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VOLUME 64 ISSUE 1

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BUILDING RESILIENCE

TE WHAU PATHWAY SHOWCASES MODULAR PRECAST FOR LOW-IMPACT MARINE CONSTRUCTION

ATLAS CONCRETE HQ PROVES LOW-CARBON CONCRETE PERFORMANCE WITHOUT COMPROMISE

UPFRONT

NATIONAL INFRASTRUCTURE PLAN – IMPLICATIONS FOR CONCRETE

THE RECENT RELEASE OF THE 2026 *NATIONAL INFRASTRUCTURE PLAN* MARKS AN IMPORTANT STEP FORWARD FOR OUR INFRASTRUCTURE SYSTEM. PLANNING HAS OFTEN BEEN FRAGMENTED OR REACTIVE, CONTRIBUTING TO UNCLEAR INVESTMENT SIGNALS AND SHORT-TERM DECISION-MAKING. A STRUCTURED 30-YEAR OUTLOOK PROVIDES A STRONG FOUNDATION FOR PRIORITISATION AND DELIVERY.

The Plan is also notable for its frankness. Despite sustained spending, challenges remain around cost performance, delivery efficiency and asset stewardship. This influences the resilience and affordability of the services communities depend on.

RENEWALS AND LIFECYCLE PERFORMANCE

One of the Plan's clearest signals is its emphasis on renewals and maintenance. While debate often centres around new projects, much of New Zealand's infrastructure now requires upgrading, strengthening or replacement. Recognising that a substantial proportion of future investment will be directed toward existing assets reflects economic truth and a more disciplined approach to investment value.

From a concrete perspective, this shift reinforces the importance of lifecycle performance. Infrastructure outcomes are defined by what is built, and by how assets perform. Durability, resilience and reliability are central in the long-term.

AFFORDABILITY AND RESILIENCE

The Plan's focus on affordability underscores the need for whole-of-life thinking. Initial construction cost is only one dimension of infrastructure value. Materials that support longer service life, reduced maintenance and greater resistance to environmental demands contribute to cost stability and performance. Concrete's established role across transport, water, energy and social infrastructure aligns with these priorities.

The Plan also highlights the growing influence of natural hazards, demographic change and decarbonisation pressures. New Zealand's exposure to earthquakes and extreme weather, combined with projected population growth and increasing electricity demand, will place pressure on infrastructure networks. In this instance, resilience and performance reliability become critical considerations.

DELIVERY EFFICIENCY

Improving outcomes remains a recurring theme, and will depend not only on funding levels, but on how projects are designed and delivered. Streamlined design approaches, standardisation, scalable systems and greater use of prefabrication can enhance productivity

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A Advertorial

Cover Image: Te Whau Pathway links Waitematā and Manukau Harbours.

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BUILDING RESILIENCE

and manage risk. Concrete's versatility supports more efficient delivery models, particularly for renewals and upgrades.

PERFORMANCE AND CARBON

Emissions performance is now embedded in infrastructure planning. Durability, longevity and carbon reduction are interdependent. Infrastructure designed for a longer service life lowers lifecycle emissions while strengthening value. Advances in low-carbon concrete through co-processing in clinker production and the uptake of SCMs are delivering lower embodied carbon without compromising quality.

LOOKING AHEAD AND CARBON

The *National Infrastructure Plan* signals a continued move toward whole-of-life decision-making. Concrete will play a key role in integrating resilience, productivity, affordability and emissions performance, helping translate infrastructure ambition into reality.

Rob Gaimster
Concrete NZ Chief Executive

Paid access to the recent Learned Society Slabs & Shrinkage: Design Tips & Tricks seminar can now be accessed via the Concrete NZ website: **www.concretenz.org.nz**

UPCOMING SEMINAR – REINFORCED CONCRETE DIAPHRAGM DESIGN

CONCRETE NZ IS DELIVERING A NATIONWIDE SEMINAR ON REINFORCED CONCRETE DIAPHRAGM DESIGN, BASED ON THE CONCRETE NZ RED BOOK.

Focusing on Section B4, the seminar explores the role of diaphragms in seismic performance and guides participants through a detailed medium-rise building example.

Attendees will gain practical insight into NZS 3101 and NZS 1170.5 compliance, including seismic force determination, pESA methodology, modelling approaches and reinforcement detailing.

The session is tailored to engineers, designers, specifiers and contractors seeking applied design knowledge. Participants will also receive comprehensive notes and have the opportunity to engage with industry experts.

For more information and to register, visit the Concrete NZ website – **www.concretenz.org.nz**

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CONCRETE NZ CONFERENCE RETURNS TO WELLINGTON IN 2026

THE CONCRETE NZ CONFERENCE 2026 WILL TAKE PLACE FROM 21–23 OCTOBER AT TĀKINA WELLINGTON CONVENTION AND EXHIBITION CENTRE, BRINGING TOGETHER PROFESSIONALS FROM ACROSS NEW ZEALAND'S CONCRETE AND CONSTRUCTION SECTORS.

Following the success of last year's refreshed format, the conference will again feature a dynamic two-day technical programme showcasing leading local and international speakers, alongside lightning talks and opportunities for delegates to present their work.

The event will also include an extensive trade exhibition, the President's Reception and conference dinner, where industry awards will be presented.

For registration and sponsorship details visit – **www.concretenz.org.nz**

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2026 CONCRETE NZ CONFERENCE AWARDS – ENTRIES NOW OPEN

ENTRIES FOR THE 2026 CONCRETE NZ CONFERENCE AWARDS ARE NOW OPEN, PROVIDING AN OPPORTUNITY TO RECOGNISE EXCELLENCE ACROSS OUR MEMBERSHIP.

A highlight of the Conference formal dinner on 22 October at Tākina Wellington, the awards celebrate outstanding contributions from individuals, teams and organisations across all Sector Groups and the Learned Society.

From technical excellence and innovation through to health, safety, sustainability and industry leadership, the awards reflect the strength and diversity of our sector. Members are encouraged to start considering potential entries.

Full details, including submission forms and category information, are available now. Visit **www.concretenz.org.nz** for details.

2025 CONCRETE NZ CONFERENCE RECAP: ENGAGEMENT, INNOVATION AND PARTNERSHIP

THE 2025 CONCRETE NZ CONFERENCE AT AUCKLAND'S VIADUCT EVENTS CENTRE BROUGHT TOGETHER A VIBRANT CROSS-SECTION OF THE CONCRETE INDUSTRY - FROM SUPPLIERS AND PRODUCERS TO DESIGNERS, ENGINEERS, ACADEMICS AND CONTRACTORS - FOR THREE DAYS OF COLLABORATION, TRANSFORMATION AND GROWTH.

The event's strong attendance and lively atmosphere reflected the sector's shared commitment to innovation, sustainability and professional excellence. Across technical sessions and informal discussions, delegates exchanged ideas, shared experiences and explored practical ways to advance performance, quality and resilience in the built environment.

A particular highlight was the keynote line-up. Dr Andrew Minson, Director of Concrete and Sustainable Construction at the Global Cement and Concrete Association (GCCA), offered a compelling global perspective on decarbonisation and the industry's pathway to net-zero. Clare Tubolets, CEO of Australia's Smartcrete CRC, followed with a fascinating look at innovation across research, design and manufacturing. Their insights set the tone for a programme rich in technical depth and forward-looking discussion.

Equally important was the sense of community. The conference demonstrated the power of bringing people together to address shared challenges - from low-carbon materials and circular economy opportunities to advancing design standards and embracing new technologies. Every conversation reinforced the collective drive to ensure concrete continues to underpin sustainable, high-performing infrastructure for Aotearoa New Zealand.

Concrete NZ warmly acknowledges the valued support of its Patrons - Golden Bay, Holcim and Pacific Steel - along with all sponsors and exhibitors whose partnership helped make the conference possible. Their commitment plays a vital role in fostering dialogue, sharing knowledge and strengthening connections across our diverse and dynamic industry.


Conference keynote Clare Tubolets (Smartcrete CRC).


Dr Andrew Minson (Global Cement and Concrete Association - GCCA).

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Ben Hurley, MC extraordinaire, kept the crowd entertained through the evening.

RECOGNISING ACHIEVEMENT AT THE 2025 CONCRETE NZ CONFERENCE AWARDS

HELD AT AUCKLAND'S VIADUCT EVENTS CENTRE, THE CONCRETE NZ CONFERENCE AWARDS ONCE AGAIN RECOGNISED THE INDIVIDUALS AND TEAMS WHOSE COMMITMENT, INNOVATION AND COLLABORATION CONTINUE TO STRENGTHEN NEW ZEALAND'S CONCRETE INDUSTRY.

Hosted by the very amusing Ben Hurley, this year's awards showcased achievements in technical excellence, customer care, carbon reduction, health & safety and diversity & inclusion.

The 2025 Awards continue Concrete NZ's mission to highlight the ingenuity and professionalism that define its members and the wider concrete community. See the following pages for recipients.

AWARDS ACKNOWLEDGE OUTSTANDING SERVICE AND LIFELONG CONTRIBUTION

An important set of awards presented at the 2025 Concrete NZ Conference celebrated individuals whose service, leadership and integrity have profoundly shaped New Zealand's concrete industry.

These honours recognise contributions that extend well beyond individual organisations, influencing industry culture, technical practice, safety, sustainability and professional development across decades.

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Brian Godfrey's willingness to challenge the status quo always sparks debate and encourages constructive discussion.

OUTSTANDING CONTRIBUTION AWARD
BRIAN GODFREY

The Outstanding Contribution Award recognises an individual whose sustained service has made a visible and lasting difference to the concrete industry. In 2025, this honour was awarded to Brian Godfrey in recognition of his long-standing leadership, principled advocacy and deep commitment to industry improvement.

Brian has been a highly influential member of the Readymix Sector Group and its predecessor, the New Zealand Ready Mixed Concrete Association, serving with distinction as both Committee member and President. Throughout his service, he has demonstrated strong, values-based leadership and a willingness to engage constructively with complex and often challenging issues affecting the sector.

Well known for his readiness to challenge the status quo, Brian has never shied away from robust debate when it served the greater good of the industry. His thoughtful and forthright contributions – particularly in the area of health and safety – have helped shape safer, more responsible industry practices, raising expectations and standards across the sector.

Brian Godfrey accepts his Outstanding Contribution Award from Concrete NZ chief executive Rob Gaimster.

Beyond his formal roles, Brian is widely respected as a mentor and supporter of others within the industry. His integrity, authenticity and collegial approach have left a lasting impression on colleagues and emerging leaders alike. Through both his professional contributions and personal example, Brian Godfrey has made an enduring impact on the concrete industry and is a most deserving recipient of the Outstanding Contribution Award.


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HONORARY LIFE MEMBERSHIP
GRAHAM COLLIE

Honorary Life Membership is awarded in recognition of a lifelong commitment to the concrete sector, reflecting exceptional service, leadership and contribution over many years. In 2025, Concrete NZ proudly conferred this honour on Graham Collie.

Graham's career spans decades of hands-on involvement across concrete operations, during which he undertook virtually every business role. His leadership helped grow Atlas Concrete into a leading company while embedding strong values around quality, customer service and operational excellence. He has driven practical innovation, including sustainable solutions for concrete waste management in Auckland and initiatives to secure long-term sand supply, strengthening resilience for the wider sector.

A tireless advocate for industry improvement, Graham has been a long-serving supporter of the Plant Audit Scheme and the work of the association, including extensive service on the New Zealand Ready Mixed Concrete Association

Graham Collie accepts his Honorary Life Membership of Concrete NZ from chief executive Rob Gaimster.

(NZRMCA) Council and as long-time Chair of its Auckland region. He also played an important role in supporting the transition to Concrete NZ and, more recently, in refreshing the Readymix Sector Group to better engage members nationwide.

Equally important has been Graham's investment in people and community – mentoring colleagues, supporting schools through the Gateway programme, and contributing to local sport, music and community organisations. His career reflects not only business success, but a genuine commitment to building capability and opportunity across the industry and beyond.

Graham Collie's wife Kathryn and son Andrew helped him celebrate on the evening.

James Mackechnie acknowledges those that have assisted him during his career.

HONORARY LIFE MEMBERSHIP
DR JAMES MACKECHNIE

A further Honorary Life Membership was awarded to Dr James Mackechnie, recognising a career that has profoundly influenced the technical, academic and professional foundations of New Zealand's concrete industry.

Over more than three decades, James' work has bridged academia, industry and professional service – a rare and powerful combination. Beginning his working life in South Africa, including time as a Research Officer at the University of Cape Town, he went on to establish a distinguished career in New Zealand. As a Senior Lecturer and CCANZ Fellow at the University of Canterbury, he educated generations of engineers while producing influential research that continues to guide durability practice, standards and specifications.

In industry, James has held senior technical roles with Allied Concrete, applying academic rigour to real-world materials challenges. His research into supplementary cementitious materials and engineered sands has supported more sustainable concrete practice, earning recognition including the Sandy Cormack Prize for research excellence.


Conference keynote Clare Tubolets from Smart CRC in Australia celebrates with James Mackechnie.

James has also provided outstanding professional leadership – authoring key technical publications, contributing across ready mixed, precast and cement sectors, and chairing the Standards Committee responsible for the 2021 revision of NZS 3104. As President of the New Zealand Concrete Society and as Education, Training and Research Manager for Concrete NZ, he consistently demonstrated vision, generosity and integrity, leaving a lasting legacy across the profession.


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ALLIED CONCRETE'S HYDROGEN-DIESEL CONCRETE TRUCKS A WORLD FIRST

Bernie Napp, *Prospect Consulting*

TWO HYDROGEN-DIESEL CONCRETE TRUCKS ARE LEADING THE WAY IN LOWER-EMISSIONS READYMIX DELIVERY, ONE IN AUCKLAND AND THE OTHER IN INVERCARGILL.

"In terms of dual fuel technology development, we are 3-4 years ahead of anyone else in New Zealand," says Kim Hill, Innovation Manager at Change Fuel Technologies, one of many HWR companies along with Allied Concrete.

Parent company H.W. Richardson Group (HWR) is the lead supplier of hydrogen-diesel retrofits in New Zealand, and recently retrofitted a truck in Queensland, Australia. Other countries using similar technologies are the UK, Switzerland, Germany, Belgium, Canada and Australia.

The technology involves placing tanks full of compressed hydrogen gas either on the chassis or behind the driver's cab. Systems range from 250 kg to 980 kg depending on the storage volume. For a concrete truck, it carries a 250 kg system on the chassis, and the concrete truck's payload of 6 cubic metres stays the same.

HWR started thinking about hydrogen around five years ago, with its exposure to the fuel industry through HWR's ownership of Allied Petroleum, and in view of a collective trucking fleet of more than 1300 units.

"HWR took on the challenge to make a difference and provide their customers with lower-emissions transport across all the sectors of business," Hill says. "100 percent alternative fuels was not going to be the short-term answer without significant impacts to operations. Since the price is relatively high, we needed a hybrid option to create the demand to enable the hydrogen refuelling

THE BENEFITS OF HYDROGEN-DIESEL RETROFITS

- Retrofittable to existing diesel engines, extending the lifespan of current assets.
- Maintains full load capacity in the bowl, unlike electric alternatives.
- No range anxiety; trucks can operate solely on diesel, and operate on their usual routes without limitations.
- Fast refuelling, similar to diesel, allowing minimal downtime and keeping trucks on the road.
- Seamless switching between hydrogen-diesel and diesel only modes, depending on operational needs – via smart controls.
- Adheres to stringent European hydrogen safety standards, ensuring safe and reliable operations.
- Nitrous oxide reduction, contributing to improved air quality.
- Smart controls optimise fuel use between hydrogen and diesel for best road performance.
- Carbon emissions reporting capabilities to help businesses monitor and reduce their environmental footprint.

infrastructure to grow. This is going to be key to enable the heavy transport transition."

At present Hiringa Energy and Halcyon make and sell hydrogen for use in transport in New Zealand. Hiringa have four refuelling facilities in the North Island, and Halcyon has one, near Taupō. HWR is building their own production and refuelling station in Invercargill, to enable their dual-fuel fleet in the South Island.

Hill says there is an element of risk, but HWR is willing to accept that risk and that customers are willing to pay a premium for lower emissions in their business. Early adopters of the low emission technology are large corporates, or companies with strong sustainability targets, including central and local government.

"That's what we anticipate."

HOW THEY DID IT

HWR started working with two European companies in 2022, Hill says, however, they were not able to move fast enough, or with enough flexibility, to convert the many different makes and models of trucks operating in New Zealand. "We decided we could do this ourselves."

As external demand grew for the hydrogen-diesel retrofit system, HWR created a company that could offer a commercial product. Rebranded as Change Fuel Technologies, the message emblazoned on converted trucks is "Driving Change. Driving Hydrogen."

Today HWR has 13 hydrogen-diesel trucks across the business, including four retrofits sold to customers. Besides concrete trucks, other conversions include bulk aggregate tipper trucks, milk tankers, curtain-siders, and bitumen carriers.

HOW IT WORKS

Change Fuel Technologies builds the hydrogen technology onto existing diesel engines. Hydrogen is injected through the air-intake during the intake stroke, creating a uniform mixture with air. Diesel is the pilot fuel, auto-igniting and co-combusting with hydrogen to drive the piston down during the power stroke. An advanced control system allows for seamless switching between fuel modes for consistent energy output and performance, whether in dual-fuel mode, or solely diesel.

The truck operator has a screen inside the cab to monitor the hydrogen system's status but no interaction is required, and no changes to the vehicle performance.

Each truck reports its fuel use in real time, for use in company sustainability reporting.

HIGH PERFORMANCE

At the top end, a concrete truck will run on 60 percent hydrogen and 40 percent diesel, with a corresponding lowering of transport emissions. When the truck is stationary, and the concrete is mixing in the bowl, a situation where the fuel demand is constant and predictable, higher percentages of hydrogen can be used.

When driving the truck, the fuel mix changes depending on truck speed, whether it is slowing down and speeding up, and whether the terrain is hilly or flat. The mix rate can vary between 30 and 40 percent hydrogen in this situation.

A full tank of hydrogen, working with diesel will fuel 3-4 deliveries of readymix concrete to a site, providing the flexibility Allied Concrete needs to keep operating, and, as Hill says, "The beauty of our system is that when hydrogen is not available, they can run on diesel-only."

One retrofitted truck has already done 650,000 km, which is roughly halfway through the life of the truck, and no issues with long-term performance.

"Each truck does different work, and has different performance," Allied Concrete's General Manager Hans Fuchs says. "As we develop more data on different makes and models and types of loads, we can establish what performance looks like and where the best opportunities actually sit."

AFFORDABILITY

Fuchs says that in comparison to other conversion options, a hydrogen retrofit costs $120,000 for a vehicle that costs $250k to $300k.

"The hydrogen-diesel option is a cost-effective way of entering the market,"

As to fuel use, hydrogen costs $15-17/kg, compared with the equivalent energy delivery of diesel at $7.50/kg. The projections are that hydrogen could come down over time to $10/kg while the price of diesel could increase.

HWR received support from the Energy Efficiency and Conservation Authority for the first six vehicle retrofits, of which one of two concrete trucks was included in the trial. Later HWR and other companies choosing the retrofit have benefited indirectly from the Lower-emissions Transport Fund, which purchasers of products from Change Fuel Technologies were able to access.

EMISSIONS REDUCTION GOALS

In its 2024 Sustainability Report, HWR says it has committed to reducing fuel consumption by 8 percent per tonne kilometre by 2027.

The company is looking at its longer-term future, Fuchs says, across various programmes, including improving driver behaviour. "Our programmes to reduce fuel usage also focus on driving more efficiently, as well as maximising use and capacity. This has a major impact in fuel reduction."

"Increased payloads mean fewer journeys, and our scheduling and dispatch system, MyTransport, demonstrates that up to 30 percent improvement in kilometres needing to be delivered can be achieved from better fleet management."

SIZE OF THE PRIZE

New Zealand's concrete industry produces around 4 million cubic metres of concrete annually, consuming an average of 5.5 litres of diesel per m^3 of delivery. This translates to 22 million litres of diesel used every year to move concrete.

If all trucks were converted to HWR's dual-fuel hydrogen technology, diesel use would drop from 22 ML a year by 6.6 ML, or a 30 percent drop. The savings on CO_2 emissions would be 17,688 tonnes a year.

Allied Concrete has calculated this annual emissions reduction as equivalent to planting more than 290,000 trees a year or taking 3,800 cars off the road each year.

"Our technology directly supports Concrete NZ's initiatives towards achieving net-zero carbon emissions by 2050. By addressing the transportation sector, a significant contributor to the industry's carbon footprint, we are paving the way for a more sustainable concrete industry in New Zealand."

Acknowledgement: *This article originally appeared in Inside Resources and was reproduced with kind permission from Freeman Media and Bernie Napp of Prospect Consulting.*

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Te Whau Pathway's elevated boardwalk spans mangroves, using modular precast concrete for durable, low-impact infrastructure in sensitive environments.

TE WHAU PATHWAY PROJECT

MODULAR PRECAST DESIGN FOR LOW-IMPACT CONSTRUCTION IN AN ECOLOGICALLY SENSITIVE MARINE ENVIRONMENT

THE TE WHAU PATHWAY IS A LANDMARK SHARED-USE PROJECT THAT CONNECTS COMMUNITIES ALONG AUCKLAND'S WHAU RIVER, DEMONSTRATING HOW THOUGHTFUL DESIGN AND CONSTRUCTION CAN DELIVER DURABLE PUBLIC INFRASTRUCTURE IN CHALLENGING MARINE ENVIRONMENTS.

Forming part of a 15 km shared-use pathway, the project will ultimately link communities from the Waitematā to the Manukau Harbour, following a traditional portage route used by mana whenua for generations. The project is divided into five sections, with Section 5 including a 1.1 km elevated boardwalk traversing ecologically sensitive mangrove environments.

Designed by Beca and constructed by HEB Construction for Auckland Council, the board-walk illustrates how a modular precast concrete approach - supported by early collaboration and digital delivery - can minimise environmental impact while achieving efficient, repeatable construction outcomes.

A COLLABORATIVE FOUNDATION

From the outset, the Te Whau Pathway was conceived as a partnership project involving Auckland Council, the Whau Coastal Walkway Environmental Trust, Auckland Transport, the Whau and Henderson–Massey Local Boards,

and mana whenua including Te Kawerau a Maki and Ngāti Whātua Ōrākei. This collaborative approach was reflected in the delivery model adopted for the boardwalk section, which was developed under an Early Contractor Involvement (ECI) arrangement.

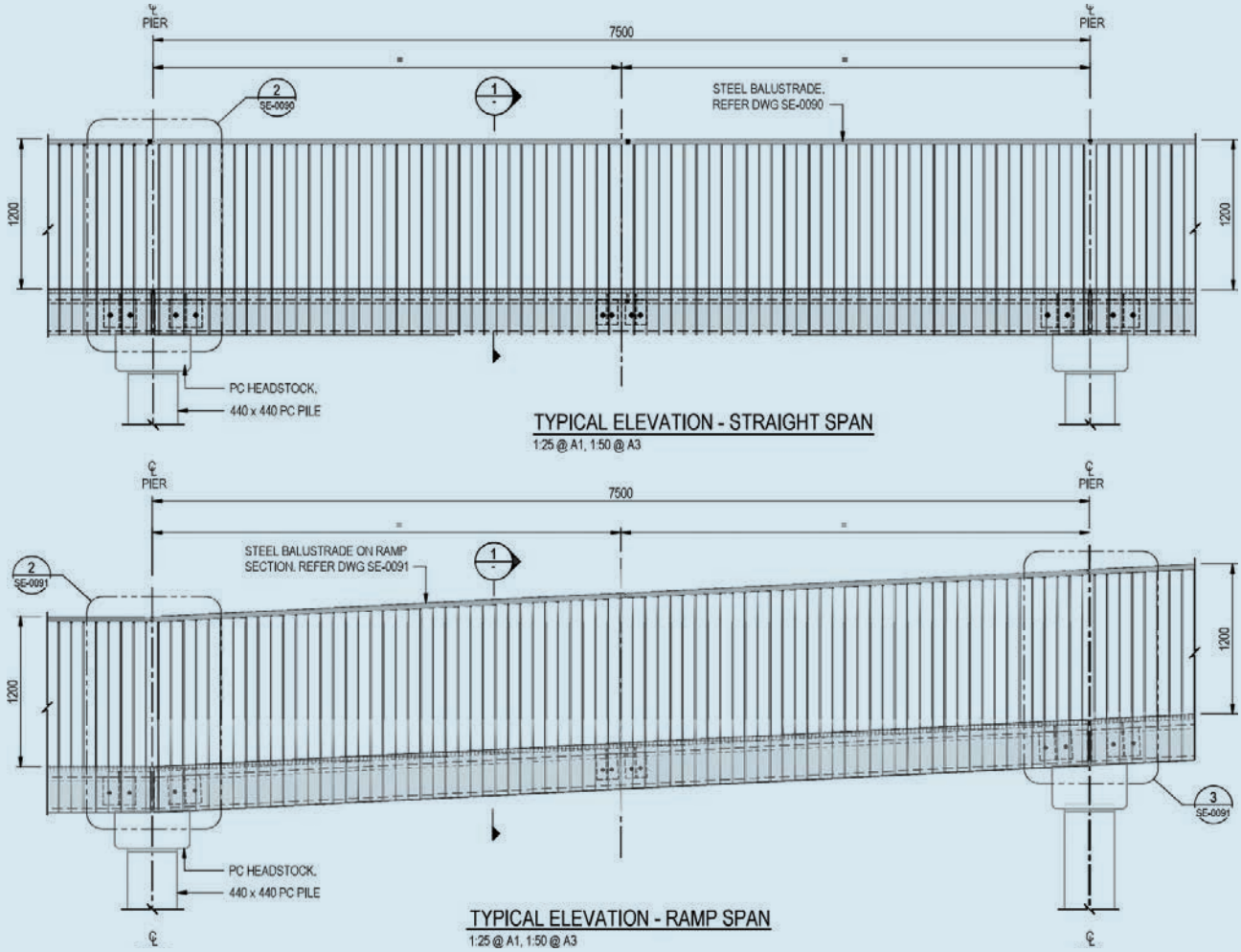
The ECI process proved critical in responding to evolving design, procurement and environmental constraints. During the COVID-19 pandemic, for example, escalating aluminium prices and supply uncertainty prompted the project team to reassess an early concept that relied on an aluminium superstructure. The decision to transition to a concrete solution reduced procurement risk, improved durability outcomes, and highlighted the adaptability of precast concrete in challenging marine environments.

DESIGNING FOR SENSITIVITY AND REPEATABILITY

The boardwalk is divided into two segments – Zone 7, connecting Roberts Field to Bridge Avenue Reserve, and Zone 8, extending from Bridge Avenue to SH16 Northwest Cycleway. Zone 7 consists of 124 spans of 7.5 m length, totalling approximately 930m, while Zone 8 consists of 28 spans with an overall length of around 210m. To accommodate curvature and varying ground levels, the design incorporates straight spans and curved spans with radii of 100 m and 30 m, as well as level and ramped sections. Resource consent requirements specified a minimum clearance between the underside of the structure and Mean High Water Springs, dictating the board-walk decking level.

A key driver of the design was the need to minimise environmental disturbance within the mangrove habitat. To achieve this, the team adopted a "build-over-the-top" construction methodology, allowing works to proceed progressively from temporary staging and then from the completed structure rather than from the ground below. This approach required a highly modular solution, with all structural components prefabricated off-site and assembled efficiently in situ.

The resulting structure consists of simply supported spans formed by a modular grillage system. Each span uses six precast prestressed concrete joists connected by stainless-steel transverse blockings. The joists span between precast concrete headstocks supported by pairs of piles, while Fibre Reinforced Plastic (FRP) grating panels provide the decking surface. Balustrade panels are installed in 3.75 m segments, allowing individual units to be replaced over the structure's service life without major intervention.



Zones 7 and 8 comprise 152 spans (~1.14km total), including straight and curved sections (30–100m radii) with level and ramped profiles.

GROUND CONDITIONS AND STRUCTURAL DEMANDS

Ground conditions along the alignment vary significantly. Zone 8 is characterised by shallow rock, while Zone 7 is mostly underlain by considerably softer materials. Although liquefaction was not considered a governing risk due to the clay-rich soils, the design accounted for cyclic softening and kinematic ground displacements during seismic events, and the potential for slope instability within tributary channels.

In addition to typical loading conditions such as dead load, wind load, and pedestrian live loading, the structure was designed for maintenance vehicles, seismic actions, wave loading, and construction vehicles. Seismic analysis was undertaken in accordance with NZS 1170.5 using equivalent static force methods, with soil–structure interaction explicitly modelled. Wave loading proved to be a critical design driver, with a 0.2 percent Annual Exceedance Probability event assessed in combination with extreme water levels and sea-level rise, resulting in governing lateral demands on the piles.

MODULAR PRECAST CONSTRUCTION IN PRACTICE

Construction methodology was closely aligned with the modular design philosophy. Piling works were supported by temporary staging, after which the permanent substructure enabled a gantry system to be installed. This gantry allowed precast elements to be delivered and erected directly from above, avoiding the need for access tracks or extensive temporary works within the mangroves.

Precast components were produced in two locations. Prestressed joists were manufactured at HEB's specialist precast facility, while piles and headstocks were cast on site in a dedicated precast yard. This approach reduced transport distances, improved quality control, and allowed

all elements to undergo full water curing to meet durability requirements for a Class C marine environment.

Each precast element was assigned a unique identification number and tracked digitally through production, curing, storage, installation and quality assurance. Digital tools, including 3D modelling and smart QA forms hosted on Autodesk Construction Cloud, enabled real-time verification of installation accuracy, reduced the risk of errors, and provided a transparent view of construction progress through colour-coded models.

DURABILITY THROUGH DETAILING

Durability was a central consideration across all structural components. Pile solutions were tailored to ground conditions, combining driven steel UC sections with precast concrete segments in softer soils, and bored precast or in-situ piles where rock was shallow. Headstock-to-pile connections were carefully detailed to accommodate rotation, resist wave- and seismic-induced forces, and protect exposed reinforcement in the marine environment.

The prestressed joists were designed as cracked members under NZS 3101 exposure requirements, with stainless-steel blockings and fixings specified to high surface finish standards to reduce corrosion risk. Balustrades were detailed with duplex corrosion protection systems to achieve a 40-year design life to first maintenance, while isolating washers were used throughout to prevent bi-metallic corrosion.

The "build-over-the-top" approach enabled installation from above, avoiding ground disturbance and protecting mangroves throughout construction.

Modular grillage spans use precast prestressed joists on headstocks and piles, with FRP decking and replaceable balustrade panels.

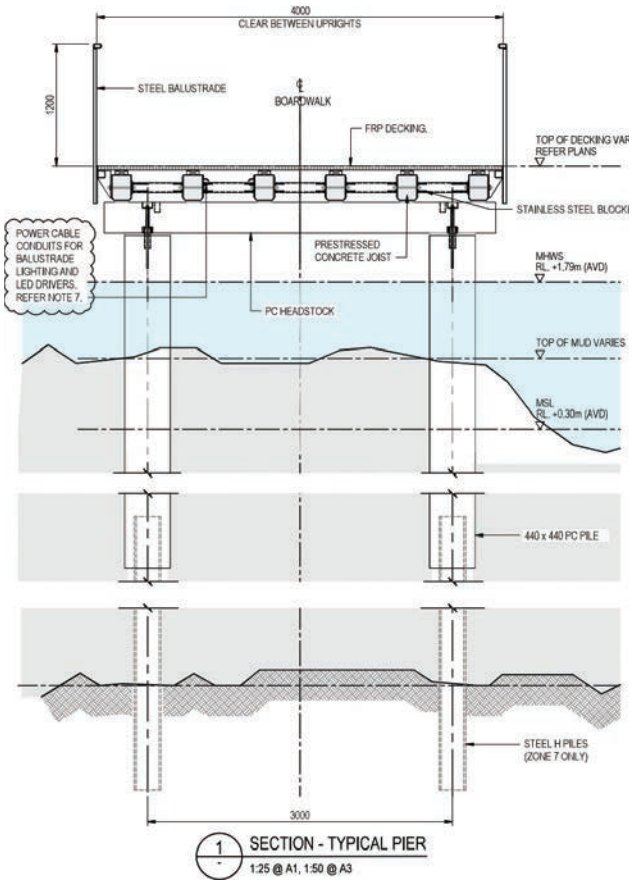
SUSTAINABILITY OUTCOMES

Sustainability was embedded throughout both design and construction. The build-over-the-top methodology significantly reduced site disturbance and protected the mangrove habitat. Off-site prefabrication improved material efficiency and reduced waste, while digital QA processes minimised paper use and improved resource management.

In a further demonstration of circular thinking, surplus concrete pile offcuts generated during installation were repurposed as seating elements along the pathway and at a local school, extending the life and value of materials beyond their original structural function.

PROGRESS AND FUTURE POTENTIAL

The section of pathway between SH16 and Roberts Road has now been completed, and was opened to the public in late March. A second section in Avondale, Section 2, has secured funding with construction due to follow on from Section 5. Section 2 will connect Ken Maunder Park to Wingate Street using the same modular precast design approach. Although these two sections currently stand apart geographically, the long term vision is for them to be linked as further funding becomes available.



Modular grillage spans use precast prestressed joists on headstocks and piles, with FRP decking and replaceable balustrade panels.

Precast prestressed concrete elements were digitally tracked, ensuring quality, precision, and efficient assembly across varied conditions.

Beyond delivering a high-quality public asset, the Te Whau Pathway boardwalk provides a replicable model for future stages of the pathway and for similar projects across New Zealand. It demonstrates how precast concrete, when combined with early collaboration, digital delivery and thoughtful construction planning, can enable low-impact infrastructure solutions that balance durability, efficiency and environmental stewardship.

Acknowledgement: *The authors thank Auckland Council for permission to publish this article and acknowledge the contributions of project partners, HEB Construction and Beca.*

Source: *This article is based on a paper presented at the 2025 Concrete NZ Conference, "Te Whau Pathway Project: Modular Precast Design for Low-Impact Construction in an Ecologically Sensitive Marine Environment", by J. Xu and A. Dickson (Beca), and A. O'Donnell and E. Caudwell (HEB Construction), which won the Sandy Cormack Best Paper Award.*

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Scanning concrete discharge gives real-time fibre distribution insight, enhancing quality assurance and consistency in steel fibre reinforced pours.

STEEL FIBRE QA: BEYOND THE BUCKET – TESTING THE WHOLE LOAD

Alan Ross, *Certus Consulting*

QUALITY ASSURANCE IN CONCRETE TENDS TO FOCUS ON THE FAMILIAR: SLUMP. AIR. BLEED. CYLINDERS. OCCASIONALLY A CORE. ALL NECESSARY. ALL PART OF THE ROUTINE. WHEN IT COMES TO STEEL FIBRE CONCRETE, THOUGH, THE CONVERSATION OFTEN STOPS AT DOSAGE.

The docket says 20kg/m³. The fibres are in the mix. The mix design is signed off. Comfort levels rise.

The reality is that fibre performance depends not only on how much steel goes into the truck, but how that steel is distributed through the load. A 30-litre snatch sample taken from a bucket might tell you something about that sample. It does not necessarily represent what is happening across the full 5-6 cubic metres.

That is where using new technology and implementing a monitoring tool, such as the eyeD system, has added something useful to the QA process for fibre reinforced concrete.

Rather than relying on a small sample, the device scans the entire truck load as it is discharged. It measures fibre distribution continuously and reports trends across the whole volume of concrete. Instead of a single data point, you get a profile of the load - in real time.

The difference in obtaining continuous vs discreet measurement is important when fibre performance underpins the structural design.

In steel fibre reinforced slabs designed to the UK Concrete Society's *TR34 Concrete industrial ground floors: A guide to design and construction* (4th ed.) or other similar guidance, the residual flexural strengths (fR1, fR3 or fR4 depending on the design approach) are central to the calculation process. Those residual strengths assume fibres are present in the right quantity and evenly distributed. Significant variability in distribution may influence the slab's post-cracking behaviour - even if the target dosage on the docket was technically achieved.

Scanning the load before it is poured provides feedback in real time. If variability is identified during the pour sequence, batching, dosing or mixing procedures can be reviewed before loads from subsequent trucks are placed. It becomes a live QA tool, not simply a record for compliance.

That is particularly relevant on larger industrial pours where consistency across multiple loads matters.

It is also important to be clear about what the wash out test and this type of site-based testing does and does not replace.

Quality control at the batching plant remains fundamental. Fibre type, geometry, tensile strength and, importantly, target dosage are established and verified at that stage. The plant is the only point in the process where fibre properties and intended quantities can be accurately controlled.

Site-based scanning and sampling should complement, not substitute, that upstream QA. The two work together. Plant QA confirms what should be in the mix. Site QA provides visibility of how that mix is behaving in practice.

Historically, fibre verification has relied on wash-out testing of small samples taken from individual trucks. That method has a defined place in the standards and remains useful. The limitation is scale and timing. A 30-litre sample represents only a small portion of the load, and by the time results are available the concrete has often already been placed and finished.

As monitoring technology evolves, it provides additional tools alongside established test methods. Standards define baseline requirements; where fibre performance contributes directly to structural capacity, some projects may warrant broader visibility of what is actually being placed.

Scanning the full concrete discharge provides a different layer of information and greater transparency around what is actually being placed.

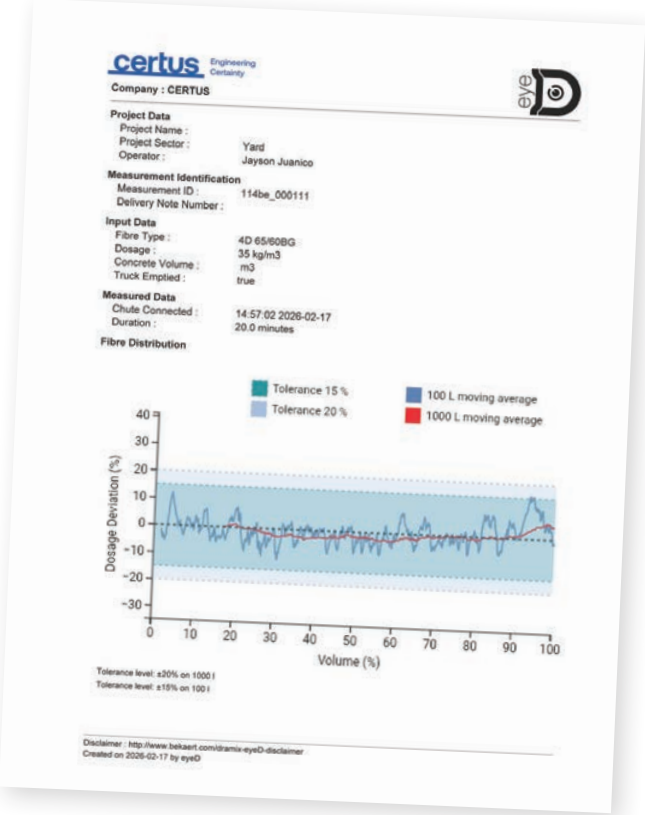
In practical terms, the eyeD unit sits in the discharge path and records data as the bowl is emptied. The resulting report presents a graphical profile of fibre deviation across the load volume, typically assessed against defined tolerances over 100-litre and 1000-litre segments. For engineers reviewing documentation, the output is straightforward. For contractors and suppliers, it provides a clear record of consistency across the pour.

The discussion then becomes less subjective. Instead of asking whether the mix "should be fine," the conversation is objectively informed by measured distribution of the fibres across the full load.

The intent is not to add unnecessary layers of testing. It is to ensure that what is being specified in terms of fibre performance can be reasonably demonstrated in the field.

A 30-litre bucket sample represents a small fraction of a truck. Observing the full load provides a broader and more representative picture of what is actually being placed.

Where fibre performance contributes directly to structural capacity, that additional visibility is well worthwhile. A


certus Engineering Certainty

Company : CERTUS

eye D

Project Data
Project Name :
Project Sector : Yard
Operator : Jayson Juanico

Measurement Identification
Measurement ID : 114be_000111
Delivery Note Number :

Input Data
Fibre Type : 4D 65/60BG
Dosage : 35 kg/m3
Concrete Volume : m3
Truck Emptied : true

Measured Data
Chute Connected : 14:57:02 2026-02-17
Duration : 20.0 minutes

Fibre Distribution

Tolerance 15 %
Tolerance 20 %
100 L moving average
1000 L moving average

Dosage Deviation (%)
40
30
20
10
0
-10
-20
-30

0 10 20 30 40 50 60 70 80 90 100
Volume (%)

Tolerance level: ±20% on 1000 l
Tolerance level: ±15% on 100 l

Disclaimer : http://www.bekaert.com/dramix-eyeD-disclaimer
Created on 2026-02-17 by eyeD

eyeD records fibre distribution during discharge, producing a simple graphical report that verifies consistency across the load.

certus

Certus is an independent engineering consultancy focused on commercial concrete floors - covering slab design, surveying, construction monitoring, on-site QA and independent certification.

They work alongside asset owners, engineers, material suppliers and contractors to bring practical, site-based input right through from design to construction to handover and beyond.

That includes more detailed work around fibre distribution checks, abrasion and slip testing, floor flatness surveying and reporting, design documentation and construction drawings, and support around specifications and how the floor is actually performing on site.

Visit the Certus Consulting website to find out more - **www.certus.nz**

CONCRETE IN CONTEXT: MATERIAL CHOICES AT NGARARA VILLAS, WAIKANAE

Concrete enabled durable accessways, supporting heavy vehicles and keeping the site clean, safe and efficient.

SET WITHIN THE GARDEN PRECINCT OF WAIKANAE ON THE KĀPITI COAST, NGARARA VILLAS IS A 20-HOME DEVELOPMENT DESIGNED FOR DURABILITY AND ENVIRONMENTAL RESPONSIVENESS, HIGHLIGHTING HOW CONCRETE HAS BEEN STRATEGICALLY INTEGRATED TO MEET BOTH CONSTRUCTION AND LIFECYCLE DEMANDS.

As explained by Kevin Yaxley, Development Project Manager at Palmer & Cook Developments, material selection was driven by practicality as much as performance. One of the most visible examples is the use of concrete for accessways and hardstanding areas. While hot mix asphalt is often considered for such applications due to its speed of installation, it was ultimately ruled out as its relative softness and susceptibility to damage under heavy construction traffic made it less suitable for a site that required robust, early-stage access.

Concrete, by contrast, provided a durable and reliable solution. It enabled accessways to be installed ahead of house construction, supporting heavy vehicle movements without degradation. In addition, its ease of cleaning helped minimise mud and debris across the site, improving both safety and efficiency during the build. Exposed concrete finishes were selectively used to introduce subtle traffic-calming features, demonstrating how functional requirements can align with design outcomes.

Cost and constructability considerations further reinforced this choice. While hot mix asphalt could potentially be installed around a week faster, it requires tighter tolerances and more intensive preparation. When steel reinforcement and overall performance are factored in, hot mix was estimated to be less economically viable, making concrete both the more practical and cost-effective option.

The use of concrete continues into the homes themselves, most notably in the adoption of concrete floor slabs in place of traditional timber flooring systems. This decision reflects a broader focus on durability and long-term value. Concrete slabs offer excellent structural integrity and resilience, particularly in variable ground conditions, while also contributing to improved indoor comfort through thermal mass. This helps

regulate internal temperatures, reducing reliance on mechanical heating and cooling.

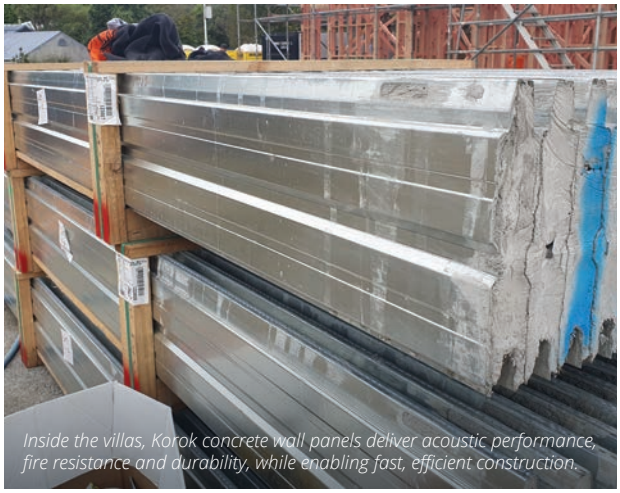
From a construction perspective, slabs also simplify the building process and reduce complexity on site. When considered alongside cost efficiencies – the advantages become compelling.

Across the development, concrete mixes were carefully specified to suit different applications. House slabs utilised 25–30 MPa concrete, with higher strengths applied where ground conditions required additional performance. Driveways and footpaths were constructed using 25 MPa concrete at a thickness of 120 mm, reinforced with SE72 mesh to ensure durability under regular use. In total, approximately 600 m³ of concrete was used for the villas themselves, with a further 90 m³ allocated to accessways.

Sustainability considerations also informed material choices. A pervious concrete solution was selected for car parking areas to meet Kāpiti District Council requirements for permeable surfaces. This system supports stormwater management by allowing water to infiltrate through the surface, reducing runoff and contributing to more sustainable site design. Importantly, installation of the pervious concrete was scheduled for post-construction to avoid clogging during the build phase.

Inside the villas, concrete continues to play a role through the use of Korok autoclaved concrete wall systems in place of traditional timber partitions. These panels provide excellent acoustic performance, with a high Sound Transmission Class (STC) rating, as well as fire resistance and durability. Their tongue-and-groove, screw-fixed installation system also enables fast construction, supporting programme efficiency without compromising quality.

Taken together, the material choices at Ngarara Villas demonstrate a clear and consistent approach: selecting concrete not just for its structural capabilities, but for its contribution to buildability, resilience and long-term performance. With the development now complete, it stands as a strong example of how concrete can support well-designed, low-maintenance residential environments that are built to last.



Inside the villas, Korok concrete wall panels deliver acoustic performance, fire resistance and durability, while enabling fast, efficient construction.

concretenz MASONRY

Concrete Bricks - Half the Emissions of Clay Bricks

All images: Firth Industries.

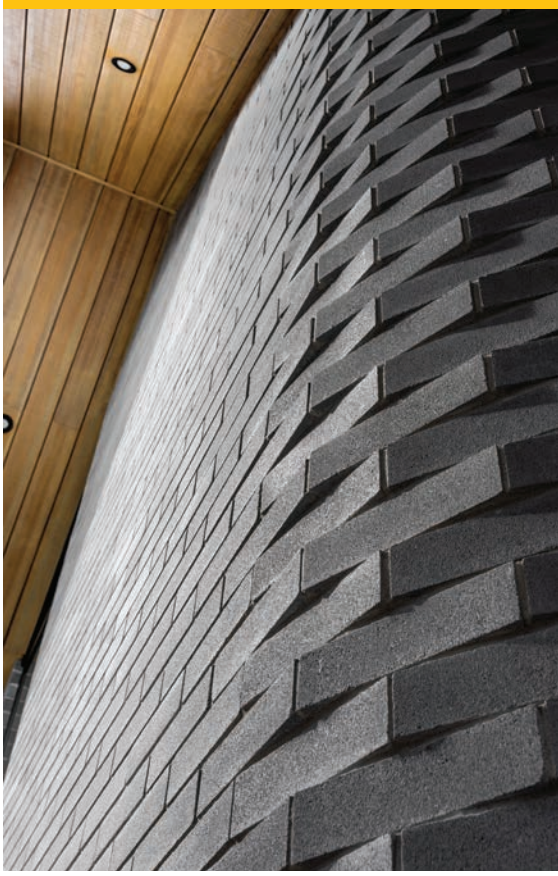
A DESKTOP ANALYSIS OF 3RD PARTY VERIFIED ENVIRONMENTAL PRODUCT DECLARATIONS (EPDS) HAS FOUND THAT CONCRETE BRICKS CAN DELIVER SIGNIFICANTLY LOWER CARBON EMISSIONS THAN TRADITIONAL CLAY ALTERNATIVES.

The study compared the embodied carbon associated with the manufacture of concrete bricks produced by a New Zealand supplier with that of fired clay bricks supplied from Australia. The findings show that, on average, concrete bricks generate around half the carbon emissions of clay bricks.

This difference is largely attributable to the manufacturing process. Fired clay bricks require prolonged exposure to very high temperatures, resulting in substantial fuel consumption and higher embodied carbon - typically around 0.5 kg of CO_2 per kilogram of bricks. Concrete bricks, by contrast, are produced using a less energy-intensive process.

Further emissions reductions are also achievable through optimised concrete mix design and the incorporation of recycled materials, strengthening concrete bricks' sustainability credentials.

These findings provide practical, evidence-based insight for designers, specifiers and builders looking to reduce the carbon footprint of construction projects without compromising performance or durability.



Country of origin	Type	GWP / tonne (kg CO_2 eq)					GWP / m^2 (kg CO_2 eq)		
		Manufacture only			incl. Transport[1&2]		incl. Transport[1&2]		
Supplier / Product		A1 - A3[x]	Unit	Average	A1 - A3	Average	A1 - A3	Unit	Average
AUSTRALIAN imports									
Austral, Punchbowl - 10 holes	Clay	253	tonne		269		40.40	m^2	
Austral & Nubrik, Wollert - 10 holes	Clay	181	tonne		198		30.70	m^2	
Austral, Golden Grove - 10 holes	Clay	215	tonne		232		33.72	m^2	
Bowral Bricks, Bowral - Hamlet - solid	Clay	288	tonne	**203**	304	**220**	33.07	m^2	**31**
Austral & D. Robertson, Longford - 3 holes	Clay	109	tonne		126		22.28	m^2	
Austral, Rochedale - 10 holes	Clay	184	tonne		201		29.22	m^2	
Austral, Hornsley Park - 10 holes	Clay	193	tonne		209		30.38	m^2	
NEW ZEALAND made (Firth Industries)									
Firth Focus, Natural, Christchurch - solid	Concrete	106	tonne				12.60	m^2	
Firth Focus, Natural, Auckland - solid	Concrete	*	tonne		117		13.94	m^2	
Firth Strata - solid	Concrete	125	tonne				12.60	m^2	
Firth Manorstone, Christchurch - solid	Concrete	73	tonne	**109**		**111**	11.45	m^2	**13**
Firth Manorstone, Auckland - solid	Concrete	*	tonne		84		13.21	m^2	
Firth Devonstone, Christchurch - solid	Concrete	131	tonne				12.93	m^2	
Firth Devonstone, Auckland - solid	Concrete	*	tonne		142		14.92	m^2	

[x] Source: EPDs: epd-australasia.com
* no manufacture in Auckland - shipped from Christchurch to Auckland
[1] 0.00665 kg CO_2 per tonne per km sea travel to Auckland. Source: ecoinvent.org/database
[2] 0.01069 kg CO_2 per tonne per diesel truck km. Source: ecoinvent.org/database
NOTE A: considered typical Australian brick dimensions in mm: L 230 x H 76 x D 110
NOTE B: considered typical New Zealand brick dimensions in mm: L 230 x H 95 x D 70

Visit the Concrete NZ website to download the factsheet - **www.concretenz.org.nz**

Lintel Design Guidance for Masonry Veneer

Main image above: Firth Industries.

CONCRETE NZ HAS RELEASED A NEW INDUSTRY RESOURCE, *GUIDANCE ON LINTEL DESIGN FOR MASONRY VENEER*, PROVIDING CLEAR, PRACTICAL DIRECTION FOR DESIGNERS, ENGINEERS AND CONSTRUCTION PROFESSIONALS WORKING WITH BRICK VENEER SYSTEMS.

Lintels may be considered a secondary structural element, but their role in masonry veneer construction is critical. Positioned above openings such as windows and doors, lintels support the weight of masonry and distribute loads safely to either side. Without appropriate design and detailing, issues such as cracking, deformation or corrosion can arise, affecting both performance and aesthetics.

"This new guidance responds to the need for consistent, accessible design information, bringing together established standards and best practice into a single reference," says Concrete NZ Head of Architecture, Ralf Kessel. "It focuses on masonry veneer systems tied back to a primary structure, distinguishing them from structural masonry, which is reinforced and concrete-filled and requires separate design approaches."

A key concept explored is how loads are transferred through masonry. In traditional running bond construction, an arching effect forms above the opening, meaning the lintel supports a triangular distribution rather than the full wall height. In contrast, stack bond construction does not benefit from this behaviour, requiring lintels to carry the full load of masonry above, often resulting in larger lintel sizes.

The guide provides practical detailing advice, focusing on steel angle lintels, the most common solution in New Zealand. These angles are embedded into the veneer and bear onto masonry jambs, providing the bending strength to support the cladding. Key requirements such as minimum seating lengths, jamb support dimensions and installation orientation are clearly outlined.

Image: Klinker Profi.

Importantly, the guidance aligns with *NZS 4229:2013 – Concrete Masonry Buildings Not Requiring Specific Engineering Design (non-SED)* and the Concrete NZ *Concrete Masonry Manual*. Where projects fall outside of non-SED parameters, such as larger spans or greater veneer heights, the guide reinforces the need for specific engineering design input.

"Designers are also guided through key considerations such as veneer thickness, opening span and the height of masonry supported above the lintel," says Kessel. "These factors influence lintel selection and performance, with tabulated solutions provided for common scenarios. Deflection limits are also addressed to prevent excessive movement and cracking."

Durability is another critical focus area. Given their exposure, steel lintels must be protected against corrosion. The guide outlines suitable material options, including stainless steel grades and galvanised systems with duplex coatings, tailored to New Zealand's varied environments.

"By consolidating technical requirements, design methodology and detailing guidance, this publication provides a valuable tool for improving consistency and confidence in masonry veneer design," Kessel says. "It supports better outcomes on site, reduces the risk of defects and reinforces the importance of getting the fundamentals right."

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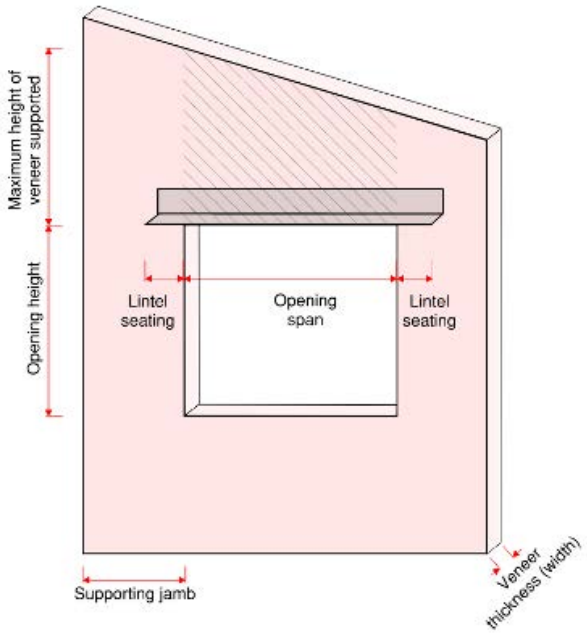


Illustrative diagram of key dimensions.

Visit the Concrete NZ website to download the guide – www.concretenz.org.nz

CONCRETE NZ ASSOCIATE MEMBERSHIP RATIONALISATION: SIMPLICITY AND CLARITY

CONCRETE NZ IS STREAMLINING ITS ASSOCIATE MEMBERSHIP STRUCTURE TO BETTER REFLECT TODAY'S INTEGRATED INDUSTRY - DELIVERING A SIMPLER, CLEARER FRAMEWORK ALIGNED WITH HOW MEMBERS ENGAGE NOW AND INTO THE FUTURE.

Concrete NZ's membership framework has evolved over many years, shaped by both the Association's history and the changing structure of New Zealand's concrete industry. As with many long-standing organisations, membership categories have expanded incrementally - responding to sector needs, emerging disciplines and shifting patterns of engagement.

While this evolution has served the Association well, it has also introduced complexity that no longer reflects today's industry, particularly since the formation of Concrete NZ bringing together the legacy/founding associations. Following recent Board discussions and enabled by updates to the Concrete NZ Rules, a rationalised Associate membership structure is now being implemented - focused on simplicity, clarity and future relevance.

A REVISED FRAMEWORK

Under the updated Rules, Associate membership now exists as a single class. Building on this, Concrete NZ will introduce a simple two-tier structure:

- Platinum Associate Member
- Associate Member

This replaces multiple legacy categories with a clearer, more accessible framework, simplifying administration while recognising different levels of engagement.

WHY CHANGE WAS NEEDED

Existing categories - Associate categories for the Cement, Masonry, Precast, Readymix and Reinforcing sectors, along with legacy CCANZ Gold, Silver and Bronze - were introduced at different points in the Association's development, reflecting valid relationships at the time.

However, the industry has become increasingly integrated.

Many organisations now operate across multiple parts of the value chain. Suppliers serve diverse markets, contractors work across disciplines, and service providers contribute expertise across sector boundaries. As a result, distinctions that once made sense no longer reflect how businesses engage with the industry - or with Concrete NZ.

The previous overlapping categories add complexity without meaningful differentiation. The new structure responds with a simpler, more flexible framework providing more visibility and engagement opportunities across the industry.

A CLEARER, CONTEMPORARY STRUCTURE

The revised categories are designed to reflect both accessibility and engagement depth.

The **Associate** member category provides a clear entry point for suppliers, contractors, and service providers seeking connection, information and participation in the Concrete NZ network.

The **Platinum Associate** member category recognises organisations seeking deeper engagement - offering enhanced visibility, stronger alignment with strategic initiatives and greater involvement in connecting with industry and supporting industry leadership.

This approach acknowledges that members engage in different ways - and that all forms of participation contribute to a stronger industry.

FAIR AND TRANSPARENT TRANSITION

A key priority throughout this process has been fairness and continuity.

Concrete NZ recognises that members have joined under different frameworks, often reflecting long-standing relationships. Transition pathways from existing Gold, Silver, Bronze, and Sector Group Associate memberships to the new categories are being finalised.

The objective is a smooth, transparent change that provides alignment with each organisation's preferred level of engagement.

ALIGNMENT ACROSS MEMBERSHIP CLASSES

The rationalisation also reflects the broader structure of Concrete NZ membership:

- Producer Members – participating through Sector Groups
- Associate Members – typically suppliers, contractors and service providers
- Learned Society Members – typically consultants, engineers and academics

A review identified areas where categories overlapped without clear definition. For example, some Producer Members also hold Associate memberships. Under the revised framework, these organisations will remain within the Producer category, where Sector Group participation already provides appropriate representation and benefits.

Associate Members with Learned Society memberships will retain flexibility to hold both, depending on their needs.

SIMPLIFICATION CREATES OPPORTUNITY

While the primary aim is clarity, the rationalisation also delivers broader benefits:

- A simpler, more intuitive membership structure
- Clearer pathways for engagement
- Better alignment with modern industry participation
- Reduced administrative complexity
- A well-defined premium (Platinum) category

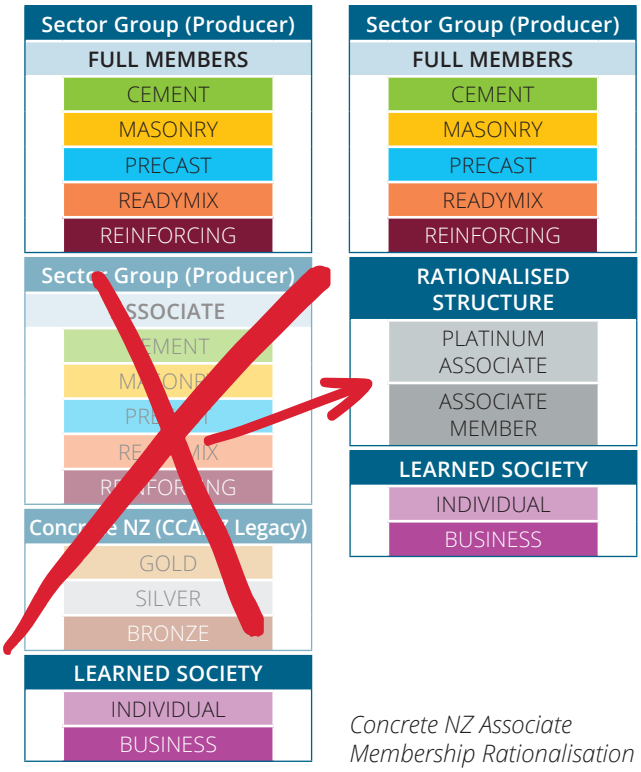
Importantly, the new framework also makes it easier for organisations from adjacent sectors to engage - such as technology providers, equipment suppliers, sustainability specialists and logistics partners.

A simpler structure is easier to understand, communicate and grow.

COMMUNICATION IS KEY

Structural change alone is not enough - its success depends on clear communication.

Concrete NZ is committed to articulating the value of Associate membership, including industry connection, advocacy, technical leadership, knowledge sharing and business visibility.



Concrete NZ Associate Membership Rationalisation

NEXT STEPS

The new structure will be introduced progressively, aligned with the rollout of a new Association Management System.

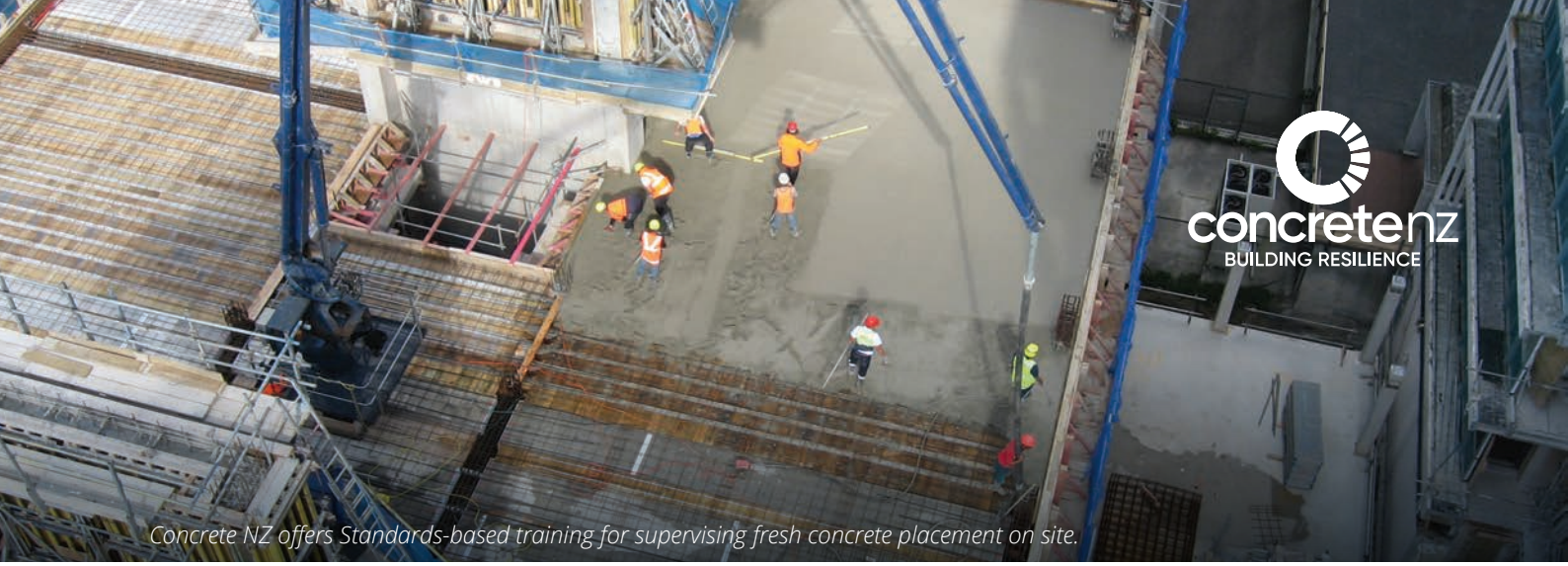
Over the coming months, Concrete NZ will work directly with existing Associate Members to:

- Confirm transition pathways
- Discuss category alignment
- Provide clarity on Associate membership options and benefits
- Ensure continuity ahead of renewals

This engagement will occur well in advance of the renewal cycle, giving members certainty and time to consider their preferred pathway.

No immediate action is required.

Concrete NZ remains committed to ensuring its membership framework is practical, resilient, and future-focused. Because while categories may evolve, the purpose remains the same - Supporting a stronger concrete industry!



Concrete NZ offers Standards-based training for supervising fresh concrete placement on site.

BUILDING CAPABILITY THAT LASTS: THE ROLE OF INDUSTRY ASSOCIATIONS IN TRAINING AND EDUCATION

AS CONSTRUCTION ACTIVITY BECOMES MORE COMPLEX AND EXPECTATIONS AROUND QUALITY, DURABILITY AND COMPLIANCE CONTINUE TO RISE, TRAINING AND EDUCATION ARE INCREASINGLY CENTRAL TO INDUSTRY PERFORMANCE. FOR BUILDERS AND CONTRACTORS, ACCESS TO PRACTICAL, RELEVANT AND TRUSTED LEARNING PATHWAYS CAN MAKE THE DIFFERENCE BETWEEN MEETING MINIMUM REQUIREMENTS AND CONSISTENTLY DELIVERING HIGH-QUALITY OUTCOMES.

Industry associations play a critical role in this space - bridging the gap between Standards, design intent and what happens on site. Concrete NZ's approach to training and education provides an example of how associations can support capability across the construction sector.

PRACTICAL TRAINING GROUNDED IN STANDARDS AND SITE REALITY

Concrete NZ delivers a suite of industry training courses designed to support those working directly with concrete on site or from a design perspective. Key to this programme is the **Concrete Construction Course**, a two-day classroom-based course aimed at those supervising the placement of fresh concrete, including site foremen, formwork carpenters and apprentices.

Built around *NZS 3109 Concrete Construction*, the course focuses on practical understanding of materials, construction practice and quality control. Topics include concrete production, reinforcement, formwork requirements and good site practice - from placing and compaction through to curing and crack control. The course is designed to meet industry needs while aligning with relevant NZQA standards.

Complementing this is the **Concrete Masonry Course**, developed with support from Firth Industries. Based on *NZS 4229 Concrete Masonry Buildings Not Requiring Specific Engineering Design* and relevant *Building Code* clauses, the course provides designers and practitioners with the knowledge to develop compliant masonry designs without the need for specific engineering input. Structural design, bracing, foundations, diaphragms and weathertightness are covered, with practical exercises reinforcing learning outcomes.

SUPPORTING TECHNICIANS AND TESTING CAPABILITY

For many in the industry, quality outcomes depend on competent testing and verification. Concrete NZ's long-running **Concrete Technicians Course**, originally established by the Cement & Concrete

Association of New Zealand (CCANZ), continues to play an important role in developing and refreshing technical capability.

This three-day lab based course, which can be taken as individual day courses, provides both introductory and refresher training covering concrete properties, production, construction and testing, with practical competency in fresh and hardened concrete testing emphasised through demonstration, discussion and assessment aligned with unit standards.

ADDRESSING WEATHERTIGHTNESS AND PERFORMANCE EXPECTATIONS

Weathertightness remains a critical issue for designers, builders and regulators alike. Concrete NZ's **Weathertight Concrete Construction Course**, developed with support from Firth Industries, is designed for architects, designers, building officials and construction professionals seeking a clear understanding of concrete and concrete masonry performance under *Building Code Clause E2 External Moisture*.

Based on the *Code of Practice (CoP 01) for Weathertight Concrete and Concrete Masonry Construction*, the course covers wall systems, flashings, roofs, decks, slab-on-ground construction and moisture management, helping reduce risk and improve build quality.

KNOWLEDGE-SHARING THROUGH SEMINARS AND CONFERENCES

In addition to formal courses, Concrete NZ's Learned Society plays a key role in delivering targeted technical education through seminars and webinars. Recent examples include the *Strut & Tie* design webinar and the *Slabs & Shrinkage: Design Tips & Tricks* seminar series, both of which attracted strong engagement from designers and contractors.

Looking ahead, *Reinforced Concrete Diaphragm Design* seminars will be delivered nationwide, providing updated guidance fundamental to earthquake performance and reinforcing the link between design intent and construction delivery.

At a broader level, the Concrete NZ Conference, to be held at Tākina in Wellington from 21–23 October, provides a national forum for sharing technical insight, policy direction and emerging best practice, connecting contractors, designers, suppliers and decision-makers.

SUPPORTING VOCATIONAL PATHWAYS THROUGH BCITO

Beyond delivering its own training, Concrete NZ also supports the development and promotion of BCITO concrete qualifications, recognising the importance of strong vocational pathways for long-term workforce capability. Working alongside BCITO and industry partners helps ensure qualifications remain aligned with real-world construction practices and evolving expectations.

This collaboration supports consistent standards, clearer career pathways and improved outcomes on site, particularly as demand grows for skilled workers who understand both traditional construction practice and emerging requirements.

A LONG-TERM INVESTMENT IN INDUSTRY QUALITY

Training and education are not short-term fixes; they are investments in safety, quality and productivity. By developing Standards-based courses, delivering targeted seminars, hosting sector-wide conferences and supporting vocational qualifications, Concrete NZ demonstrates how industry associations can play a pivotal role in building capability that lasts.

For builders and contractors, access to this kind of practical, industry-led education helps turn compliance into competence - and competence into confidence - on every project.

Visit the Concrete NZ website for more information about training courses and seminars – **www.concretenz.org.nz**

Concrete NZ's Technicians Course builds practical capability in fresh and hardened concrete testing.

Based on Concrete NZ's CoP 01, the Weathertight Concrete Construction Course addresses Building Code Clause E2.

CONCRETE NZ LIBRARY

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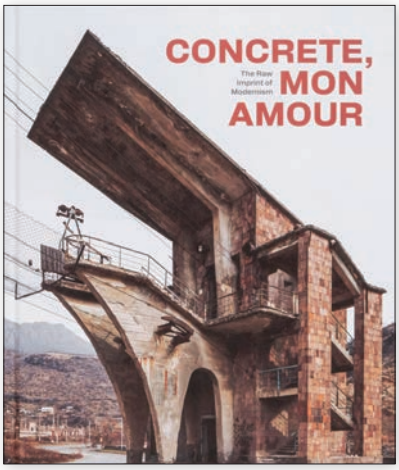
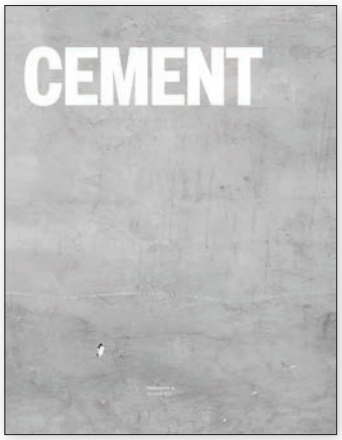


CONCRETE, MON AMOUR: THE RAW IMPRINT OF MODERNISM - STEFANO PEREGO

A striking photographic exploration of modernism's ambition and enduring legacy, *Concrete, Mon Amour* captures the raw power of mid-to-late 20th century concrete architecture. Through carefully composed imagery, Stefano Perego revisits structures once celebrated as radical experiments and now viewed with both admiration and critique. From iconic landmarks to overlooked outliers, the book reveals the paradox of these forms – monumental yet austere, unadorned yet deeply expressive. Set against diverse landscapes, each image invites reflection on the ideals that shaped modernism and the material honesty that sustains its relevance today.

CEMENT: THE COFFEE TABLE BOOK - TYPOGRAPHY VULGARITIES

Blending bold visual impact with refined simplicity, *Cement* is both a design object and a curated collection of typographic expression. Presented in an oversized format with a monochromatic palette and soft-touch finish, the book delivers a sequence of carefully composed layouts that celebrate form, colour and visual storytelling. Each page offers a considered interplay of typography and design motifs, making it as engaging to explore as it is to display. Equally suited to contemporary, minimalist or rustic interiors, *Cement* is a statement piece for design-conscious readers seeking inspiration, balance and understated sophistication.



LIBRARY QUIZ

To go in the draw to win a copy of *Concrete, Mon Amour: The Raw Imprint of Modernism* by Stefano Perego, answer the following question:

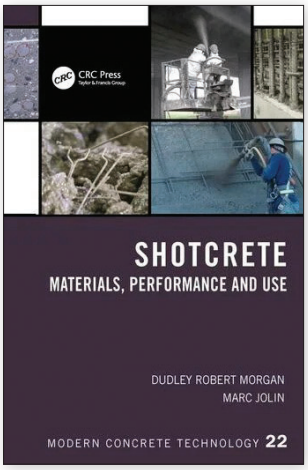
How long is the overall shared-use pathway of Te Whau Pathway is part?

Email your answer to **library@concretenz.org.nz**. Entries close Friday 12 June 2026.

Congratulations to Joanna Fibreson of Hardy Foundations, who correctly answered the Vol. 63 Iss. 04 Library Quiz to receive a copy of *Concrete and Plastic: Thinking Through Materiality* by Kylie Crane.

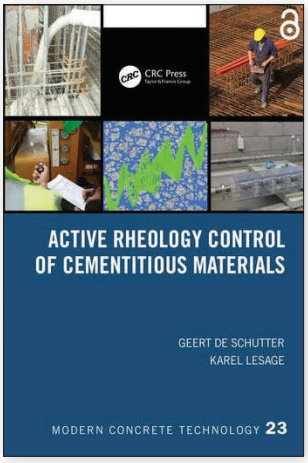
SHOTCRETE: MATERIALS, PERFORMANCE AND USE - DUDLEY ROBERT MORGAN & MARC JOLIN

This comprehensive reference provides a detailed overview of shotcrete technology, covering its materials, performance and wide-ranging applications. From curvilinear structures and overhead work to seismic retrofit, repair and ground support, the book highlights where shotcrete offers clear technical and economic advantages over conventional methods. It explores mixture design, equipment, application techniques and current research, supported by extensive case studies spanning infrastructure, tunnelling, architecture and more. Designed for engineers, architects, contractors and academics, this text serves as both a practical guide and an authoritative resource on one of concrete's most versatile construction methods.



ACTIVE RHEOLOGY CONTROL OF CEMENTITIOUS MATERIALS - GEERT DE SCHUTTER & KAREL LESAGE

Presenting cutting-edge research from the SmartCast project at Ghent University, this book introduces the emerging field of active rheology control in cementitious materials. It outlines innovative methods that enable real-time adjustment of concrete behaviour during placement through responsive admixtures and components. This new level of control enhances constructability, improves reliability in traditional casting, and opens pathways for advanced applications such as 3D concrete printing. Combining theory with practical insight, the book explains the mechanisms and approaches behind this technology, offering valuable guidance for researchers and forward-thinking practitioners shaping the future of concrete construction.



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