

# SCOPE

NZ METAL ROOFING MANUFACTURERS INC.



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June 2021

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Below is a brief introduction to the 2021 executive of The Metal Roofing Manufacturers Inc. It is intended that Scope be representative of the Metal Roofing and Cladding Industry in both commercial and residential sectors. Your submission of material you consider is of interest is welcomed be it design, research, manufacture or construction.

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Pacific Coil Coaters and New Zealand Steel are proud to support the initiatives of the MRM and Scope Magazine





## CAMBRIDGE STUD

Cambridge Stud, New Zealand's premier thoroughbred facility has undergone significant enlargement and enhancement since new owners took over in 2018.

Brendan and Jo Lindsay, last year's Owners of the Year at the New Zealand Thoroughbred Awards, have inspired the comprehensive revamp of the Cambridge Stud complex to include a suite of buildings offering an increased level of comfort and luxury for the horses in what is now deluxe accommodation.

Comfort comes courtesy of insulated roof panels (Thermospan EPS) from Metalcraft Insulated Panels, offering high R value so the stables are warm, quiet and calm for their valuable residents.

The Lindsays have brought fresh ideas to the complete rebuild of the stud, the entire project encompassing 12 buildings which have been completed over a period of 18 months. Included is a hospitality building and a heritage museum,

honouring the legacy of the stud's founders Sir Patrick and Justine, Lady Hogan and the horses that have come from this iconic thoroughbred nursery including the legendary stallions Sir Tristram and Zabeel. The intention is for Cambridge Stud to offer educational visits to the museum with many interactive features and elements to foster interest in one of the largest and most modern studs in Australasia.

Metalcraft Insulated Panels was first approached by the architect in 2018, outlining the scope of the planned project with the hospitality building already under construction. Following an initial consultation over the design the full scope of the project was revealed as other support buildings were added to the project as part of the owners' evolving design requirement.

The main stables is the largest and most technical building and is the showpiece of Cambridge Stud, in the shadow of the bronze replica of New Zealand's famous stallion Sir Tristram (1971 – 1997). Etched

in stone above his courtyard resting place are the words "The greatest thoroughbred stallion to ever stand in the Southern Hemisphere".

At 62m x 13m, the roof design of the main stables was complex as it encompassed full length and full width cupola raised turret roofs for louvred ventilation with 1.3m lengths of 50mm Thermospan EPS panels at the top gable.

Travis Cook and his team from Roof It Waikato handled the difficult valley junctions well and quickly mastered the best way to fit the many insulated panels. All Thermospan EPS panels include a 100mm rebate for the gutter overhang which saves considerable time for the installers.

As always the maximum span between the purlins was a prime consideration at 7.62m long, 75mm Thermospan EPS was chosen to adorn the lower slopes of the main stables and this became the template for most of the other key buildings. The 75mm thick Thermospan roof panel proves a 1.96 R value, offering an increased level of comfort for the horses.



Among the many challenges working on an operating stud in the quietest possible manner was the requirement that no screw ends were to be visible from below. The solution was for a 65mm x 35mm steel box section with screw ends less than the maximum 30mm inside measurement. Konnect supplied 135mm Steeltite screws for the Thermospan and 115mm Steeltites for the 75mm Thermospan roof panels with the result that there are clean lines throughout the inside of each building.

Along with the main stables, other buildings roofed were a covering barn, preparation barn, stallion stables, yearling stables – north and south, foaling barn (opened in August 2020), store room, heritage museum, staff cafeteria, feed shed and the hospitality building.

The roof colour of choice for Cambridge Stud was COLORSTEEL® Flaxpod®/Titania, a colour chosen for the recently completed stables project at Ellerslie and is an inspired choice in the stud's idyllic rural setting.





Allowing the day-to-day work of the stud to continue the contractors under the helm of Shane Morgan of Shane Morgan Builders had to observe some restrictions on when vehicles could access the site and throughout the extended project Shane communicated well and was concise in what was required, giving plenty of notice regarding key dates for panel installation.

Terry Stevenson, Technical Sales Consultant for Metalcraft Insulated Panels says the Thermospan roof panel is becoming increasingly popular for animal, industrial, commercial, and also some residential roofs. As well as flat EPS and PIR wall panels, Thermospan EPS roof panels come with a fire retardant expanded polystyrene core while SuPIRspan PIR panels have an even higher R value for the same thickness and are more fire resistant.

“SuPIRspan PIR roof panels are becoming a popular choice for architects on large and small industrial/commercial roofs; insurance companies are well versed with the superior fire resistant qualities of PIR panels.

“The real benefit of both Thermospan EPS and SuPIRspan roof panels is we can manufacture these up to an incredible 25m in one length, which removes the requirement for one, or even two end laps.

Cambridge Stud was established in 1976 when Patrick and Justine Hogan (now Sir Patrick Hogan) sold their Fencourt Stud property and purchased 400 acres of land at Cambridge.

The foundation sire was Sir Tristram, son of English Derby winner Sir Ivor, the stallion sired 45 individual Group 1 winners and more than 130 Stakes winners. The success of the Hogans thoroughbred nursery brought about significant changes in the

Australasian breeding programme. Apart from Sir Tristram, Cambridge Stud also produced his champion prolific son Zabeel.

At the time of sale, Sir Patrick was adamant that Cambridge Stud should not end up in foreign ownership, leading in 2017 to the purchase by Brendan Lindsay MNZM and Jo Lindsay, plastics moguls who had sold Sistema, their Kiwi plastic kitchen containers company.

The Lindsays’ vision for the stud going forward has included replacement of all the stud barns along with the introduction of new, state of the art facilities to enhance the experience of having what is surely the best and most modern stud in the country. Education and acknowledgment of the rich history of the stud, its legendary founder and the hundreds of winning horses to have been associated with the stud is a key ingredient of the Cambridge Stud refurbishment.

Since purchasing Cambridge Stud the Lindsays have added over 40 new broodmares to be serviced by world renowned stallions Almanzor – imported from France – followed later by Embellish and Hello Youmzain – also imported from France.

Eight Melbourne Cups, four Cox Plates, three Caulfield Cups and the Golden Slipper have all been associated with Cambridge Stud. The construction

of new buildings has dominated life at the stud farm as the owners’ master plan for their tasteful improvements has reached a conclusion.



**Contractor**

Shane Morgan Builders  
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**Roofing Manufacturer**

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Colour  
Flaxpod®/Titania

**Roof Installation**

Roof It Waikato Ltd  
Travis Cook  
Telephone: 027 640 6128

## NOEL JESSOP'S HAMILTON HOME

A home exuding innovative ideas and featuring a unique wall cladding detail is the result of an unusual partnership between architectural designer and client. Designing one's own home is always hard but the additional challenge for Noel Jessop of Noel Jessop Architecture (NJA) was that the client was wife Kylie.

Together they have created a home in rural Hamilton which is outstanding on many fronts with a high degree of functionality to meet the needs of their family of six.

"Having my wife as a client was good as she brought a new perspective to the design process", says Noel. "What is day-to-day for me was a whole new experience for her but ultimately it made me a better listener and communicator; you have to understand the person sitting across the table from you".

Temple View is about 15 minutes south-west of Hamilton CBD and the suburb, created in the 1950s, is home to the 20-hectare garden of Taitua Arboretum featuring open pasture, lakes and woodlands. The suburb is where Noel and Kylie found a hilly 6500m<sup>2</sup> block with wide ranging views back towards Hamilton and in 2018 they bought it. The site was the perfect location to begin designing a home that would embrace the views on offer and what the site at the top of the ridgeline would allow.

"There was no real rush to complete the project at that time and so we had the luxury of working through ideas and discussing what we required as a family of six", says Noel.

"Kylie said from the outset that it needed to be light and bright with an open flow and easy access to the outdoors, especially from the ensuite. We had stayed at a resort where the ensuite led straight out onto the pool area and Kylie was keen to replicate that feel".

The home is designed to feature a mixture of individuality and communal spaces with constant reference to the outdoors, even in the upstairs through windows providing that link to the landscape. The form of the home is simple – fulfilling the functional, financial and aesthetic aspects of the project; just one room wide and no 'extraneous' spaces like hallways.

All the views are to the east and the house is oriented that way with entry to the back on the western side. In simple terms it comprises two "boxes" arranged one on top of the other and set at perpendicular angles. The upper level is cantilevered over the lower level at each end creating a car port on one side and a verandah on the other.

Entry is to the ground floor which comprises a main bedroom suite along with an open plan kitchen, dining and living room with access to eastern and northern outdoor spaces. A staircase from the entrance leads to the children's living space plus four bedrooms and a bathroom. Noel says with a building platform of 1500 – 2000m<sup>2</sup> to play with it was imperative to give every family member what they wanted. Even the pool is located not to occupy an important lawn area for the children to play next to the house.

The eastern deck is the party deck where the BBQ is set up and is accessed directly from the kitchen while the northern deck leads off the living area and is referred to as the evening deck, with its more subdued vibe and where, as the sun sets, one can look over to the city lights.

Considerable thought and effort was given to cladding and roofing choice. Noel and the NJA team worked at length on a detail for a rainscreen – an idea that started in the office as a piece of cut out cardboard. What followed was a mock-up of how the fish-like scales could work both as a rainscreen but to also act as a solar shield to the upper level of the home. The metal of choice was aluminium as an efficient conductor of heat and cold and the material was cut and shaped into scales by Morne Aucamp of TMB Cladding Services and installed by Hayden Johnstone of Johnstone Building. The wall of scales is an engaging feature





on either end of the upper structure, contrasting well with the larch and cedar cladding on the walls below. European sourced larch - chosen for its knots and grain structure - is also featured on a flush mounted garage door system clad in larch battens, while other walls on the upper level have HardiFlex cladding.

Says Noel: "We're sitting at the top of the ridgeline so we needed to provide protection from the wind and sun. One thing I discovered was that there's no such thing as prevailing wind when you're on top of a ridge - it comes from every direction so materiality is really important".

The roof has a shallow 3° pitch and Dimond Roofing supplied a BB900 profile with its strong ribs selected to add to the overall detail on this rural Hamilton home so perfectly suited to the family's lifestyle.

The Jessop's home can also boast some clever joinery which is wide-spanning with full height doors and windows at the lower level giving the home with its simple internal material palette and detailing a bach-y feel.

"The simple act of getting the windows and doors in the right places can have a transformative effect on any home and on the quality of lifestyle of those living in it", says Noel. "We couldn't be happier with the result; in terms of what the house does for us there's nothing we would do differently."



#### Architectural Designer

Noel Jessop Architecture is a boutique architectural practice creating modern, contemporary design in both the residential and commercial markets. The philosophy of the practice is creating "what feels right for us". Our purpose, it says, is to integrate our thinking with our customers so we produce a final product that makes everyone proud.

#### Designer:

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Website: [www.nja.co.nz](http://www.nja.co.nz)

#### Builder:

Johnstone Building  
Hayden Johnstone  
Phone: 022 643 1758

#### Roofing Manufacturer:

Dimond Roofing  
Material: BB900

#### Roof and Wall Cladding Installer:

Hayden Johnstone

#### Photography:

Simon Wilson

**CARDRONA ALPINE RESORT SKIFIELD ENTRY AND  
TICKET OFFICE**

The strong Cardrona culture was used as a platform, with the regeneration of the base build area backed by efficiency, experience and yield.



A new entrance and ticket office at Cardrona Skifield is the latest development in a masterplan to improve the visitor experience.

Architects Warren and Mahoney have been involved for many years in the rejuvenation and refinement of the buildings themselves and the layout of the site.

The firm conducted a series of conversations with the executive followed by a workshop with operational staff to review the physical building mass, facilities and service – all aimed at delivering a great guest experience at Cardrona.

Warren and Mahoney was briefed to deliver a compelling re-utilisation of the existing base buildings.

The strong Cardrona culture was used as a platform, with the regeneration of the base build area backed by efficiency, experience and yield.

A workshop was conducted with selected operational staff who identified three typical guests: The Family All Day Experience, The Village Dweller and The Ski Nut. These were derived from a similar exercise conducted at Vail resort in Colorado.

Key drivers for the concept were the Cardrona culture (quirky, fun and safe), the need to retain existing base buildings but re-organise connections and flow, create moments of surprise, create added yield through improved retail and food and beverage offerings, consolidate children's and crèche areas, and a great 'entry experience' as first impressions are imperative.

The skifield also wanted to provide an authentic New Zealand experience but with European service standards.

Architect Simon Taverner, of Warren and Mahoney, says Cardrona was keen – from a sustainability point of view – to keep the buildings that they had but to make better use of them.





He said, "The owners did not want to demolish existing buildings but the base buildings had been added on to in an ad hoc manner over the years and had some issues with wear and tear, maintenance and functionality."

The project was approached through the eyes of the customer and the connected physical experiences and the journey onto the mountain. The aim was to build on the existing character and to define the culture by realigning the physical assets and adjacencies to deliver a great but unexpected customer experience.

The entry building is now the beacon for the guest arrival sequence. The LED feature lighting is used to define the building form but to also act as part of the overall resort navigation rather than using secondary signage.

Guests are channelled into either ticketing, rentals or directly onto the slopes via a weather protected express pathway. This connected arrival has been carefully planned to allow guests to self-navigate through the base area without having to double back for services such as ticketing and rentals. Using the key built assets, the design increased the base building food and beverage offering and extended the main café to alleviate current and future congestion.

As Simon explains, "The customer flow through the buildings didn't work that well and it meant people had to zig-zag around to get through the entry process which was creating crunch points. So we began by unpicking the way customers should flow through the buildings a get a sensible flow to improve the whole customer experience." Simon says the ticketing office, with its soaring, angular roofline was designed for visual impact as well as being a practical form for the extreme environment.

"To sit comfortably with the other buildings it had to have a bit of mass and volume to give it presence," he says.

"The intention with the design was to respect the alpine forms that were there already and those roof forms are there by necessity really just to shed snow. They get up to 3m of snow a year there so, just as you see in European alpine villages, you need steep roof forms with large overhangs for protection from the snow. The environment was driving a lot of the design decisions."

In that regard, the decision was made to use an aluminium roof because it could be installed with a double lock seam that couldn't be opened up by ice pressure. The ribs are all folded so that the seam is oriented away from falling snow. The roof also has a Rooflogic® warm roof system.

"They get up to 3m of snow a year there so, just as you see in European alpine villages, you need steep roof forms with large overhangs for protection from the snow."

Simon says, "There was a lot of work involved calculating snow loads and the way snow drifts form, and how the snow would act and melt. "We had a lot of conversations about gutters or retaining snow on the roof as insulation but the snow can slump and shear off, which is fine if, like in European villages, it is just falling into a garden but up there it would be falling where people were walking, which is not so good.

"So we went with a roof with a folded edge with no gutter to allow constant release of snow off the edge in small quantities."

Andy Monk, of Extreme Roofing Ltd, says the double standing seam on the roof was trickier to execute but only one of the complications of doing a job in extreme conditions.

Andy says, "A lot more thought had to go into the job because you are working in extreme wind zones so you need a lot more in the way of counterweights and when you are working with these warm roof systems you have to keep the water out."

He adds, "The trickiest thing was getting our fixings right because there was so much wiring under the roof we had to make sure none of it got penetrated."

And just like the builders, Cook Brothers, Andy and his team were working in a tight timeframe to get the work finished before the ski season started and while there were still visitors to the resort in the form of mountainbikers and hikers.

Cook Brothers used custom hoarding with Cardrona and Cook Brothers imagery to engage the public and spark their interest during the build.

Because the Cook Brothers team is team based in Southern Lakes, a location unmatched in its national beauty, they felt a real responsibility to drive sustainability as a key focus throughout the project.

They carefully selected building materials and recycled where possible to minimise the impact on the environment. Records of power, water, and waste were measured, gauging the overall environmental impact of this project. Carpooling







expressway. As it is the main threshold and portal to the base village, shedding snow, ice and mud from footwear was a major consideration for the ticketing office.

An exterior heated concrete plinth is the first surface that guests walk across before they reach a metal grate at the main doors. Snow, ice and mud are shed at each footfall as people cross the entry grate.

Along with the playful LED lighting, Roofing Industries' Eurostyle™ Interlocking wall and soffit panel helps to create an impressive entry.

Inside, warm timber tones create a cosy feel but floors (recycled rubber), walls and desks are all robust so they can cope with people in ski boots carrying ski gear.

Simon says, "On a cold, stormy day you want that warm, cosy look that timber gives but everything is very solid in there so it can take knocks and kicks."

■ |||

#### Warren and Mahoney

Founded in 1955 by Sir Miles Warren and Maurice Mahoney in Christchurch, the firm has designed many buildings regarded as the benchmark of New Zealand Modernism.

Today, Warren and Mahoney has teams in Christchurch, Wellington, Auckland, Tauranga, Queenstown, Sydney and Melbourne, who work seamlessly together under its 'one studio' structure.

Warren and Mahoney is the only third-generation architectural practice in New Zealand, and offers a multidisciplinary design practice with architectural, interior, graphic, urban and environmentally sustainable design services. Over the decades it has nurtured some of New Zealand's finest architectural talent, and its people remain integral to its history of innovation and design excellence.

The firm is guided by one central principle: its belief that capturing and reflecting identity is key to making places that work for their users. Identity is the understanding of self, grounded in place, culture, heritage and sense of purpose.

"We know from long experience that the most authentic, successful and enduring projects are those that reflect the shared identity of the community."

"We work in close collaboration with clients, communities, government and industry. We have an extensive network of designers and consultants around the world, allowing us to bring in the best talent for your project, whatever the location."

Warren and Mahoney, ph 03 961 5926 or [www.warrenandmahoney.com](http://www.warrenandmahoney.com)

#### Roofing and cladding:

Eurostyle - Epic™ in Euramax® .80 Aluminium pre-painted 'Schist' colour

#### Roofing and cladding supplier:

Roofing Industries Ltd (Christchurch and Cromwell), [www.roof.co.nz](http://www.roof.co.nz)

#### Roofing contractor:

Extreme Roofing Ltd, Cromwell, 03 4450553 [www.extimeroofing.co.nz](http://www.extimeroofing.co.nz)

#### Builder:

Cook Brothers, Queenstown, ph (03) 451 1123 or [www.cookbrothers.co.nz](http://www.cookbrothers.co.nz)

#### Photography:

Marina Mathews Photography



## MY WHARE

Visionwest is one of five providers who make up Housing First - a housing collective that is working towards ending homelessness in Auckland. Their latest initiative is focussed on young people and offers them a chance to find greater independence as they share a close connection with a family while having their own personal space.

My Whare is an innovative programme, initiated by West Auckland based Visionwest Community Trust in response to the crisis of youth homelessness; it is intended to give young people who have had a rough start in life, the opportunity to have a brighter future.

The programme will be offered to youth transitioning out of care or homelessness, providing them with a small studio which will be located on the residential property of a host family. The independence of the young person will be fostered by the provision of personal space, coupled with the shared experienced gained by having a connection to a host family and community.

SGA Ltd has been privileged to be involved in the development of two prototype studios for the My Whare programme – the Whare Tahī and the Whare Rua. Strachan Group Architects (SGA Ltd) has had a relationship with Visionwest for nearly a decade, working with their housing team on various initiatives of which My Whare is the latest.

Pat de Pont, SGA Ltd Director and Architect on the project says the whare borrows ideas from the tiny house movement to develop units that can be easily transported and connected to services in a typical suburban environment.

“The key to meeting these initial demands was to design the requirements of scale and weight for light trailers and to select construction materials for their lightness, strength and durability.”



Building the two prototype whares was undertaken by Crate Innovation Ltd, a Kingsland-based building company owned by brothers James and Fraser Strachan. The studios have light steel framing and are overlaid with an insulated oriented strand boards for stiffness with roofing and wall cladding





The tiny studios Whare Rua and Whare Tahī have been developed to promote a vision to transition troubled young people into host family homes to set them on a road to self-reliance and independence.

completed mainly in Metalcraft Roofing's Corrugate profile. Baby corrugate was used on Whare Rua walls.

Crate Innovation has the ability to fabricate and pre-fabricate whare-type units, the inner walls and cabinetry of the whares employing the extensive use of sustainably sourced European poplar plywood which is a very lightweight and strong panel lining with a pale, fine-grained finish.

#### Interior colour scheme

Says Pat: "The small scale of these whare meant that the colour/materials palette needed to be restrained so that an "unfussy" calm could be maintained. All the poplar linings and cabinetry have been clear finished with Aquaclear and this has been accented with black pre-finished plywood panels and fittings. Flooring finishes are neutral greys with natural timber decking.

"A pop of colour to add a little light-heartedness to the scheme is provided in the indoor/outdoor window seats. Lichen to complement the Scoria COLORSTEEL® in the Rua and the Flaxpod® COLORSTEEL® in the Tahī".

Established 30 years ago, Visionwest began as a drop-in centre at the local disused railway station. It now offers wraparound support for the vulnerable including food support, budgeting, counselling, employment training, early childhood learning, home healthcare and housing. The latter beginning with the purchase of a property for emergency housing back in the early 1990s.

With 1,700 employees – one of West Auckland's biggest employers – Visionwest has recently been able to purchase a vacant Salvation Army Church in Glen Eden to cater for its mushrooming growth.

The tiny studios Whare Rua and Whare Tahī have been developed to promote a vision to transition troubled young people into host family homes to set them on a road to self-reliance and independence.



#### Architect

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#### Builder

Crate Innovation Ltd  
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#### Roofing Manufacturers

Metalcraft Roofing  
Material:  
COLORSTEEL® Scoria Maxx Corrugate  
COLORSTEEL® Flaxpod® Maxx Corrugate  
Roofing Industries Ltd  
Scoria Maxx Slimline (Baby corrugate)

#### Roofing and Cladding Installer

Crate Innovation Ltd



**ST PETER'S ANGLICAN CHURCH**

The \$1 million Rieger organ, one of only two Riegers in New Zealand, has been replaced to the south of the chapel.



One of the latest historic buildings in Christchurch to be successfully restored following the 2010 and 2011 earthquakes is St Peter's Anglican Church in Upper Riccarton, now the oldest Anglican stone church in the city.

First consecrated back in 1858, the Gothic style church suffered major damage to the stone walls on the north and south transepts and the eastern gable of the sanctuary was also badly impacted. The slate roof – although suffering some damage in the quakes – was able to be repaired. The engagement of Tennent Brown Architects to repair

and strengthen the church enabled some new thinking on how St Peter's would function and serve its community in the future.

It was the inclusion of new extensions to increase the amenities offered by St Peter's – these extensions constructed from Port Hills Basaltic

rock – that have set the church apart as a place for community engagement and to meet its needs in the 21st century.

The main addition (betterment) to the church is the glassed atrium and its simple, modern form and blends in well with the original stone building without detracting from it. A new chapel, the Nurse Maude Chapel of Compassion, was dedicated on 28th February 2021 by the Right Rev'd Dr Peter Carrell, Bishop of Christchurch. This chapel is the previous lesser damaged sanctuary at the eastern end of the nave. The more spacious nave, chapel and atrium can seat 299 people. Most importantly the damaged vicar's vestry has been turned into toilets which old churches never seemed to have.

Generous amounts of natural light are brought into the body of the church from new glazing in the northern transept of the rebuilt church. All stained glass windows, after remedial work, have been replaced in their original position or now hang on rods and are backlit by daylight in the southern transept and atrium.

The \$1 million Rieger organ, one of only two Riegers in New Zealand, has been replaced to the south of the chapel. The acoustics of the church are deemed second to none by the musical director and there is much interest in holding concerts in this beautiful building.

**Zinc wall cladding**

The introduction of new extensions to be clad in zinc with laminated timber columns was an opportunity for one of Dimond's RoofingSmiths in the area, CS Roofing Canterbury Ltd, to provide expertise in the installation of wall cladding to areas of the five newly created extensions.

Rhienzink from Germany was supplied in coil form and rollformed by Dimond into standing seam with trays ranging in length from 3m to 9m in length – last year's shipping delays caused by the pandemic – not making life easy when a European imported product was specified to inject new life into the landmark Christchurch building.





The main addition (betterment) to the church is the glassed atrium and its simple, modern form and blends in well with the original stone building without detracting from it.

The attractive atrium has a kitchen included and parishioners mingle here after a service for a time of fellowship.

CS Roofing Canterbury's Dustin Van Biljon led a team to install the Rhienzink trays to the project over a period from 3 to 12 months, the installers also providing a solution around the windows of using welded aluminium to give the appearance of zinc to match the vertical Rhienzink trays. In addition to the wall cladding new zinc parapet cap flashings were installed to two church gables.

A fundraising target (over and above insurance) for the strengthening, restoration and betterment of St Peter's Church was circa \$2,400,000 and the Parish Fundraising Committee and Church Property Trustees (CPT) of the Christchurch Anglican Diocese committed to a range of activities to raise funds both here and overseas to ensure the project would happen. Parishioners who were keen to maintain their family's 150 year plus links to the church and other interested parties were invited, for example, to purchase blocks (\$500) or stones (\$1000). Living bequests of \$25 a week over a six-year period were made by many – often in the names of their children. A donor's board to recognise this generosity has been erected in the church.

CPT insists that a building project cannot begin until the funding is present. To enable this the parish borrowed from its Glebe Funds to serve as guarantee for the then deficient amount. Fundraising continues to allow this 'borrowed' money to be paid back to the Glebe Fund which was established after the sale of residential sections many decades ago and supports the clergy and parish activities.

The church was to have been re-dedicated on 28th February but Covid restrictions means this became a restricted event and a repeat of the service will now take place on 27th June. Vicar's Warden Dr Corin Murfitt commented that the betterment of St Peter's and the addition of soft seating with a reduced number of pews has proved popular for the parishioner's comfort.

"The attractive atrium has a kitchen included and parishioners mingle here after a service for a time of fellowship. The ten-year wait without a church to worship in has finally arrived and is celebrated even though the parish hall served well during this period", he said.



**Seismic award finalist**

St Peter's Church is one of six finalists in this year's Seismic Award sector of the Canterbury Heritage Awards to be announced at Christ's College on 11th June. The Seismic Award recognises commitment to investment or a unique solution to earthquake strengthening which has saved or will now protect a heritage building or structure. Among the six finalists is the Christchurch Town Hall, the Muse Art Hotel, the Public Trust Office building and the Rakaia Gorge No 1 bridge.



**Designer:**

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**Main Contractor:**

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Website: [www.higgsconstruction.co.nz](http://www.higgsconstruction.co.nz)

**Wall Cladding Provider**

Dimond Roofing  
Material: Rheinzink  
Profile: Standing Seam

**Wall Cladding Installer**

CS Roofing Canterbury Ltd  
Nathan Maxwell  
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Telephone: 03 338 0400

**Photography:**

Video Taxi



## TELFER HOUSE



A home in Kerikeri's new Rangitane River Park subdivision is attracting favourable attention and influence for what it brings to the development as one of the first homes to be built.

The large 320m<sup>2</sup> home (471m<sup>2</sup> if a large stand-alone garage is included) was custom designed, in close collaboration with owners Jonathon and Janine Telfer, by Alan Simpkin of Arcline Architecture Ltd in the Far North.

The home may be large but cleverly has a small house feel through the architect's adherence to the clients' brief for the creation of a central "hub" combining kitchen, dining and family room – kids space being closely aligned to the kitchen.

Jonathon Telfer, of award-winning Telfer Roofing, says architectural designer Alan Simpkin was almost immediately able to interpret their ideas for the home when he first walked onto the site.

"It impressed us that Alan was able to come up with a design concept that replicated what we wanted", says Jonathon. "His background in building was a benefit with his first hand knowledge of different products for us to take into consideration.

"Group housing is prominent in the market but we wanted a superior take on those homes including the use of a bigger choice of brick in the mix with vertical cedar cladding, both of these meeting the requirements of covenants on the subdivision.

"The Premier Estate brick is laid in a stack-bonded style to blend well with the cedar cladding above and beneath the windows."

Living in the sub-tropical north it was imperative for the home to feature accessible and ample areas for indoor/outdoor flow and the design features a large and sheltered outdoor decking area in close proximity to the pool with its frameless glass balustrading. The deck is elevated to ensure easy views of action when children are in the pool.



The home has four bedrooms, an office, two bathrooms, three WCs, kitchen, dining, family room and lounge with constant reference to the outdoors. There is a two-car garage plus a standalone garage which has a set down floor to accommodate a boat or caravan with parking space for two more cars and includes a home office with toilet and an upstairs man cave.

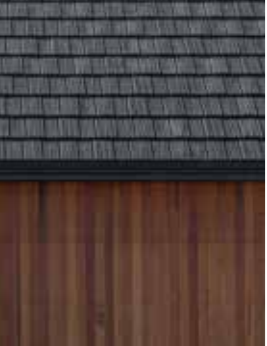
A design feature which became instantly measurable when the home was completed in late 2019 was the configuration of the sheltered deck area which keeps the main living room cool during a typically warm day but then retains an appropriate temperature late in the day and in the evening.

### Brief

Says Alan Simpkin, of Arcline Architecture Ltd: "The clients wanted a classic, timeless home that wouldn't date with time so gable forms and cedar cladding mixed with long Premier Estate bricks were chosen. We needed a roof that was sympathetic to the coastal area and being in the Far North District Council zone required low reflectivity and natural colours. The roof needed to be long lasting and sustainable with a good warranty."

Telfer Roofing is the Metrotile distributor north of Whangarei and a significant feature of the home is the Metrotile CF Shake profile selected for the 35° pitched roof. The CF range is suitable for





"The Metrotile CF Shake was the best choice and with its slate appearance it really complements the architecture of the home"

all wind zones in New Zealand and the profile is designed with no visible fasteners and these are fully concealed from the weather.

"The Metrotile CF Shake was the best choice and with its slate appearance it really complements the architecture of the home", says Alan Simpkin.

"The varying tones of the roof blend in well with the surroundings and the imported large palms complete the natural, sub tropical landscaping around the home. The CF concealed fixings are great which we consider to be important in this sea spray zone – less holes in the roof and none of the fixing holes are exposed to the weather or are visible.

"The clients wanted a roof with a generous pitch and this was a great opportunity for Jono and Janine who own Telfer Roofing to show off Metrotile's CF Shake profile".

The generous expanse of the shake profile on the roof is one of the home's special attributes and as Jonathon adds: "You see a lot of the roof which we are both pleased to feature given the interest being taken in our home as the subdivision grows".

#### Arcline Architecture

Arcline Architecture Ltd is a team of Architectural Designers, Contract Architects and Project Managers creating designs across all sectors of the construction industry. The practice is lead by Alan Simpkin, a fully qualified builder and Architectural Designer for over 25 years. Building is in the background of all that he brings to the design and build process. Alan and his wife Michelle first started their Design and Build company in 1993 building an average of 20 homes per year over a ten-year period until, in 2003, the team refocussed to provide only architectural design. Offering clients a hassle-free experience while planning and obtaining the necessary consents is all part of the Arcline Architecture experience and the company lives by its motto – "Excellence by design".



#### Architectural Design:

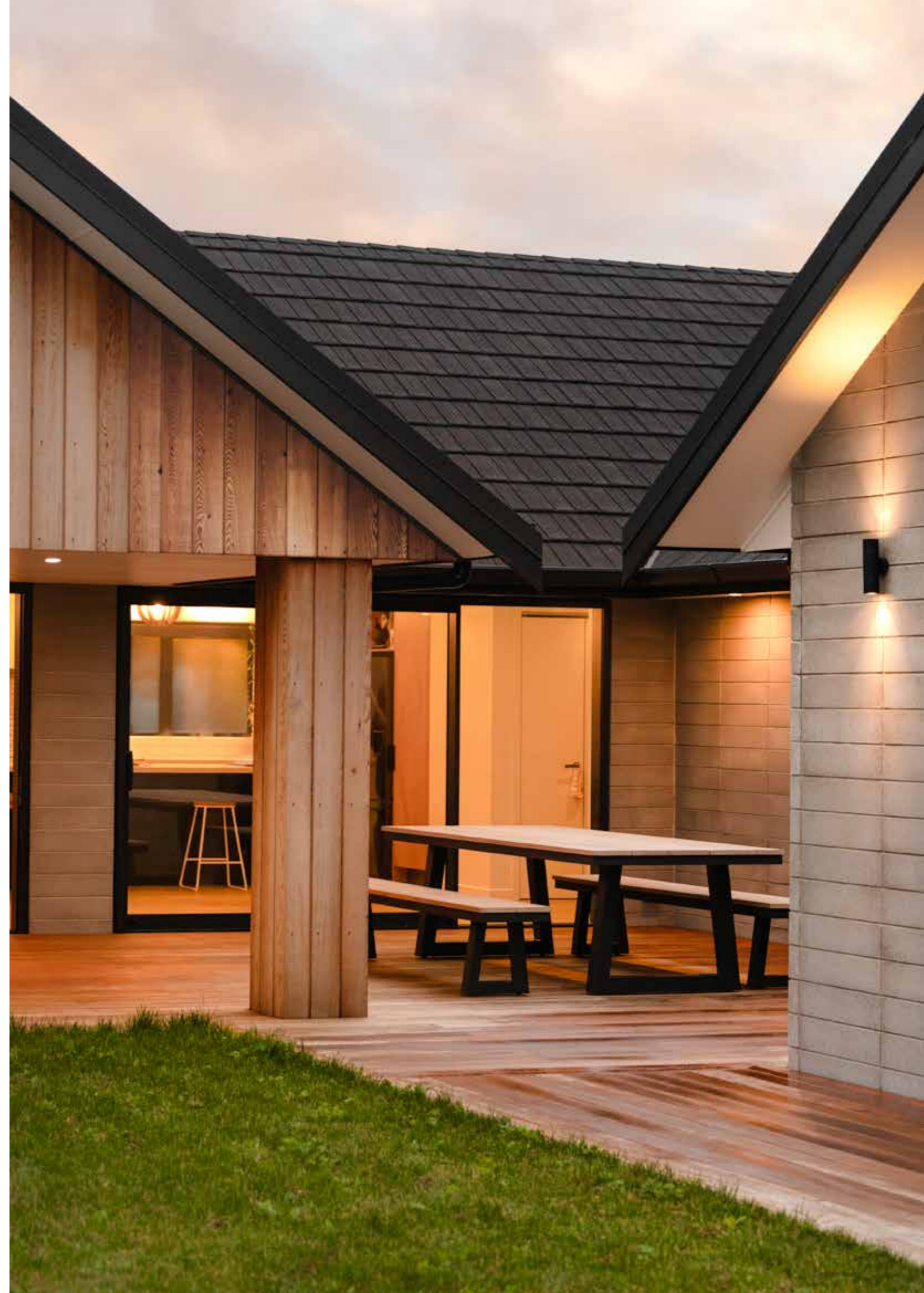
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Colour: Charcoal Blend  
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## ST HILDA'S COLLEGIATE VISUAL & PERFORMING ARTS CENTRE



Designing a Visual and Performing Arts Centre with its diverse demands is a complicated task but the challenges are amplified when it fronts a street in an inner-city residential area.

When Cameron Grindlay, of Dwelling Architectural Design, started assembling the design brief for the new Visual and Performing Arts Centre at St Hilda's Collegiate School in Dunedin there were many important elements to consider.

The centre needed ample, suitable and versatile spaces for dance, drama, live performance, photography, and visual art, but Cameron also had to have consideration for its visual impact in the neighbourhood, minimising the noise generated, and taking into account the privacy of those neighbours and the students using the spaces.

The underlying design narrative was proposed by the Head of the Art Department based on a waka huia. A waka huia is a treasure box, used by Maori to hold precious adornments. In this case the staff, students and the work they create is the precious treasure held within the building.

The long, raked building is broken into three sections for relief, with horizontal cedar cladding and blue painted plywood "carvings" inlaid on the vertical longrun ribbed cladding, providing adornment to the waka huia.

Ray Ferguson, of Ray Ferguson Roofing Ltd, says to execute the three sections and the carvings, "the flashing detail was very labour intensive. It was important to get the measurements correct to achieve a high standard of workmanship".

"Some flashings had to fit over and under timber work. The builder gave me the points of reference where he was going to place the timber."

Rays says that because the detailing of the cladding was so intricate, he coordinated throughout with the builder and architect.

"I made up small patterns for the flashings using strips of ColorSteel to ensure the flashing would fit correctly before having them made due to the amount of folds."

He adds, "The large flashings on the front of the building were a challenge due to their size. They had to be lifted off the truck and taken up to the roof manually without them flexing and getting damaged."

The 780sqm building rises from a single storey at the entrance to a double-height north-facing but windowless performance space with lighting gantry. To reduce the building's height and impact from the road, the north end of the building has been excavated into the site. Services to the roof are restricted, maintaining the clean lines of the building.

The long, slender form is positioned along the edge of the site, providing privacy and safety from the road while also sheltering a new artificial turf tennis/netball court on the opposite side.

The white longrun roofing and cladding and the cedar cladding complement the surrounding palette in the residential area. The white roofing cladding also greatly reduces the heat loading on the building.

Quality acoustic design ensures that there is excellent sound in the performance spaces, reduced reverberation in classroom spaces and reduced sound to neighbours. This was achieved using acoustic and angled wall and ceiling panelling and double and triple linings and roof sarking.

Cameron also had to take into account that natural light into the Dance, Drama and Photography spaces needed to be minimised, while indirect, ambient natural light was beneficial for displaying visual art.



The performing spaces at the north have separate access to avoid thoroughfares. This also allows private functions (with kitchen) and performances without opening the rest of the building.

The main performance space can also be closed off and the smaller dance area made private for rehearsals.

The centre of the building has shared storage/ services areas for space efficiency and to allow for collaborations in productions. A mezzanine floor contains costume storage/changing, light/sound booth and plant rooms.

Interiors are neutral and warm, providing a backdrop for but not competing with student creativity.

All products were compared to competitors for sustainability. Everything from manufacturing processes to a company's environmental record were taken into account when selecting materials.

The building won the Architectural Designers of New Zealand (ADNZ) 2020 commercial/industrial award.

The judges were impressed that the building avoided the "predictable pitfalls" of being either overly flashy or boxy and anonymous.

They said, "The façade is broken into playful elements, inferring the syncopated rhythm of the different spaces and activities without descending into visual chaos. This is aided by the limited palette of cladding materials with vertical corrugated long run combined with horizontal cedar echoing the vernacular materiality of the surrounding housing stock."



### Dwelling Architectural Design

The practice's philosophy is that. "Designing is part of the process of creating, and it should be a process that is enjoyed by all – from the client to the sub-contractor. It is a chance to dream and the end result should be something that everyone is proud of.

"Design needs to be sustainable, individual and tailored for the site. Thought needs to be given to materials, sun, views, prevailing wind, budget and how the client lives in order to make the final outcome relevant.

"Design needs to be thorough with attention paid to detail. This is the art of communicating through drawings. Time and attention paid at the start, pays dividends during the build. Design decisions need to be made early. It is strange but true that to make something look simple and elegant takes more time, thought and detail than making a cluttered form.

"Creating takes a team. For a build to be a successful, it takes teamwork from the client, the designer, consultants, the contractor and sub-contractors working towards a common goal. We are in this together and together we can come up with creative solutions. The job does not end when the design is complete but the designer needs to be involved until the end.

"That is Dwelling's goal – creative, sustainable and thoughtful design, brought to life by a team that enjoys the process."

#### Designer:

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#### Roofing and cladding:

Dimond Zinacore Hi5 in 'Pacific White' and 'Sandstone Grey'

#### Roofing contractor:

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Telephone: 0274 376 874

#### Builder:

Stevenson & Williams, Dunedin  
Telephone: 03 455 4034

#### Photography:

Sean Waller







## AWAAROA HOUSE

Close connections to the outdoors are fostered through this unique Waiheke Island home.

The majority of people who build new homes on Waiheke Island aim to find a north-facing site with sea views. For the owners of this home, however, it was a coastal, south-facing site that took their fancy. The aim of the design was to create a house that was personal, private and offered a retreat, using the side of the hill as shelter and encompassing the idea of an encampment to foster a lifestyle that was close to nature. Views to the sea are framed by the house itself and outdoor living is foremost.

Designed by Cheshire Architects, the home consists of three separate buildings embraced by an outdoor room. The central, gable form contains the social areas of the house - the living, kitchen and dining

spaces - and two smaller canvas clad buildings straddle it on either side, which contain bedrooms and bathrooms.

"The site was formative in the way the buildings are placed," says designer Sarah Gilbertson. "As you approach the site, the single gabled form acts as a marker, and the courtyard and cabins gently reveal themselves as you move into the site."

The three buildings are dressed in unusual claddings, with the two small buildings cloaked in a tautly stretched canvas skin. "These are carefully considered and detailed, yet simple, buildings," says Gilbertson. "The canvas conceals careful engineering that allows occupation of the thresholds. These form a vestibule for shoes and coats, and window apertures which you can occupy."

The central gable features Metalcraft Roofing's E-Span® 340 roofing in COLORSTEEL® Lichen, with the illusion of it folding down the outer wall. This is detailed to appear like a single object, folded with a Canterbury Prickle edge that extends over the concealed gutters. "There is a lot of non-standard detailing and we worked together with Metalcraft Roofing to ensure the details are technically robust. It is strong because of the collaborative effort of many," says Gilbertson.

"The site was formative in the way the buildings are placed, [...] When you approach the site the single gabled form acts as a marker, and the courtyard and cabins reveal themselves as you move up and into the site."

The Lichen colour of the metal is not often specified for houses, but in this case it was chosen for its ability to merge with the natural landscape and with the colour of the canvas. "The Lichen sits beautifully in the environment," says Gilbertson. "There is a matte softness to it, not unlike the foliage of kanuka and manuka. It also reflects the nostalgia of canvas tents, and with that, a relaxed atmosphere."

The front and back faces of the building are clad in recycled timber taken from a demolished building in the city, a choice which was client-led. "The clients were very engaged with the project and invested much personal time and energy, which has contributed to its richness. They were keen to use natural materials, oils and finishes and driven to make environmentally sound and sustainable choices," says Gilbertson.

Inside, the central building features a sofa seemingly carved from the timber-clad walls. A long narrow building, the space culminates in a picture window overlooking the ocean. The bedroom cabins have fireplaces and cosy nooks to escape the social areas. Showers are contained within the window frames, so the homeowners can feel as though they are showering outdoors.

Despite having to walk outside in all weathers to get to bed, the homeowners report to love their new home and the lifestyle it provides, close to nature and in touch with the elements and changing seasons.





The Lichen colour of the metal is not often specified for houses, but in this case it was chosen for its ability to merge with the natural landscape and with the colour of the canvas

#### Cheshire Architects: Design Philosophy

Everything we do is bespoke. We begin each relationship from its own core principles, and work closely alongside our clients to deliver projects that exceed their hopes, dreams and ambitions. Cheshire Architects delivers the sophistication of a boutique studio with the confident management of a highly experienced firm.



#### Main contractor:

Ramma Construction

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Website: [www.tacticalroofing.co.nz](http://www.tacticalroofing.co.nz)  
Facebook: Tactical Roofing

**Roofing/cladding Manufacturer:**  
Metalcraft Roofing East Tamaki

**Photographer:**  
©Jackie Meiring Photography



## NZMRM AND WIND LOAD TESTING.

### Part 1: Setting the scene.

#### Wind events and cladding.

The primary purpose of a roof (or wall) is to keep rain and wind out of the building it is over or around. This means it must stay on the building regardless of whatever the weather throws at it. This is generally taken to mean wind and rain.

In Australia this weather includes tropical cyclones, which have had very destructive outcomes over large areas. In New Zealand it includes all our “regular” weather, which located in the middle of an ocean is not cyclonic, but we do have severe wind events which we don’t expect to damage buildings. In spite of this we seem to accept damage from the occasional high velocity “twister” or “tornado” which is usually very localised (down to a few houses). These do have wind-speeds much higher than the normal run of storms, and the circular motion can lift off otherwise robust roofing. It can also include earthquakes.

So we do need to be able to determine wind resistance of our various cladding components.

There are a number of variables that affect the ability of a roof to withstand local wind uplift pressure.



#### The variables in cladding

These relate to the roofing product and its installation as separate variables. The product base is characterised by the metal, its thickness, and its tensile strength. This may be rollformed into one of many profiles. This then fixed to a structure which is basically part of the building. The roof structure is typically longitudinal members (rafters) attached to the frame of the building, and then horizontal cross members (purlins). Both rafters and purlins may have variable spacing to provide different levels of support. The product is fixed to the purlins with fasteners which go through a rib into the purlin (top-fixed) or held to the purlins by one of two main clip fixed/secret fixed methods. Top fixed roofing may be fitted with load spreading washers (LSW) to increase uplift resistance

#### Testing

In order to determine if a roof (or wall) will withstand the wind load in a specific location it is obviously desirable to test the proposed setup at a wind pressure similar to that to which it will be exposed to in practice, rather than just waiting to see if it fails.

There are two test concepts –

Calculate the pressure at a particular location on a structure, expose a test set-up of a suggested configuration to the calculated wind pressure and see if it passes. If it does then it is suitable; if not determine the pressure at which it fails, or upgrade the configuration in some way (thicker, more fasteners).

Or test the suggested configuration to failure at increasing spans. This will advise the span at which the product can be used in a location with this wind pressure. This has been the process used in NZ.

Usual test procedure is to take one profile, made with one material (metal, thickness and strength) and test one fixing method and then vary the purlin spacing to generate a Load/Span Graph. Several linked variables may be on one plot e.g. with and without LSW, different fastener density (possibilities are determined by the profile, e.g. how many ribs?) and perhaps material thickness. Depending on

There is currently a demand for much higher wind uplift resistance. This has created a need to upgrade the equipment.

the profile, more than one fixing pattern may be possible. Normally however each plot is for one set-up of everything with purlin spacing the only variable.

In reality there is more than one imposed external load on a building – wind pressure uniformly distributed over the exposed face (UDL) which may be into or away from the cladding, concentrated or point load in one location, typically roof traffic but may be other localised loads, and snow loading, also UDL but only downwards. Here we will discuss primarily wind loading. In considering wind “uplift” removing cladding panels we are looking effectively at suction upwards/outwards. Since in practice it is difficult although certainly not impossible (check Intertek) to create suction over a large area of cladding, we have used various ways of applying uniformly distributed loading to the underside of the cladding and determine resistance of the material to being blown off or over the fastening system. For much of the time during which testing has been carried out in NZ we have been looking at permanent damage round the fasteners for top fixed roofing (termed Serviceability failure as the product may remain in place but not fulfill its function of keeping water out) and actual removal of the cladding for secret fixed roofing (termed Strength or Ultimate failure).

#### The demand

The local test requirement “marketplace” has been a volatile one. For quite a period in the 2010s the emphasis was on using greater purlin spacing. Then we saw the use of tray roofing on purlins instead of ply decking. Both of these produced a demand for extra testing.

More recently there has been a demand for Ultimate failure data after Serviceability for top fixed roofing, and some secret fixed roofing has properties which may allow declaration of Serviceability failure as well. There is currently a demand for much higher wind uplift resistance (although wind conditions haven’t actually changed) and as we shall see when we get to the NZMRM Test Rig this has created a need to upgrade the equipment. Some of the other global test methods produce ultimate failure only – destruction.



#### How wind blows things off

Actual wind blows down on one part of the building creating inwards pressure and then creates upwards or suction pressure on an adjacent area. This what blows the roofing off. Creating a low-pressure (suction) test area over cladding, while not impossible, is not very practical, and so we simulate this by applying upwards load underneath the cladding and determining the effect on the fasteners, which are effectively lifted from the supporting purlins by the sheet itself. For this purpose the supporting structure and the fasteners are regarded as rigid, although in real life situations this is not always the case, and roofing can come off more or less intact, separated from the building. It is the case that in real life, e.g. blown-in garage door, internal pressure also can occur. The net total pressure effect is the same. Although “blowing off” seems to be across the roof instantly, in fact it is a rapid sequence of failure starting at one place, usually the periphery.

#### Testing globally

So, how do we actually do the testing? Over decades various methods have been used around the world to simulate wind action on building



The wind load on a section of a building is determined by a number of factors – location and so local wind speed, topography, sheltering, and the shape and location in the building of areas of cladding.



cladding. All of these are by necessity a compromise to some extent. Investigating the internet shows people today using a box filled with water; loading sand onto the underneath of an inverted roof, and using combined suck and blow devices. Probably the most similar to real life would involve using a very large wind tunnel to house an entire test roof, or possibly an aircraft engine (Florida). These all suffer from various disadvantages, not least the cost of the equipment and the difficulty of accurately and quickly measuring the actual pressure, and also the difficulty of generating the very high pressures currently required in NZ without destroying the test equipment. In a number of cases it looks like the test is a single one to destruction.

In Australia and New Zealand, we have used sandbags on upside down roofing, then airbags underneath the installed roofing. The late Stuart Thomson spent many hours testing a whole range

of products with airbags for NZ Steel in the 1980s. The advantage is that the pressure is applied as incremental self-contained load sources and no specially pressure resistant substructure is required. The disadvantage is that the pressure is not directly applied underneath the fasteners and it is not very realistic at the actual point of connection between the fastener and the support structure.

**The Airbox**

More recently, and in New Zealand since about 2000, we have used an “airbox” in which the product to be tested is fixed as it is to be installed across a steel box 15m x 2.1 m x 0.5m, forming the top of a closed box. Air pressure is applied to the box and so the underside of the sheet, until something happens. In Australia there are at least two of these units, one publicly available at the Cyclone Testing Station in Townsville, (part of James Cook University). This unit originated in the 1970s following two cyclonic wind damage disasters, and became the CTS in 2002. They have an airbox 10m x 2m x 500mm and an airbag tester also. Air bag testing requires less structure and is still used in Australia (and perhaps elsewhere). We understand that BRANZ also have a smaller unit.

**Standards in Australia and NZ**

There are a number of standards globally which cover how to calculate wind loads and how to test things for their capacity to withstand these loads. For Australia and New Zealand the relevant standard calculating wind loads is the joint standard AS/ NZS 1170.2 Structural Design calculations Part 2 Wind Actions. As in the simpler NZS 3604 the wind load on a section of a building is determined by a number of factors – location and so local wind speed, topography, sheltering, and the shape and location in the building of areas of cladding. Having done a calculation you (engineer) add a local factor KI which can be up to 3 times the nominal pressure on the building. This has been created by successive failures of less conservative calculations.

Now having calculated the loads cladding is required to withstand – and noting some of this in NZ is related to isolated extreme wind events, which

In the end what we were being asked to do and what was in the COP deviated. This has been rectified and Section 17 now contains specifications for testing concentrated load and wind uplift based on mostly the above Standards, modified according to NZ practice and experience.

climate change may or may not exacerbate – we need standards to govern testing. As normal we have Standards which tell you how to test stuff and (in this case ) one to tell you what numbers you need from the testing.

These are all Australian only, although NZMRM have had input into the latest version. The test methods are in the AS 4040 series. 4040.0 is the covering general Standard, 4040.1 covers point/ concentrated load testing, 4040.2 is wind uplift for non-cyclonic regions, and 4040.3 cyclic wind load testing for cyclonic regions. All of these are dated from 1992 apart from Part 3 which was updated for the new Low-High-Low cyclic test in 2018.

The main Standard covering roofing in all its aspects is AS 1562 Design and Installation of sheet roof and wall cladding which actually has parts for metal roofing (Part 1), plastic (Part 3 2006, joint AS/NZS) and fibre cement (Part 2 1999.) AS1562.1 started life in 1992 and after several attempts during the

2000s and 2010s was eventually revised seriously in 2018. NZMRM was involved in the committee doing this, and not having it as a joint standard (which was the original intention) allows us to use parts selectively.

And – the NZMRM Code of Practice for Metal Roof and Wall Cladding. Created in 2003 and now in online only version this has contained information about wind load testing according to Stuart Thomson and John Yolland all this time. In the end what we were being asked to do and what was in the COP deviated. This has been rectified and Section 17 now contains specifications for testing concentrated load and wind uplift based on mostly the above Standards, modified according to NZ practice and experience.

Next time – The history of testing by NZMRM, and the NZMRM test facility, past and future.

■ |||



# SCOPE

NZ METAL ROOFING MANUFACTURERS INC.

## Members

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