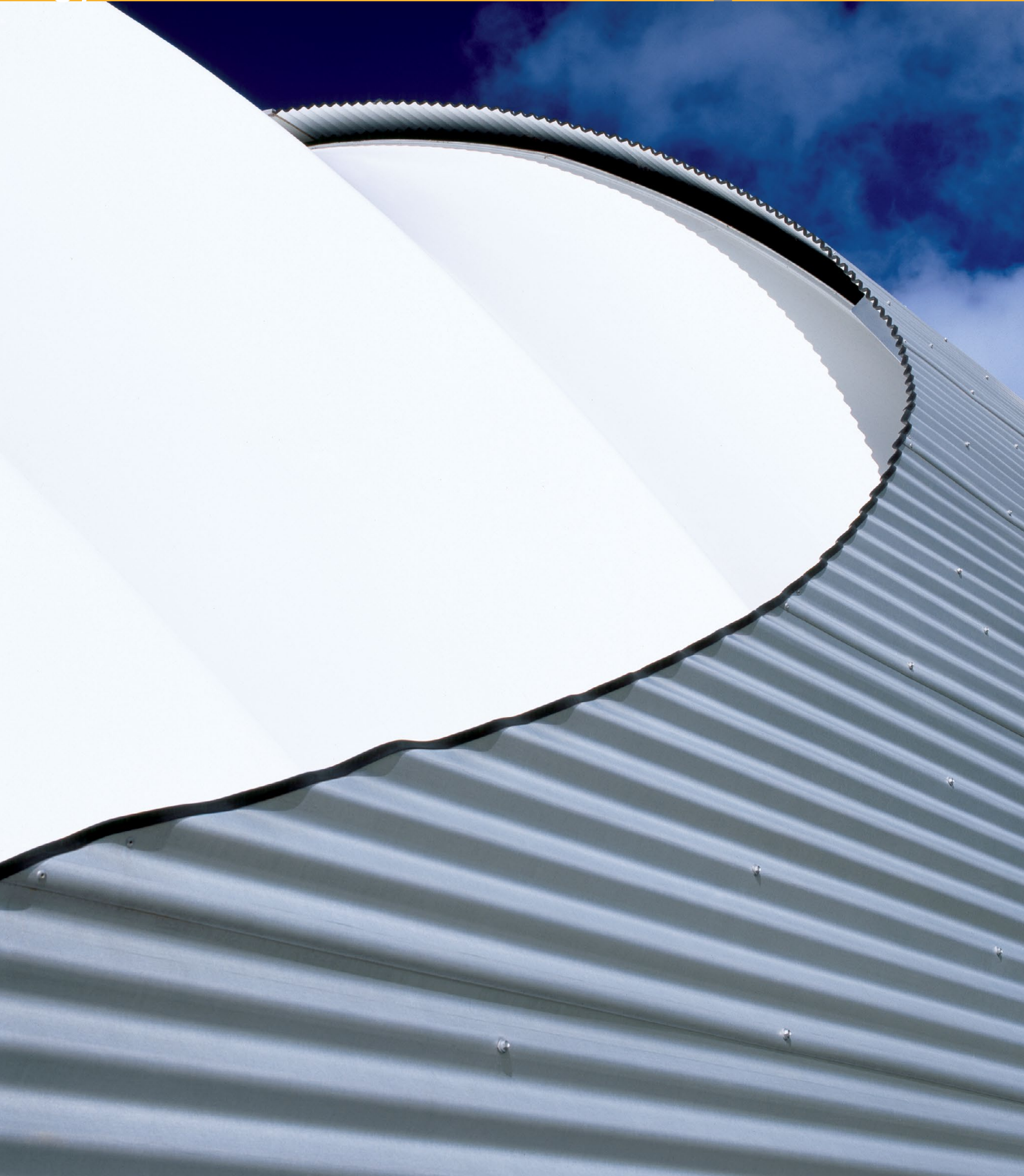


steel|profile

97

Architectural steel innovation with BlueScope Steel
december 2006



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(cover photography)

ZINCALUME® steel in corrugated profile wraps up and over our featured Great Barrier bach – or holiday house – in New Zealand.

(opposite) The clean, bold lines created by COLORBOND® Stainless steel underpins the industrial heritage surrounding Challenger TAFE College at Fremantle.



002

Dome home

Mention the word bach, the New Zealand term for holiday house, and most people on that side of the Tasman think of well-worn furniture, beach towels hanging over sun-bleached, peeling decks and mismatched crockery. However, most people haven't seen Greg and Georgie Noble's Great Barrier Island home away from home.

010

Embracing location

Red Bank House, high up in Victoria's snowfields, is well concealed along a 1km dirt road lined with alpine eucalypts. Perched high on the edge of a plateau, this 250-square-metre snowfields gem, designed By Peter Sandow, looks out on one of Australia's harshest environments. But rather than concealing its occupants from the weather, it instead allows them to feast in all its glories.

016

Bridging history

Despite its unmistakably contemporary form, the new Challenger TAFE building in Fremantle sits comfortably in the port's industrial heritage milieu. This multi-award winning facility – which has just secured the RAIA's 2006 COLORBOND® Steel Award – also provides the West Australian Maritime Training Centre with a much-needed campus heart. Architect Brett White has made the most of COLORBOND® Stainless steel in an extremely harsh environment.

024

Broome pearler

Designing and building in Broome isn't easy, according to Perth-based architect Finn Pederson. Apart from being located a long way from raw materials, there's often a shortage of tradespeople to do the work. Add to that Broome's intersection with a range of climate zones and you find yourself in an architecturally challenging position – one that Pederson has revelled in with this home.



002

Project	Great Barrier Island bach
Architect	Greg Noble
Designer	Georgie Noble
Builder	Offshore Homes and local sub-contractors

Mention the word bach (the New Zealand term for holiday house) and most people conjure up images of well-worn furniture, beach towels hanging over sun-bleached, peeling decks and mismatched crockery. But then, most people haven't seen Greg and Georgie Noble's Great Barrier Island bach.

DOME HOME

When architect Greg Noble and his interior designer wife Georgie first stepped off the plane at Great Barrier Island and looked around, they promptly got back on the plane and went straight back to Auckland.

"We flew in on a filthy day, it was miserable," says British-born Georgie. A friend had recommended the couple visit the island, which is a 30-minute flight or three-hour ferry trip northeast of Auckland. "Somebody in London had told me it was beautiful and that we should take a look."

Indeed "The Barrier" (as it is known by locals) is spectacular on a sunny day. Its rugged, bush-clad peaks seem prehistoric and its beaches are picture-postcard New Zealand: soft white sand dunes, flax bushes and glistening water. But in grim weather the island is windswept, cold and muddy.

Disappointed, the Nobles spent the next few months tripping around the North Island's holiday spots. But, discouraged by the long car trips involved, they gave Great Barrier another chance.

That day, the couple stumbled upon a small grassy site surrounded by native Kanuka and Manuka trees, with an estuary close by. "I don't know why we came back, but it was fantastic. By nine o'clock that night we'd bought the site," says Georgie. "We love it. The bush is wonderful."

Today the Nobles' site is hard to miss. Ask the locals how to find it and they will immediately direct you to what some call "The Opera House".

Nestled into the side of a hill, the striking home is dominated by curves. A bright white, tensioned membrane is stretched across thick, arcing steel frames, giving the appearance of ribs from inside the house.

A gleaming expanse of ZINCALUME® steel in corrugated profile curves up one side of the bach and clads the back wall, while a timber deck extends outwards from the front of the house. Acrylic windows and aluminium bifolds around the front of the house provide views over the bush and estuary.



Nestled into the side of a hill, the striking home is dominated by curves, with a white, tensioned membrane stretched over a steel frame juxtaposing the balance of ZINCALUME® steel skins.





The curved membrane covering the front of the home glows at night when the lights inside are turned on. The external timber deck drips down from the front, taking advantage of the sloping block.

Light years from the typical weatherboard Kiwi bach, the Nobles' place is at once conspicuously more sophisticated than the average Barrier house, and completely at home with the island's reputation for non-conformity.

The Nobles had come out "on a whim" from England, where they had been working in partnership for a decade under

the banner Georgigregg. Greg, a New Zealand-born but UK-trained architect, designed the houses while Georgie, an ex-advertising designer, worked with clients to develop a brief and helped kit-out the interior.

"We quit England because everyone was building boring old traditional brick houses. This," laughs Georgie, indicating the couple's bach, "is a gut

reaction to having built too many of them."

Greg says the concept for the shape of the house came after a few months of living on the site. "We thought that in the summer, that camping ground," he says, pointing across the river to the Medlands camping ground, "has got to be the prettiest in New Zealand. It just looked stunning with

all the tents. That introduced us to this model."

"I'd never seen a membrane like this used on a residential building before," says Greg. "It covers a huge area without a lot of steel support – and all this is only supported by four steel ribs, and they stand by themselves. It's just like a tent; you have a centre post and four corner posts."

The 150-square-metre membrane is a polyester-reinforced PVC imported from Germany but made up to the couple's specifications. Greg explains that it was "draped over like a tent in one piece and then tensioned at all edges with a system of bolts".

At night time, the membrane glows when the lights inside are turned on. "In the morning

I love the patterns caused by the sunlight on the roof and the sounds of the birds," says Georgie.

The structure was so carefully designed, Greg explains, that by the time it was finished project engineers DJ Shilton realised it could be deemed hurricane-proof.

As a husband and wife architecture, design and

landscaping team, Georgie and Greg firmly believe that none of these elements should be considered in isolation.

“An architectural space is integral as part of the interior decoration,” says Greg. “A house can’t sit in a landscape without them tying together, and if you integrate all three – architecture, interior and landscaping – you’ve got a really harmonious result.”

This design philosophy is evident inside. The clean lines of the house are mirrored in the uncluttered furnishings chosen from the couple’s Auckland design store, Georgigregg.

The voluminous ground level relies heavily on strategic and confident placement of dramatic leather furniture (in deep aubergines and reds) to provide a sense of composition.

Greg singles out the kitchen as one of his favourite features.

“I like the simplicity of it,” he says, pointing to the slim yellow curved bench and notable absence of cupboards. “We’re cooks – good cooks – we like the food and the kitchen.”

Meanwhile, tucked away behind a partial wall, a cosy lounge area featuring a fireplace clad in ZINCALUME® steel serves as the family’s haven in wintry weather. A graceful, cantilevered staircase connects the ground floor with the mezzanine level.

Upstairs, it is immediately clear that this is a house clearly designed for its inhabitants – not for entertaining.

The upper level, built with steel frames and precast concrete, contains the master bedroom, another bedroom with bunk beds for the couple’s three children and two adjoining bathrooms.

There is little privacy; the rooms are separated only by a wall

that doesn’t quite reach the ceiling and a striped curtain. Meanwhile, the large bathroom windows, which overlook bush behind the house, are simple cut outs with no glass at all.

“We’ve had friends over from the UK saying, ‘But there are no walls and no doors’. They were slightly put out,” says Georgie.

“But it wasn’t about entertaining. We don’t care about walls and doors and windows.”

Greg adds: “You have to build as individuals. If we were thinking ‘how are we going to sell this?’ we would never have gotten anywhere.”

Georgie is at pains to point out that the entire house – especially the concrete floor and furnishings – was designed for ease of cleaning and maintenance. “You go to most bachs and they’re damp and they smell. I didn’t want to be cleaning on holiday all the time.”

“With this house, you go away for two or three weeks and when you come back it smells just like the leather furniture,” says Greg.

The house is powered by eight 80W solar panels and the Aga stove, which is partially clad in ZINACLUME® steel, runs off gas cylinders. “If we had three days of rain while we were here watching television and SKY all the time, then we might run into problems by the fourth day,” says Greg. “But we’re generally fine.”

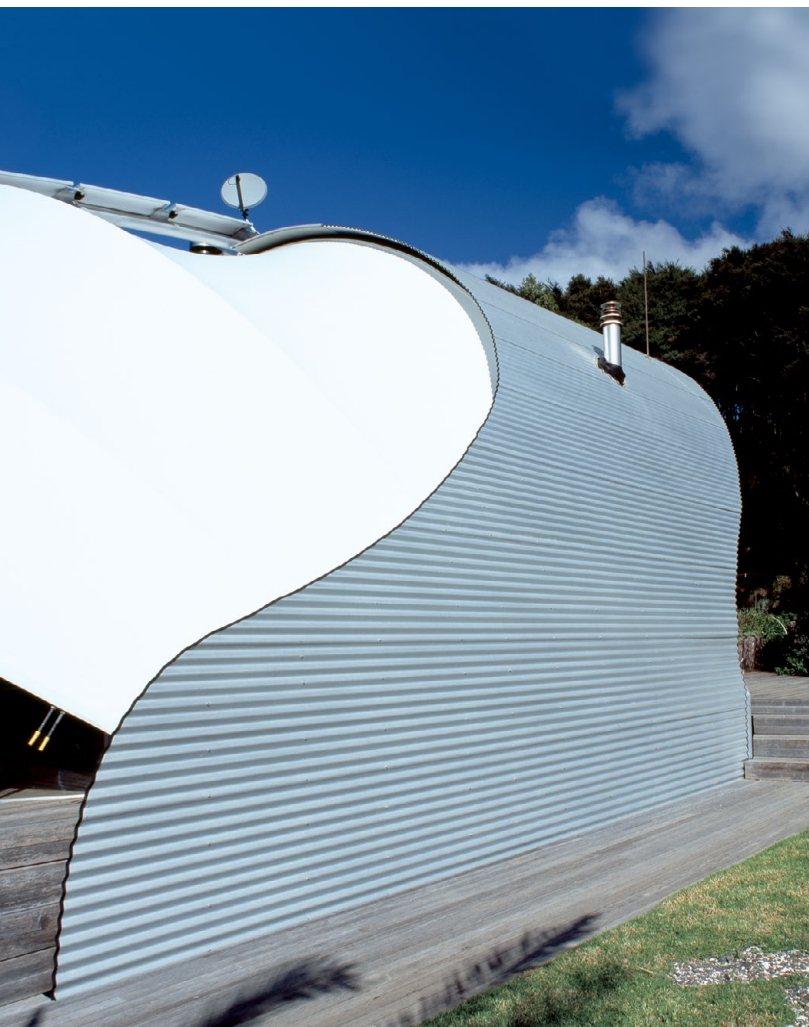
He says the bach’s concrete floor is thermally efficient, with the sun able to warm it through the membrane. Even after the sun has set, the floors are so warm you could be forgiven for thinking under-floor heating had been installed.

The solar panels themselves are not concealed and sit on the steel frame like a spine along the membrane roof. “On most houses solar panels look awful on the roof,” says Greg. “But here they show off how the house works, and I like that.”

Likewise, the television satellite dish perched atop the house, the three gas tanks that power the Aga and the tensioning bolts used to stretch the membrane have also been left completely exposed. “I don’t think they are obtrusive to the form,” he says. “We left the bolts and the yellow rubber protecting them to express the process of tensioning.”

The Nobles say one of the favourite features of their bach is its isolation. Compared with its neighbour, Waiheke Island, with its numerous vineyards and soaring house prices, Great Barrier Island (population 500) is remote and rural. It’s the kind of place where bus stops are covered with brightly coloured murals, art galleries featuring painting and Maori crafts seem to operate out of

(below) The corrugated ZINCALUME® steel wraps seamlessly up and over the home, while the same steel material lends itself ideally to the curved rear wall.





The openness of the main living area is punctuated by bold furniture styles and tones. Concrete flooring eases maintenance issues.

every third house, and gum-booted locals ride their horses along the main road.

“It’s like being on another planet,” says Georgie. “You don’t get the mad Christmas rush or people dropping in to see you.”

But when it came to constructing their bach, the Nobles quickly realised that the island’s isolation – and especially the site’s location on one side of a river that rises above knee height at high tide – was going to be a challenge.

Greg says he chose to use prefabricated steel to frame the house, along with the membrane and cladding made from ZINCALUME® steel, because it would be quickerto assemble. Nevertheless, construction was slow going.

“It was difficult,” says Greg. “Things like hiring a crane on the island are really hard. But the local sub-contractors were great. They were very resourceful. I must give credit to Offshore Homes.”

The delays meant the couple spent longer than they had anticipated living in a shed on site. “It seemed like years, but it must have only been months,” says Georgie. “We had no running water then, we couldn’t wash,” she continues. “But when the rats started coming out I’d had enough.”

She adds that the only thing that arrived on schedule was the Aga stove – which was imported from the UK. “It sat in the camping ground in its box for three months.”

Anna Saunders



The kitchen reflects the home’s overall design simplicity and functionality.



Project:
Great Barrier Island bach
Client:
Greg and Georgie Noble
Architect:
Greg Noble
Designer:
Georgie Noble
Builder:
Offshore Homes and local sub-contractors
Structural engineer:
DJ Shilton
Steel fabrication:
Acme Engineering
BlueScope Steel products:
ZINCALUME® steel in corrugated profile for external cladding.
ZINCALUME® steel in baby corrugated profile for internal cladding features
Size:
180 square metres
Photography:
Paul Bradshaw

010

Project Red Bank House
Client Geoff and Joanne Driver
Architect Fooks Martin Sandow Anson
(FMSA) Architects

The challenging five-hour drive from Melbourne to Red Bank Plain, in northeast Victoria's high country, is rewarded upon reaching the summit. Views span across the Crackenback mountain range and through alpine valleys. "Where else would you get views like these?" asks architect Peter Sandow, a director of Fooks Martin Sandow Anson (FMSA) Architects.

EMBRACING LOCATION

A veteran skier who has also worked in the region for 30 years, Sandow and FMSA Architects have established a reputation at Mt Hotham for their numerous ski lodges, houses, apartments and social facilities, as well as the Mt Hotham airport terminal. "We've just recently completed this police station," says Sandow, pointing to a striking new building noticeable upon arrival at the ski resort.

So with FMSA Architect's years of experience, and reputation for understanding the difficulties of building in this environment, the owners of this house at Red Bank Plain, a 15-minute drive from Mt Hotham, approached them for this project. "Our clients were interested in building something on the high plains," Sandow says. "They saw this property and fell in love with it . . . and you can understand why." Sandow points to magnificent views over seemingly endless mountain ranges.

Well concealed from the road, the approach to the house is along a one-kilometre dirt road, lined with alpine eucalypts. It was at the broken edge

of a band of these eucalypts, on the edge of a plateau, that Sandow positioned this new 250-square-metre house.

Designed for Geoff and Joanne Driver and their two teenage children, FMSA Architect's brief was for an environmentally sensitive design that occupied a reasonably modest footprint. The architects went through all the energy saving alternatives with their clients, including hydro, wind and solar power (the latter being selected). "They also wanted the house to respond to this site," says Sandow, who was keen to embrace the views. "They wanted a low-maintenance design. It's crucial in this harsh environment, where the thawing and freezing takes its toll. Even masonry gets a beating," he adds.

"We didn't want the standard house, with a pitched roof and completely clad in timber. We wanted something that was different, but durable as well," says Geoff Driver, who loves the sense of being outdoors, even when family members are warming themselves inside. "You feel as though you're





(above) Conceived as a ‘pavilion in the park’, the house allows those inside to embrace their environment, rather than walling them in for ‘protection’.

absorbed into the entire site, not just sitting in one part of the house.”

Unlike many homes in the mountainous regions that take an inward view in response to the severity of the climate, FMSA Architects took a more transparent approach to design. Conceived as a ‘pavilion in the park’, the house features expansive double-glazing on all sides. “It’s often thought that you have to board people in to avoid the cold,” Sandow says. “However, there are other ways of dealing with this climate.”

The house comprises two interlocking pavilions. The main

kitchen, dining and living areas are framed in glass. The bedroom wing on the first floor is enveloped by walls made from LYSAGHT CUSTOM ORB®, also with generous glazing. The skillion roof is also made from LYSAGHT CUSTOM ORB®, as is the roller door to the garage, allowing a fast escape from the elements.

“When the temperature falls below zero, you want to make a quick exit from the cold,” says Sandow, who made the family’s ‘drying area’ accessible from the garage, as well as positioning it immediately inside the front door. “The family want to be able to remove all skis and all

wet gear as soon as they arrive home,” he says. Referring to the large steel grid ‘door mat’ slightly elevated above the ground, he says: “They also need to be able to remove snow from their boots.” As welcoming is a 30,000-litre rainwater tank near the path to the front door. “While it marks the entrance, it’s for fire-fighting purposes only,” Sandow says.

The house is an evocation of 1950s modernist design. “It wasn’t intentional ... I suppose I’ve always admired some of the heroic modernist architecture from that period,” says Sandow, who was keen to create a sculptural form within the

landscape rather than perching the house on the highest point.

While the Red Bank House doesn’t sit on the highest point of the 40-hectare site, it still manages to embrace its location. The open-plan living areas are framed by double-glazed floor-to-ceiling windows on three sides, broken only by the insertion of a fireplace in the lounge. A concrete slab extending across the ground floor attracts the northern sunlight and slowly releases heat during the day. And at night, hydronic heating panels allow the warmth to continue.

And while heating isn’t an issue in the summer months, there is north-south cross-ventilation. “The house is only one room wide, so it’s simply opening up doors and windows either side,” Sandow says.

Sandow was also keen to express the steel structure rather than bury it in the landscape.

A window seat on the first floor is also expressed in the landscape, cantilevering over the side path. An external tapered steel wall enclosing the seat activates the southern facade. Juxtaposed with the charcoal rendered masonry wall of the garage, this elevation appears animated. “It’s great to be able to see who’s arriving,” Sandow says.

One of the main problems in designing a house in the high country is working out the most appropriate place to “‘dump’ the snow” without damaging the structure. As a consequence, FMSA Architects designed a skillion-shaped roof both over the bedrooms and the main living areas. “There’s no point directing it [snow] towards a deck or the garage door,” says Sandow. A steel flue with a ‘snow divider’ was placed on the roof above the living room to help carry the weight of any snow.

FMSA Architects ensured a ‘raw’ steel edge on the two roof plains to allow snow and water to run off easily. “Gutters wouldn’t last very long. The weight of the snow would damage them in no time,” Sandow says. He was also keen to angle the two roofs by approximately eight degrees to allow for views from the second living area on the first floor.

Steel is expressed in the home’s frame, as well as in the balcony from the first floor and in the staircase. Stainless steel cables used in the yachting industry substitute for balustrades on the external balcony and staircase. Steel also supports the veranda over the main bedroom. This veranda carries the photovoltaic panels used to generate the home’s energy. “We couldn’t have placed these panels on the roof. The snow would have simply covered them, like a glacier on the move,” Sandow says.

(below) Solar panels are arranged neatly along one side of the home, while a large timber deck opens off the downstairs open-plan living area, affording outdoor living in warmer months.





(above and above opposite)

A second living area is located directly above the open-plan kitchen and dining area. This section of the home is effectively one room wide, allowing for panoramic views.

(opposite) The first-floor window seat offers views of the area's snow gums, and juxtaposes the narrowing hallway in which it's located.

While FMSA Architects could have considered using other materials, they were keen to use steel wherever possible. "It's strong, durable and lasts forever. Why would you use anything else?" says Sandow, who also admires the aesthetic quality of steel. "I'd rather use steel thoroughly than use it as tokenism to the rural vernacular." The architects were also drawn to using steel as a result of its relatively light weight and ability to be transported to remote and sometimes hard-to-access locations.

Plywood was also used extensively throughout the house, lining the raked ceiling in the living area and appearing in joinery, both in the kitchen and in the bedrooms. The plywood used for the ceiling in the lounge extends to the exterior, in the underside of a veranda. "Plywood is like the willow of a cricket bat; it yellows beautifully in time," says Sandow, who also used plywood for the kitchen joinery, including the central

island bench. "The kitchen has a circular layout," he says. "The idea is for several people to move around in it at the one time."

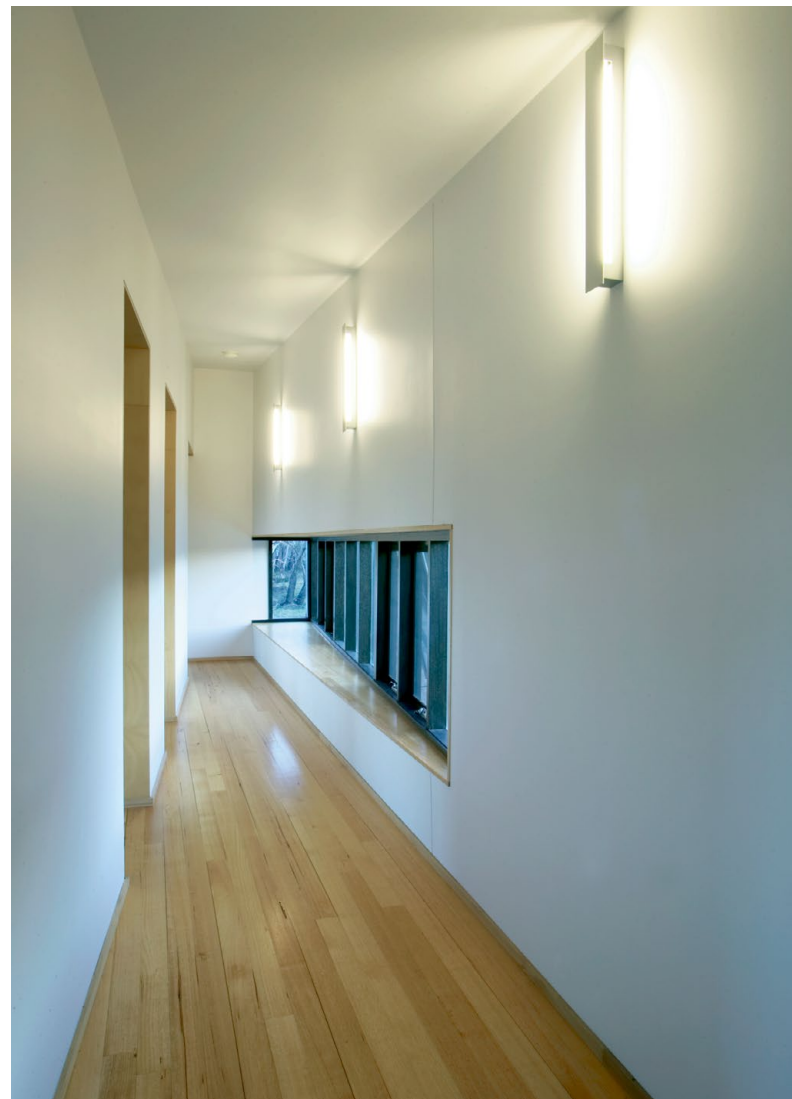
A second living area is located at the top of the staircase. Used by the family for watching television and as a space for the children, it benefits from views on three sides, including an impressive view of the steel roof over the living area. "It's quite a dynamic aspect, particularly in winter when the snow moves down the roof like a melting glacier," Sandow says.

One of the most unusual spaces in the house is the corridor and window seat running along the three bedrooms and bathroom on the first floor. Narrowing in width from two metres to one, the splayed corridor offers views of the snow gums. FMSA Architects also included plywood-lined alcoves to each bedroom in the design of the corridor. "We wanted to

articulate the passage, as well as providing a sense of depth," says Sandow, who designed the open-fronted plywood wardrobes in each bedroom as well the bed heads and side tables. "The problem with having doors on cupboards is that people invariably leave clothes behind," he says. "This way, it's easy to check before leaving."

The main bedroom, located at the front of the house, benefits from morning light and also acts as a lookout point over the property. With large-frame window and doors to the balcony, it's a refreshing alternative to the cave-like bedrooms often found in alpine homes. "It's terrific to be able to look towards the ranges and see the sun coming up," says Sandow, who was also keen to dispense with curtains. "We're not in the city, so why not embrace the site?"

The ensuite bathroom to the main bedroom is also transparent, with the vanity and mirror (suspended by steel cables) forming the only



screen from the driveway. "We did numerous layouts to the main bedroom and bathroom," Sandow says. "We all agreed that there's a different mentality up here. Privacy isn't a major issue."

For FMSA Architects, getting the concept for the design of this house was reasonably challenging. "Our clients wanted the comforts of the city," Sandow says. "However, they didn't want an urban house placed in a rural setting. It had to be a recessive design, rather than following a suburban model.

"At dusk, it's quite spectacular," Sandow explains, "with the unique ways in which the sun seems to set. Half the sky is magenta, while the other half is a bluish green. And there's a clear shadow line between the two."

The five-hour trip from Melbourne can be testing, but rewards such as these are immeasurable.

Stephen Crafti

Project

Red Bank Plain House

Client

Geoff and Joanne Driver

Architect

Fooks Martin Sandow Anson (FMSA) Architects

Project architect

Amber Lucy

Project team

Peter Sandow and Amber Lucy

Builder

Steve Graves – 0418 607 666

External wall cladding and roofing

LYSAGHT CUSTOM ORB®

Approximate cost of the building

\$550,000

Approximate size of the building

250 square metres, including the double garage

Photography

Paul Bradshaw

BlueScope Steel recommends the use of COLORBOND® pre-painted steel or ZINCALUME® zinc-aluminium alloy coated steel for the majority of external cladding applications.

016

Project New Challenger TAFE building
in Fremantle, WA

Architects Cox Howlett + Bailey Woodland

Design director Steve Woodland

BRIDGING HISTORY

Despite its unmistakably contemporary form, the new Challenger TAFE building in Fremantle sits comfortably within the port's industrial heritage milieu. It also provides the West Australian Maritime Training Centre with a much-needed campus heart.

Like most ports around Australia Fremantle, near Perth, has been forced to adapt to changing times. Victoria Quay now hosts a range of attractions and events, including the weekend E-shed markets, the Tall Ship Leeuwin and the popular and striking Western Australian Maritime Museum. However, these new activities don't detract from the hub's working status. Fremantle is still Australia's third busiest port.

Located between the port and the town itself, the Maritime Training Centre specialises in maritime and marine courses. The centre is part of Challenger TAFE which operates 10 other training centres throughout Perth.

The Maritime Training Centre's proximity to the waterfront, shipbuilding and repair facilities, cargo operations and West Australian shipping companies has contributed to its reputation as one of the most innovative and industry-relevant maritime training facilities in Australia. Many students, both past and present, are employed worldwide, and the centre now boasts state-of-the-art facilities such as simulators,





The use of COLORBOND® Stainless steel in CUSTOM ORB® profile and an overall design employing a saw-tooth roofline reflects the area's industrial past.

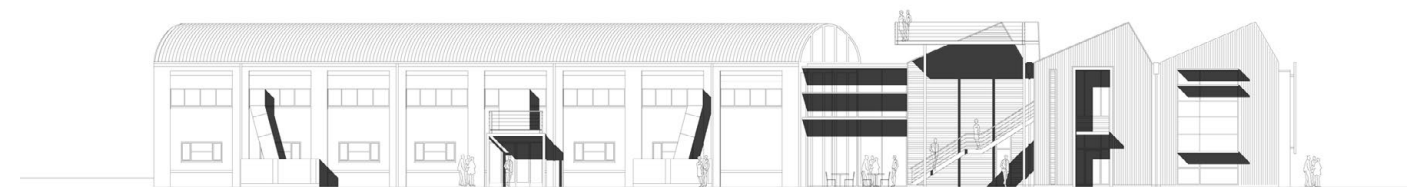
an aquaculture hatchery and a fleet of six vessels, including the 18-metre training vessel Maritime Image.

Formerly housed in an ad hoc assortment of brick and corrugated steel buildings, the Maritime Training Centre

recently overhauled its campus in conjunction with Perth-based architects Cox Howlett + Bailey Woodland. The brief called for a new building at the western edge of the campus to house the library, student administration, teaching spaces and executive offices for

Challenger TAFE, along with repairs and minor works to six other buildings across the site with a newly landscaped courtyard at its centre.

According to architect Bret White, an associate at Cox Howlett + Bailey Woodland,



1 5 10m



The client wanted to accommodate a host of functions in a single building, while marrying it seamlessly to an older 1950s brick structure.



this project was much bigger than its concrete and steel parts. “We were also required to build a campus heart ... a front door ... an esprit de corp if you like,” he says. “The client wanted a whole host of things in one building, and it delivers those.”

The new building is a rectangular structure accessed via north-south and east-west corridors that intersect near its centre on the ground and first floors. It is lightly attached to the existing Cygnet building – an older brick structure dating from the 1950s – via a steel-framed glass box that affords views on three sides, while the longer axis connects the ‘front’ door at the southern end to the main outdoor walkway that runs through the campus, parallel to Slip Street.

The new entrance from the main car park provides ready access to both student administration and the library, which are located either side of the ground floor intersection. The remaining ground floor space is given over to computer labs and other larger teaching spaces, a student café that opens onto the central courtyard and amenities (including toilets, lockers and showers).

From the main intersection a glazed staircase offering expansive views across Fremantle Harbour leads to the first floor (as does an adjacent passenger lift). Upstairs, teaching spaces, including 10 pilot simulation booths and larger classrooms, occupy the northern section, while the southern wing accommodates the newly centralised executive offices of Challenger TAFE.

This portion comprises a large open-plan reception area, boardroom and other meeting spaces, and cellular offices that overlook the harbour below. The site is located on one half of a narrow spit surrounded by water.

on three sides, making it a particularly special place to build, White says.

“To the south, it’s possible to see Bathers Beach, a site of early European landings in Fremantle, and a significant place in our history,” he says. “On the other side, this building is subservient to the new Maritime Museum [designed by Cox and completed in 2002], which means that this particular structure cannot be anything but a maritime building.

Obviously these factors demanded that the new building should be designed to withstand

the punishing effects of salt spray, salt water, ferocious winds and driving rain: it needed to be a robust building that wore its maritime credentials with pride.

“We didn’t want to make gratuitous maritime references. Instead, we aimed for a more intuitive ‘maritime’ feel, rather than going for the obvious clichés of ship’s wheels and life buoys,” White says.

These subtle references can be read in the external staircase that connects the central courtyard with the first-floor corridor, resembling stairs that

might lead to a ship’s bridge. Another reference can be found in the curved concrete benches in the courtyard, designed by landscape architect Aror Vitae to reference waves that break before a ship’s prow.

“The language of this building also draws inspiration from various shed frame elements that you can see in Slip Street, which forms the northern edge of the campus,” White says. “The sawtooth roof, the vertical and horizontal patterning of cladding made from COLORBOND® Stainless steel and the large windows on the western facade, where the size

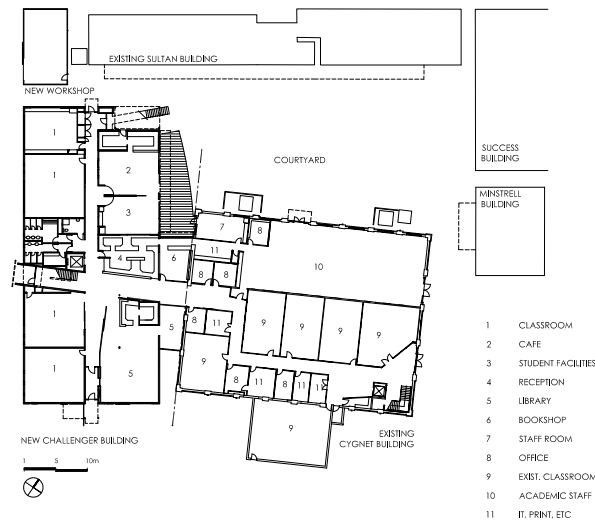
and scale was directly lifted from the large openings in the nearby sheds, are all evidence of how this site’s context influenced our thinking.

Taking into account the work-oriented structures surrounding the TAFE campus and the industrial tone of the port, White opted for cladding made from COLORBOND® Stainless steel in the colour of Windspray® for the new building.

“This is a tough environment and we didn’t want to compete with the heritage pastel shades that you see on some of the sheds,” he says. “We wanted

(above) The external stairway leading to the first floor corridor resembles stairs that might lead to a ship’s bridge.





to express the industrial character of this area. The shade we chose is similar to hulls of commercial and Navy ships that frequent the port, or the worn corrugated steel sheds in Victoria Quay Road.

“We spent a huge amount of time looking at how this building might age, and we aimed to ensure that it would age with dignity.”

While it presents a hard shell to the street, the building boasts some unexpected intimate

While the building presents something of a hard shell to the outside world, reflecting its harsh environment, its interior is light and airy.



touches, including the aqua detailing around the doorways, especially those at the eastern and western ends of the ground floor corridor which resemble the coloured inlay of an old-fashioned cutlery drawer.

“We extracted that shade of aqua from Challenger TAFE’s former logo,” White says. “The inset around that doorway is about providing a sense of comfort and envelopment at the entry, in the same way Borromini did in his Italian churches.”

A paler shade of aqua is picked up in the medium performance glazing on the western facade, and the colour predominates in the new graphics and signage throughout the complex, also designed by Cox Howlett + Bailey Woodland.

Inside, the architects relied on a muted palette of colours and hardwearing materials, again designed for simplicity and longevity. “The colouration is

not a show pony or a fashion statement.” White says. “The floors are poured concrete with local aggregate – white marble quartz – mixed in, and the executive offices feature highlights of yellow and timber, but the view is always the main focus.”

On the northern and western facades, the upper floors boast sun-shading systems, while all windows have roller blinds to enable individuals to reduce glare as necessary.

Throughout the design, considerable thought was given to environmental performance within a cost-effective budget. The building’s structure consists of a steel frame with precast concrete walls on in-situ concrete slabs. The walls provide thermal mass.

Reverse cycle air-conditioning equipment was located beneath the roof line to maintain the building’s clean lines and protect

mechanical systems from heat loads. The overall design – which incorporates two-hour timers and separate air-conditioning zones in all teaching spaces – also minimises heat loads and heat loss.

All glazing is body-tinted and laminated to improve thermal and acoustic performance, as well as safety performance under the recently adopted Fremantle Port Authority Buffer Policy. It enforces strict acoustic, air-conditioning and material selection requirements for the precinct to protect occupants from various port-related accident scenarios. The Maritime Centre is the first building to conform to these new guidelines.

All in all, the new building and accompanying minor works have delivered on their promise to create a central focus for the disparate collection of buildings that previously occupied the site, in a way that is sympathetic to context and history. In recognition

of the project’s significant achievements, it received the 2006 Award for Public and Institutional buildings in the Royal Australian Institute of Architecture (RAIA) WA Chapter awards. (Editor’s note: More recently, it has been awarded the RAIA’s 2006 National COLORBOND® Steel Award – a fitting end to this year’s 40th Anniversary celebrations for COLORBOND® steel.)

According to the RAIA national jury, the architect’s objectives have been realised. “The architect’s solution effectively supports the client’s aspirations and responds sensitively to the unique waterfront environment,” the jury citation stated.

“The project is an excellent response to the Waterfront Master Plan and is an appropriate example of how buildings should be developed in the important historic context.”

Rachael Bernstone

Project:
New Challenger TAFE building in Fremantle, WA
Architects:
Cox Howlett + Bailey Woodland
Tel: 08 9322 3644
Design director
Steve Woodland
Design associate
Bret White
Project architect
John Lee
Project team
Clive Clifford, Jennie Officer
Awards:
2006 RAIA Award Public / Institutional Category (WA Chapter)
2006 RAIA National COLORBOND® Steel Award
Principal steel components:
Roofing and wall cladding made from COLORBOND® Stainless steel in CUSTOM ORB® profile in the colour of Windspray®
Photography:
Paul Bradshaw

024

Project	Greg Jones residence, Broome WA
Architect	Iredale Pedersen Hook
Builder	Brolga Constructions, Dene Purdon

After Broome was first gazetted as a township in 1883 following its establishment as a pearling centre, the town's earliest European and Asian settlers built their homes from materials shipped north along the Western Australian coast from Perth. Initially, they created simple structures, combining jarrah timber frames with single-skin corrugated steel cladding, with the same material used to create steeply pitched roofs.

Later, the houses of wealthy pearling masters were elevated and orientated to capture westerly winds that blow in across Cable Beach to Roebuck Bay. Expansive enclosed verandas with shuttered windows and lattice screens kept the sun and insects out, while allowing the breeze through. The less well-off residents lived in smaller houses that jostled with their neighbours for space in the cramped working-class quarters, but they employed a distinctive architectural device called a wind scoop to bring the cooling breezes into their homes. Many used corrugated steel as a cladding and roofing material.

In some respects, not much has changed since those early days. Most of the town's new homes boast roofs and external wall cladding made from COLORBOND® and ZINCALUME® steel, although they now feature steel framing for ease of transport, erection, and to conform with cyclone regulations.

Broome resident Greg Jones first visited the area in 1987 and stayed mostly in caravans over

BROOME PEARLER

his subsequent visits before permanently relocating from Perth in 2000. Having decided to build his own home within the new Sunset Rise subdivision near Cable Beach, Jones sought an architect. "I spoke to a few architects at first, but not many were willing to work in Broome at that stage," he says. "Then I met Finn Pedersen and he agreed to take the job... I told him I wanted a casual beach-style house."

Designing and building in Broome isn't easy, according to Pedersen, who spent five years living in the town before returning to his roots in Perth. In that time, and since his return to the state's capital, Pedersen has designed many buildings on remote aboriginal communities in the Kimberley region, as well as several structures in Broome itself.

"Broome's location means that you have to work within some strange parameters," he says. "It's situated at an intersection of different climate zones, including tropical, sub-tropical, Mediterranean and desert conditions in any one year. That means there





The unusual roof design captures and funnels cooling ocean breezes: a contemporary solution to an age-old climate issue.

are many extreme weather conditions to take into account – cyclones, desert winds, humidity, heat and torrential rain – and it also results in incredible bio-diversity.”

One major climactic challenge stems from the tropical wet and dry seasons. In the dry season, Broome experiences large diurnal temperature swings – topping out in the mid-30s during the day, with overnight temperatures of just five degrees or lower. However, the temperature is constantly warm in the wet season: again hovering around the mid-30s, with peaks above 40 degrees Celsius. This is accompanied by 70 to 80 per cent humidity day and night, sometimes for months on end.

Unlike Australia’s other tropical and sub-tropical zones, Broome also experiences strong south-easterly winds, particularly in the dry season. They blow in from the Great Sandy Desert.

Further complicating matters is the high cost of building, resulting from the fact that the region boasts little in the way of raw materials, necessitating the delivery of building materials from the southern parts of the state. For that reason, lightweight structures are commonplace.

In the case of Greg Jones’ new house, these constraints were combined with the fact that newly subdivided housing lots tend to be only 500 to 600 square metres.

“Our primary objective for Greg’s house was to catch good breezes and shield the house from the sun, but that was difficult given the size of the lot and the way it’s diagonally rotated from north,” Pedersen says.

Pedersen’s solution was to break up the mass of the three-bedroom, two-bathroom house by creating two pavilions, situated at the front and rear of the lot, connected by courtyards and a shaded walkway. The design allows ocean breezes to enter the site from the west before passing through every room – indoors and outdoors – as they travel across the block. The staggered layout also reduces the impact of the building on neighbours down-wind. Meanwhile, the front pavilion boasts an upper level comprising master bedroom, ensuite and veranda, all of which were deliberately elevated to enhance their ability to capture the breeze.

Pedersen admits Jones’ house owes more to Broome’s early housing than most of its

contemporaries. “Most mainstream housing in Broome relies on refrigerative air conditioning to keep cool,” he says. “Greg’s house has more in common with Old Broome homesteads in that it relies on night-time breezes from the west and south-west and a modern interpretation of the screened or shuttered veranda you see on the old pearlers’ houses. At the same time, it’s undoubtedly a contemporary house, because we’ve sculpted the roofs and eaves in a non-traditional way.”

The roof made from COLORBOND® steel is one of the most striking visual details of the house, and also one of the most innovative aspects of the design. The pitch varies across the roof of the main living area which results in a curved plane effect. Pedersen opted for this geometrical solution for two reasons: to reduce the height of the second storey section and to provide low eaves to the north-east and north-west, thereby helping to reduce heat gain in the wet season.

Despite its unusual shape and curved plane, Pedersen says the roof wasn’t difficult to build. “It’s fairly conventional on one level: we’ve taken very conventional materials and methods, and done something interesting with them,” he says. “When building in Broome and other remote locations, we prefer robust detailing rather than highly crafted detailing. Having said that, builders in Broome are used to building for cyclone conditions, and they really understand how corrugated steel works. I think some of the best roofers in Australia work in that region, because they specialise in overcoming those environmental demands.”

Like early houses in Broome, the roof over the living room contains a manual roof vent that can be opened or closed to further relieve heat build-up



The primary goal was to catch and use cooling breezes, while shielding the house from harsh sunlight . . . The solution, on the small building block, was to break up the mass, creating pavilions linked by courtyards and a walkway.





(above and opposite)
Timber decks, cooling fans
and enormous shaded
overhangs work with
Broome's climate rather
than fighting against it.

inside. And while the house
boasts a reverse-cycle air-
conditioning system in the living
room and master bedroom,
Jones says he only uses it for
a few weeks of the year as
the house remains comfortable
through all but the most
extreme weather conditions.

In addition to its well-considered
climactic attributes the house
boasts a number of other
sustainable design features,
including: low embodied energy
through the use of lightweight,
renewable and recycled
materials; energy-efficient

fluorescent lighting with T5
tubes and digital dimmers to the
living room; and the integrated
native Kimberley landscaping,
which is an ongoing project
undertaken by Jones to provide
shading and screening within
the site, and to increase privacy
from the street and amongst
neighbouring properties.

"I like to use indigenous natives
if I can, although it's a process
of trial and error," Jones says.
"Unfortunately I've lost a lot of
plants, and I have to grow a lot of
seeds myself: it's an experiment
because people aren't used to
working with them but I enjoy
the satisfaction or propagating
plants, and seeing them flourish
when they succeed."

In the house itself timber
was used sparsely and simply.
"We thought strategically
about where we put timber
— we used timber slats to
create operable screens that
enclose the carport and living
spaces, but they are simple
and made out of recycled
jarrah," he says. "The floors
throughout are termite-treated
marine-grade plywood, which
is generally considered to be a
less environmentally damaging
form of timber. The timber decks
outside use the same recycled
jarrah, for added durability."

For Pedersen, the house
exemplifies his firm's approach
to architecture. "It's a tapestry
of all those fundamental design
constraints, such as place, the
clients' program, their budget,
local and historical elements,
and the microclimate of the
site," he says.

Given the nature of the
constraints in this case, and
the unique roof form, it's a
house that could only have
been built in steel.

"I'm happy with the way it
sits on the site, and how
Greg's landscaping and the
building have created a
pleasant microclimate and

a great presence on the street,"
Pedersen says.

"One of my favourite aspects
is the look of all these lines.
From the top of the roof to the
ceiling lining in ZINCALUME®
steel, contrasting with the
external COLORBOND® steel
cladding, and even the clear
corrugated polycarbonate
above the living room door —
they all play games with the
appearance of the house.
And the corrugations are
quite sensual in terms of
the way shadows play on
them throughout the day and
across changing seasons."

The house also provides
an increasingly rare link to
Broome's traditional residences.
Sickert says in her book that
"we now have a town populated
by buildings that have little
connection to the environment",
where corrugated facades
provide the only connection
between the traditional and
modern. She does concede,
however, that there are an
"increasing number of well-
designed houses in Broome",
and she argues that "their
climate-responsive design
creates living spaces that
are a pleasure to inhabit".

Jones can attest to that.
His home provides an ideal
backdrop for the indoor-outdoor
lifestyle he sought. "I like
the open feeling of the living
spaces," he says. "I had some
people around for a barbecue
recently, and we started with
drinks upstairs on the veranda
where we watched the sunset,
then we moved to the rear
courtyard where I've set up
the barbecue, before shifting
to the main deck to eat.
At night, you can have
everything open.

"I didn't want a house where
you live inside all the time ...
A lot of living is done outside
in Broome."

Rachael Bernstone



Project:
Greg Jones residence,
Broome WA
Architects:
Iredale Pedersen Hook
Principal Architects:
Finn Pedersen
Other team members:
Adrian Iredale, Ross Brewin,
Caroline Dicoita, John Belviso
Builder:
Brolga Constructions,
Dene Purdon
**Principal steel
components:**
COLORBOND® steel in
CUSTOM ORB® profile for
roofing and external wall
cladding. ZINCALUME® steel
in CUSTOM ORB® profile
for selected internal ceilings.
Photography:
Paul Bradshaw

steelprofile

It's important for people to be able to easily recognise the idea behind a design. Whether it's a domestic or commercial project, ideas should be expressed clearly. That's really what architecture is about.

This house in Victoria's high country is like a big wedge that's grown out of the trees.

It's a comfortable home for the owners, irrespective of the season, and it's easy for them to use.

The house also expresses its function quite clearly. If it could speak, the house would say: "I'm a simple shed where snow is dumped. And the flow of water is assisted with a simple skillion-shaped steel roof."

The design is about controlling snow and water as much as it is about embracing the site. Up here you don't want to walk on soggy soil.

I didn't have to deliberate about using steel for this house. It's a building product that's extremely flexible, and which offers a broad span. You can really do anything with steel.

Some materials might need to be concealed, but you'd never hide steel. It's visually attractive as well as being functional. It's durable and there's no danger of rotting. And that's particularly important up on the high plains.

Peter Sandow

Architect, Director of FMSA Architects



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