIGHTING AND SERVICE ENGINEERS** LUCID Consulting Australia **IRRIGATION DESIGNERS** HydroPlan **BUILDER** LCS Landscapes **STEEL FABRICATOR** Woods Constructional Engineers **PRINCIPAL STEEL COMPONENTS** Custom play equipment made from Orrcon Steel tubular steel in various diameters; small sections 76.1dia x 3.2mm CHS; large sections 127dia x 4mm CHS. Steel framing battens for shelters: 50x75x6mm RHS. Steel planters: 5mm BlueScope HW350 TRU-SPEC® steel and 50x50x5mm SHS. Butt-welds, plate and elbows supplied by BlueScope Distribution **PROJECT TIMEFRAME** 18 months **SIZE** 1 Ha (Park) **TOTAL PROJECT COST** $2.1 million **AWARDS** 2015 Australian Institute of Architects South Australia Awards: The David Saunders Award for Heritage and Urban Design Award; 2015 Planning Institute of Australia Awards: Australia Award for Urban Design - Delivered Small Projects; 2015 Australian Institute of Landscape Architects SA Awards: Excellence in Design

COURTING SUCCESS

There's a new member of the select cohort of steel buildings that call Olympic Boulevard in Sydney home, and it holds its own in that pantheon of sports facilities thanks to a winning combination of material innovation and agile design.

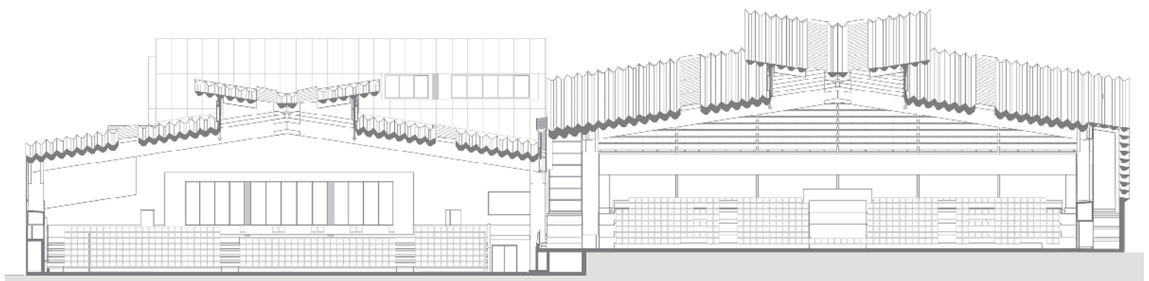
Words **Micky Pinkerton** Photography **Paul Bradshaw; Geoff Ambler**

ARCHITECT
Scott Carver

PROJECT
Netball Central

LOCATION
Homebush, New South Wales

GA



SHORT SECTION

One of the ongoing debates in sport is the value of statistics. Whatever side you barrack for there is no denying that sports coaches and administrators are using increasingly complicated mathematical formulas to analyse every on- and off-court aspect of their games. Attendance figures, turnstile takings, win/loss record, home team advantage, individual player rebounds and assists – the combination of variables is endless.

While netball is the largest female participation sport in Australia and one of the country's most popular school sports – just as the team with the most time in possession and shots at goal doesn't necessarily win the game – netball has often come off second best to other sports in funding.

All that has changed with a new purpose-built Netball Centre of Excellence facility – Netball Central – in the Sydney suburb of Homebush,

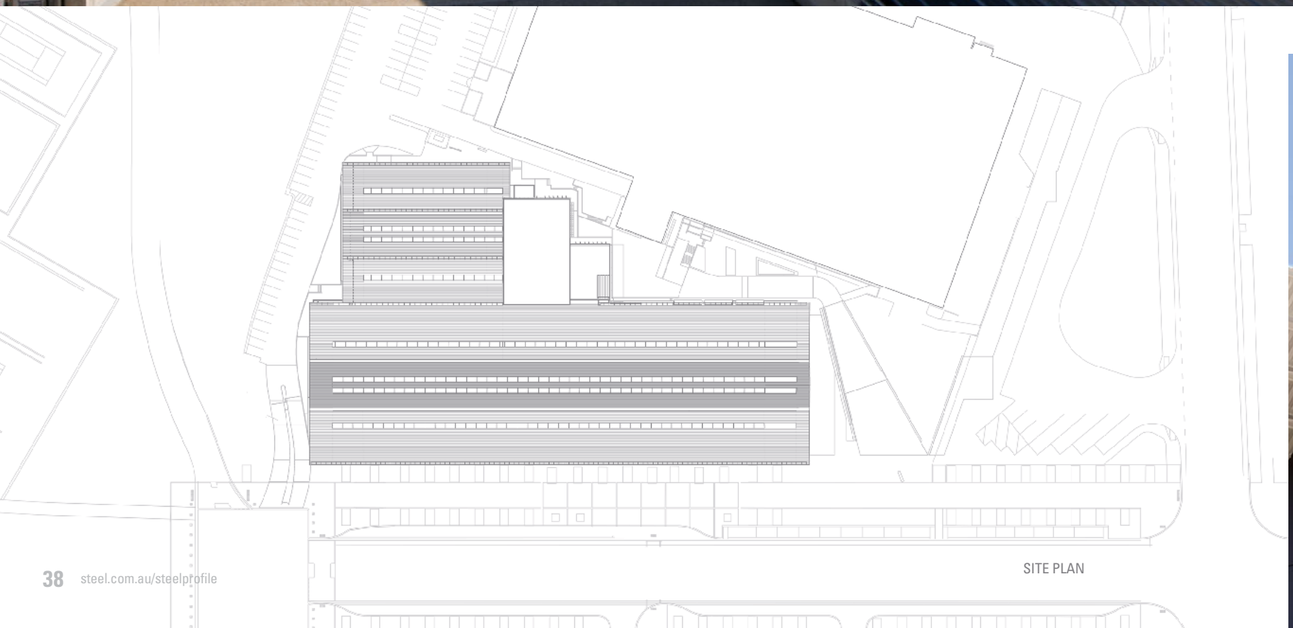
ZINCALUME® steel in Fielders ARAMAX FreeSpan profile allowed the roof to be erected in just two weeks and its signature deep profile gives the building an original and spirited look

made possible with $30m of state and federal funding. Netball Central comes with an impressive figures sheet of its own: a show court with seating for 850, a secondary court seating 350, four additional full sized courts, six team change rooms, training and meeting rooms, medical facilities and a cafe. In the not-too-distant future it will also become the home of Netball New South Wales' Hall of Fame.

Looking beyond the numbers, architects Scott Carver came to be involved with the project through that unquantifiable advantage of a strong relationship between architect and client developed during a previous engagement. They understood the intangibles of the project – of netball's long-standing contribution to the social fabric of Australia and the landmark

PB

Steel offered aesthetic and functional benefits in terms of quick erection, strength and stability



SITE PLAN

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that the government funding package represented as the most significant to date for a women's sport. The architects were determined to find a way to factor these quiet achievements into their design solution for the facility.

"We argued that the building had the potential to be a rebirth of their brand, and they were open to a new look," explains Scott Carver director Bob Perry. "They needed a building that was distinctive and suitably assertive, with a different aesthetic to most buildings. We wanted to do something for them that wasn't generic, that didn't really look like other sports facilities – a design that was vigorous and fresh."

The result is a building that sits firmly within the 'large shed' genus of Australian sports facilities but moves beyond its omnipresent kin through material innovation. Yes, there's a gable roof and a portal frame, but neither conform to the standard. Steel played a vital role in creating a shed-like building at this oversized scale, offering aesthetic and functional benefits in terms of quick erection, strength and stability.

Roof sheeting made from ZINCALUME® steel in Fielders ARAMAX FreeSpan profile leads the construction stats on this project. Continuous sheet lengths of 140 metres allowed the roof to be erected in just two weeks and provided the architects with the material flexibility (both literally and conceptually) they were looking for to create a spirited and original look.

TOP LEFT: Each 140m-long sheet made from ZINCALUME® steel in Fielders ARAMAX FreeSpan profile was roll-formed on site before being lifted in place by two cranes

TOP RIGHT: Each sheet took just 45 minutes to install, providing cost and time saving benefits

LEFT: Specifying the continuous sheets made from ZINCALUME® steel in Fielders ARAMAX FreeSpan profile allowed a roof design where rainwater flows from end to end along the length of the building, rather than ridge to edge. The northern eave takes advantage of this feat, dramatically cantilevering as a clean edge with no guttering required, and celebrating the deep profile of this remarkable material

Perry had not used the ARAMAX FreeSpan profile previously but had been aware of its capabilities and was looking for the right project to celebrate its unique attributes. The 150-metre frontage along Olympic Boulevard provided the perfect opportunity.

The site is on a gentle hill and the building follows the topography downwards. Specifying ARAMAX FreeSpan allowed the architects to design a roof that slopes not from the ridge to the edge of the portal frame, but along the length of the building and with no joints. Rainwater therefore drains along the whole of its 140-metre length.

"Despite being lightweight and highly manoeuvrable to install, as soon as it's connected up with the sheets already in place it finds its shape and reveals its rigid strength"

Two of the design's more dramatic moments draw on this feat: the cantilevered northern eave, which extends three metres off the building as a clean sheet, and the organ of downpipes at the southern end of the building that stop short of the ground so you can see the water in a storm delivered from the tubes to the sumps underneath them. With each gully on the roof carrying the equivalent volume of rainwater as a domestic house, it's a simple but spectacular device.

The construction process was relatively straightforward. The roofing arrived as a huge coil of flat ZINCALUME® steel which was then roll-formed into the FreeSpan profile.

"Part of the efficiency of it is that it is roll-formed on site," explains Perry. "Each 140 metre-long sheet was rolled and stacked along the boundary of the site and then carefully and safely lifted across onto the building frame, sheet by sheet, by two cranes. Despite being lightweight and highly manoeuvrable to install, as soon as it's connected up with the sheets already in place it finds its shape and reveals its rigid strength. It took about 45 minutes to put each sheet on, so once you get going you are covering big areas pretty quickly."

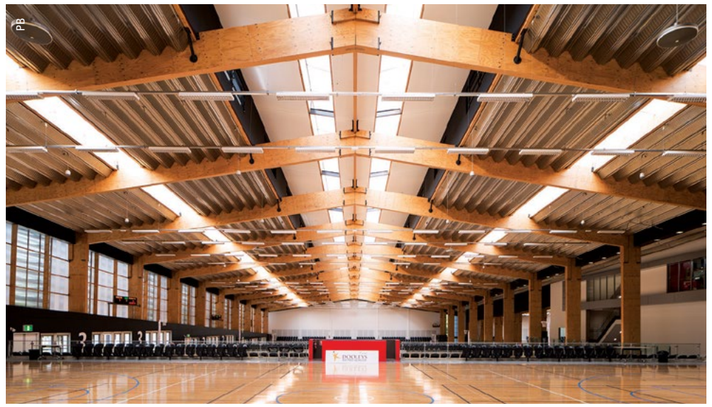
The architects specified an unpainted ZINCALUME® steel finish throughout the project and ARAMAX FreeSpan makes a final appearance as a sun shade along the front facade of the building, to allow natural daylight in with sunlight trespassing onto playing courts. It fulfills its function well – the clients have not yet had to turn the lights on during the day and there is no glare for players.

Perry's favourite time to visit the building is in the early evening when the facility is most busy with local competitions. As the lights come on, the activity and energy inside can be made out through the screens and polycarbonate cladding, providing a beautiful civic presence that is commanding yet accessible. The architect reports that the clients are extremely happy and not long after completion were able to show off their unique building when Sydney hosted (and Australia won) the Netball World Cup. Indeed the client's website proudly states that the building is "revered as the leading purpose-built netball facility in the world".

Finally, the sport now has a home that lives up to those impressive statistics, and a vigorous and fresh design that pays homage to its unique position in Australian society. The building's material variables defy reduction into a neat equation, adding that indefinable verve and spirit that make sport – and architecture – great. **SP**

LEFT: At 37-metres long and 1.2-metres deep, laminated veneer lumber (LVL) frames – with the assistance of rapid-installation Quick Connect steel bolts – challenge typical expectations of scale achievable by natural wood. Steel makes a further contribution to LVL's practicability via roofing material selection. To avoid rain exposure to the lightly finished timber it was important to get the roof on the portal frame as soon as possible. ARAMAX FreeSpan's propensity for rapid assembly saw the roof installed in a fortnight

BELOW: Roofing made from ZINCALUME® steel in Fielders ARAMAX FreeSpan profile also functions as the interior soffit



PANEL SAYS

The overarching architectural language of this sporting facility is carried through from the bold roof form – with its central up-turned gulley – to the delicate fins of the sun shading, thanks to the clever use of steel cladding in the distinctive Aramax profile. There is a measured restraint to this design, and a singularity in its execution, that gives the building a strong presence on its gently sloping site. The meticulous detailing continues inside, where the notched edges of the Aramax profile sit comfortably upon portal timber frames. The project exemplifies a very clear concept where contrasting elements – the strength and innate rigidity of deep profiled steel sheeting versus the tones of timber – are juxtaposed to great effect

LONG SECTION

PROJECT Netball Central **CLIENT** Netball New South Wales **ARCHITECT AND LANDSCAPE ARCHITECT** Scott Carver **PROJECT TEAM** Bob Perry, Claire Matheson, Miruna Sladescu, Julia Stockwell **STRUCTURAL & CIVIL ENGINEER** Arup **BUILDER** Pro Build **CLADDING CONTRACTOR** Sahara Roofing **PRINCIPAL STEEL COMPONENTS** Fielders ARAMAX FreeSpan roof sheeting made from ZINCALUME® steel; Quick Connect steel bolts **PROJECT TIMEFRAME** January 2013 - December 2014 **BUILDING SIZE** 9600m² **TOTAL PROJECT COST** $30 million

MAXIMUM IMPACT

An unusual collaboration between a roll-former and a well-known architect resulted in the development of a new steel profile that bears his name. Words **Rachael Bernstone** Photography **Sam Noonan**

Architects have long been associated with high-end product design: Mies van der Rohe is well known for his Barcelona chair, while mention of Le Corbusier brings to mind his elegant LC4 chaise. Adelaide-based architect Max Pritchard can now lay claim to his own design legacy – one that calls to mind decades' worth of his distinctive steel roofs – the steel profile Maxline® 340.

In 2012, South-Australian roll-former Revolution Roofing invited Pritchard to co-create the new product that the company hoped would fill a gap in the steel cladding market. The product aimed to replicate the crisp flat pan of European-style zinc or copper cladding without the extra labour and costs associated with those materials.

Pritchard lent his design expertise and hands-on feedback to the project, as well as offering the under-construction Rawlinson House as a prototype. The three-pavilion structure made from local stone walls and topped with a story-book pitched roof with distinctive gabled ends – made from COLORBOND® steel in the colour Ironstone® – is located in a picturesque valley south-east of Adelaide.

"I went to my clients and builder and said: 'We could be the first here with something really interesting', and they thought it was worth pursuing," Pritchard recalls. "It was experimental, but luckily the builder had a carpenter/roofer who could install it."

As it was, the installation of the profile proceeded smoothly, largely aided by it having the widest flat-pan – a 325mm-wide pan and 53mm-tall rib – that doesn't require a substrate stiffener.

Maxline® 340 has the widest flat-pan – a 325mm -wide pan and 53mm-tall rib – that doesn't require a substrate stiffener

"One disadvantage," Pritchard says, "of working with zinc on a roof is that it needs a plywood or other material base because it's very soft, so there's the cost and labour associated with doing that, as well as the extra cost of the zinc itself."

At Rawlinson House, the Maxline® 340 roof profile was fixed in place with visible screws. Later, the fixing system was further refined with the use of concealed clips, before the profile was launched to market.

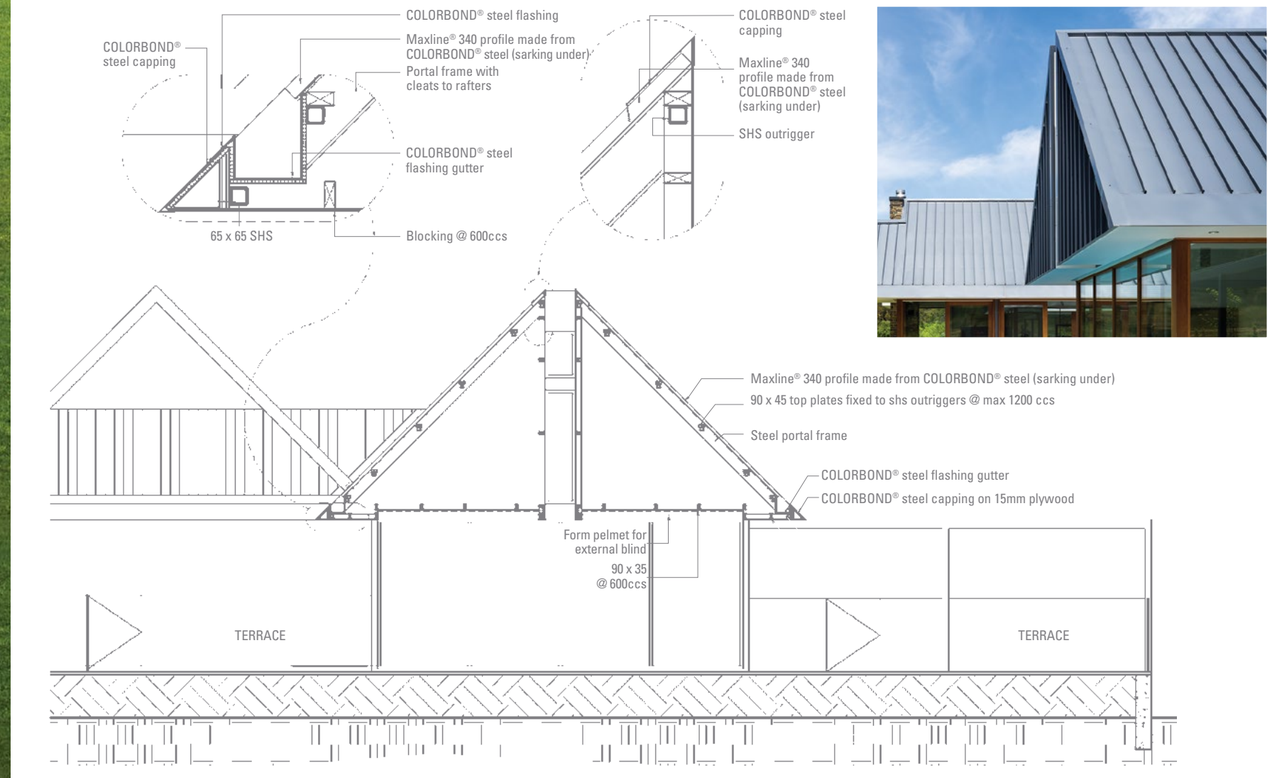
"Visually, we really liked it," Pritchard says. "On this house we were trying to achieve a different roof with a sharper appearance, and this profile delivered the desired outcome at a lower cost for us compared with a zinc roof."

According to Revolution Roofing national products manager Eric Lien, the cost of using Maxline® 340 made from COLORBOND® steel to clad a roof could be approximately half the cost of zinc cladding, depending on the type of project and degree of difficulty. "Also, Maxline® offers fast installation time with no specialist contractors or plywood substrate required, and it is available in a wide range of COLORBOND® steel colours which are made in Australia, whereas zinc currently comes in a limited number of colours and roofing products made from it are usually imported from Europe," Lien says.

While European aesthetics drove the product's development, Maxline® 340 was developed to withstand Australian conditions. "We wanted a steel profile with a strong, flat appearance because in Australia there is a high-end residential market that enjoys that look, but some projects never come to fruition because of the projected cost," he says.

Since the Rawlinson House was completed, many other architects have embraced the profile, using it for wall and roof cladding on schools, health care facilities, retail premises, office buildings and houses, Lien adds. Maxline® 340 – named after the architect who helped create it – is now available nationwide, thanks to roll-forming machines located in Adelaide and Perth.

"We can deliver it to any state in Australia, in most COLORBOND® steel types and finishes," Lien says. "We've done projects in our Maxline® 340 profile made from COLORBOND® Coolmax® steel, COLORBOND® Ultra steel and COLORBOND® Metallic steel, as well as in a range of regular COLORBOND® steel colours." **SP**



PROJECT Rawlinson House **CLIENT** Andrew and Kerrie Rawlinson **ARCHITECT** Max Pritchard Architect **PROJECT TEAM** Max Pritchard and Andrew Gunner **STRUCTURAL & CIVIL ENGINEER** PT Design **BUILDER AND CLADDING CONTRACTOR** Fairweather Davies **STEEL FABRICATOR AND SHOP DRAWING CONTRACTOR** Stevens Structural **LANDSCAPE DESIGN** Distinctive Gardens **PRINCIPAL STEEL COMPONENTS** Roofing: Revolution Roofing Maxline® 340 profile made from COLORBOND® steel in the colour Ironstone® **PROJECT TIMEFRAME** 1.5 years **BUILDING SIZE** 570m²

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