THE MAGAZINE OF THE NEW ZEALAND INSTITUTE OF BUILDING INC.

ISSUE **109**

# PROGRESSIVE BUILDING

FEB / MAR 2015 $9.90

## BASE BUILD
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# TRADE MARK AWARENESS NOTICE FROM NEW ZEALAND STEEL - COLORSTEEL®

February 2015

# To: The Building Industry

**Re: Trade mark awareness notice from New Zealand Steel – COLORSTEEL®**

For over 30 years, New Zealand Steel has been known for its COLORSTEEL® prepainted steel products used for roofing, cladding, rainwater products and fencing.

New Zealand Steel owns several trade marks for its COLORSTEEL® range, including some registered marks: COLORSTEEL®, THE ROOF OF NEW ZEALAND®, COLORSTEEL® ENDURA®, COLORSTEEL® MAXX®, COLORSTEEL® METALLIC®, COLORSTEEL® BOUNCE® and COLORSTEEL® CP ANTIBACTERIAL.

Not all prepainted steel products are equivalent. The COLORSTEEL® brand is synonymous with high quality products[1] made in New Zealand and formulated for New Zealand conditions. Through ongoing innovation and research COLORSTEEL® products remain at the forefront of coated steel technology, utilising unique paint formulations that provide excellent colour performance to withstand New Zealand's extreme climate and harsh UV rays and excellent pencil hardness for a tough and scratch resistant finish.

Unfortunately, over the last 12 months, New Zealand Steel has received an increasing number of complaints from homeowners with defective roofs, made from imported prepainted steel[2], who were of the understanding that they had been supplied with a genuine COLORSTEEL® branded product. Defects have included premature fading and a base metal thickness (BMT) below that required by the NZ Building Code Acceptable Solution E2/AS1.

New Zealand Steel is concerned that some suppliers of these prepainted steel products may be inaccurately describing its products. In particular, a) there have been examples of confusion between a prepainted roof and a genuine COLORSTEEL® roof, b) use of the term "COLORSTEEL®" to refer to prepainted steel generally, and c) using words similar to COLORSTEEL® to imply that it is a COLORSTEEL® branded product.

It is vitally important to New Zealand Steel that its COLORSTEEL® trade mark is not infringed to protect and reinforce New Zealand Steel's position as a pre-eminent supplier of roofing products in New Zealand. Constant monitoring and vigilance by New Zealand Steel supports rollformers and roofers who supply and install genuine COLORSTEEL® products, and ensures homeowners and commercial project managers receive nothing less than the high quality COLORSTEEL® branded products they ordered.

New Zealand Steel takes the protection of its COLORSTEEL® trade mark seriously and issues 'Cease and Desist' letters to companies incorrectly associating their product to the COLORSTEEL® brand.

If roofing suppliers or specialists require clarification regarding the use of New Zealand Steel's trade marks or suspect that someone may be incorrectly using the COLORSTEEL® trade marks, please contact the COLORSTEEL® Marketing team on **09 375 8824** or email **info@colorsteel.co.nz**.

If it is not manufactured by New Zealand Steel then it's not a genuine COLORSTEEL® branded product:

COLORSTEEL® COLORSTEEL® Endura® COLORSTEEL® BOUNCE®
COLORSTEEL® Maxx® COLORSTEEL® Metallic®

NEW ZEALAND STEEL

[1] COLORSTEEL® products are manufactured under a third party accredited ISO9001 quality management system to ensure consistency and reliability. COLORSTEEL® products have undergone a four year exposure test on New Zealand and Australian extreme exposure sites for both (UV) colour performance and long term durability. COLORSTEEL® ENDURA® and COLORSTEEL® MAXX® products are manufactured to comply with the requirements of AS/NZS2728:2013.

[2] Testing by NZ Metal Roofing Manufacturers Inc showed after 2000 hours of UV exposure NZ made prepainted steel showed no evidence of degradation compared with the imported product tested under the same conditions (Source: www.metalroofing.org.nz. Search "imported" under "Technical Articles").



HCA.CO.NZ BSS0019_PB

## FROM THE EDITOR

It has been a busy start to the year with lots of good news on the construction front. The statistics all point to an increase in dwelling consents and in non-residential construction. But according to the BIS Shrapnel *Building and Construction in New Zealand 2015-2020* report, the rate of growth is likely to start to slow down as the Christchurch rebuild activity peaks. In the 2015/2016 year, the building sector is forecast to peak at $14 billion in real terms. Over the following four years, BIS Shrapnel expects the total residential and non-residential building authorisations to remain near this new peak level at about $12-13 billion per annum.

In this issue, we hear from analyst James MacQueen who raises some interesting points about performance bonds and how best to deal with them in this 'boom' period in which many construction companies are experiencing rapid growth.

We also have a look at a diverse group of projects – from the guest building at the base of The Remarkables ski field, pg. 42, to the country's most advanced data centre in Auckland, pg.32.

On page 32, we review the construction of stage one of a flagship building in Christchurch, the BNZ Centre, which when complete will cover half a city block and offer 30,000m2 of mixed-use commercial space on the site where the popular Re:Start container mall was formerly situated.

Clare Chapman

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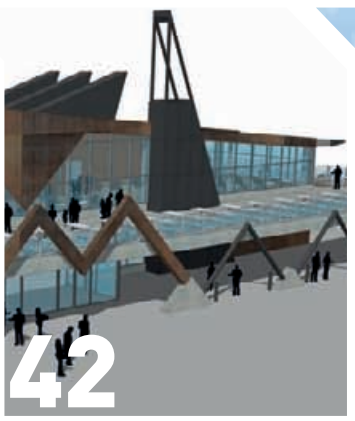




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# Smart building

## The 2015 NZIOB conference will present industry-wide insight, commentary and innovation in conjunction with site visits around Christchurch.

The biennial New Zealand Institute of Building Conference is fast approaching. The 'SMART' Conference will be held in Christchurch on 18-19 March 2015, with seminars and conference dinner on Wednesday 18 March, and a day of site visits on Thursday 19 March.

The 2015 SMART Conference follows on from the very successful 2013 'Bounce-back' Conference.

In 2013, the construction industry was slowly emerging from the global financial crisis (GFC) and wondering how the sector (having been brutally stripped of resources through the period 2008-2012) could meet the twin demands of the Canterbury rebuild and the forecasted exponential growth of Auckland. Two years on, the sector is in full flight and needs to be operating in a smart fashion to deliver the buildings and infrastructure New Zealand desperately requires.

The SMART Conference will showcase recent key public and private building projects. It will explore current market forces, and it will invite conference delegates to re-imagine their collective attitudes as we transform our thinking into seeing ourselves as construction industry brands on an individual, company, and sector level.

Our thirst for design innovation will be quenched with presentations on resilience, while in the technology session we will hear about how building information modelling is operating in real time on one of Christchurch's largest projects, and what is on the horizon line for construction software.

As the NZIOB did with Bounce-back, the SMART Conference will explore a point-in-time theme – the zeitgeist of this moment. For 2015, it is about working smarter, from a resources perspective (a nod to the government's productivity partnership work), emerging technologies, and the changing priorities for our building stock, to name a few.

The NZIOB is proud to facilitate this refreshed point-in-time analysis of our sector, and to do so in a forum reaching right across the construction industry.

**Malcolm Fleming**
**NZIOB Conference chair**
**Central Chapter president**

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It has 15-position adjustable tongue control for consistent screw driving of a variety of materials and intelligent trigger design allowing for total control of application.

The foot LED and improved ergonomic design with a rubber grip over the mould and steel belt hook and magnetic bit holder mean this is the ideal tool for various applications.

### HOW TO ENTER

To enter the prize draw, answer the following:
Where is Spark's new Auckland data centre?

Email your answer to **pbcomps@agm.co.nz**
The competition closes on 31 March 2015. By entering you agree to receive newsletters from AGM Publishing.
Your details will not be shared with, or used by, a third party in any way.

### CONGRATULATIONS

The winner of our December/ January prize draw was **Mark Vining** of Nelson.

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# Riverside rebuild

Central Christchurch's Riverside Apartments reached practical completion in mid-January after a nine-month reconstruction.

The earthquake-damaged building on Carlton Mill Road was given a new lease on life thanks to a package of works designed by international architects The Buchan Group. The works included code-specified structural strengthening, a new external façade, and upgrades to the complex's boutique rooms.

# Soaring value

The value of building activity in the September 2014 quarter reached a new high of $4 billion, according to Statistics New Zealand's analysis.

The $4 billion included $2.5 billion worth of residential building work, and $1.5 billion of non-residential building work.

In volume terms, after removing price changes and seasonal variations, building activity increased again in the September 2014 quarter.

"Overall building activity volume increased 1.5 per cent in the September 2014 quarter, growing for the 10th quarter in a row," business indicators manager Neil Kelly said.

Non-residential building activity volume grew a seasonally adjusted 4.4 per cent, and residential building activity fell by 0.7 per cent. "The trend for non-residential building activity has nearly reached the same level as the series high in the March 2006 quarter," Mr Kelly said. The current level is just 0.6 per cent lower.

# Council directors

The New Zealand Green Building Council announced its new board of directors at its annual general meeting in Auckland in November.

The board is joined by two new directors: Gary Walker, executive general manager of Hawkins Construction and Steve Aschebrock, director and joint owner of INZIDE Commercial. "I'm delighted to welcome Gary Walker and Steve Aschebrock to our board of directors," NZGBC chief executive Alex Cutler said. "Their expertise and commitment to sustainable building in New Zealand will add to the board's energy and focus and help steer the NZGBC as we grow."

# In flight

Hawkins commenced a $58 million extension to Wellington Airport's main terminal building in November.

The 6000m$^2$ extension will add another 30 metres to the building, double the width of both southern piers, provide extra gate lounge space, new retail and food and beverage offerings, double the number of toilets and provide extra parking spaces for aircraft.

Floor-to-ceiling windows and laminated timber cross-braces will span the full length of the southwest pier.

"This strong architectural feature will enhance one of the key features of the airport being a hub of natural light with views over the runway and Lyall Bay," Wellington Airport chief executive Steve Sanderson said.

Hawkins chief executive Geoff Hunt said the airport project aligned with Hawkins' own goals to deliver high quality projects while creating a great experience for clients and communities throughout the project. "This directly aligns with the airport's vision to ensure that the passenger experience at Wellington Airport is the very best it can be."

When the main terminal was opened in 1999 around 9,500 passengers flowed through the airport each day. That has now increased to 15,000 on average with busy days reaching up to 20,000.

The extension to the main terminal will initially cater for the 5.5 million passengers that arrive and depart Wellington each year, including 750,000 flying internationally. Total passenger numbers are forecast to increase by around 135,000 per year.

# Antarctic milestone

January 20, 2015 marked the 58th anniversary of the establishment of New Zealand's permanent presence in Antarctica with Scott Base. The same week also marked the start of a major $4 million upgrade of the Hillary Field Centre, a facility which supports New Zealand's expanding science and environmental programmes at Scott Base.

The construction of Scott Base began in 1956; a complex of six buildings was designed to be connected by covered walkways with each building no less than 7.6 metres apart.

"Scott Base has been, and continues to be, a home away from home for many hundreds of New Zealanders. That's why it is important we celebrate the history of these buildings through which many of us share such fond memories," Antarctica New Zealand chief executive Peter Beggs said.

"Scott Base now has the capacity to accommodate up to 85 people at any one time and supports more than 11,500 scientists, event and outreach teams each year. Over the past 58 years our scientists, in collaboration with many other nations, have confirmed Antarctica is changing at an accelerated pace. As such, by maintaining our presence on ice, and supporting internationally peer-reviewed science, we will be able to learn more about what this means for New Zealand and our families."

In a joint venture between Antarctica New Zealand and the Certified Builders Association of New Zealand, two apprentices were selected to travel to Antarctica and work on the field centre extension – New Zealand's southern-most construction project.

Blake McDonald and Peter O'Sullivan, both of Dunedin, started work in Antarctica on 15 January and will complete a three-month programme at Scott Base ending in April.

# Breach rejected

The Commerce Commission completed its investigation in December into allegations that Winstone Wallboards Limited (a subsidiary of Fletcher Building) acted anti-competitively to maintain its market position in the manufacture and supply of plasterboard.

Based on the evidence gathered during the investigation, the commission does not believe Winstone breached the Commerce Act 1986 and it will not be taking any further action. "Winstone's supply contracts with merchants (excluding Placemakers which is also a subsidiary of Fletcher Building) do not contain contractual provisions that require the merchants to purchase all their plasterboard from Winstone. Nor do we believe that the rebates Winstone pays to merchants result in merchants purchasing nearly all of their plasterboard from Winstone." The full investigation report is available at comcom.govt.nz

# Crankworx

Construction has begun and it's all go in Rotorua where Extra Mile Trail Building are creating the trails for international event Crankworx.

The world's largest mountain biking festival, it will be held in Rotorua on 25-29 March.

The trails are being carved into the side of Mt Ngongotaha, underneath Skyline's gondola. Once completed, the world-class downhill trail will feature big jumps, steep sections and off-camber runs.

Riders will take between 2.4 and three minutes to get from top to bottom.

# All-time high

The Building and Construction Industry Training Organisation (BCITO) achieved a first for the construction sector last year, signing up 5,000 new apprentices.

"This milestone reflects the huge commitment from the building and construction community, our apprentices and BCITO staff," chief executive Ruma Karaitiana said.

"We look forward to working with the industry to maintain momentum over coming years to ensure we meet the skill requirements of New Zealand's construction sector. We're literally building people like never before."

# New urban

A company was formed in Christchurch in late-2014 borne of a collaboration between Beijing-based Huadu Group and Christchurch businessmen John Fairhall and Bert Govan. NewUrban Group already has projects underway; its first is Lintrathen Gardens, a residential development in Fendalton.

In July 2014, Govan and Fairhall went to China to review Huadu's industry-leading construction methodology and material procurement programmes first-hand. "We are delighted to be partnering with Huadu, a company that has won numerous Chinese construction awards over a range of projects from residential through to commercial building types," Govan said. "The NewUrban Group brings international capital and expertise, delivered through experienced local partners to the quality end of the New Zealand property market." But, he said, "it's important to note our product is aimed squarely at local buyers. We will be adapting Huadu's technology and construction systems and they will be delivered by leading Christchurch and New Zealand companies to achieve high quality outcomes across all of NewUrban's developments."

Huadu is comprised of several different divisions ranging from residential property development to municipal public projects.

# Guiding skills

Auckland's 'Workforce Roadmap', a statement from the city's construction industry to the vocational education sector, is leading the way forward in management of the skills shortage.

Guided by Graham Hodge, development manager for Alliance, a group of tertiary education providers in the wider Auckland area – BCITO, Connexis, Competenz, Skills, Manukau Institute of Technology and Unitec – the roadmap aims to better align future needs with training programmes.

"The tertiary education sector collectively has not been as well connected to industry as it should be," says Hodge. "We need to ensure the qualifications we offer are better aligned to future workforce needs and to do this we must listen closely and carefully to industry.

"Once, we find out what the industry needs, we can plan how to deliver qualifications which are just proxies for skills," says Hodge. "And employers need a balance of workers in all relevant occupations with the right skills."

Fletcher Construction, Hawkins, Naylor Love Construction, Dominion Constructors, the New Zealand Transport Agency and Auckland Council are jointly sponsoring the workforce roadmap development. Industry ownership will guide which skills are needed in which jobs for the next five years.

"It is now up to us to deliver," Unitec chief executive Rick Ede said on behalf of the alliance. "This is about planning ahead to avoid shortages and ensure school leavers understand their career path opportunities."
workforceroadmap.org.nz

# Lessons learned

More than 30 New Zealand infrastructure leaders visited the United Kingdom in November 2014 looking to develop a vision about how New Zealanders plan, fund and deliver infrastructure and urban intensification.

Organised by the New Zealand Council for Infrastructure Development (NZCID), the delegation included members from Treasury, Auckland City Council, Beca, Fulton Hogan, Ministry of Business Innovation and Employment, Ngai Tahu, the Canterbury Earthquake Recovery Authority and the Canterbury Employers' Chamber of Commerce. The group looked at major projects in London and Manchester, including Crossrail, High Speed 2, the 9 Elms housing development, and the Manchester central urban re-generation.

NZCID chief executive Stephen Selwood said the United Kingdom was ambitious, seeing infrastructure investment as a driver for growth, unlike New Zealand where project conceptualisation was often defined, "not by what we need, but by how much money we have and whether we can get consents. The British are focussed on the outcomes."

The UK has around $750 billion dollars of infrastructure development planned in the next 20 years.

"Where we kiwis are preoccupied with how much things will cost, the British are concerned with how best they gain the benefits from investment and then look for every which way they can to raise the money they need to realise the benefits.

"They promote, look out and actively seek foreign investment. They embrace the private sector, and, from what we saw in Manchester; central and local government work much more collaboratively than we do in New Zealand.

The delegation has received key messages to take back to New Zealand. Technical, financial, and governance knowledge has been gained but above all, a realisation that New Zealand needs a profound shift in attitudes towards overseas investment and nation building, according to Raf Manji, chair of the Finance

# New year, new law

As of 1 January 2015, residential builders are required to keep, and be able to produce, written records of any residential work undertaken valued at more than $30,000.

In July last year, building and construction minister Dr Nick Smith announced that builders would need to keep a written contract (with specific clauses around warranties, dispute resolution and remedies) and mandatory disclosure of information would be required by building contractors about their business information, key contacts, their role and qualifications, insurance cover held and warranties offered for any jobs priced over $30,000. Consumers also need to be provided with a checklist covering tips about engaging builders and managing a residential project valued at over $30,000.

"We need to replace a 'she'll be right' with a 'doing it right' culture, with increased professionalism, open disclosure and clear expectations about what work is to be done, at what price and in what timeframe," Mr Smith said when he announced the changes last year.

"These measures will reinforce the good practice of many contractors while constraining people only interested in making money at the expense of doing a quality job. They are part of a wider programme of work to better our building and construction industry, which also includes more robust occupational regulation and improved construction contracts law," Mr Smith said.

Failure to comply with the new legislation can result in an instant fine of $500.

More information about the changes is available at dbh.govt.nz/building-amendment-act-2013.

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# Designday Pro

The line-up for 2015's inaugural event for the wider design sector was announced on 25 February at an exclusive launch party in Auckland.

Nineteen design showrooms will open their doors for Designday Pro on Friday 20 March to present a range of unique and inspiring installations, professional development opportunities, education and a new way to network.

Designday Pro will be followed by the public event, Urbis Designday on 21 March, a must-attend event in the New Zealand design calendar.

Run by AGM Publishing, the events offer a fresh new way to get involved in the wider design sector.

Publisher Nathan Inkpen said guests would experience the largest ever line-up of design-led collaborations at the 2015 events.

"Designday Pro is a brand new initiative for 2015 and is the result of a direct response to feedback from the design and building industry. So, from the success of our public event Urbis Designday we created an exclusive event for professionals working in the built environment sector. The tour format, with free transport over multiple city fringe venues, offers great networking opportunities and a new platform to connect with both suppliers and design practitioners in a fun and inspiring atmosphere.

"Expect a day of education, information and inspiration, and a new way to network with clients and peers at Designday Pro," Inkpen said. Highlights of Designday Pro include a collaboration between ECC, fashion designer Ingrid Starnes and multi-award-winning landscape designer Xanthe White, a partnership between Autex and Ctrl Space, and Methven and Eucalyptus Design's collaboration.

Designday Pro runs from 10am-9pm with free transportation between venues from 4pm. The majority of the showrooms are located on the city fringe in the suburbs of Parnell and Mount Eden.

Entry for professionals in the wider design sector is free for both Designday Pro and Urbis Designday, but online registration is a must.
Register now at *architecturenow.co.nz/designdaypro*

# Developer co-funds roading projects

A multi-million-dollar roading and infrastructure project is underway in Queenstown after developer, the Porter Group, co-funded the project.

The work, which is now underway, will see a new eastern arterial road (EAR) and roundabout built off State Highway 6 to access the burgeoning Shotover Park retail precinct.

"It's been a case of working with the New Zealand Transport Authority (NZTA) and the Queenstown Lakes District Council (QLDC) for many years to finally achieve this," Porter Group chief executive Alastair Porter said.

The new roading will access a new 8,000m2 Mitre 10 Mega store scheduled to open in spring 2015 and a future PAK'nSAVE supermarket.

"In addition to these, there's approximately another 30 commercial industrial adjoining sites on the Shotover Park development that have been sold to predominantly Queenstown businesses, many of which are very keen to get on with their development," Mr Porter said.

"This is wonderful news for Queenstown because it will significantly expand affordable living opportunities and broaden the range of products and services which are desperately needed to underwrite Queenstown's continued rapid growth."

Mr Porter said the State Highway 6 Eastern Arterial Road roundabout project was "long overdue". He said NZTA had made it clear that a private funding contribution was essential for this project to proceed. For this purpose the Porter Group had arranged funding for two-thirds of the required private contributions.

Also to ensure that a connection between Glenda Drive and the new EAR could be open before next winter 2015, the Porter Group let a contract to Fulton Hogan in November to undertake pre-road earthworks and underground services.

"The whole community is aware of the number of accidents there have been at this intersection, let alone congestion problems," said Mr Porter. "For this reason we make no apologies for constantly lobbying for many years for this work to be done."

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# Interior Awards

Online entries to the Interior Awards 2015 opened on 4 February. This year's awards feature some exciting changes to the programme.

Interior Awards 2015 see the launch of the student category, which aims to recognise a design concept (built or un-built) across all areas of interior design (excluding residential). To be eligible, entrants must be aged 28 or under and be currently studying full time in 3rd or 4th year or recently graduated (end of 2014) in the fields of interior design, spatial design or architecture.

"This new award provides an opportunity for students to showcase their interior design projects and elucidate how conceptual, material and formal concerns have shaped their design development," professional teaching fellow at the University of Auckland's School of Architecture and Planning and co-organiser of the student award category Rachel Carley said. "The award acknowledges interior design as part of an 'expanded field' that seeks to question, redefine and challenge the limits of the discipline," Carley said.

The 2015 Interior Awards will also see the very popular workplace category divided into two sections: workplaces up to 1000m$^2$ and workplaces above 1000m$^2$.

"The move recognises the unique set of design needs and the tailored solutions increasingly being crafted to suit the different-sized workspaces," awards convenor and editor of Interior magazine Federico Monsalve said. "It gives the jury panel an invaluable tool to compare and celebrate these spaces in a more targeted fashion."

This year's judges are looking forward to sifting through the entries in search of the country's most revolutionary, disruptive, or plain alluring interior spaces.

**KEY DATES**
**Entries close**: 29 April 2015
**Finalists announced**: 7 May 2015
**Finalists present live to judges**: 20 - 21 May 2015
**Awards evening**: June 2015 (exact date to be confirmed)

# Nature's Support

We have a therapeutic back belt and a knee support from Nature's Support to give away. Nature's Support recently launched a new pain relief product range for those with arthritis, ligament or nerve damage, repetitive strain injuries and other debilitating joint ailments. The products are hand crafted from selected brush tail marsupial wild furs and then processed into pelts using 100 per cent natural materials. The pelt is then attached to a flexible cortex belt with Velcro fasteners.

Email your name and address to **pbcomps@agm.co.nz** by 30 March to go in the draw to win one of the natural pain relief supports.

# Advanced simulation

This year, University of Canterbury experts will use the university's BlueFern computer to simulate what happened under the ground during the Canterbury earthquakes.

Civil engineer, associate professor Brendon Bradley, said the aim was to use advanced simulation methods to understand the way in which seismic waves radiated from the earthquakes across the Canterbury Plains and interacted with liquefiable soils near the surface that caused significant damage.

"We want to understand the relative contribution of the wave propagation in rocks deep beneath the Canterbury region, or the soft liquefiable soils beneath Christchurch, that were the predominant cause of the extreme levels of ground shaking."

Professor Bradley has spearheaded vital research following the earthquakes and was recently named the New Zealand Young Engineer of the Year at the national 2014 Engineering Excellence Awards.

He is considered an international research leader in several emerging fields of earthquake engineering and has been a member of the New Zealand reconnaissance teams for overseas natural disasters including the 2009 Samoan tsunami and 2011 Japan earthquake.

"We expect this research will provide a significantly different perspective on previous work in this area by making use of high computing resources and also will establish research in this area in New Zealand," Bradley said.

"We are also examining the impacts of topographic effects which occurred in Christchurch's Port Hills and produced large shaking and slope instability that resulted in red zoning of residential areas. This is not just of interest for Christchurch. The impact and consequences will be likely greater in future earthquakes in the Wellington region, for example, where a significantly greater portion of the urban area occurs in topographically irregular terrain."

In 2014, Bradley became the first New Zealander and youngest researcher to receive the prestigious Shamsher Prakash Foundation Research Award, given annually to an engineer, scientist or researcher from anywhere in the world under the age of 40 who is a specialist in geotechnical engineering or geotechnical earthquake engineering.

# Change to LBP requirements

Upcoming changes to the Licensed Building Practitioners (LBP) scheme, which were announced in late-January, will make on-going professional development more relevant and less onerous.

Under the new scheme, licensed building practitioners will be required to do both compulsory and elective activities. The compulsory activities will involve reading the LBP News section of the Ministry of Business, Innovation and Employment's *Codewords* newsletter and identifying two examples of on-the-job learning.

LBPs will also do elective activities that are relevant to their work and licence class.

"New Zealanders want to know their homes and buildings are properly designed and built by people who are trained to do the job," the Ministry of Business, Innovation and Employment's registrar of building practitioner licensing Paul Hobbs said.

"By moving away from an entirely points-based system in favour of learning outcomes, LBPs can keep up with best practice whilst continuing to give consumers confidence they are qualified and accountable for the quality of their work."

The new skills maintenance scheme does not introduce any new activities - it simply makes two existing activities compulsory, with the aim of making the scheme more meaningful and in line with best practice across all seven licence classes.

"The ministry will road-test the new scheme during the first half of this year, by working with LBPs, building merchants, and trade associations so that any unforeseen issues are resolved before LBPs are required to transition from November 2015," Mr Hobbs said.

The LBP scheme was launched in 2007 to raise standards across the building and construction sector and consumer confidence in the quality of work carried out.

Since 2012, it has been compulsory for practitioners who do restricted building work to be licensed or to work under the supervision of a licensed practitioner.

More than 24,000 LBPs have been licensed since the scheme started in 2007.

# Heritage breach

Arrow International says it is grateful the courts recognised that the company acted in good faith despite its breach of the Heritage New Zealand Pouhere Taonga Act.

Arrow was discharged with a conviction on 22 January after its contractor, Mike Greer Homes Canterbury Ltd, disturbed a heritage site in the outer Christchurch suburb of Redcliffs without the correct prior authority being granted by Heritage New Zealand.

Heritage New Zealand said the site played a crucial role in "developing ideas about the origins of Maori culture and the relationship between Moa hunters and classical Maori".

"The site is a large moa hunter occupation site dating to around the mid 14th to early 15th centuries," Heritage New Zealand said.

The charge was laid in 2014 and related to foundation excavations undertaken during the rebuild of a residential property in Redcliffs. "We take the protection of our national heritage very seriously. Regrettably, in this particular instance we failed to ensure that an application for authority to excavate, as part of a residential development, was lodged with Heritage New Zealand prior to any earthworks being undertaken," Arrow International director Tom Clisby said.

"Arrow reviewed its policies and procedures at the time of the charge and has subsequently evolved the company's best practice as it applies to archaeological discovery and protection.

"We have also been working closely with Heritage New Zealand, our environmental consultant, Opus International, and local iwi representatives to implement a number of initiatives developed to heighten the understanding within the construction industry of both the importance of archaeological discovery to protecting our national identity and the requirements around the current legislation as they apply to construction operations. Our primary aim is to ensure that heritage and environmental issues are fully understood by contractors and appropriately respected throughout all construction operations," Clisby said. "Mike Greer Homes has been very supportive of getting these initiatives up and running within the contractor community and have contributed to the implementation of these."

# Smart building

The 2015 New Zealand Institute of Building conference is fast approaching.

Held in Christchurch on the 18th and 19th of March, the theme this year is SMART: Showcase, Market Focus, Attitudes, Resilience, Technology.

NZIOB president Warren Chapman said the conference promised to be an insightful and forward-thinking event hosting an array of speakers from New Zealand and overseas. "There is an unprecedented opportunity to rethink, revitalise and renew the New Zealand built environment. The conference is a chance to hear from industry leaders of the challenges, goals and aims of the sector as it moves through this boom period of unprecedented opportunity, as well as a unique event at which to network with your peers from across the country."
smart15.co.nz

# Skills demand

The number of skilled vacancies advertised online in New Zealand rose 1.1 per cent in December 2014 to its highest level in nearly six years as a result of the Canterbury rebuild needing skilled construction workers and engineers, according to the Ministry of Business Innovation and Employment. Over the year, Canterbury-based vacancies for construction and engineering rose 16.8 per cent, and since the September 2010 earthquake, have soared 375 per cent.

# NAWIC Awards

In 2015 the National Association of Women in Construction (NAWIC) will host the inaugural national excellence awards, supported by principal awards sponsor Hays.

Hays held a local Women in Construction awards in Canterbury in 2014, which focussed on the contribution of women to the Christchurch rebuild, and they are pleased this year to be joining forces with NAWIC in support of a national programme.

The awards are intended to celebrate the achievements of women working in the male-dominated construction industry.

Awards will be presented in a variety of categories covering a broad spectrum of the industry. A presentation ceremony will be held in Christchurch on 7 May at the Rydges Hotel. nawic.org.nz

# Textile re-use

An American engineer is investigating how textile waste could be used as an alternative to traditional building materials, particuarly in seismic retrofits of civic structures and infrastructure projects

While many people would look at textile waste and immediately think of disposal, California State University Long Beach researcher Yu-Fu Ko has very different thoughts.

Ko, a member of the Faculty of Civil Engineering and Construction Engineering Management, when presented with textile waste sees only opportunity.

Ko has recently been researching ways to utilise textile waste in the seismic retrofitting of structures, with an eye to using textile waste to support civic structures.

"I'm looking at how they might be used to reinforce concrete structures such as buildings and bridges," Ko said. "If the preliminary research results were successful, it could be applied to retrofit earthquake-damaged structures in the future. In current practice, carbon fibre reinforced polymer composites (CFRPs) are used to retrofit buildings and bridges. But making these reinforcing fibres can be hazardous. Workers who make carbon fibres breathe in the materials. That's not good. Plus, carbon fibres are expensive. I hope, by mixing textile waste with bio-derived resin matrix, they will deliver the equal strength of CFRPs at a reduced environmental impact."

Not only would textile waste patch up an aging infrastructure, it would offer a substitute for diminishing global resources.

"The material diminishing the fastest is timber," he said. "I see less every year. The same is true for reinforced concrete and steel. Typical buildings and bridges today still use all these materials. That won't be the case in the future."

When he teaches undergraduate and graduate students, Ko stresses the potential for the use of new materials. "If you inject carbon nanotubes into a structure, it can multiply the strength of the original structure. Look at the process of filling concrete with rebar. The carbon nanotubes play the same role as the rebar. It offers additional reinforcement. In decades, there will be limited resources to make rebar. In addition, the carbon nanotubes offer many times the strength offered by rebar reinforcement. We are talking about superstructures in the future."

Developing new computational modelling is also part of Ko's research focus. He uses computational algorithms to perform the numerical tests, which will be calibrated by performing the mechanical tests that could characterize the materials used in the analysis and design of buildings, bridges and other infrastructures. "New materials are always under development. New materials would change current analysis and design philosophy of structures. If you understand the material behaviours at the microscopic and nanoscopic scale, you can understand the macroscopic behaviours and easily utilise these materials."

# A manifesto for construction

Last year, UK publisher Building, started a consultation to draw up a policy blueprint for the industry that could be taken to the UK's political parties in advance of the May election.

"Our aim was, in partnership with the sector, to create a manifesto for construction; a document containing the measures the industry as a whole felt would best enable it to grow to meet the needs of the UK economy over the next five years and beyond," a statement from Building read. "It is undoubtedly primarily for the industry itself to drive reform and improvement in the way that it works - in profitability, delivery of projects and sustainability itself. But it is the government that sets the framework within which the industry operates. Our manifesto says that to help the industry - and thereby the UK - to be successful, a new government should adopt policies for construction that achieve three fundamental things:

Create a vision for the built environment of the UK with sustainability at its heart

Set up structures, funding and incentives to achieve it

Demonstrate a clear commitment to investing in the built environment to achieve social, economic and environmental benefits.

"After extensive consultation, Building's manifesto for construction - Agenda 15 - includes a series of separate policy recommendations across six separate areas."

Agenda 15 is available online in its full form at building.co.uk

# New generation of 'supertalls'

In 2014, 97 buildings measuring 200 metres or more in height were completed around the globe, which marks a new record. The previous record was in 2011 when 81 skyscrapers measuring 200 metres or more were completed.

The 2014 statistics showed 11 buildings classed as 'supertall', which stand 300 metres tall or higher, were completed.

The statistics, provided by The Council for Tall Buildings and Urban Habitat (CTBUH), show more than 935 buildings exist that stand at 200 metres or higher, a 352 per cent increase from 2000 when only 266 existed.

Asia's dominance of the tall building industry increased yet again in 2014; 76 per cent of the tall buildings completed were in Asia.

At 541 metres, New York's One World Trade Center was the tallest building to be completed last year and is the world's third-highest building.

Interestingly, the majority of tall buildings completed last year used composite construction as the primary structural system, while all-steel structural systems and those which used predominantly concrete were both on the decline.

skyscrapercenter.com

# Natural inspiration

Queensland's new $1.5 billion Lady Cilento Children's Hospital opened to the public in January, becoming Australia's largest and most advanced children's hospital.

"We're very excited to see the Lady Cilento Children's Hospital, which was seven years in the making, become a fully operational children's health campus," Conrad Gargett project director Bruce Wolfe said.

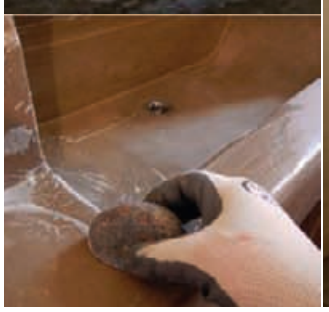
"The permeability of the design - being accessible and open - connects with public zones and makes the Lady Cilento Children's Hospital a real community building," he said. "The hospital also incorporates generous landscaped areas at so many of the levels, allowing access to the outside environment, natural light and fresh air."

The completed hospital forms a new major landmark for Brisbane, connecting with the city's popular South Bank precinct, Somerville House and St Laurence's College. The international award-winning design references the structure of a tree with a 'trunk' and 'branches' providing vertical and horizontal linkages that unite diverse cultures, moving beyond silo departments and creating a rich community environment.

Extensive sun shading responds to Brisbane's subtropical climate and forms a major design element with purple and green blades referencing the surrounding nature, while expansive openings in the building's façade connect the internal spaces to the outside.

The landscape architecture, carried out solely by Conrad Gargett, plays a major role in the design of the hospital and includes a large, sloping green roof, transplanted 30 year-old fig trees, state of the art play areas and a number of roof gardens for recreation and rehabilitation. The holistic design of the hospital highlights the wellness benefits of nature with healing gardens and therapeutic outdoor spaces.

## Fine-grained lime plaster by Rockcote



**Create a traditional Tadelakt plaster finish with ROCKCOTE Marrakesh.** Marrakesh can also be finished to a traditional flat lime plaster or for a contemporary look can be used to achieve a traditional glass face marble plaster. ROCKCOTE Marrakesh is a fine grained lime plaster that can be used for both interior and exterior spaces including areas of high humidity such as bathrooms and wet areas.

Marrakesh creates a seamless surface where the smooth curve of one element flows into another evoking a sense of ease and continuity not seen with standard finishes.

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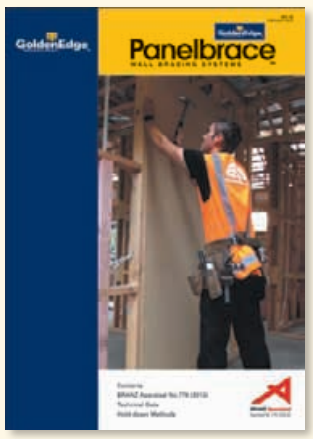
## New MDF Bracing System




**BRANZ appraised to resist seismic and wind loads.**
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Environmentally friendly, GoldenEdge Panelbrace Wall Bracing Systems are based on 9mm and 12mm GoldenEdge Regular MDF.

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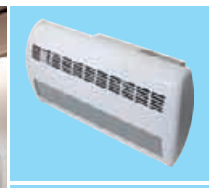
## Wall mounted room heater range by Weiss



**Powerful, efficient heating.**
The Weiss flush and wall mounted fan heaters have an attractive slim design while hiding a powerful yet quiet tangential fan. Tested and approved to New Zealand standards they have a touch pad electronic control interface with an LED display, optimal timer function and the flush mounted unit fits into the existing cut out for Skope 981E.

The impedance-protected Class B1 Motor and extended three-year warranty make these heaters ideal for domestic and commercial settings alike to quickly heat large areas such as hallways, living areas, and classrooms.

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**Smartfit® is an 'alternative solution' method of compliance with clause E2 of the New Zealand Building Code.**
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SilcaSystem® provides an economical solution for DIY homeowners, architects, developers, and contractors alike to achieve creative designs and produce a durable elevated patio adding value to a home or property and enhancing the outdoor living experience without the continuous maintenance hassles and ongoing costs of wooden decking.

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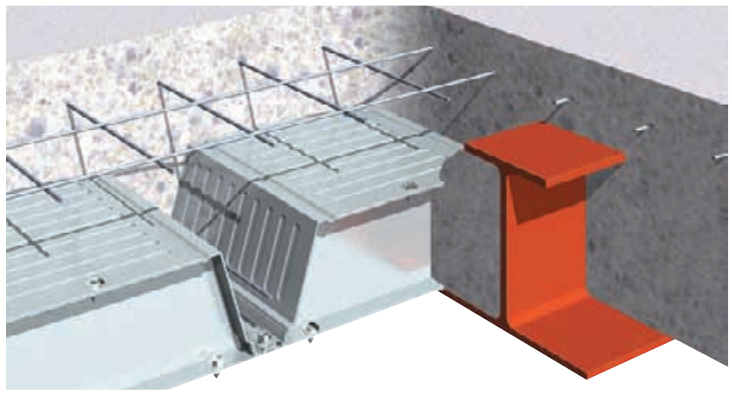
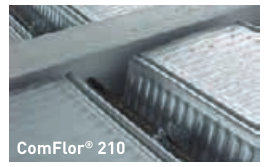


**ComFlor® is a new generation in composite steel floor decking systems.**




Manufactured in New Zealand and technically supported, ComFlor's® high-tech design and manufacturing delivers major benefits including advantages in seismic, gravity and foundation design, simplicity of construction and cost efficiency.

ComFlor's® primary application is in composite construction where optimised deck spans on long-span composite beams allow architectural freedom. Three profiles are available to suit a wide range of construction projects including apartments, offices, hotels, hospitals, car parks, retail centres and warehouses. Available in ComFlor® 60, ComFlor® 80 and ComFlor® 210.

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# Energy oversight

## Auckland-based consultant Neil Purdie says until mandatory disclosure of energy use is required for lease transactions there is no incentive for owners to improve efficiency in commercial buildings

**NabersNZ is starting** to gain traction in New Zealand with a number of buildings being prepared for rating.

The scheme is voluntary and provides a simple rating system for tenants and building owners to understand how their building performs, from bad (0-2 stars) to good (4-6 stars).

To date, the rating system has succeeded in exposing the drivers of poor energy use in New Zealand commercial buildings, which are the commercial leasing obligations and poor HVAC design.

Confronting building energy use costs money. The landlord incurs a capital cost to establish the infrastructure necessary to split the energy use between the landlord and the tenant, with no return on the investment.

The world of commercial leasing is not governed by common sense, as the Auckland District Law Society lease demonstrates, as there is no obligation for a building owner to provide an efficient building to the tenant.

Effectively, the tenant is responsible for all outgoings, and must pay all energy costs as well as most building maintenance costs. There is no incentive for a building owner to split the energy use or improve the energy use of a building, as the tenant's accountant pays the bill without blinking.

It is not uncommon for a gas bill to be paid month in month out without question, as the amount does not change. No one stops to think that heating energy should only be used in the winter and question why are they paying a gas bill all year round.

Excessive energy use is probably due to poor engineering. Many HVAC systems have been set up to fail in terms of energy efficiency. Some engineers effectively design cooling systems for the hottest day of the year and heating systems for the coldest day of the year, then compromise for the other 363 days.

Many of these systems control room temperature by reheating refrigerated air to ambient temperature, using two lots of energy, when none should be used at all.

Does anyone care? An energy efficient building will use less than 100kWh per square metre a year while the worst use around 300kWh per square metre per year. Paying a penalty of $40 per square metre per annum (20c/kWh) to heat cold air is not clever. Would you prefer to pay $20,000 per year, or $60,000 for a 1000m$^2$ office, on top of $250,000 rent per annum?

Commercial property transactions in New Zealand have been akin to buying fleet cars such as Falcons and Commodores, where no one cared about the gas bill.

The analogy is interesting; as we see the demise of the Australian car industry; inefficient cars and inefficient buildings have been recognised and legislated against in Australia. Government departments are required to lease energy efficient property.

Discerning buyers, which may or may not include our government departments, will perhaps look at the overall cost of the commercial transaction instead of ignoring the operating expenses.

At this stage, government leasing policy does not address building energy use. This will inevitably lead to a number of "gas guzzler" buildings being developed in Christchurch for government tenants.

Until mandatory disclosure of energy use is required for lease transactions, there will be no incentive for building owners to improve building efficiency other than the demand of educated tenants.

The New Zealand government should provide leadership, as an educated tenant, to align with the Energy Efficiency and Conservation Authority and New Zealand Green Building Council initiative to bring NabersNZ to the market.

> The world of commercial leasing is not governed by common sense... there is no obligation for a building owner to provide an efficient building

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# Making a mark

## Wellington-based architect Gina Jones on elevating more women into senior roles in the construction sector, and the inaugural 2015 National Association of Women in Construction Excellence Awards

*'How can women reach senior positions within the construction sector?*

*Some young women in architecture question the need for a feminist movement, claiming to have experienced no discrimination. My concern is that although school is not a non-discriminatory environment, it is probably the least discriminatory one they will encounter in their careers. By the same token, the early years in practice bring little differentiation between men and women. It is as they advance that difficulties arise, when firms and clients shy away from entrusting high-level responsibility to women.'*
*-Denise Scott-Brown, 1975.*

Sadly, the above statement from 1975 resonates as strongly today as it did 40 years ago.

Starting at TWIA in Wellington as an architectural graduate in the mid-1980's, I often found myself as a lone female on site. As unbelievable as it sounds today, I recall at one large construction event, being the sole woman among a sea of over 200 males. We have certainly come a long way from those days, though sadly, the issue of gender inequality in the building industry remains topical.

This is not solely a New Zealand problem. The United Kingdom's *Architecture Journal* has been publishing an annual 'Women Issue' for a significant period of time.

The main themes have been rather consistent over the years. Numbers aside, the main points raised in a recent edition of *Architecture Journal's* Women Issue could have been written anytime over the past 30 years, namely:

- How it is that our [UK] Architectural Schools graduate equal numbers of male and female students while only 21 per cent of registered architects in the UK last year were female?
- The UK figure of women comprising 21 per cent of registered architects compares poorly to the percentage of female licensed doctors (44 per cent) and the percentage of women lawyers with practising certificates (47 per cent).

In New Zealand:

- Former NZIA chief executive, Beverly McCrae, is on record as saying that "less than 20 per cent of our architectural members but nearly 40 per cent of our graduate members are women."
- About 40 per cent of registered doctors, lawyers, and accountants are female.

The perennial question is therefore to ascertain why women do not progress to senior positions within the construction sector.

We need to encourage women to pursue, establish and sustain their careers in the construction industry. When I became the inaugural National Association of Women in Construction (NAWIC) president in 2013, we aimed to establish NAWIC as a body that promotes the construction industry to women, and one that supports our industry's female 'rising stars'.

One critical area where we can do this is by encouraging female construction professionals to enter industry awards. Having been judging convenor for the high profile New Zealand Institute of Buidling Awards for many years, I have observed a distinct lack of women entrants. What is the reluctance here?

I was thrilled to see Architecture Women New Zealand launch its inaugural awards last year. Open to registered architects and architectural graduates, the awards provided a forum to acknowledge our female architectural achievers.

The logical progression is to develop industry-wide construction awards, which has now been realised with the launch of the Hays NAWIC Excellence Awards. The awards will celebrate individual achievement across diverse categories including professional disciplines, trades and study/ apprenticeships.

There will also be a category open to all individuals and organisations who are at the forefront of advancing and furthering the interests of women in the construction industry.

I believe that these awards will be aspirational for women.

They will provide a stage for female construction practitioners to shine, and will provide markers for a fulfilling career within this most exciting industry.

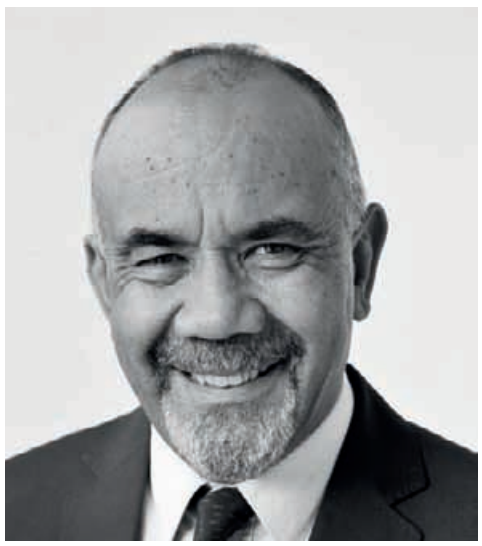
The Hays NAWIC Awards will assist in the retention of female practitioners, and will elevate these women into more senior roles within the construction industry.

This is a significant step towards us viewing Denise Scott-Brown's comments of 1975 as those from a bygone era, rather than one with ongoing currency in 2015.

*Gina Jones is the founder and principal of well-known Wellington architectural practice, Accent Architects.*

# Forest safety

Maori Party co-leader and Member of Parliament for Waiariki, Te Ururoa Flavell, welcomes the findings of an investigation into the lack of safety in the New Zealand foresty industry



Tēnā tātou katoa.

As the Member of Parliament for Waiariki, which boasts the largest forestry area in the country, it's fair to say that I have a pretty strong interest in this industry and a genuine concern at the number of injuries and deaths occurring within it.

Māori have a unique relationship with the forest. We recognise an Atua - a god as the caretaker for the forest, Tāne. In our history, Tāne was a figure of great importance. He separated the earth from the sky and brought light into the world. He is often known by different names to reflect his different roles. He is called Tāne-mahuta as god of the forest, Tāne-te-wānanga as the bringer of knowledge, and Tānenui-a-rangi as bringer of higher consciousness. Our relationship with the forest goes further, as we also see it as a provider of food. Our hunters use the forest to gather kai to fill the freezers at home and those of our pakeke (elders) and also for events on the marae. Our people are naturally at home in the forest and so it should come as no surprise that working in the forestry industry is a popular career of choice for many Māori.

Across the industry, Māori own around $2 billion worth of forestry assets and Māori-owned land beneath plantation forestry is currently around 520,000 hectares. There is obviously strong involvement from Māori in the industry, and that is likely to grow in the future as more iwi settle their treaty claims.

All too often there are stories in the media of another bushman, logger or forestry worker not returning home from his day's work. In 2013 alone, out of 51 workplace deaths, 11 of those occurred in the forestry industry – deaths that could have possibly been prevented. That is 11 deaths too many and I applaud the efforts made by those within the sector and outside of it, who have committed to working towards improvements in the safety of our workers in this area.

> In 2013 alone, out of 51 workplace deaths, 11 of those occurred in the forestry industry – deaths that could have possibly been prevented

This year, Rotorua will host the Forestry Industry Safety Summit in March, and I note that one of the key-note speakers will be Wiremu Edmonds, who has become well known now in the forestry industry for the compelling address that he along with his wife Marsella have delivered to more than 8,000 people across the forestry, roading, farming and construction sectors about being safe in the workplace.

Together, they have spoken at 78 events, run 26 leadership programmes and shared the story of the son they lost in a tragic forestry death two years ago.

Their message and delivery, I am told, has been well received across the industry – in fact, I have heard of seminars that have had not a dry eye left in the room after the couple has delivered their kōrero – and we are talking about conferences not just in Aotearoa, but across the world and as far away as South Africa.

Their message is a simple one that is told to remind each and every person who works in or around potentially dangerous workplaces, that life is precious. Each and every person in a workplace has a family and should be in a position every day, to walk back into their home at night, to leave their workplace safe and well and ready to head back tomorrow for another day's work. There is no shortcut worth taking that puts another person's life at risk.

Last year, I welcomed the findings of the Independent Forestry Safety Review panel, who undertook an investigation into the lack of safety in the industry. They released a report outlining a string of recommendations that are to be undertaken over the next three years.

I am really hopeful that these recommendations are implemented by the companies and contractors for the sake of their employees and I would expect that the government also plays its part in keeping our workers safe.

The Māori Party has raised the issue of safety of our forestry workers time and again with the government and we expect that with the recommendations, will come some action.

The Māori Party does not want one more life lost to the forestry industry.

Ngā mihi nui kia koutou katoa.

*Hon Te Ururoa Flavell, Member of Parliament, Waiariki*

# In the mix

Holcim's newly appointed New Zealand country manager Glenda Harvey talks to *Progressive Building* about her path to construction management and her next steps in the industry

**On the face** of it, Glenda Harvey's career trajectory seems a little unusual. Initially trained as a nurse, she made the great leap from the health sector to construction. But Holcim New Zealand's newly appointed country manager, who first worked full time at the age of 30, thinks nothing of traversing the distinctly different industries.

Married at the age of 18 to Brian, it was during time spent caring for the couple's two young daughters, Rebecca and Casey, when Harvey started an extramural degree through Massey University in business studies, majoring in accounting. But, after seven years of part-time study and a move to Queensland for Brian's work in the mining industry, the bachelor degree was put on hold.

In 1987, the Wairoa-born and raised mother sought a new direction and she began a nursing qualification, which she completed after three years of study, ultimately leading to her first full-time position back in Napier, where she then spent six years working as a nurse.

But Harvey's adventurous nature soon led her to tackle new challenges. She picked up her uncompleted business degree, and, with a new direction in mind, completed the qualification with a major in human resources before securing a position as a human resources advisor. Over the following five years she was involved in the closing of Napier Hospital and the establishment of a new centre in the town. She says it was a fantastic learning opportunity, but it was a proposition further south that lured Harvey and her family to Christchurch in 1999, where she became the human resources manager for Christchurch Hospital.

The 54-year-old says she is always on the look-out for new challenges and when a human resources role popped up at Milburn (now Holcim) only 18 months into her new role at the hospital, she leapt at the chance to enter an industry that had always intrigued her.

"It was an industry that had always interested me," she says "Milburn was a well-respected employer and I enjoy change and learning new things."

Thus began Harvey's trajectory into the construction industry. With an appointment as human resources manager, she relished the varying parts of the business she had the opportunity to experience including the environmental portfolio, communications, leading projects and branding.

"It's a company where if you put up your hand, which is what I tend to do, you have the opportunity to be involved in things outside of what your core responsibility is and that has been the beauty of Holcim," she says.

And it appears putting up her hand comes naturally to Harvey, who represented Holcim and was the chair of the board at the CCANZ for several years as well as being involved in Holcim's leadership team for the strategic new direction the company has taken, importing cement and developing two new terminals.

Globally, Harvey was part of a steering team that looked at the operating model for human resources for the business in Vietnam and following this, moved to Australia in 2010 to become the human resources manager for the Australian arm of the business.

There, the challenges were rich and varied, with 500 sites and around 3,500 contractors and employees to contend with. The experience she gained in Australia led ultimately to her appointment in mid-2014 as New Zealand's country manager and a move back to home soil.

Now based back in Christchurch, the grandmother of two is finding time for wider insterests, including involvement with Rotary and indulging in her favourite pastimes, walking and tramping.

She admits she can't answer the question 'where will you be in five years?' but says when a new challenge is on the horizon, "I'll put my hand up again.

"Holcim has a critical role to play in the construction sector in New Zealand and is a respected business partner and employer. Christchurch is also a great place to live and a city of many opportunities as the post-earthquake rebuild picks up momentum."

## Christchurch is a great place to live and a city of many opportunities as the post-earthquake rebuild picks up momentum

# Shine on

As Auckland Transport starts the retrofit of 44,000 street lights with energy-efficient luminaires, we look at the latest in lighting technology and design here and abroad.

TEXT **JOANNA JEFFERIES**

**A reduction in** crime and prevention of traffic accidents are potential impacts on Auckland City when it upgrades its street lights to energy efficient technology this year.

The first phase of a two-phase upgrade programme, which commences in July and is scheduled to run for five years, will see 44,000 street lights retrofitted with light emitting diode (LED) luminaires, replacing the current stock of high pressure sodium lamps.

Phase one will focus mainly on residential roads, which comprise approximately 60 per cent of the region's street lighting network, while the balance of the conversion of Auckland Transport's approximate 100,000 street lights is expected to follow in four to five years.

But while the cost-saving quality of LED technology is well documented (Auckland Transport estimates net savings of $32 million over the 20-year design life of the LED luminaires) it is the added benefits of reducing road accidents and improving motorist and pedestrian safety that will have a further positive impact, Auckland Transport media relations manager Mark Hannan said.

"White light provides better colour recognition and is regarded as a safer light because it is easier for motorists to see people and other vehicles," he said. "LED light provides better control of the light and limits spill light and night glow."

A telemanagement system (TMS) will be used to manage and monitor the network and will bring Auckland into line with countries overseas where similar systems are being used to manage electricity usage and prevent crime.

United Kingdom-based company Telensa has developed an innovative system allowing selected street lights to be switched off or dimmed for set hours in the middle of the night, or dimmed according to traffic volumes or weather conditions.

Enlightenz marketing co-ordinator Ali McGraw said the flexibility of LED technology combined with the power of lighting controls meant further savings could be made as well as improvements to pedestrian safety and traffic flow in Auckland.

"These same control systems aren't limited to street lighting; they can also be used to dim or turn off illuminated signs, bollards or carpark lighting during low-traffic hours thereby lowering energy use. Lighting controls can also be used to ramp up street lighting around event venues so pedestrians and cars can be moved safely and more quickly away, or to provide more light for emergency services when incidents occur," McGraw said.

Crime prevention is another area where LED technology is having an impact. Philips general manager Gordon Wiffen said a

Telensa has developed an innovative system allowing selected street lights to be switched off or dimmed for set hours in the middle of the night

connected system made this possible.

"When LED luminaires are controllable and connected, they can both respond to data commands and share information about their operations and environment. This means that, for example, councils can dim particular lights outside of peak hours or have brighter lights in high criminal risk areas."

Wiffen said employing a remotely controlled system meant there was no longer a reliance on consumers to report faults and the resulting efficiencies in energy usage meant huge cost savings.

But the technology of TMS systems is not limited to street light networks. Recently, Papamoa's Bayfair shopping centre became the first mall in New Zealand to make a wholesale upgrade to energy-efficient LED lighting with a centrally controlled system. The owners have reported energy usage savings of 64 per cent as a result.

The upgrade, which was undertaken by Philips, involved the replacement of more than1,450 individual light fittings. All redundant fittings were broken down and recycled – a total of 2,476 kilograms of material.

Wiffen said the large-scale retrofit presented some specific lighting challenges.

"To make the switch viable, any new light fittings had to generate at least as much light output as the current fittings, and there had to be minimal disruption to the centre shops and customers during installation."

To achieve peak performance in terms of quality of light and efficiency, the lighting is integrated into the centre's building management system, meaning all the lighting can be controlled and monitored from one hub, enabling the system to automatically adjust itself to make maximum use of natural light.

Gerard Lighting Group design and technical manager Mike Quin said »

## HUMAN-CENTRIC LIGHTING

While innovations in bulb design and efficiency and 'connected' technology are creating huge savings in energy usage and maintenance reduction commercially in New Zealand, overseas there has been a further move towards creating lighting that can improve well-being and productivity. Enlightenz marketing co-ordinator Ali McGraw says European companies like Trilux are developing 'human-centric' lighting, which mimics natural light patterns. "The inner clock of humans is regulated by natural light, with daylight increasing our level of activity and darkness reducing it. When the artificial light in our workplaces imitates the course of the day, it improves our mental well-being. To take it a step further, the blue light component of white lighting can be tuned to improve workplace motivation, concentration and to support intellectual tasks, or to facilitate communication, socialisation or relaxation at the end of the working day."

innovations occuring in the LED lighting sector surpass those happening in computers or mobile phones.

For example, innovations in thermal technology mean LED recessed light fittings no longer need to have a clearance space between them and the building's insulation as they have done in the past. As well, advances in the colour temperature of LED luminaires, which was once fixed, can now be altered without changing the lamp.

"By utilising the colour mixing technology, with one fitting or lamp installed you can switch light colour between 'warm white' and 'cool white'" he said.

"LED street light technology not only reduces the energy consumption and the carbon footprint but also provides a long and predictable lifetime, which significantly reduces servicing requirements and provides unprecedented cost savings."

Energy Efficiency and Conservation Authority research shows switching to energy efficient lighting is one of the best returns on investment available for reducing overall energy use, and with commercial buildings in New Zealand accounting for 21 per cent of the total national electricity use, a move towards LED lighting technology may be on the cards for more businesses.

## PHILIPS HUE

At the forefront of connected home lighting in New Zealand is Philips Hue.

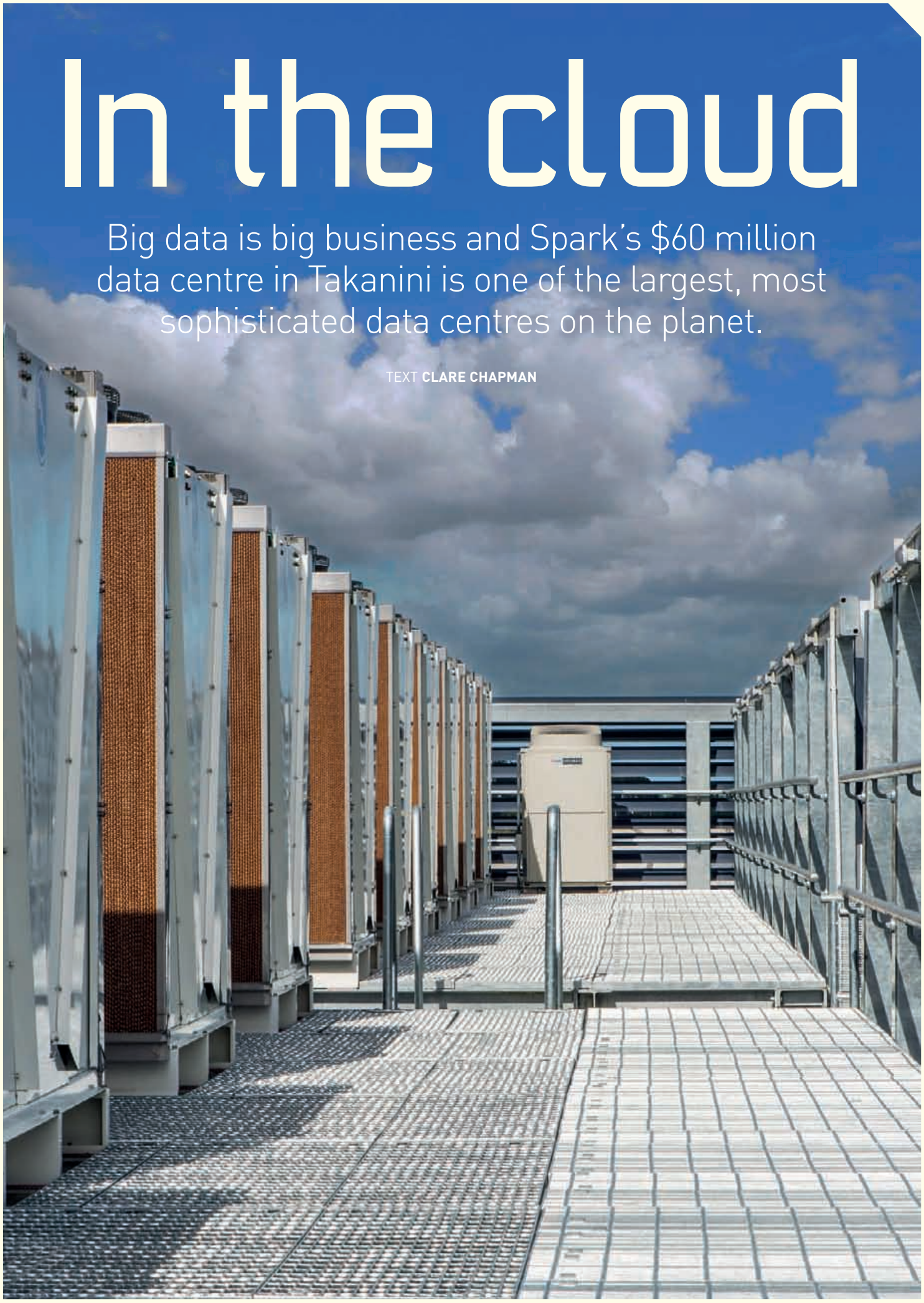
Hue is a web-enabled LED home light system, which can be controlled from a smartphone or tablet. Users can choose from up to 16 million colours and programmed light scenes and creative opportunities are endless – using internet automating service If This Then That, Hue lights can synchronise with other applications and devices to act as indicators for weather, stocks, sports scores, emails, social media and more.

Overseas, Hue has even proven useful for the hearing impaired – lights can flash when the phone rings, or when someone comes to the door.

# In the cloud

Big data is big business and Spark's $60 million data centre in Takanini is one of the largest, most sophisticated data centres on the planet.

TEXT **CLARE CHAPMAN**



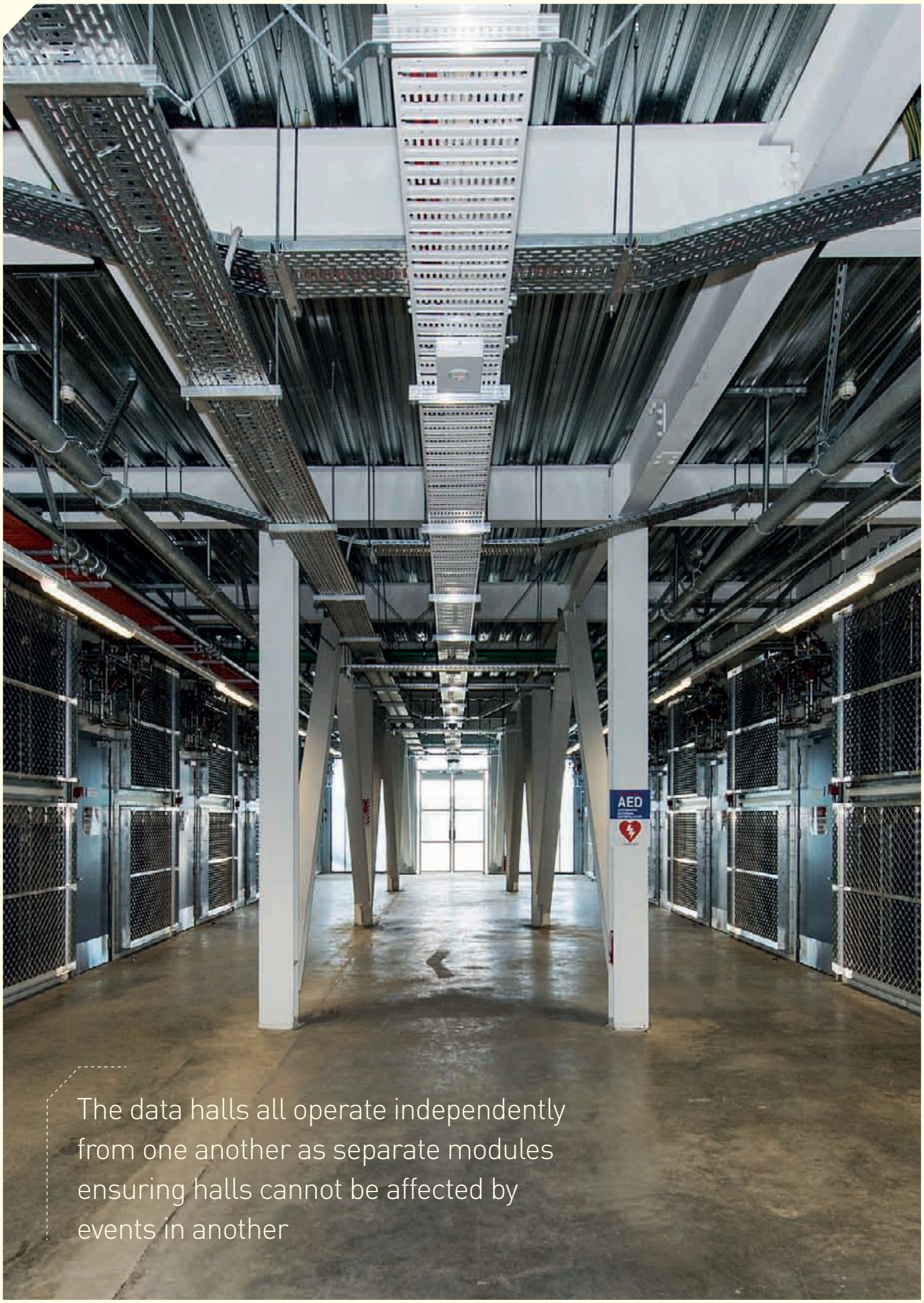
**OPPOSITE:** Detail from the roof.
**ABOVE:** The centre is located on a greenfields site in Takanini in Auckland's south.

**It is one** of New Zealand's most secure buildings, and it may just provide a prototype for developments of similar nature around the globe. But this building isn't designed for human inhabitants; it is a facility built solely to house mega data – accommodating the equivalent of 640,000 servers, or enough processing power for every New Zealander to host 10 personal websites.

The $60 million 400-rack facility is owned by Spark (formerly Telecom) and is the first stage of a tiered development based upon scalability and flexibility enabling easy expansion. It has a state-of-the-art security centre, and the central data hall is mounted on base isolators to provide added seismic protection. The buildings in place now are stage one of the tiered development. Future demand will be met by the facility's flexibility to scale up as required.

The site was chosen for various reasons: it is away from flight paths but close to road transport, high voltage power and data fibre links and is in an area rated as a low risk for tsunami. "This is as good as it can get in New Zealand with its Tier 3 international rating. That means our customers will receive very secure and reliable operations when utilising our services," Spark Digital chief executive Tim Miles said. "The next level of international rating is military grade and can't be built here because we don't have competing national electricity networks."

AECOM technical director Chris Treleaven said because of the deep bedrock up to 20 metres under layers of peat and mud, the orthodox approach would generally be to utilise many large, bored in »

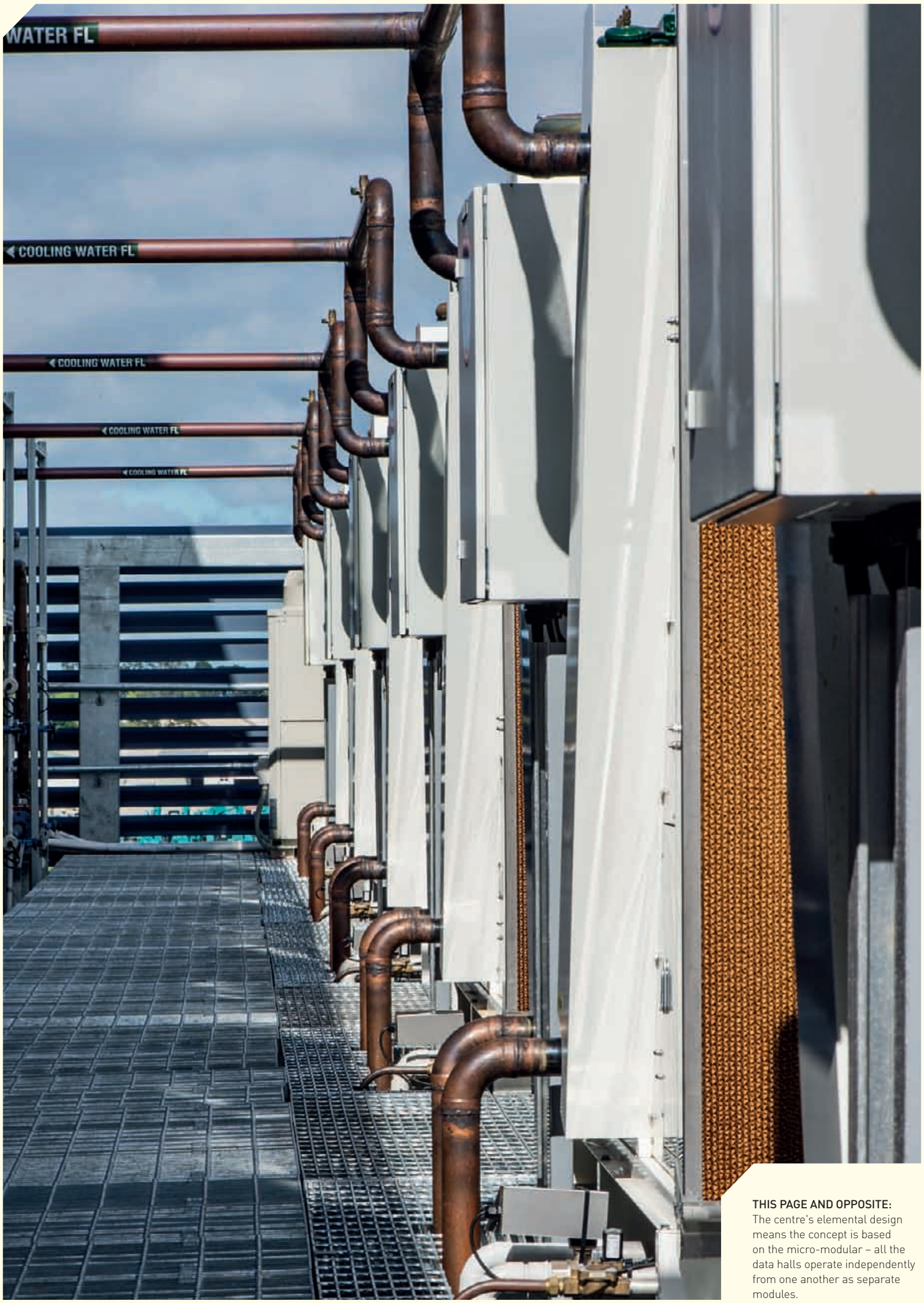



The data halls all operate independently from one another as separate modules ensuring halls cannot be affected by events in another

situ piles for this sort of development. "AECOM used a mix of screw piles and bored in situ piles, which reduced costs and piling times by one third." The design also incorporates a base isolated system, which greatly reduced the lateral forces applied to the piles and resulted in a cost and time saving. "It also reduced the data hall acceleration levels to a point where standard IT racks could be used instead of the seismic Zone 4 types, which are more expensive," Trevalen said.

The ground floor structure accommodates full construction loading on unpropped partial depth precast beams. This design was used because the peat soils were too soft to prop off and it also sped up the construction process. A steel frame structural solution was utilised above the ground floor, allowing the bulk of the three-storey building's

**THIS PAGE AND OPPOSITE:** The building is designed solely to house server racks and as such retains an industrial feel.

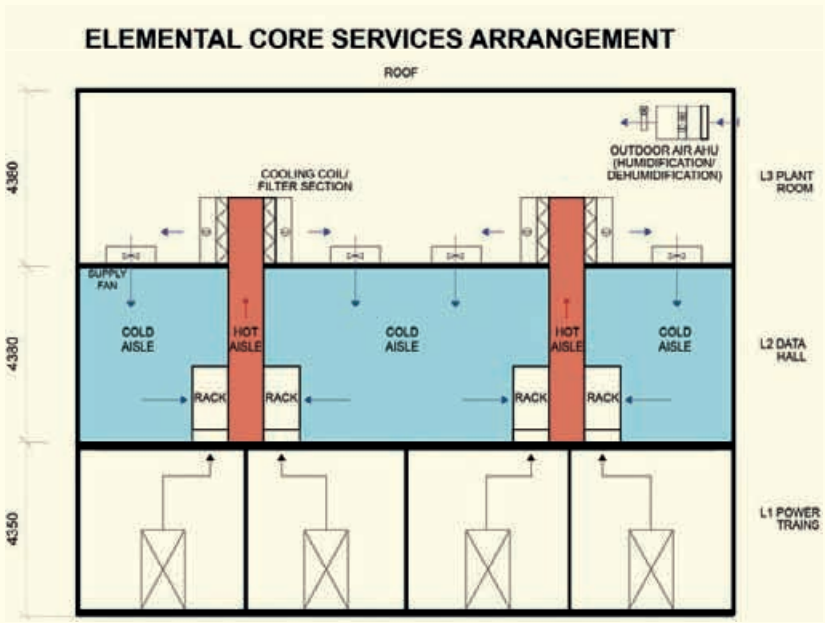


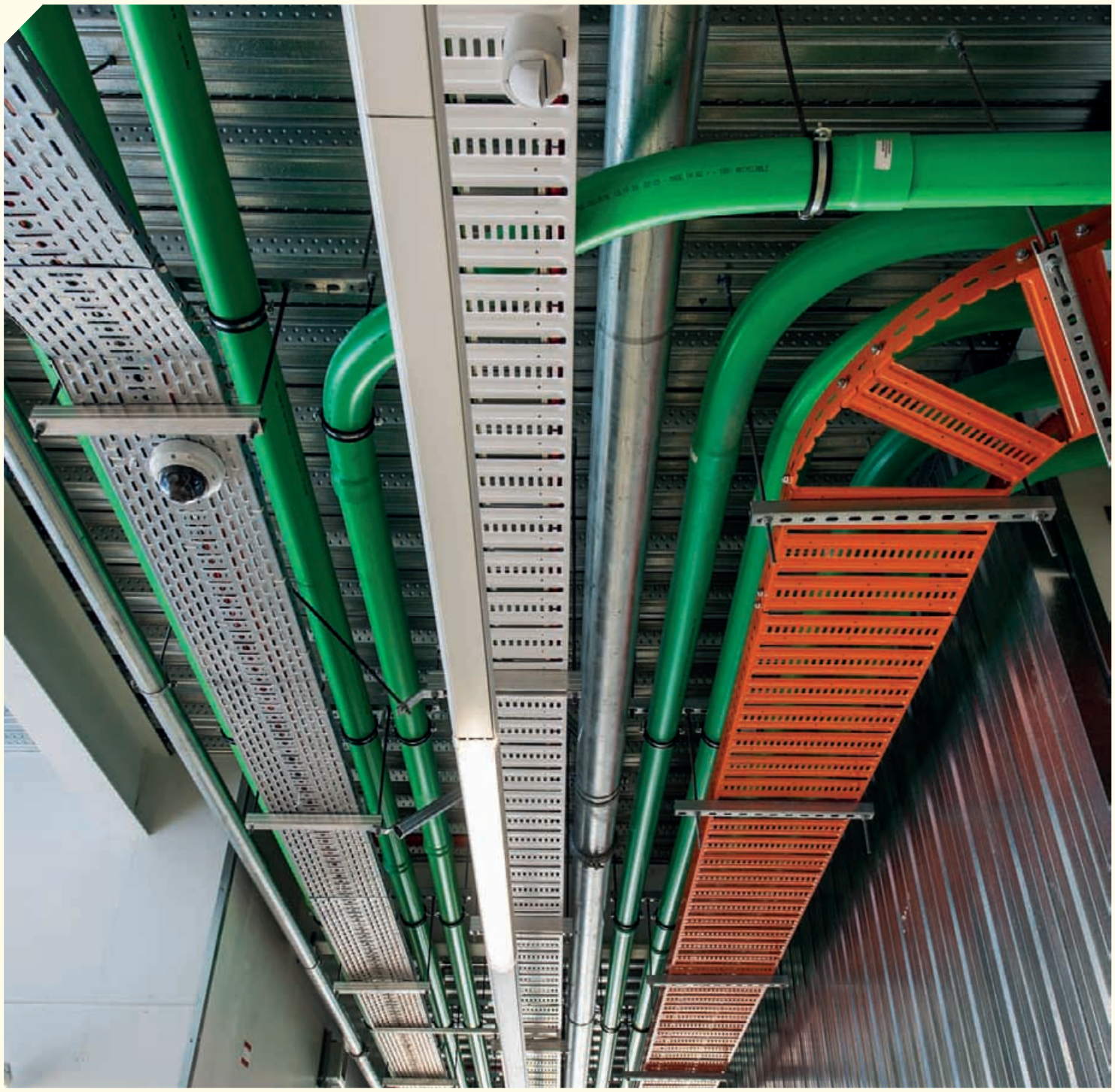

**THIS PAGE AND OPPOSITE:**
The centre's elemental design means the concept is based on the micro-modular – all the data halls operate independently from one another as separate modules.

structure to be fabricated off site while the piling was done on site.

AECOM design manager Paul Garlick said the overarching concept behind the facility's design was the micro-modular; the construction methodology was able to provide separate data halls in a staged rollout. Each of the four halls houses 100 racks, with a major benefit of this approach the ability for Spark to offer some of the halls early to their anchor tenants. The data halls all operate independently from one another as separate modules, ensuring halls cannot be affected by events in another.

But the modular approach also has other benefits. It meant smaller cables could be used to deliver power to the servers – part of the AECOM Elemental design – which means there are no electrical or power systems in the data halls. These are housed on separate levels.





The Elemental philosophy is to adopt a smaller module size wherever is reasonable ... small modules are then micro engineered

Data centre designers have historically leant towards installing bigger generators and coolers but this is not the case here. "AECOM's Elemental data centre design has deconstructed the traditional data centre topology and reassembled it," Murray Dickinson of AECOM said. "The Elemental philosophy is to adopt a smaller module size wherever is reasonable ... small modules are then micro engineered".

At the Takanini data centre, the advantages created by the micro-modular system are clear and highlighted by Spark's reduced power use. Spark's data centre required 400 racks at an average power density of 10kW per rack (4MW of IT power). A more traditional design would use eight very large 1.5MW no-break power systems, while the Elemental solution uses 16 smaller 0.5MW units providing a 40 per cent reduction in power system size. »

**THIS PAGE:** Detail of services running through the building.

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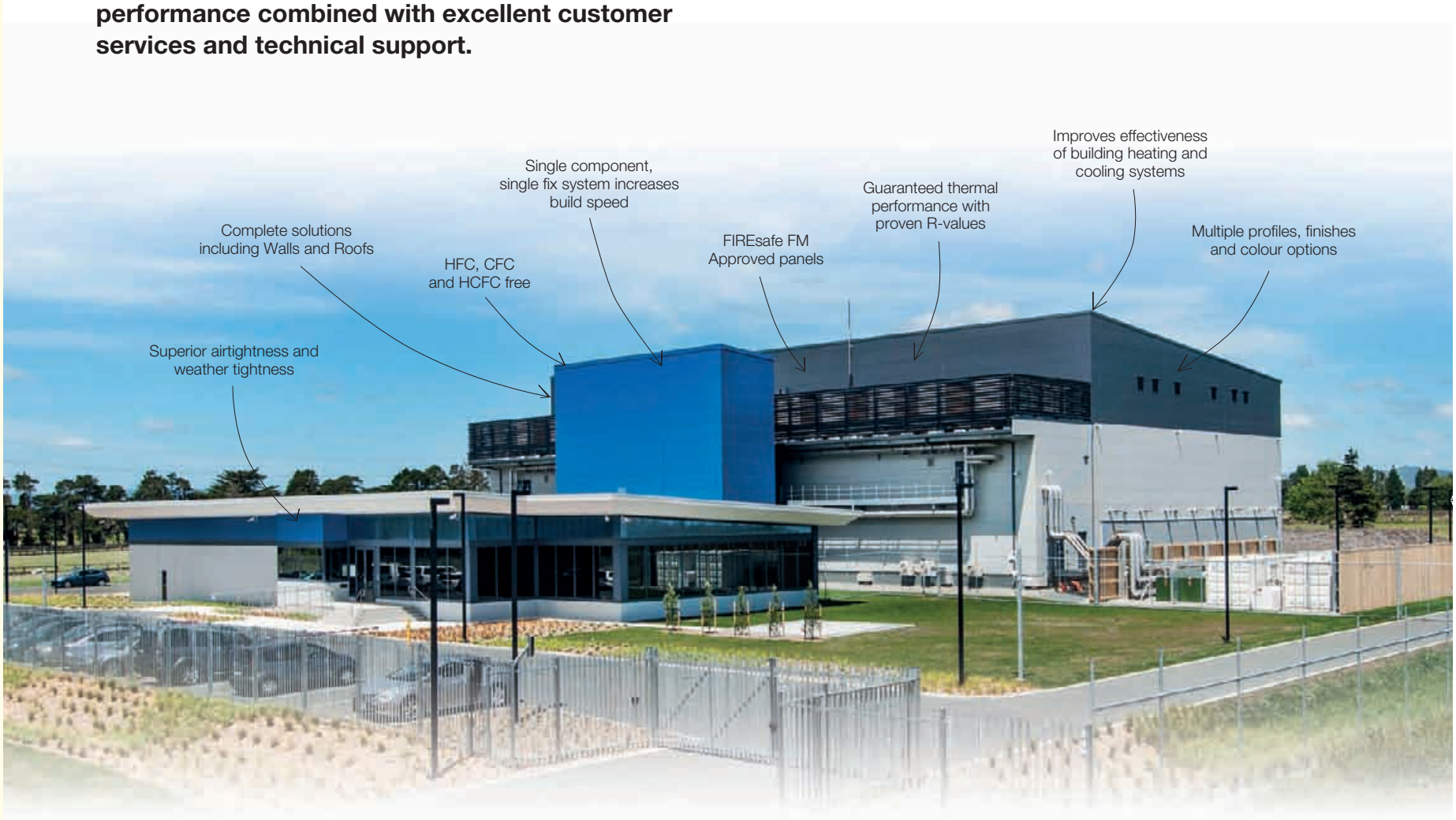


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| | |
|---|---|
| **Project** | Spark Digital |
| **Location** | Takanini, Auckland, New Zealand |
| **Use** | Data Centre |
| **Designer** | AECOM |
| **Main Contractor** | Hawkins Construction |
| **Certification** | Tier 3 International Rating |
| **Products** | Trapezoidal Roof Panels (KS1000 RW)<br>Architectural Wall Panels (AWP);<br>Mini-Micro (KS1000 MM) & Wave (KS1000 WV) |

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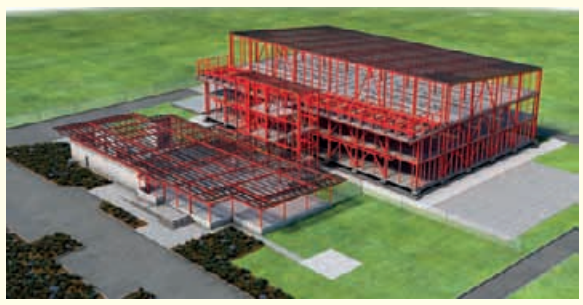


**THIS PAGE:** BIM representations of the centre, structure and mechanical plant.

Traditional design for N+1 redundancy [a form of resilience that ensures system availability in the event of component failure. Components (N) have at least one independent backup component (+1)] would have necessitated a large capital plant and sizeable distribution systems to be installed on day one to meet a relatively low initial load. The micro-modular design approach allows the installed plant capacity to closely follow the demand curve as the site grows. This significantly reduced the initial capital cost of the facility.

The micro modular design also results in redundancy and resilience benefits. High availability is achieved by using many smaller plant items in highly paralleled arrangements.

Sustainability and energy efficiency were central to the design process. In this case, the design enabled a power use effectiveness or PUE (a measure of the facility's total power delivered divided by its IT power equipment usage level) of less than 1.3 to be achieved across the entire site. "Delivering this level of efficiency within the project budget creates an exemplar that is likely to be replicated globally," Dickinson said.

AECOM sustainability manager Scott Smith explained this in another way: "This is an exemplar project because reductions in energy use are hugely significant. A change in PUE of 0.1 for the building could result in 3,000,000 kWh per annum of energy savings, which is more than the total energy consumption of 20,000m$^2$ of new office space, or the $CO_2$ equivalent of more than 15 million driving kilometres."

But the servers themselves produce a lot of heat, so a cooling system was developed to combat this. This isn't a traditional solution either. Cooling is by way of a closed circuit adiabatic-free cooling system, which is able to operate for 95 per cent of the year without the assistance of chillers. "This mechanical solution is a deconstructed version of a traditional arrangement ... the adiabatic cooling system does not rely on chillers. A facility of this size would normally have an Olympic-sized swimming pool of chilled water held at low temperature that would give the chillers time to recover after a power failure. Our primary cooling system doesn't use chillers so we don't need to protect against this system lag. Instead, we simply provided two independent water

## CREDITS

CLIENT
Spark (formerly Telecom)

MAIN CONTRACTOR
Hawkins Construction

CONSULTANTS
AECOM New Zealand

SUB CONTRACTORS
Ace Doors
Allendale
Appleby
Artiture
Aquaheat NZ
Bassetts
B&W Construction
BN Walker
Choice Tiling
Comfloor
Concept Floor
Concretec
Crown Flooring
Economech
Eltek
Everlight
Fencerite
Fire Security Services
Firepel Kidd
Fortlock
Global Security
ISPS
Kiwi Roofing
Leading Edge
Livefirm
Louvre Tec
NZ Fire Doors
Otahuhu Welding
P&G Engineering
Pacific Consultants
Pacific Doors
Piletech
Samson Mechanical Repairs
Schindler
Security Windows
Smith and Davies
Specialist Firestop
Speedwall
Spiral Drillers
Stevensons
Stresscrete
Target
Tower Scaffolding
Wavecom
Wilco
Wrapid Man

## Elemental data centre design has deconstructed the traditional data centre topology and reassembled it

feeds directly from separate mains as a redundancy provision," Smith said.

The cooling system is also micro modular. Each of the four data halls has three independent primary cooling systems in an N+1 arrangement. The power supplies, fans, and coil banks are arranged in a matrix across the primary cooling circuits. The matrix arrangement of the mechanical plant provides excellent redundancy. The internal design temperatures were optimised to eliminate the need for close control of the air conditioning systems. This system allowed the use of separate high efficiency EC fans and standard coil/filter banks instead of more traditional computer room air conditioning units. All of this plant is located on a completely separate floor from the data halls, which reduces the operational risk and administration overhead of maintenance activities.

# Base build

The new base building at The Remarkables ski field is well on its way to completion after a challenging build in the ever-changing alpine environment.

TEXT **CLARE CHAPMAN**

**ABOVE:** Site works start near the top of the new Curvey Basin Chair, which was installed in the 2014 summer. **OPPOSITE:** The site is 1,600 metres above sea level at the base of The Remarkables ski area.

**Working 1,600 metres** above sea level to construct a 6,019m$^2$ building at the base of a skifield – a site only accessible by a winding, mostly unsealed mountain road – posed significant challenges for the construction team.

Starting in late September 2014 at the end of the ski season, the construction team led by Arrow International's southern director Nick Hamlin, faced everything from blizzard conditions and temperatures that plummeted below zero to searing heat on summer days.

The building, which will be finished for the 20 June start of the 2015 ski season at The Remarkables, will function as the resort's new base building. Designed to accommodate 3,500 guests per day, it will house guest services, the snowsport school, retail tenancies, rental equipment and guest toilets on the ground floor. An extensive restaurant and cafe will take up level one, with a 10-metre-high glass frontage to the ski area that provides guests with extensive views of the ski area terrain and lifts.

Wrap-around decks open up to the ski area, provide seating for 500 people (additional to the 700 seats inside), and offer views across the Wakatipu Basin on the opposite side.

NZ Ski chief executive Paul Anderson says the $20 million project is part of a $45 million upgrade to The Remarkables, which includes a new six-seat chairlift, upgraded snowmaking facilities, extended and new trails, extra carparking and road improvements.

"This is the most substantial ski area investment made in the Southern Lakes area since the base building upgrade at Coronet Peak in 2007," Anderson says. "Overall, the upgrade increases the capacity of the ski area by 40 per cent, from 2,500 to 3,500 skiers per day."

Last year marked the beginning of the extensive project, with the creation of new skiable terrain: earthworks were completed in the summer of 2014

PROGRESSIVE BUILDING

This gives us the capacity to create 240 litres of snow per second. That's enough to fill 10 Olympic-sized swimming pools in 24 hours

**THIS PAGE AND OPPOSITE:**
The construction team dealt with blizzard conditions and plummeting temperatures in the early stages of construction in late 2014.

in which around 200,000m$^3$ of earth was moved to create the trails – enough to fill 1,000 Olympic-sized swimming pools.

Snowmaking capacity was also more than doubled during the 2014 summer months with the installation of 48 new snowguns and related infrastructure. "This gives us the capacity to create 240 litres of snow per second. That's enough to fill 10 Olympic-sized swimming pools in 24 hours," Anderson says.

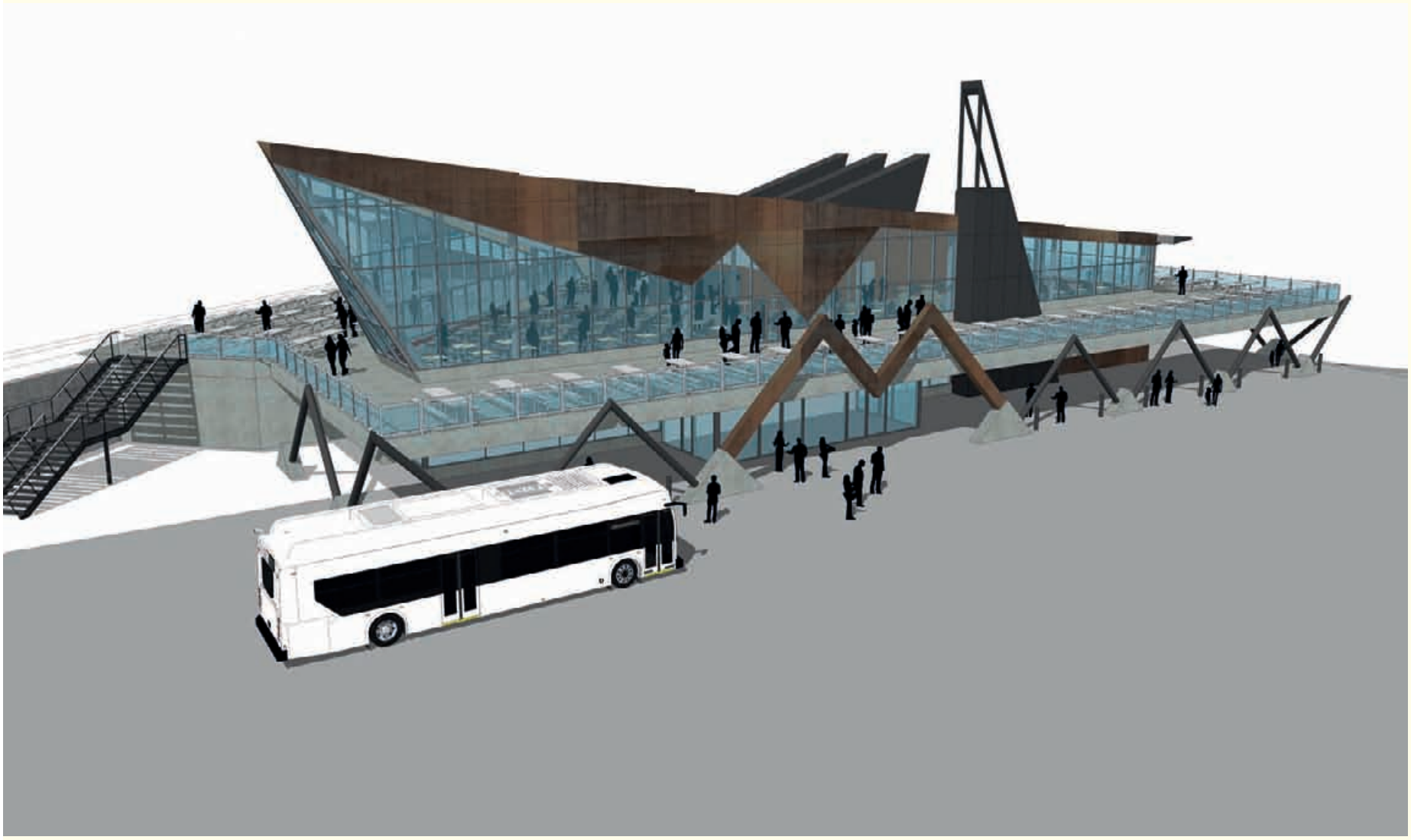
But it is this summer that work got underway in earnest on the new base building after the design phase commenced about 18 months ago.

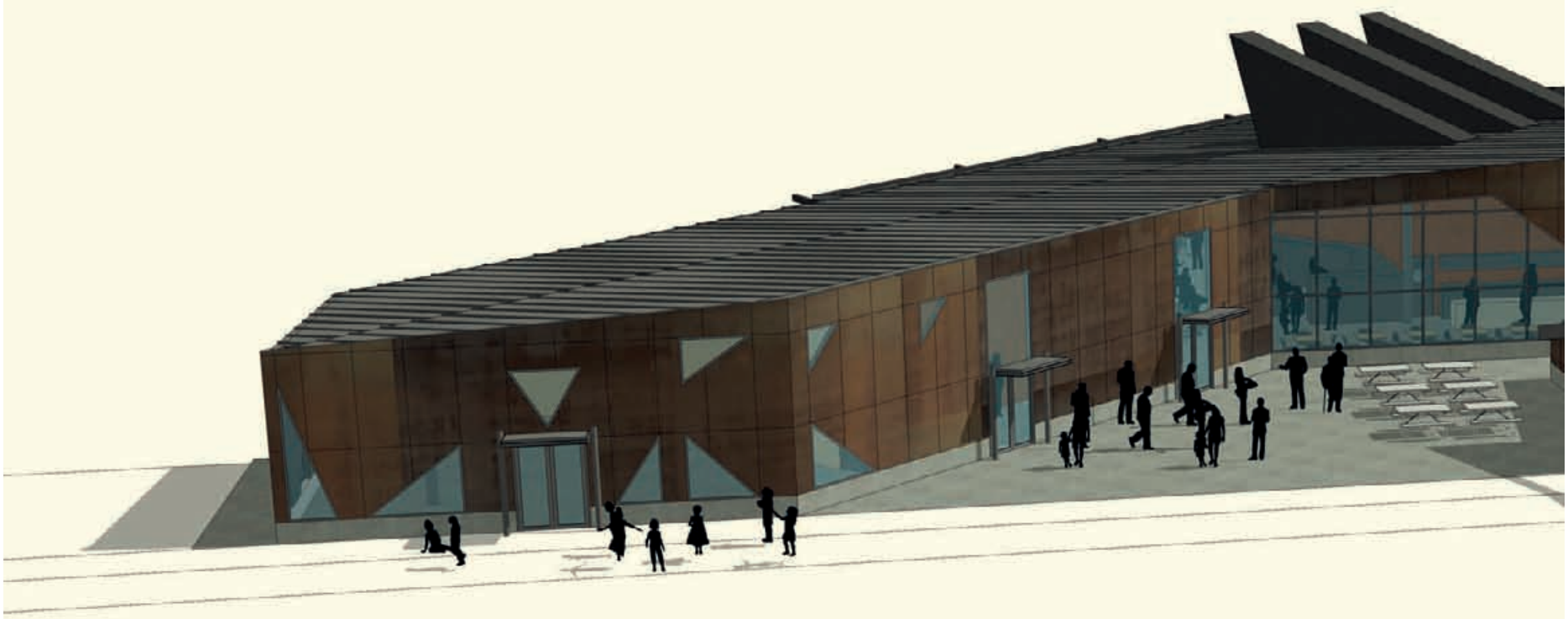
The three-storey building is located at the bottom of the learners' slopes, with the ground floor essentially at 'street level' in that buses will pull up to this level; inside is ticketing, rental equipment, related retail tenancies and administration areas.

Below, in the basement, snow making facilities are housed along with all the services. And on level one, guests can walk straight out onto the snow from the large deck area. »

## THE OVERALL $45 MILLION REMARKABLES UPGRADE:

- will increase capacity from 2,500 to 3,500 skiers per day, a 40% rise
- includes the installation of a1.2km six-seater chairlift express Curvey Basin Chairlift, which is now operational
- saw 200,000m$^3$ of earth moved to create new trails - that's enough to fill 1,000 Olympic-sized swimming pools
- includes the addition of 48 new snowguns and related infrastructure doubling the field's snowmaking capacity
- means 240 litres of snow can be created per second





PROGRESSIVE BUILDING

You can't pour concrete on top of frosted ground so we had to use covers and heated pads to stop the ground freezing before we did some of the pours

Construction will be complete in just eight months – a feat in the alpine environment.

"We had to really think about different ways we could build this building quickly but safely," Arrow's southern director Nick Hamlin says. "It's basically a big Meccano set."

The basement and ground floor levels are pre-cast concrete – walls, panels, columns and beams and double-T pre-cast flooring.

"The whole thing had to be designed in a way that allowed us to actually get the parts up the hill. The panels were all designed to ensure they could be safely carted up. It took two hours to get the truck carrying panels up the access road."

The first floor is a steel structure with the tubular steel a striking feature of the finished building.

"We will put the steel structure together on the adjacent learners' slopes and then crane it into place," Hamlin said.

The façade is a mix of glazing to take in the »

## THE BASE BUILDING IN NUMBERS

**1,600m³**
of poured concrete; 460 truckloads

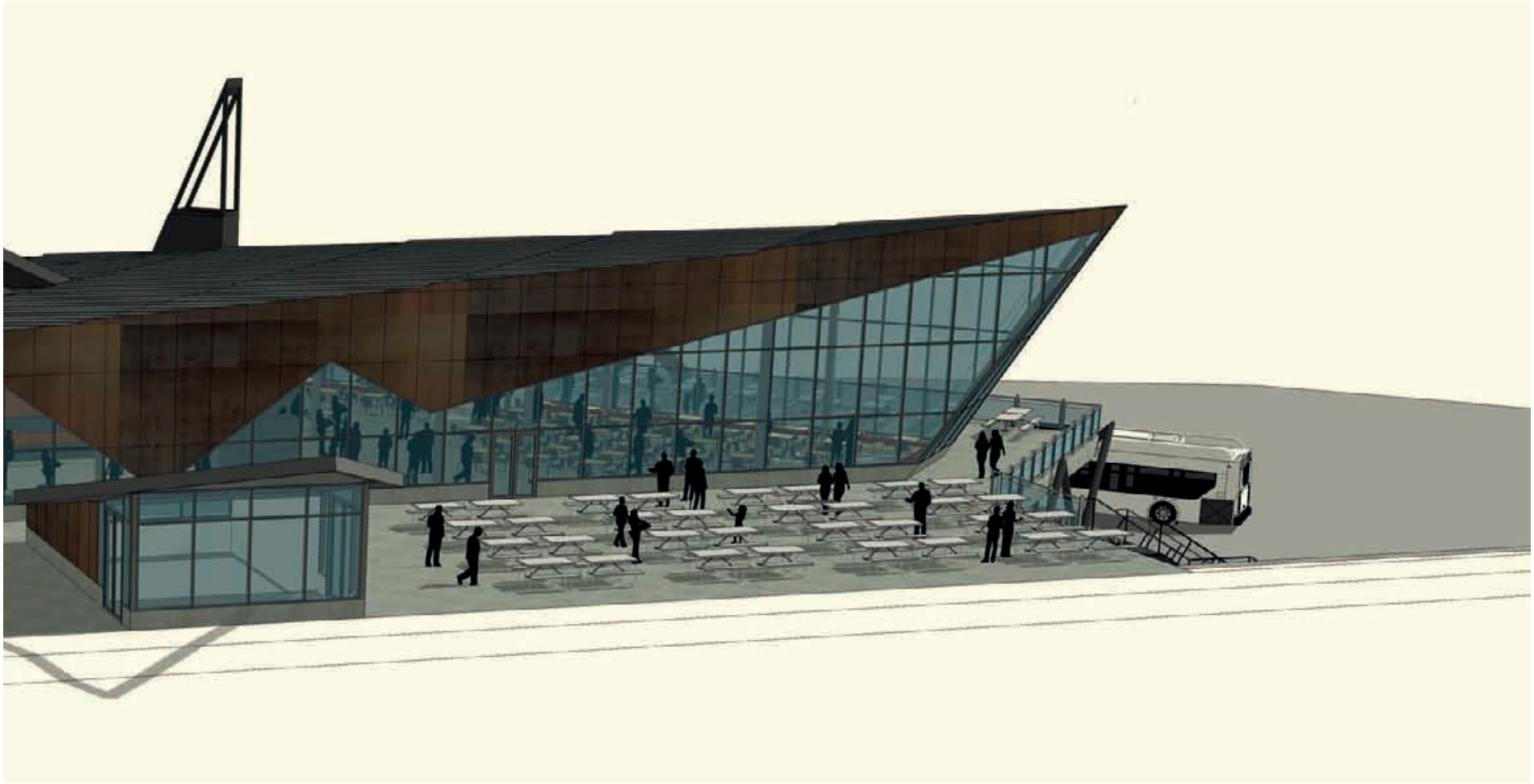
**1,300m²**
of concrete panels

**140**
tonnes of structural steel

**800m²**
of glazing

**6,019m²**
4,718m² in internal space and 1,301m² in decking

**THIS PAGE AND OPPOSITE:**
Artists' impressions of the finished building.



PROGRESSIVE BUILDING

**LEFT:** The new Curvey Basin chair is part of the $45 million staged upgrade of The Remarkables ski area.

views, and an insulated Kingspan panel product.

As can be typical, when the fields shut at the end of the 2014 season and the construction crew got into full swing, the snow didn't stop. In fact, for the first six weeks on site, it snowed about half the time.

"That meant the road had to be graded and there was about a foot of snow covering the site that had to be dug out every day.

"Then, in January, we had another significant dump of snow." Not only did the snow cause delays to the construction schedule, it also had wider implications.

"You can't pour concrete on top of frosted ground. So we had to use covers and heated pads to stop the ground freezing before we did some of the pours."

In mid-January, 130m$^3$ of concrete was poured: starting at 4am, the pour wasn't finished until 4pm the same day due to the time it took for trucks to access the site.

Another challenge for the project team was water entering the site as a result of snow melting. Hamlin says a system was devised to pump it away from the site, and extensive permanent drainage channels ensure this is not a continuing issue for the completed building.

"In every part of the building we had to look at how we would deal with snow and water. All the handrails and barriers tilt so snow can easily be removed, and the spouting has heating elements in it to melt the snow."

The fate of the former base building, which was built in the 1980s, is yet to be known. Anderson says the way mountain guests utilise the old building in the 2015 snow season will provide NZ Ski with better understanding of its potential, and a plan will be made subsequently.

The timing of the improvements is apt. This is The Remarkables' 30th year. Opening in 1985, it is one of the country's most popular ski resorts. "The improvements will enhance The Remarkables' reputation as one of the best places to ski or snowboard for both our local and overseas guests," Anderson says.

## CREDITS

### CLIENT
NZ Ski

### MAIN CONTRACTOR
Arrow International

### SUBCONTRACTORS
Action Engineering
Active Electrical
Archer Construction
Base Contracting
Brazier Scaffolding
Fletcher Reinforcing
Flints Plumbing & Drainage
Freeform Laminates
Hallmark Group
Kirky Tiling
Multiline
NJ Blockwork
Otago Sheetmetal
Otis
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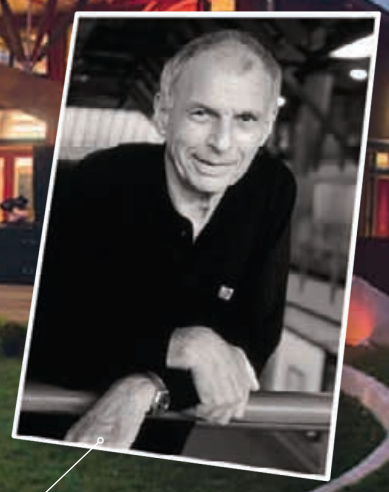

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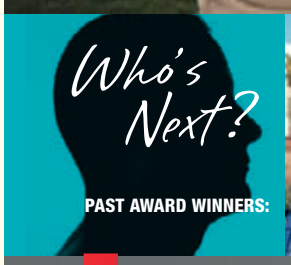


**PAST AWARD WINNERS:**


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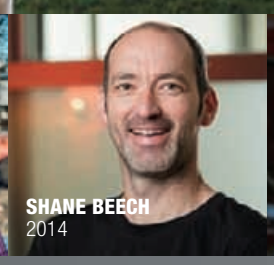
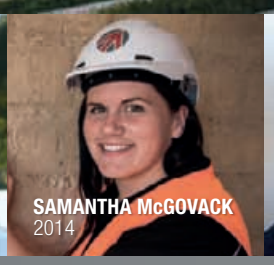

**SHANE BEECH** 2014


**CHETAN JERAM** 2014


**LUEDER STOCK** 2014


**SAMANTHA McGOVACK** 2014


**AARON STEPHENS** 2014

### 2015 AWARD CATEGORIES:

- Resene® Projects Under $2.5 Million Award
- Steel Construction NZ Projects $2.5–5 Million Award
- HAYS® Projects $5–10 Million Award
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- Holcim Projects $25–50 Million Award
- Davis Langdon Projects Over $50 Million Award
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# Cashel square

This 30,000m$^2$ anchor building takes up half a city block and occupies the site where the popular Re:Start container mall once stood.

TEXT **HELEN FRANCES** IMAGES **DAVE RICHARDS**


**THIS PAGE AND OPPOSITE:** The completed complex will comprise two multi-storey mixed-use buildings that will wrap around a public square and incorporate laneways leading through the precinct.

**The BNZ Centre**, Cashel Square is a central Christchurch anchor building that will house a number of private and government tenants.

"It is significant that the government has committed to taking space in the central city and that has been fundamental to getting the project underway," Leighs Construction project manager Carl Goldermans said.

The BNZ has naming rights to the complex, which is being built in two stages and will cover nearly half a city block. It will feature two multi-story buildings around a public square, a glass-roofed atrium, and laneways running through to the City Mall and The Terraces river precinct. The popular container mall, Re:Start, which occupied part of the site has relocated across the road.

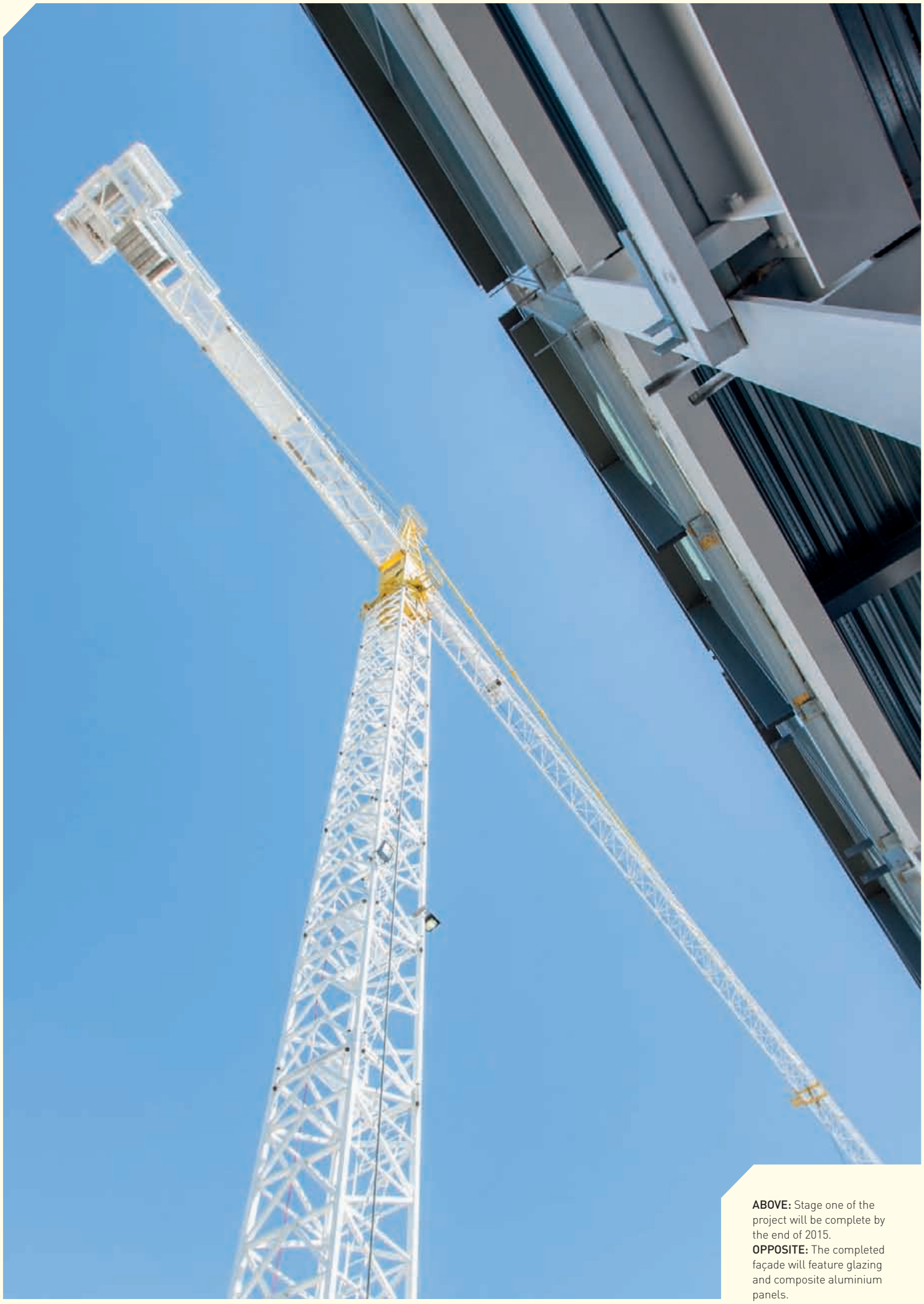
At the time of interviewing, the structure of stage one (six storeys) was 90 per cent complete and the contractor was beginning to install the wall cladding and building services. Stage two (five storeys) is about eight months behind stage one, with ground remediation work completed and work beginning on the foundations.

The complex includes ground floor retail across all of the buildings with a first level car park and three or four levels of office space above.

Ground improvement using rammed aggregate piers (RAPs) has been completed beneath the new BNZ Centre. The RAPs, which are vertical elements of highly compacted gravel, have been installed at 2.0m centres across the entire footprint of the building to densify the existing ground conditions and mitigate the liquefaction hazard.

The method of installation uses a patented displacement mandrel and a direct vertical ramming process to construct RAPs by vertically ramming thin lifts of aggregate to form RAPs of high strength and stiffness.

The technique improves poor soils, such as loose sands and gravels, soft silt and clay, uncontrolled »



**ABOVE:** Stage one of the project will be complete by the end of 2015.
**OPPOSITE:** The completed façade will feature glazing and composite aluminium panels.

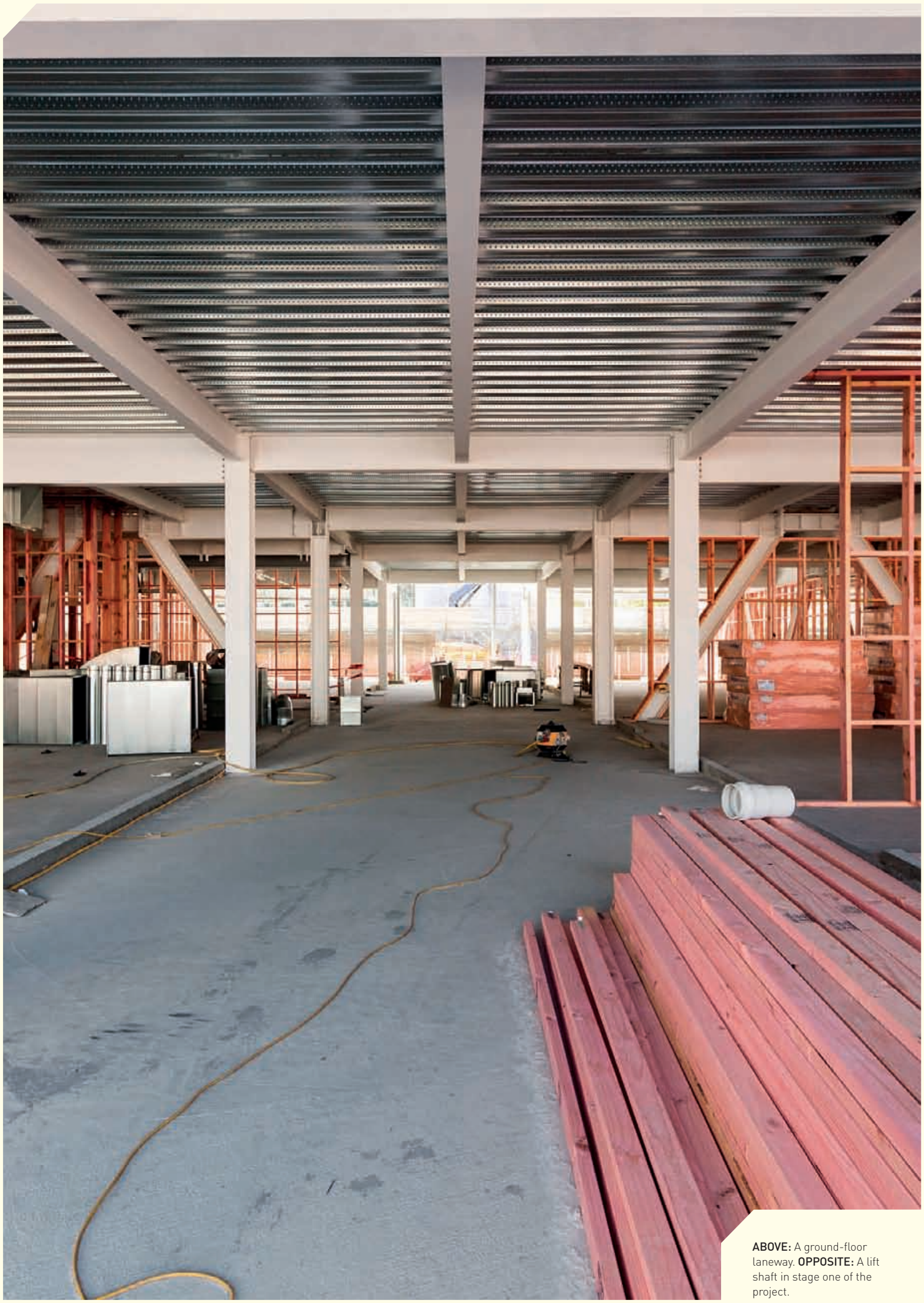
This is the first time tension RAPs have been used in New Zealand. They are specifically designed to resist large uplift demand on buildings.

fill, contaminated soils, soils beneath the groundwater table and soils susceptible to liquefaction.

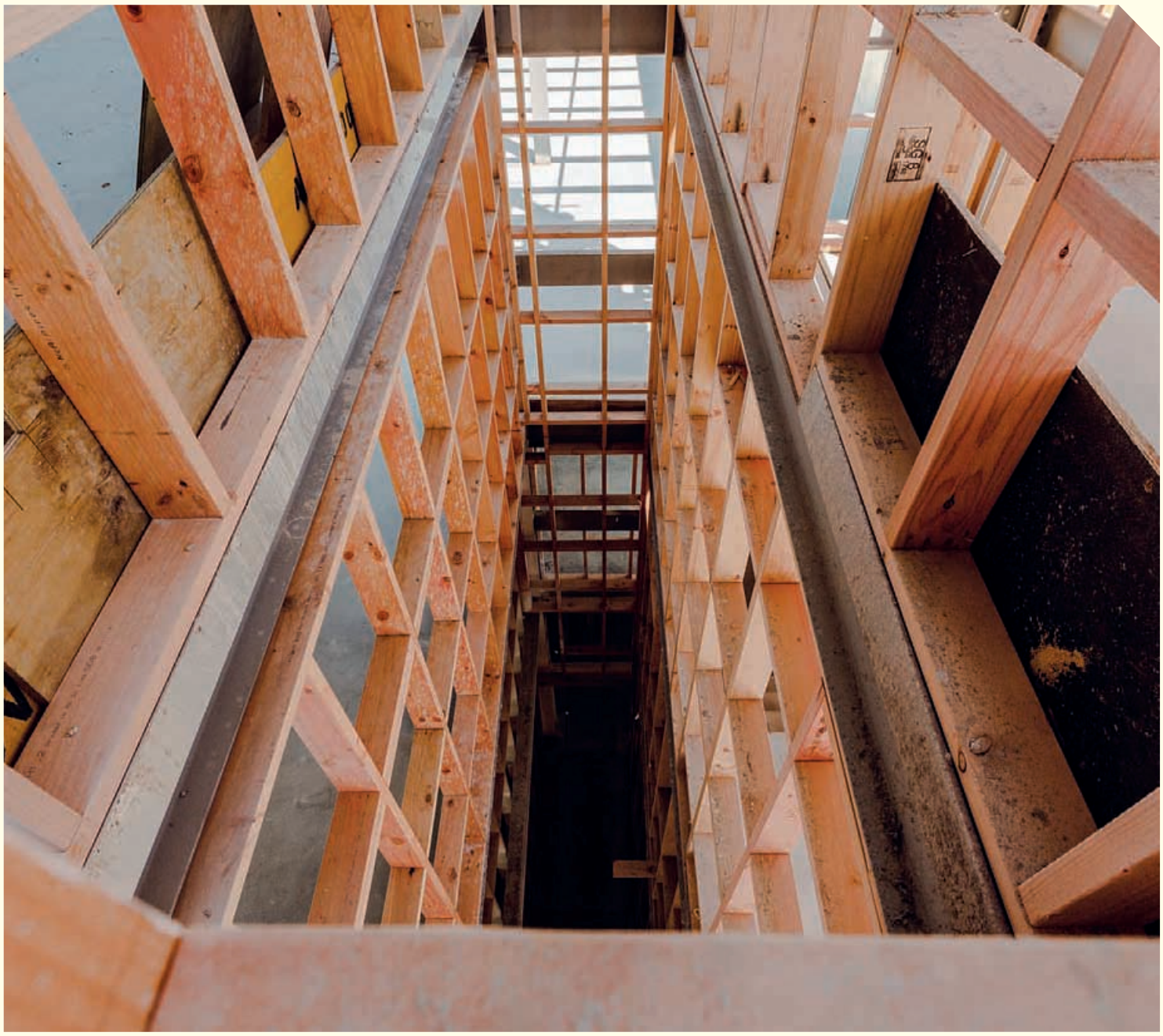
For multi-storey buildings, a significant design consideration is the resistance of tension loads generated during an earthquake.

In Christchurch RAP tension elements known as tension RAPs, have been constructed with steel elements during the installation process to provide resistance to the significant uplift and tension demands on the building. »

The frames have seismic tolerances to allow for a worst case earthquake and all the glass is strengthened



**ABOVE:** A ground-floor laneway. **OPPOSITE:** A lift shaft in stage one of the project.



A significant feature is that it has all been built around a landscaped courtyard – three buildings with intersecting laneways and arcades coming in

These comprise traditional RAP elements with a flat steel base plate and steel bars connecting the base plate to the building foundation.

"This is the first time tension RAPs have been used in New Zealand. They are specifically designed to resist large uplift demand on buildings and to assist the structural engineers' refinement of foundation design," Golder Associates construction manager Alex Baldwin says.

"We developed a safe and efficient method of installing the tension RAPs during a trial period at the beginning of the project. We were able to adapt the RAPs to suit highly variable ground conditions across the site, which were typical of alluvial floodplains. There were also significant thicknesses of compacted demolition rubble on the site."

Structurally, the buildings are steel framed with a Comflor system.

The curtain wall cladding system is a combination of glazed windows and composite aluminium panels.

"The large Hereford Street façade has been broken down into three main elements and then further broken down with fins and sunscreens to give it more of a human scale," Geldermans says.

"The depth of the fins and sunscreens changes the dynamics of the building as you are walking past it; the intention is that pedestrians are drawn towards the building and the laneways."

Contrary to some public perceptions, he said

**THIS PAGE:** An artist's impression of the landscaped central courtyard.

glass doesn't fall out in modern buildings.

"The frames have seismic tolerances to allow for a worst case earthquake and all the glass is strengthened."

Leighs Construction has had a long working relationship with the site developer Lichfield Holdings and was involved early in the process through a negotiated contract with the developer.

"We have been involved all the way through, managing the cost and taking an active role in the design process to ensure its viability. A lot of concern has gone into getting the street appeal of the building right so it is both economical and fits within the urban landscape. A significant feature is that it has all been built around a landscaped courtyard – three buildings with intersecting laneways and arcades coming in, which tie in with the existing area and will also tie in with the terraced development along Oxford Terrace, through to Ballentynes and linking back to Cathedral Square."

He said they are building in an extremely busy market with a range of sites on the go and that being well organized is crucial to attracting the right people on board.

"We have worked hard with sub-contractors and suppliers to ensure their availability. We need to make sure it is a well run site that they want to come and work on."

They look for the ability to deliver as well as price, so when local contractors were heavily committed they ordered the steel for stage one at a "very competitive price" from Australia.

Fabrication of the steel for stage two is a joint venture between a New Plymouth and a Hamilton company.

The first tenants will move into stage one by Christmas 2015 and stage two by Christmas 2016 – all 30,000m$^2$ of brand new office, retail and parking space is built to 100 per cent of the Building Code.

## CREDITS

### CLIENT
Lichfield Holdings

### MAIN CONTRACTOR
Leighs Construction

### CONSULTANTS
Sheppard & Rout Architects
Babbage Consultants
Beca
Martin Charles Consultancy
ProDirection

### SUBCONTRACTORS
Ambience Tiling
AMT Mechanical Services
Aquacraft Plumbing
Elphinstone Enterprises
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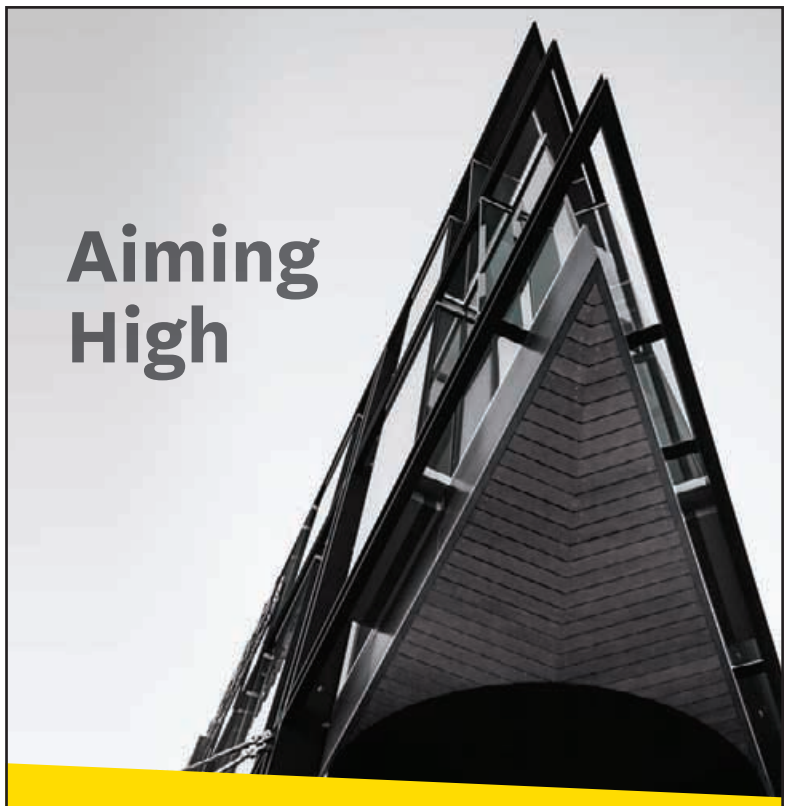


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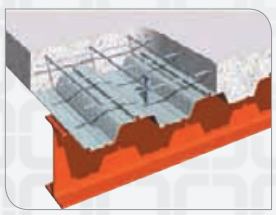
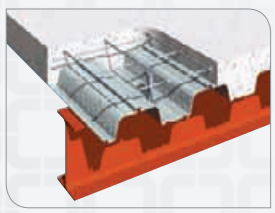


COMFLOR 60



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# The price of performance

Performance bonds are creating a range of problems for construction companies as they experience rapid growth. James MacQueen explains why and looks at ways to deal with the burgeoning issue.

**Growth of the** construction industry is being constricted during an economic upturn by requirements for performance bonds coupled with the ability of companies to finance them. The issue is greatest for construction companies that are growing quickly, taking on larger contracts or recovering from a financial set back. Some are struggling to get the necessary facilities from their bankers for greater bonding capacity as they don't have enough security available.

This is not surprising. Construction is one of the few industries where there is effectively a 10-year guarantee on past projects. The natural reaction is to extract the profits once earned and leave as little fat in the balance sheet as possible. That in turn leaves inadequate security for the bank or insurance company.

Financiers know that if one bond is called it is likely all bonds are called and the balance sheet is decimated. Accordingly, they ask for robust security.

For the larger, long-established construction companies with a very strong balance sheet, the banks' attitudes suit them as it locks out some of the competition and favours those with strong balance sheets. Some of these provide cash as security so for every dollar of bonding issued, there is a corresponding amount in a term deposit with the bank and effectively frozen so the funds cannot be used for operations.

Part of the difficulty is that due to poor margins and after allowance for overheads and tax, the equivalent of several years' profits needs to be left in the bank on term deposit. However, providing cash as security is not the only way to obtain performance bonds. Banks will generally accept property, up to a maximum security value of 65 per cent of the actual property value if there is no other debt secured against that property. This approach favours those with a strong financial position separate to the construction company, although it requires shareholders to make their personal home and investments available as security, which means they risk their life savings.

> For those who have all of their spare assets tied up in construction bonds they find they are unable to commence new projects until bonds have been released

For those who have all of their spare assets tied up in construction bonds they find they are unable to commence new projects until bonds have been released on past projects.

A few companies have been able to avoid providing 100 per cent cash security and instead have opted for a facility which is partly secured and subject to a number of bank covenants. Setting those covenants is fraught with difficulty.

Construction company balance sheets are quite different to most other organisations and conventional ratios are either inappropriate or result in creating and maintaining a balance sheet that is inappropriate for the needs of the business.

One of the issues is that the size of the numbers in a construction company's balance sheet fluctuate quite dramatically, and while a bank covenant based on equity as a percentage of total assets may be fine when the facility is put in place, there will be times during a large contract where the total asset may increase quite substantially and result in a breach of covenant despite the balance sheet still being strong.

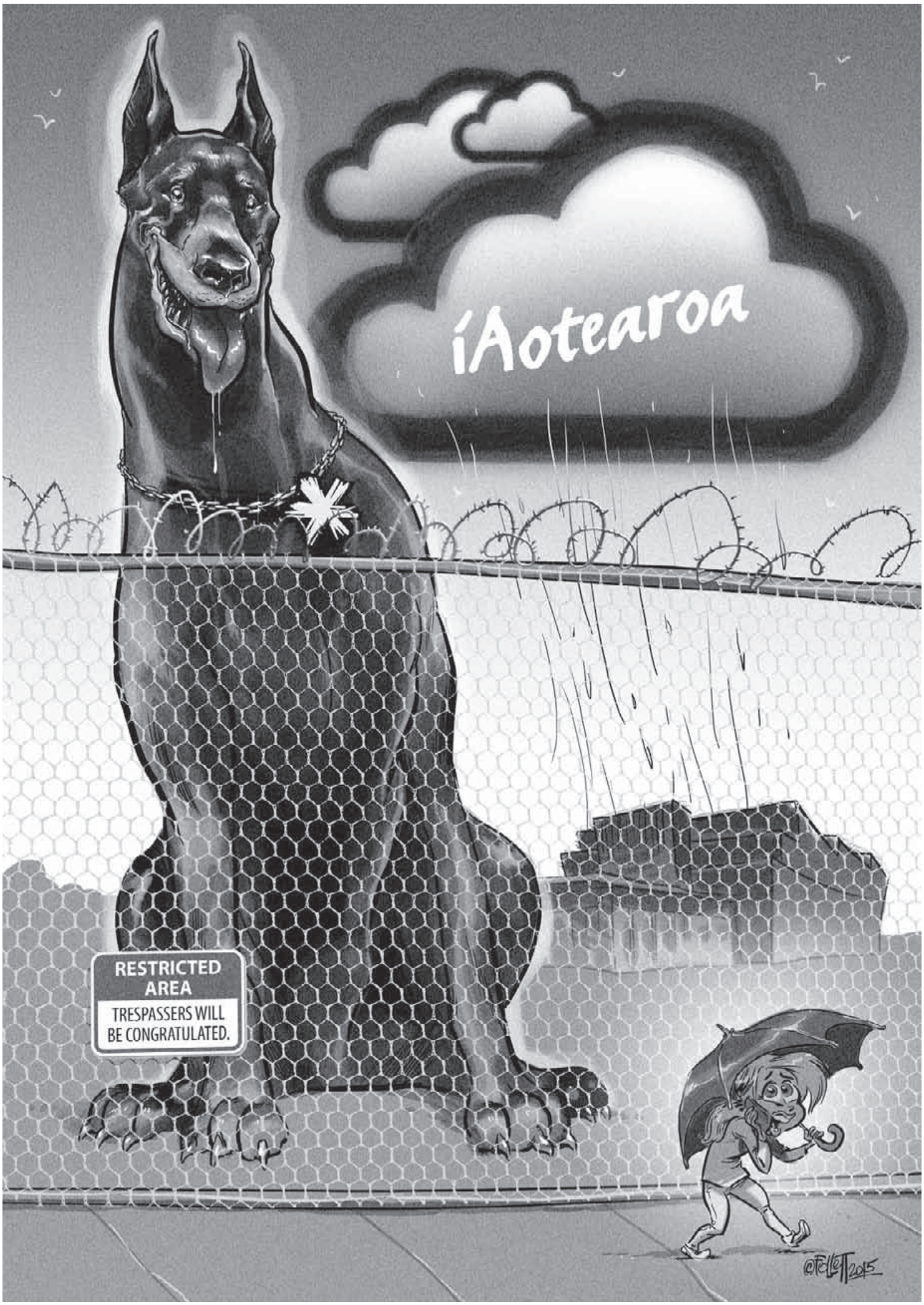
Banks prefer to obtain personal guarantees from shareholders but this becomes problematic in companies where a number of the senior management team have a shareholding and some of the minor shareholders may be unwilling to provide a personal guarantee.

Bonding also becomes difficult to finance during a shareholding succession plan where the incoming shareholders are unlikely to have sufficient resources to both pay for the shares and provide the security required for a bonding facility, which can necessitate the departing shareholders having to leave funds in the company. This difficulty and its solutions have a significant impact upon the price at which shares are transferred.

Some level of performance bonds is appropriate but for the larger projects the percentage by value can often be reduced. Retentions and contractual terms also mitigate some construction risks.

In many cases, the solution for both property owners and bankers is a greater focus on the skills, reputation and character of the construction company owners and senior team. More assessment and due diligence of these factors may allow negotiation of a lower level of performance bonds that meets both the commercial and risk management objectives of all parties.

*ABOUT THE AUTHOR*
*James MacQueen is a partner with BDO East Tamaki. He specialises in the construction industry. For further information, contact James on 09 272 0860 or email james.macqueen@bdo.co.nz*

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