JAMES STOCKWELL
HUNTER VALLEY HOUSE

WILSON ARCHITECTS AND DONOVAN HILL IN ASSOCIATION
TRANSLATIONAL RESEARCH INSTITUTE

IN PROFILE: TIM GREER
EDITORIAL ADVISORY PANEL

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

FRANK STANISIC
Director, Stanisic Stanisic

SAM BREZNEHAN
Principal, Sam Bresnehan Architects

ADAM HADDOW
Director, Adam Haddow Architecture

EDITORIAL

Welcome to Steel Profile issue 117.

What we do, as always, is bring you this collection of steel-centric architectural projects and some insights into the individuals responsible for them. One such person is Tim Greer, who considers architecture “a built experience – it’s all about the building and embedding it into its context”. Illustrating this is his Doolby Bay Shack project that, in name and materials, plays on the New Zealand propensity for “non-showy” architecture by harnessing the organic yet sophisticated qualities of weathering steel.

This is one of many featured projects in a wider-ranging mix that spans large commercial and private – all of which use steel in different, remarkable ways.

Please feel free to share your thoughts via info@steelprofile.com.au

Kristin Camery
BlueScope editor

BLUESCOPE EDITOR  Paul Bradshaw  PHOTOGRAPHER  Rob Gillam

ADVISORY PANEL

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With a form inspired by nature, this Hunter Valley home’s
dramatic roofline soars above its earthy base.

Words: Micky Pinkerton Photography: Patrick Bingham-Hall; Paul Bradshaw
JAMES Stockwell grew up on a farm near Albany, four hours from Perth, in a remoteness that breeds self-reliance. As a result he’s been welding, sawing and hammering away since he was 10 years old and has an innate ability – and interest – in solving problems as they are encountered. “Things would break on the farm; a feeder would snap in half and you’d reinforce it with something else,” says Stockwell. “You learned that this much weight on that much steel was going to break it. So that kind of practical knowledge about materials has been invaluable as an architect, because ultimately buildings are made out of stuff, and in choosing materials you have to know what that stuff is and what it can do.”

Stockwell’s modest, almost simple way of describing this selection process belies a thoughtful approach and a gift for materiality and form which have seen this young architect win a swag of residential awards in recent years. In the Snowy Mountains House (Steel Profile 104), perhaps his best-known current work, Stockwell’s appreciation of just how far you can push metal is seen in the dramatic parabolic curve of the vaulted roof made from galvanised steel in the profile LYSAGHT® CUSTOM BLUE® ORB®.

However, it was another house and a different material which originally drew the clients of this project to Stockwell. They loved the zen-like calmness of his Leura House and were keen to have a similar rammed-earth building in order to tackle the summer heat of the Hunter Valley. Spending half their week working from home, the couple also wanted a view of the Barrington Tops mountains from the proposed office above the garage. This led to the brief as a request for “an interesting roof.” It was these latter two stipulations that posed the main design question of the project.

“For an architectural answer to that,” says Stockwell, “the idea of a box-on-a-box was not really exciting because a small space up high gets heated in summer. So that led to the stretching of the roof over that form... if you did a box-on-a-box you’d have a wall, a roof, a wall and then another roof – and instead of all those joints and trickiness we decided to just wrap it in one form.”

In considering how to resolve the issue he thought back to a drawing of an owl by Picasso which the artist completed in a single line, never taking his pen off the paper, and sought to replicate that efficiency in the roofline. That inspired memory results in a form which is more a beautiful gesture than a roof, like the sweep of a conductor’s baton to a languid piece of music.

Stockwell specified roofing made from COLORBOND® Metallic in the colour Axis®, in Stramit Longspan® profile, and reports that it was relatively easy to install. Indeed, the gentle sine curve of the roof allowed the project to be constructed using straight materials in short lengths, which reduced the complexity of the build and dispensed with having to get items purposefully bent. This reduced expense could be kept down and the project ultimately came in under budget.

“The steel does the hard work of creating the shape. It’s strong and stiff enough to make the roof quite low-profile – to make it slender and just floating through”
“The form of the sine curve, being a direct expression of material ductility, is brought to life by the properties of the steel”

Stockwell likes the way rammed earth makes a building unique to its place, giving it a direct reference to the geology of the site. Despite the extremes of the climate, the running costs of the house are low thanks to the passive solar design which uses the excellent thermal mass of the rammed earth walls. The clients also report that it’s a very quiet house: the walls absorb sound as well as heat.

Stockwell made a 1:5 scale model of the project, reproducing the sine curve of the roof by simply bending a sheet of thin cardboard. It’s a curve that he finds fascinating, encouraged by engineering professor Max Irvine, with whom he has worked on a number of projects.

“It’s a harmonious curve… it’s what gravity does to everything,” says the architect. “Instinctively the sine curve is something you know. You don’t see it literally as sound waves or ocean waves. But it’s obvious when you’re standing on it, when you observe a palm tree leaning over, it’s a sine curve. There are all sorts of curves – elliptical curves, parabolic curves – but they’re all geometric construction by humans, whereas the sine curve is a geometric construction by nature.”

BELOW: Stockwell responded to the owner’s desire for an ‘interesting roof’ with a sweeping sine curve made from Colorbond® Metallic steel in the colour Axis®, in Stramit Longspan® profile
That simple curve is, paradoxically, a mathematical complexity—nine curves are in fact quite difficult to draw—so Stockwell found it easier to use a physical model, hand plotting the points off that before sending them to the shop drawer to import into the steel drawings. Stockwell is adamant that to produce the materials in any other material would have been an expensive and time-consuming process.

“Steel is brilliant in tension and that is where it really comes into its own,” he says. “It’s quite clear when you look at the building that it’s an object in tension, in other words that the creation of the flat planes into the vault sets up this magnificent tension and the decoupling of that from the rammed earth blocks—you’ve got the anchor to the earth, and the roof wanting to take off. The form of the nine curve, being a direct expression of material ductility, is brought to life by the properties of the steel.”

The main challenge of the build was getting the timber battens in the roof to go smoothly into one another to make the curves perfect for the roof sheeting on top and the ply ceiling panels below. As the ceiling and the roof are the same structure the steel dictates both forms, with the ceiling being mounted on the underside of the rafters that support the roof sheeting.

“The rafters just bolt to the steel frame,” explains Stockwell. “So the steel provides a holding point for the in-fill lightweight stuff. The ceiling battens do exactly what the roof battens do; they curve around the form, are sprung-beat, cut in half and stuck together again to follow the curve of the roof. The trick was to make sure that the battens could go smoothly around those curves and not make it too tight a radius.”

Subtle details on this project include the steel tension rods made from galvanised steel which hold up the window and door heads. Unless you know to look for them they are easily missed, adding to the impression that the ceiling is levitating above the corner windows which open out onto the lawn, and the clerestory along the southern wall of the building. In terms of palette, Stockwell left the exposed structural columns raw as galvanised steel in keeping with the unpainted finish of the other materials in the building, from the gun-varied timber to the pitted earthen walls. Even the outdoor shower taps and heads are raw brass (Stockwell got the manufacturer to pull them off the production line before they were chromed). Earthen walls. Even the outdoor shower taps and heads are raw brass (Stockwell got the manufacturer to pull them off the production line before they were chromed). Earthen walls. Even the outdoor shower taps and heads are raw brass (Stockwell got the manufacturer to pull them off the production line before they were chromed). Earthen walls. Even the outdoor shower taps and heads are raw brass (Stockwell got the manufacturer to pull them off the production line before they were chromed). Earthen walls. Even the outdoor shower taps and heads are raw brass (Stockwell got the manufacturer to pull them off the production line before they were chromed). Earthen walls. Even the outdoor shower taps and heads are raw brass (Stockwell got the manufacturer to pull them off the production line before they were chromed). Earthen walls. Even the outdoor shower taps and heads are raw brass (Stockwell got the manufacturer to pull them off the production line before they were chromed). Earthen walls. Even the outdoor shower taps and heads are raw brass (Stockwell got the manufacturer to pull them off the production line before they were chromed).

The clients understandably love their new home and are full of praise for the architect and the builder. For Stockwell, his favourite aspect of the project is how one part of the building, the roof, can do multiple things.

“Obviously it provides shelter. But it also lifts up to the north, and shuts down to the south and the west as you look at the building that it’s an object in tension, in other words that the creation of the flat planes into the vault sets up this magnificent tension and the decoupling of that from the rammed earth blocks—you’ve got the anchor to the earth, and the roof wanting to take off. The form of the nine curve, being a direct expression of material ductility, is brought to life by the properties of the steel.”

Made from local sandstone road base, the rammed earth gives the building a direct reference to the geology of the site.
ARM’s reputation as designers of iconoclastic form grows with every project. The firm’s new Perth Arena – delivered with joint venture partners Cameron Chisholm Nicol – may have been inspired by a puzzle, but it works like a dream.

Words: Peter Hyatt  Photography: John Gollings; Peter Bennetts; Greg Hocking; Duncan Barnes
Howard Raggatt spools off statistics like a man driven. Design aficionados might expect his preoccupation to be dazzling geometric sketches but, for the moment, this architect floats on a cloud of figures. He pulls apart his fists in an elastic motion and coos how the 15-metre-deep roof beams span a mighty 170 metres. It's just one of many components in a structural steel and cladding system that would make you wish you had Gustave Eiffel noodling in wonder.

As one of the design stars behind Perth's new sports and entertainment arena, Raggatt is passionate about a building that is bound to add immeasurably to the city's way of life. Apart from its radical shape, the arena is a remarkably seamless marriage of connections, intersections, joints and junctions. In all, the project took 7,216 tonnes of steel, 235,800 fully modelled members, 34,000 metres of purlins and 220,000 bolts.

"And it goes on..." Raggatt says. "There was also a staggering 25,876 architectural drawings and a separate 25,386 drawings from the shop-fitter." While the figures speak of quantity, they don't explain the quality. Raggatt thanks 3D modelling for transforming the way architects, engineers and fabricators work. "The shop-fitters can fully model every junction of every piece of steel. We integrate their model straight into ours to coordinate the structure and facade. It's a shortcut that's efficient, precise and economical," he explains.

"The problem with conventional structure in such projects isn't the primary steelwork; it's the secondary and tertiary structure that are so wastefully inefficient. "We've certainly embraced technology, but that doesn't mean that it takes charge of us. It just translates into these extraordinary shapes and forms that, until quite recently, were never possible."

The collaboration between Ashton Raggatt McDougall (ARM) and Perth-based Cameron Chisholm Nicol (CCN) delivered a venue befitting Australia's current boomtown state.

"It brings the city into line with the world's best," Raggatt says of the $550 million project.

The Arena is the focal point in Perth's 13.5-hectare urban renewal project that connects the CBD with Northbridge. WA Premier Colin Barnett described the Arena as a potential rival for Sydney's Opera House. "This is an iconic venue for Perth for many years to come. The Arena is a work of art in itself," he said.

Such comparisons unnerved architects: they invariably came off second-best. "It's impossible to compare your work with something of such renown, but we're exceptionally pleased with the result in a structure where so much could have gone wrong," says Raggatt.

When he arrived in Perth to begin the project in 2006, Raggatt found the entertainment venues to be rudimentary. " Hose-out jobs is how I would describe them," he says. "We wanted this project to set a benchmark and not be just another rude shed. Yes it's a tennis stadium, but it can be easily re-configured and it has finely tuned acoustics making it ideal for concerts."

Apart from delivering an iconographic, postcard view of the city, the arena's flexibility permits multiple spectator configurations. And, in the event of inclement weather, the retractable roof – made from Colorbond® steel in the colour NightSky®, Fielders KingKlip® 700 profile – will open or close in a mere seven minutes, three times faster than that covering Melbourne's Rod Laver Arena.

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Raggatt says that a project of such complexity might be expected to open the door to a world of disturbing defects. Almost paradoxically, he says, that didn't happen. "One thing architects love to do is complain about the parts that didn't really work out as they had hoped – and I'm like that – but this building is virtually perfect. "What you see is exactly as we designed it. The workmanship is just fantastic."

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While such sources might appear abstract and slightly remote for the average reader, it is Raggatt’s more colloquial reading that resonates. “The design always reminded us of an avocado,” he explains. “There’s that hard-core function and the delicious flesh. That quite thin ribbon around the 15-metre edge of the building is a major part of what people consider very surprising. The bulk of the building is a hard operational core enveloped by this beautiful ‘fruit’.”

Raggatt believes the project’s fine grain and DNA at molecular level are every bit as important as the major superstructure. “All of the steelwork is highly resolved and that elegance is very function-driven,” he says. “You can’t have columns or walls obstructing views or beams hanging up there, extraneously wasting space and budget.”

He points to the versatile sliding roof as an example of steel’s resolved performance. “Every square metre of roof structure is capable of supporting a tonne of load and that is almost unheard of,” he says. “Very few standards anywhere in the world can offer that. There are far more expensive variants of this type. It’s not the cheapest variant, but it’s far from the most expensive.”

The design is much more than a spectacle of towering geometries and sublime steelwork fashioned to bare economy in the delivery of jaw-dropping spaces. Curiously enough the real show occurs just inside, around the entrance and the great public concourses. “We hate the idea of a building that looks fabulous but doesn’t work,” Raggatt says. “We don’t see architecture as that kind of art. It needs to handle function so well that you don’t even think about it.”

The last thing you want was signage everywhere to help people find their way. You need clarity.” ARM is known for its bold use of colour in design, and Raggatt says this brief demanded such an approach. The architects adopted post-war French artist Yves Klein’s dictum: “Blue is the new black.” The artist created his own shade — international Klein Blue (IKB) — to signify a space awaking or ‘waking’, so Raggatt adopted the same shade (also used in ‘blue screen’ technology in film and television) for the building’s exterior, marking this as a place where major performances and events occur.

And after hardwork how does Raggatt feel? Isn’t there some regret about handing over such a large part of your life? “Funnily enough, as you walk around the project and hear the public’s response you have this strange feeling that it’s not yours any more,” he says. “It happens over time and this project took place over seven years. If architecture is purely an on display, I would say that’s small. You have to view this sort of work as part of a greater cultural adventure and human condition.”

He laments that civic architecture is too often hijacked. “It can be such an investment. How often do you genuinely invest in it?” he asks. “You talk of ‘lost opportunities’. The budgetary difference between an ordinary facility and a terrific one isn’t all that much. To take the most outrageous example, the Sydney Opera House could have been done for half the price. But at what real cost? That money would have been entirely wasted. Look at what it has brought to Australia. It is a strictly money-maker and put Sydney on the road to become a world-class city.”

Raggatt explains that the broader architecture becomes, the greater the risk and the potential for client reward. “We live in dread at the risk of failure, but it’s important to the result. If you think that you know everything and just do another version of the project before, then it’s bound to be a disappointment. No, we never want like that.”

With ARM at the helm, Perth’s new arena was never going to be another rudimentary box. The design team has delivered to Western Australia a cultural icon in step with the boom economy in the delivery of jaw-dropping spaces. "We live in dread at the risk of failure, but it's important to the result. If you think that you know everything and just do another version of the project before, then it's bound to be a disappointment. No, we never want like that.”

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While the extraordinary shapes and angles rightly capture the attention of passersby and visitors, the interiors — foyers and circulation spaces, back-of-house services and the arena itself — are not neglected by the design team. Reports suggest that the building works exceedingly well as a venue for major events. We look forward to seeing it in the flesh when we visit Perth for the Australian Institute of Architects National Conference in May 2014.

PAUL BRADSWAY

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A teenager in New Zealand, Tim Greer was fascinated by the very public discourse of Christchurch’s most famous and prolific architects – Mike Warren and Peter Beaven. “I was lucky when I was growing up that there were two modernist architects who I call ‘Petit Brutalist’ architects, because of the colonial scale of the city they were working in,” Greer says. “They would debate in the newspaper, and were constantly positioning against each other: vying for the small pool of resources for new projects. I was aware of architecture as a creative process early on, and thought it was interesting. I could see those conversations between architectural creatives and the buildings themselves as a connection.”

Greer chose to study architecture at the University of Auckland – as Warren and Beaven had done – and travelled around the world for two years before completing his degree. In his absence, a change took place at the architectural school. “It was like having two universities,” Greer laughs. “In those two years I was away, the hippies were thrown out and the post-structuralists came in. It was the emergence of the post-modern, with a group of lecturers who introduced new ideas. We started debating the meaning of architecture as a creative process early on, and you can align where you sit within all of that.”

After graduating, Greer had “an incredible desire to live in a dense urban environment.” He adds: “Sydney was fantastic because it was close to New Zealand, it had just celebrated the Bicentenary so there was a tremendous desire to create a fabulous city, and it had a tangible energy.”

Looking for work, he met with several firms and felt an immediate rapport with Brian Zulakha and Peter Tonkin, who had founded their practice in 1987. “I thought they were the most amazing 19-year-olds I’ve ever met,” he says. “They were interested in architecture in all its capacities.”

Despite their differences – the partners (Greer, Zulakha, Tonkin, who had joined as the third partner in TZG in 1996) are each 10 years apart in age with diverse cultural and educational backgrounds – they share a common philosophy of life. “We are on the same wavelength,” Greer says. “Our individual thinking may bump into each other, and we have a good connection with them, and got a sense of them as being interested in architecture in all its capacities.”

For us, architecture is a built experience: it’s all about the building.”

For his latest work was inspired by the buildings that first led him into architecture. “We started the conversation between architectural creatives and the buildings themselves as a connection.”

Greer selected a limited palette of new materials – steel, aluminium and concrete – to avoid competing with the existing fabric. “At Carriageworks, the architecture is deliberately over-scaled to match what’s there, but it is also deliberately very light – we didn’t want to compete with the shells,” he says. “The Carriageworks’ new performance spaces are made from cast concrete boxes, with office spaces suspended above on steel bridges and frames.”

“Achieving, but it was intentional.”

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At Sydney’s Carriageworks the original steelwork plays a pivotal role: skylights were replaced to allow the existing roof trusses to cast moving shadows across the concrete walls and floor, and integrated fairly plain concrete walls to emphasise the truly stunning existing steel roof trusses, which would have been at the forefront of technology in the 1880s.”

Greer says. “They cast shadows that move throughout the day: it’s a very ethereal effect, and you can move throughout the day: it’s a very ethereal effect.”

For both, Greer selected a limited palette of new materials – steel, aluminium and concrete – to avoid competing with the existing fabric. “At Carriageworks, the architecture is deliberately over-scaled to match what’s there, but it is also deliberately very light – we didn’t want to compete with the shells,” he says. “The Carriageworks’ new performance spaces are made from cast concrete boxes, with office spaces suspended above on steel bridges and frames.”

The drawings are just a means to that.”

“For us, architecture is a built experience: it’s all about the building.”

Sydney was fantastic because it was close to New Zealand, it had just celebrated the Bicentenary so there was a tremendous desire to create a fabulous city, and it had a tangible energy.”

Looking for work, he met with several firms and felt an immediate rapport with Brian Zulakha and Peter Tonkin, who had founded their practice in 1987. “I thought they were the most amazing and generous people, and there was a richness that I didn’t find in other firms,” he says. “I felt a connection with them, and got a sense of them as being interested in architecture in all its capacities.”

Despite their differences – the partners (Greer, Zulakha, Tonkin, who had joined as the third partner in TZG in 1996) are each 10 years apart in age with diverse cultural and educational backgrounds – they share a common philosophy of life. “We are on the same wavelength,” Greer says. “Our individual thinking may bump into each other, and we have a good connection with them, and got a sense of them as being interested in architecture in all its capacities.”

Over the 25-plus years they have worked together they have developed a set of four ideas that guide each project: an interest in connecting contemporary and historic culture; expanding the definition of architecture to its broadest reach (including ferryway design, landscape and urban design); pursuing collaboration as a way of broadening the architectural thinking of the design team; and, at an architectural level, an interest in robustness, or clear, simple ideas that can transcend the vagaries of developers and construction. “For us, architecture is a built experience: it’s all about the building.” Greer says. “The processes we’ve set up are all about the end game, and the end game is getting the building and embedding it into its context. The drawings are just a means to that.”

Some of Greer’s most awarded projects have brought life back into parts of the city that had fallen into neglect. Especially true of this description are Carriageworks at Eveleigh and Paddington Reservoir Gardens, both in Sydney. The first saw the insertion of contemporary art spaces into disused railway carriage building sheds, while the Gardens grew out of a disused reservoir-turned-motor-workshop on Oxford Street, which had been derelict since its partial collapse in 1990.

For both, Greer selected a limited palette of new materials – steel, aluminium and concrete – to avoid competing with the existing fabric. “At Carriageworks, the architecture is deliberately over-scaled to match what’s there, but it is also deliberately very light – we didn’t want to compete with the shells,” he says. “The Carriageworks’ new performance spaces are made from cast concrete boxes, with office spaces suspended above on steel bridges and frames.”

The drawings are just a means to that.”

“For us, architecture is a built experience: it’s all about the building.”
Greer also agitated for the building to have a strong entry portal on the street – to signal pattern to its high-grade presence – repurposing some of the original steel roof trusses to reference contemporary dance which takes place inside the steel-framed building. “We did everything we could to make a connection to the street,” he explains. “The building makes a lot of deliberate connections with the past, with the sense of industry and manufacturing – in that nothing has been cleaned up – and with its new use.”

At Paddington Reservoir Gardens, steel was used as the primary structure for the new roof canopies and stairs, and to “bundle together” all of the small-scale elements such as balustrading, signage and gates. “At the start of this project the existing structure was collapsing – during the design phase, two more vaults fell down – so we chose just one new material so as not to compete with that infirmity,” Greer says.

The use of steel in these projects relied on Greer’s earlier experience with the material in a project he still describes as one of the most challenging of his career: the transformation of Scott’s Church in Sydney’s Wyrondah into Portico apartments. On top of the Art Deco heritage-listed church, TzO designed a new steel-framed stepped structure containing 176 apartments, with 117 car parking spaces in a 25-metre deep underground car stacker.

The entire building was propped on a temporary steel structural frame prior to the excavation, which took place in a 17-metre-wide envelope dictated by adjacent underground tunnels. “That project would not have been possible without steel,” Greer says. “The original building used riveted steel from the late 1920s, so we chose just one new material so as not to compete with that infirmity,” Greer says.

The existing steel was not where we expected it to be, so we had to redesign the building.”

As if the constraints of weight and underground tunnels were not sufficiently challenging at Scott’s Church, when construction commenced the builders discovered that the original steel frame did not conform to the drawings. “So the level of accuracy that you would expect, and the reason we love steel – you design it, then shop draw it, so that you know that when it goes in, is 99 per cent perfect – wasn’t there. The existing steel was not where we expected it to be, so we had to redesign the building.”

The link between Portico and Greer’s latest steel project is fellow New Zealander Paul Rolfe, an architect at TzO who collaborated on Portico before returning to Wellington and establishing his own practice. “As the subject or viewer, a lot of my projects have details you can empathise with,” he says. “At Paddington, it’s the aluminium screen; at The Glasshouse [Theatre, in Port Macquarie], it’s the timber cladding; and at Cloudy Bay, the weathering steel. The realisation that there is a link between Brutalism and my current work is very recent: it has only just popped into my head.”

Having said that, Greer is quick to credit his fellow partners and colleagues for the quality of the firm’s recent award-winning projects, and the calibre of work it continues to win. “Having the opportunity to build with Brian and Peter, and making a framework for clever architects to come and work here, that’s been very rewarding,” he says. “Moving up to the point where we are getting some really great projects is also very rewarding. We have created a way of practising architecture where there is a lot of enjoyment.”
Wilson Architects and Donovan Hill’s groundbreaking Translational Research Institute has harnessed steel to enable precision at every point.

Write: Margie Fraser  Photographe: Paul Bradshaw, Christopher Frederick Jones

ARCHITECT
Wilson Architects + Donovan Hill Architects
in Association

PROJECT
Translational Research Institute

LOCATION
Woolloongabba, Queensland

www.steelprofile.com.au
It’s been a while since scientists were hip. Despite the guttural leaps into space travel, the heady invasions into molecular biology and nanotechnology (and let’s not forget the discovery of penicillin), there’s been a perhaps unobserved, nearly undelineated to the common perception of the profession. Back in The Enlightenment, scientists were the equivalent of rock stars. No longer floured for their heretical ideas that supposedly favoured the “natural order”, these lateral-thinking rationalists changed the world for the better. The more recent stereotype of deliberate and painstaking research maven exists hand-in-hand with the image of the scientist as a monk: the solitary figure retiring to ponder the mysteries of the universe while seeking a ‘light bulb’ moment.

The scientists for whom Wilson Architects and Donovan Hill in Association designed the Translational Research Institute (TRI) at Brisbane’s Princess Alexandra Hospital (PAH) are cut from an altogether different cloth. As architect and former DH Principal Timothy Hill suggests, the scientist is “the new leading citizen” who requires accommodation “not as a technician, but as a high-level precious member of society”.

Wilson Architects and Donovan Hill in Association won a limited competition to design the building in 2007, and the project was completed in 2012. It is the third major collaboration between the two practices and represents one of a series of significant scientific facilities for both. Funding to the tune of $364 million was provided by partner institutions of the Australian Federal and Queensland Governments, The University of Queensland and Queensland University of Technology.

The TRI touts itself as Australia’s most comprehensive medical research and biopharmaceutical facility, housing four major research institutions: the University of Queensland’s Diamantina Institute, the Queensland University of Technology’s Institute of Health and Biomedical Innovation, the Mater Medical Research Institute and the Princess Alexandra Hospital’s Collaborative Centre for Health Research and Education.

TRI’s design reflects a concern with preciousness, in its non-pejorative sense, alongside a rigorous plan that encourages communication and disrupts compartments and hierarchies. The building enjoys a prominent position and new pedestrian entry point at the corner of the hospital campus, and is a reflection of the ‘new leading citizen’s, or scientist’s international standing and abundant creativity.

The design of the TRI encourages collaboration and innovation, and places its four partnering institutions, comprising 650 researchers and 300 other staff, at a single address. The idea behind the collaboration is to improve and accelerate medical research and to translate that research into greater palliative care. For the first time in Australia, biopharmaceuticals and treatments can be discovered, produced, clinically tested and manufactured in one location, in a process known as ‘bench-to-bedside care’. The aim is to focus on a wide range of health and medical research areas including cancer, inflammation and infection, obesity and diabetes. A biopharmaceutical manufacturing facility is being constructed adjacent to the main TRI building and will house the first major biopharmaceutical production facility in Australia.

“TRI’s deliberate blurring between workplace and laboratory here,” says Hill. “The two are usually so distinct, but here we used steel to do the ‘quiet work’, and to make everything demonstrably personal, unlike a typical corporate or laboratory space.”

Transparency has been a driving concept for the design, allowing the building’s inhabitants to have views into multiple sections of the building as well as to the exterior and sky. Walls of glazing wrap around a grand outdoor garden room; the transparent layers and illuminated circulation spaces creating an active village around the central hub. Spandrel panels with no mullions allow for unimpeded diagonal sight lines across the building.

The building’s roof – covered with COLORBOND® Metallic steel in the colour Copper Penny, in Stramit Speed Deck Ultra® profile, provides a textural and tonal contrast with the recycled bricks and rose glass.
Panel says

The clever building in Brisbane’s Woolloongabba makes a generous and delightful civic space out of what was a banal brief, transforming this from a pedestrian building into a thriving community. We think it resists the urge to appropriate sticks, slats and flying roofs – typical of so many Queensland buildings – to create something that is uniquely rooted in its climate and environment without being predictable or cliched.

The expert use of a broad range of materials – brick, steel, glass and aluminium – results in a thoughtful whole that is finely balanced. Structural steel has been used to masterfully achieve the internal canopy and we particularly like the expressed steel framing on the northern elevation, which holds both the aluminium and coloured glass shading in place.

It is the steel which enables the precision of the building. The building is conceived as a shell from which the steelwork is an intermediary to which the outer facade is clipped.
A rhythm is established between the carefully wrought intimate spaces, and the expansive communal areas.

Optical trickery is used to play with the scale of the building, and is enabled by the use of structural steel. The “huge, dry-impressive floor plates,” as Hill calls them, are countered by the seemingly huge outdoor atrium. “You understand the size of the building through the size of the outdoor room, which is surprisingly small in plan, rather than the floor plates,” says Wilson. “It establishes a sense of comfort in its scale and in the multitude of wonted details,” he concludes.

The massive scale of the eight-storey building sitting prominently on a hill is tempered by the intensely human scale at points of encounter through the building. A rhythm is established between the carefully wrought intimate spaces and the expansive communal areas. Perhaps the TRFs function and presence are best summarised by one of its users. In a recent filmed interview*, Professor Milton Sandell, Laboratory Head of the Centre for Experimental Haematology at the PAH, compares the architecture of the building with the nature of scientific research:

“The difference is – as a clinician scientist – you don’t have the picture in the box from the beginning. So you work with the edges, and the corners, and you get some kind of outline, then you work your way with that. You need new ways of solving jigsaw puzzles. I think this building represents that for me.”

*SP

A video of the architects discussing this project is available at steel.com.au/showcase

Awards

- AIA Queensland Architecture Award 2013
- Queensland Architecture Award 2013
- Australian Institute of Architects (AIA) National Architecture Award 2013
- AIA QLD State Commendation for Sustainable Architecture 2013
- AIA QLD State Award 2013
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The weathering steel cladding of this COLORBOND® Award for Steel Architecture-winning “hotel for students” works on many levels to make it unique and of its place.

Words Rachael Bernstone  Photography Bob Seary
There was a design and marketing requirement to brand the facility as a distinct business, and for it to not be disconnected from the street, but that offered a space behind the facade at ground level that was open to what’s effectively a harsh urban environment,” Lake says. “A lot of the neighbouring buildings have fully glazed ground level and the bedrooms on the upper floors. “The use of perforations in some of the steel panels adds a degree of privacy while maintaining natural light internally with the communal spaces at ground level and the bathrooms on the upper floors. “A lot of the neighbouring buildings have fully glazed basements that try to be inviting from the street but don’t respond well to this block-edge street condition, or to what’s effectively a harsh urban environment.”

“we chose weathering steel for the cladding to pick up the colour of the brick without imitating it, and also to reference the industrial history of this area”

Having made the decision early on to clad the building in weathering steel, the custom-sized panels dictated the dimensions of the repetitive modules that impart a rational appearance. “Once we knew we were using this material, the whole building was set out on the 450mm module,” Lake says. “It ties in with the rooms – the windows are either 900mm or 1350mm wide – so it all fits together in a modular way.”

That was the most efficient way to use a 1200mm-wide coil, once you have folded the fixing edges,” Lake says. “We minimised the amount of wastage, which was critical to being able to afford this material, so it’s a very rational building. In student housing especially, you can’t afford frivolous things: this is a business and you need to come up with the most efficient outcome, but also something that provides a strong architectural response.”

To counter the risk of the facade appearing too regimented, Bates Smart alternated the placement of bedroom windows from left to right, in what Lake describes as “a very pragmatic response to building codes”. “If you have full-height windows on a building under 25-metres tall, which is not sprinklered, you need a 900mm separation vertically between floors,” he explains. “So here, the windows are staggered to allow us to have full-height windows without that vertical separation. Also, because the student housing typology is very repetitive, the staggering helps to break down what would otherwise be a very gridded and regular building.”

Contradicting misconceptions that weathering steel might be an expensive or difficult material to build with, Lake says the simplicity of the modular construction method allowed it to be completed on time and within budget. “From a cost perspective, this project had to be delivered at the same cost as other student accommodation projects. It was very easy to scaffold this building and achieve economies with the steel facade system.”

Lake says that the waterproofing layer, which encloses internal plasterboard and insulation, was completed early in the build, allowing the internal fitout to be carried out before the facade was added. “The facade was one of the last elements to be finished on the project, and the screens used to affix the weathering steel were somewhat contentious,” he laughs. “Ideally we would have liked them to pick up the colour of the brick without imitating it, and also to reference the industrial history of this area”.
“What we really love about this material is that it changes all the time... With age, this colour will probably sit more and more comfortably with the surrounding brick.”

On the Regent Street frontage, the perforated steel screen conceals the lounge and dining areas in the foyer, while on Dwyer Street the perforated steel doors provide natural light and ventilation to the rubbish and recycling room and bicycle storage facilities at ground level. The ‘L’ shaped building encloses the internal courtyard on the ground floor where students can eat and socialise in a retreat away from the traffic and noise.

Standing in the leafy southern courtyard, overlooked by bedrooms above, Luke admits it’s not the obvious location for an indoor-outdoor room. “But it does provide a sanctuary from the street, and throughout the year sun does penetrate this space, and we clad it with lighter-coloured materials to maximise the light,” he says. “I’m told this space is incredibly well used. Our client is very interested in creating opportunities for students to engage and collaborate with each other, so we have created different seating options within a relatively small footprint, here and inside, to foster community among residents.”

Upstairs, there are three bedroom types: single rooms with ensuite and single rooms that share a ‘Jack and Jill’ bathroom, which are clustered into six-bed apartments with their own kitchen/dining/dressing space, and self-contained studio apartments that occupy the north-east corner of each floor.

The perforated weathering steel cladding was key to balancing the need for light, space and privacy. “Upstairs, the rooms are relatively small so full-height windows make a huge difference to one’s sense of space, but there are privacy issues that go along with them, so we’ve introduced a ‘mosaic’ panel of perforated steel, which gives a sense of openness for the occupants,” he explains.

“Combined with internal blinds, it allows them to control privacy, light and views in their own living environments.”

Always conscious of maximising the inhabitable area, Bates Smart minimised circulation and service zones: all of the ‘apartments’ are accessed via one lift or stair, and one short hallway on each floor, and the bathrooms and kitchens are stacked vertically. “One of the biggest issues in designing multi-residential buildings is getting those kitchen and bathroom exhaust services out,” Luke says. “They often end up being very badly integrated into the facade, so we’ve used full-height perforated steel panels to conceal the services rather than using internal rise space, which we didn’t have room for in our overall floor plan.”

The same minute approach to detail is evident in the bedrooms, which are designed by the Bates Smart Interiors team, also responsible for the firm’s hotel projects. “We are trying to get the most rooms possible on the site but to still provide good amenities,” Luke says. “While this has a student-type feel, the interiors are more refined than typical student projects.

One of the most intriguing details can be found on the ground floor facade fronting Dwyer Street, where a unique gutter made from folded weathering steel works in conjunction with grates in the footpath edge to minimise run-off.

“From a branding and identity perspective, it’s exciting and delightful to see steel extended into such a creative and expressive manner to deliver a remarkable addition to the fabric of the city. Fundamentally this material use gives the building personality and expression while allowing it to age and weather, delivering a richer building over time.”

“These gutters, which we’ve never used before, are having some impact on the way the building weather, which is interesting,” Luke says.

“Whatever we really love about this material is that it changes all the time. It does this colour will probably sit more and more comfortably with the surrounding brick.”

On response to what is arguably a very harsh street environment, Bates Smart did something unusual on this student housing project: it located the courtyard on the south-western corner. In doing so, the architects have created a generous outdoor space that can offer quiet repose or noisy interaction, depending on the students who frequent it. Also unusually on a multi-res’ project, they chose a weathering steel cladding system which embeds the building into its red brick milieu. The custom perforated panels provide interest while allowing the architects to integrate subtle service doors at ground level and conceal building services on the upper floors, without interfering with the rigorous commitment to the steel module.

There is a design clarity apparent in the attention to detail that can be clearly observed throughout this highly resolved building.
With a design strategy inspired by the pods of the locally indigenous Kapok tree, this new school by HASSELL honours local history while offering a warm welcome to students and the broader community.

Words Alex Taylor  Photography Douglas Mark Black
Distinguished by a steel-tough outer ‘shell’ and a softer, open courtyard interior, this new Catholic secondary college at Palmerston – a satellite city about 25 kilometres south-east of Darwin – has been a long time in the making. First mooted in 2001, Perth-based architect David Gulland of HASSELL was part of the team that won the original design competition for the project in 2002. It was then shelved for several years, but when the Catholic Education Office (CEO) re-started the scheme in 2009, Gulland was approached again.

The original design competition was for a standalone middle school, but in the interim the remit had expanded to encompass a complete high school on the same site. “At that point, we went right back to first principles, and it was good for the clients to see where we were coming from, talking about the site and a conceptual layout,” Gulland says. Concurrently, HASSELL was working on several other education projects that were at various stages of design and construction, including Dalyellup College in Perth (see Steel Profile 104). What made this one stand out was the unique attributes of the site.

“The site was a clear inspiration, partly because of the topography but also because CEO places a strong emphasis on spiritual and pastoral care, and the site was adjacent to indigenous heritage and natural heritage areas,” Gulland says. “This wasn’t a typical school in a sub-division surrounded by roads, so the challenge for us was to make linkages to those places – gestures beyond the boundaries of the school – and also to capture views across Palmerston. The site conditions provided us with design opportunities for the community to see the school and vice versa; for the school to become a beacon in the landscape.”

On the other side of the school, an indigenous sacred site holds special significance for local Aboriginal people. “The school is keen to build relationships with the Larrakia nation, so the idea that there is a potential visual connection adjacent to the school became key to our orientation of the buildings at concept sketch stage,” Gulland says. “We were keen to pay reference both to the sacred site and the heritage site – which occupies a topographical high point – and this influenced the orientation of the new buildings and the master plan approach to the site.”

The new school was designed in two distinct stages – two long, cranked wings that seem to nestle into the hillside at one end and jut out over the landscape with large cantilevered roofs at the other. “Our Perth team worked with Darwin-based HASSELL team member Reuben Bourke and colleagues at æ.”

The nearby heritage site known as 17½ Mile Camp was a major defence point in World War II, when Darwin was under attack from Japanese bombers. Home to Australian and US troops in 1942, it now comprises preserved fox holes and interpretative signage that describes the site’s history, and is part of a heritage trail that was completed while the school was under construction. The boundary between the two sites is deliberately low-key, to foster a sense of connection with the past for students.

The roof of the library, at the western end, extends beyond the building in a gesture that is visible throughout the surrounding suburb; a deliberate attempt to make the school a beacon in the landscape.

**Panel Says**

This new school in Darwin’s satellite city of Palmerston has a modest appearance that doesn’t try to overwhelm its setting. With its subtle gestures, big roof overhangs and civic scale, it effortlessly achieves many laudable aims. We especially admire the way the building seems to emerge from the hillside, reminding us of the Arthur and Yvonne Boyd Education Centre at Bundanon by Glenn Murcutt in the way it responds to the landscape and follows the contours of the terrain. The fine steel structure combined with the use of steel cladding and expressed shading articulates the facade in a refined and elegant way, lending this project an understated beauty.
The selection of lightweight materials – including two COLORBOND® steel profiles for the upper and intermediate levels – adds texture and rhythm to the facade, and provides contrast with the heaviness of the concrete block-work lower level.

The plan features several innovations that HASSELL has used previously, but they were arranged here because of the school’s emphasis on pastoral care, he says. “The learning areas have been laid out as clusters of rooms, with four general learning spaces, so that they can form communities by year group, and look out into the broader school through a series of common pathways.” Gulland says. “That approach will become more apparent once stage two is built, and the stepping system—whereby the youngest students start on the south side and move around to the north wing as they progress—will very much be a practice.”

“Bathing” of the tropical climate, where airconditioning is needed in the ‘build-up’ period before the wet season, the isolated spaces often have double glazed windows. “We’ve installed breezeway elements between the learning spaces, to encourage indoor/outdoor connections when the weather is more favourable,” Gulland says.

“The verandah loops around the inside of the main school with double doors connecting to the outside, and international/interiors to give a season-dependent range of options.”

The spaces between the buildings were also carefully considered and arranged — similar to Dyalgap College, Gulland says — and the staged construction program meant that all of the elements, indoors and outdoors, had to work twice as hard in the first phases. “Because of the split construction program we talked with CEO about how to make spaces multi-functional,” he says. “For example there is an undercover area at present that will become a full cafeteria in the future.

“We needed to provide specialist facilities such as laboratories in the first stage,” he adds. “Because it’s hard to teach science in a temporary location, it’s hard to teach science in a temporary location, so the second stage largely features learning stages and areas that can easily be adapted.”

From a design point of view the second stage is fully documented and expected to be delivered in separate packages. The completed school will have the capacity to serve between 650 and 780 students, most of whom are likely to be drawn on pastoral care, he says. “The learning areas have been laid out as clusters of rooms, with four general learning spaces, so that they can form communities by year group, and look out into the broader school through a series of common pathways.” Gulland says. “That approach will become more apparent once stage two is built, and the stepping system—whereby the youngest students start on the south side and move around to the north wing as they progress—will very much be a practice.”

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Bathing of the tropical climate, where airconditioning is needed in the ‘build-up’ period before the wet season, the isolated spaces often have double glazed windows. “We’ve installed breezeway elements between the learning spaces, to encourage indoor/outdoor connections when the weather is more favourable,” Gulland says.

“The verandah loops around the inside of the main school with double doors connecting to the outside, and international/interiors to give a season-dependent range of options.”

The spaces between the buildings were also carefully considered and arranged — similar to Dyalgap College, Gulland says — and the staged construction program meant that all of the elements, indoors and outdoors, had to work twice as hard in the first phases. “Because of the split construction program we talked with CEO about how to make spaces multi-functional,” he says. “For example there is an undercover area at present that will become a full cafeteria in the future.

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“The verandah loops around the inside of the main school with double doors connecting to the outside, and international/interiors to give a season-dependent range of options.”
Like a leaf falling randomly onto a clump of sticks, this public shelter's shimmering, thin-edged roof rests lightly on slender steel columns.

Words Rob Gilham Photography John Gollings

STEEL DETAILS

Steel was likewise the material of choice for the roof - constructed from Blackspun thin rolled sheet and finished with a pre-painted system - as “a highly customised sandwich panel, complete with insulation.” Built in two halves, the roof panels met at an extremely thin middle junction point to make the whole.

“Transporting and erecting the roof as a whole was always going to be difficult as it was craned out three at a time and then worked together on site,” Knott explains. The choice to build the shelter with steel was very much supported by the client, Knott says. “The client had its own design team which was very involved from a technical point of view. With permite issues to consider, they were impressed by the longevity of the material and the highly protective coatings. The structures are going to be there in 100 years’ time and that’s exactly what the client is after.”

The Australian Gardens has also resonated with locals and has had a transformative effect on the suburb. “Cranbourne is a relatively low socio-economic area and free entry to the Gardens has had a really positive effect,” Knott says. “A lot of people go there, and children especially are delighted by the experience of the landscape and the shelters. It has really regenerated the area.”

And the architect’s favourite feature? “I like the way it sits within the landscape. For us, the best results are in 12 months or less because this shelter is going to be there in 100 years’ time,” Knott says. “So we work in the manufacturing stage as early as possible through to the build stage. It’s our job to present a solution,” Knott recalls.

The landscaping by Taylor Cullity Lethlean was well established when the brief was received, presenting an unusual role-reversal for the architects. “Normally the landscape comes at the completion of a project, but this was very much the opposite,” says BKK Director in charge Simon Knott (the second “K” in Black Kosloff Knott).

He describes the roof – constructed from Blackspun thin rolled sheet and finished with a pre-painted system – as “a highly customised sandwich panel, complete with insulation.” Built in two halves, the roof panels met at an extremely thin middle junction point to make the whole.

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