
BRANZ
Annual Review
2023

Our vision is to challenge Aotearoa New Zealand to create a building system that delivers better outcomes for all.

BRANZ – the Building Research Association of New Zealand – is a multi-faceted, science-led organisation. We use independent research, systems knowledge and our broad networks to identify practical solutions that improve Aotearoa New Zealand's building system performance.

BRANZ is driven by the knowledge that, to thrive as a society, New Zealanders need a built environment that is safe and healthy and performs well.

Unlocking momentum

The BRANZ Annual Review 2023 shares how our strategic insights and actions are unlocking momentum within the building system. By amplifying positive change and fostering innovation, we are working to help transform Aotearoa's built environment for the future.

The building system exists within many interconnected and active forces. As relationships and behaviours change, the whole system can move in new and unexpected directions.

BRANZ holds a uniquely independent and impartial view of the entire building system. We are in the right position to understand patterns, identify levers, share learning, step into gaps and act as a catalyst for change.

Within these pages, we share stories about the ways we are unlocking the positive momentum that exists within and around the building system.

We are acting on climate change. Our mahi on climate change adaptation is supporting communities and sparking collaboration across the sector. By upskilling industry, influencing regulatory change and future-proofing buildings, we are directing our energy towards Aotearoa New Zealand's net-zero carbon goals.

We are improving safety and wellbeing for Kiwis. Housing plays a huge role in the quality of people's lives. By accelerating action on healthy homes and increasing building resilience in emergencies, we are strengthening our built environment to deliver better outcomes for Kiwis.

We are collaborating to build a higher-performing industry. We are boosting our capacity to deliver results by developing cutting-edge facilities and transformational tools and kick-starting industry collaboration on system challenges.

We are investing in future leaders. We are funding innovative scholarship ideas, working in partnership with tertiary institutions, and creating career development opportunities to equip the next generation of industry leaders.

We are driving change within BRANZ. Our people are our engine for change. We are investing in our team with transformational intent, taking great strides on our sustainability, and we are leading with strategic direction.

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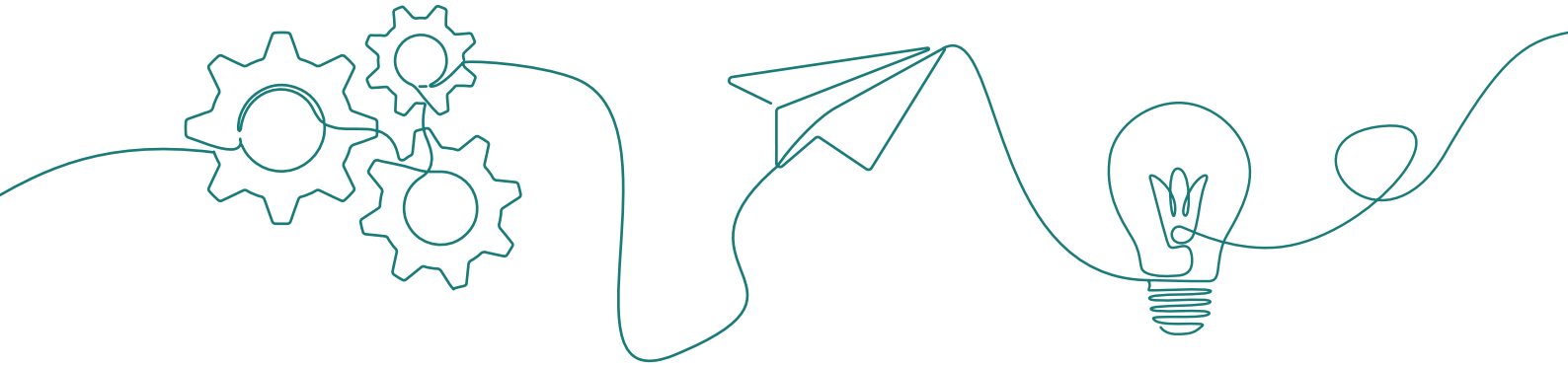
2023 BRANZ ANNUAL REVIEW



Chair and Chief Executive welcome

Welcome to the BRANZ Annual Review 2023

Resilience is always at the forefront of our thinking here at BRANZ, and this year has been no exception. Much of our work is dedicated to understanding and communicating what it will take to make our built environment more resilient, in particular to the impacts of climate change.

The importance of that focus was sheeted home at the beginning of 2023 when flooding and devastating landslips hit Auckland and Northland, closely followed by the catastrophic events of Cyclone Gabrielle, impacting hardest in Tairāwhiti and Hawke's Bay. No one can forget those tragic scenes.

Together with all of Aotearoa New Zealand, our hearts went out to the families and communities who were directly affected – those who lost their lives, their homes, their businesses and livelihoods. These events brought into sharp focus the increasing frequency and severity of extreme weather events as a result of climate change. They also highlighted the critical need to move even more quickly to improve the resilience of New Zealand's building system.

BRANZ remains at the forefront of efforts to respond effectively, with our research into mitigations and adaptation in the climate change context continuing to gain momentum in the wider industry.

In the immediate aftermath of the floods, BRANZ was able to offer practical assistance at a grassroots level, publicising information on cleaning, drying out and restoring a home after a flood. However, it is the Levy funding we invest in research that informs design and construction of new buildings and renovation of old ones that will have the greatest impact. New Zealand's focus must be on building back better.

Already, a lot of BRANZ's work is dedicated to ensuring buildings can better cope with more intense rainfall, floods and inundation, higher temperatures, sea-level rise and stronger winds. For example, this year in collaboration with WSP Ltd, we published a research report providing comprehensive guidance on how to strengthen timber-framed houses against projected increases in windspeeds, and we have engaged researchers to work with iwi and hapū to co-create solutions to the impacts of climate change on vulnerable marae, many of which are coastal or near waterways.

Claire Falck
Acting Chief Executive Officer

Nigel Smith
Board Chair

BRANZ continues to lead the industry with research and activities to support the transition to an affordable, zero-carbon built environment that can deliver better outcomes for all. Increasingly, that is not just about the research we and our partners undertake but about ways in which we can add value by breaking down any barriers and encouraging behaviour change.

A great example of this is how we are supporting industry acceptance of the changes introduced into the Building Code clause H1 *Energy efficiency* requirements.

BRANZ research helped inform those changes, which demand a significant shift in the way buildings are designed and constructed and are an important step towards a net-zero carbon built environment. However, we also recognised there were genuine concerns within the industry that these new standards had the potential to add cost at a time when the industry is already under significant strain.

BRANZ continues to lead the industry with research and activities to support the transition to an affordable, zero-carbon built environment that can deliver better outcomes for all.

We looked for innovative ways to allay these concerns and positively support the industry. BRANZ and other industry players developed a one-stop-shop H1 Hub to make it as easy as possible for people to locate everything required to understand and implement higher performance standards. It is a practical, user-friendly way to help promote the regulatory changes that will ultimately result in warmer, drier and healthier buildings, reduced heating costs and a lower carbon footprint.

Alongside this important climate and resilience work, our research continues to focus on outcomes that improve – or even save – the lives of families and communities. For example, this year, we contributed to a new guide promoting fire-safe design and completed research that strengthens the link between poor housing and negative health and wellbeing outcomes. By providing information about the groups of people most at risk, the research will help policy makers target interventions to those most in need.

BRANZ also continues to undertake and support research that will enhance industry performance and improve its environmental footprint. Initiatives in 2022/23 have ranged from supporting a new postgraduate degree course for construction sector professionals through to construction site waste management protocols and progressing towards energy performance certificates for homes.

Ensuring BRANZ can continue to robustly support the industry for the long haul is a priority.

Building capability and resilience has been the focus of our campus redevelopment project. The new structures laboratory opened in February 2023, signalling the completion of the first stage, and work on the new fire testing laboratory is also progressing at pace. These are exciting developments not only for our dedicated research teams, who now have advanced equipment and additional capacity to expand their testing regime, but also for the industry.

Our efforts to support building system transformation would not be possible without our people. Our leadership development journey over many years has resulted in a high-performing, responsive team and collaborative culture that helps us deliver our strategy and keep pace with our ever-changing world.

Inside these pages, we hope you will enjoy learning how the BRANZ of today is helping to ensure the buildings of tomorrow will perform no matter what the future holds.

Ngā mihi nui

Nigel Smith
Board Chair

Claire Falck
Acting Chief Executive Officer

Farewell to Chelydra

To reach its true potential, a successful organisation needs great leadership.

It seems fitting that the theme of this BRANZ Annual Review is unlocking momentum because our ability to do so is largely thanks to former Chief Executive Chelydra Percy's outstanding leadership.

For almost 9 years, Chelydra has worked to create a high-performing team and collaborative culture. Leading from the front – but also comfortable contributing and guiding from the sidelines – Chelydra has been passionate about developing leadership capability across the business.

Of all her many strengths, her warm and inclusive leadership style was highlighted by BRANZ staff, business partners and former Board members at her farewell. Chelydra was acknowledged as that very rare leader – one who cares as deeply about her people and their success as she does about BRANZ and its success.

While Chelydra's achievements in the business have been many, there are a few in my view that deserve particular acknowledgement and speak to her character and passion for the best outcomes.

Chelydra's efforts led to the introduction of the Long-Term Building Research Levy Utilisation Policy, achieving a stable financial business model for BRANZ. This has meant that, despite Levy receipts (and BRANZ funding) being directly linked to the levels and values of annual building consents, research programmes are not impacted by the boom-bust cycle.

The impact of this policy cannot be overstated. Together with Chelydra's determination to ensure staff wellbeing, BRANZ was able to successfully navigate the choppy waters of COVID-19 disruption and research could continue uninterrupted.

Chelydra's ability to lead difficult, but necessary, conversations within the building and construction sector led to the BRANZ Industry Transformation Agenda and provided the genesis for the Construction Sector Accord. Chelydra, as lead for the Environment Workstream of the Construction Sector Accord, worked with leaders from across the industry to deliver the Construction Sector Environment Roadmap for Action – a true watershed moment.

Those industry conversations also served to underscore the unique role BRANZ continues to play as a catalyst for change, acting as a role model and driving the industry towards better outcomes.

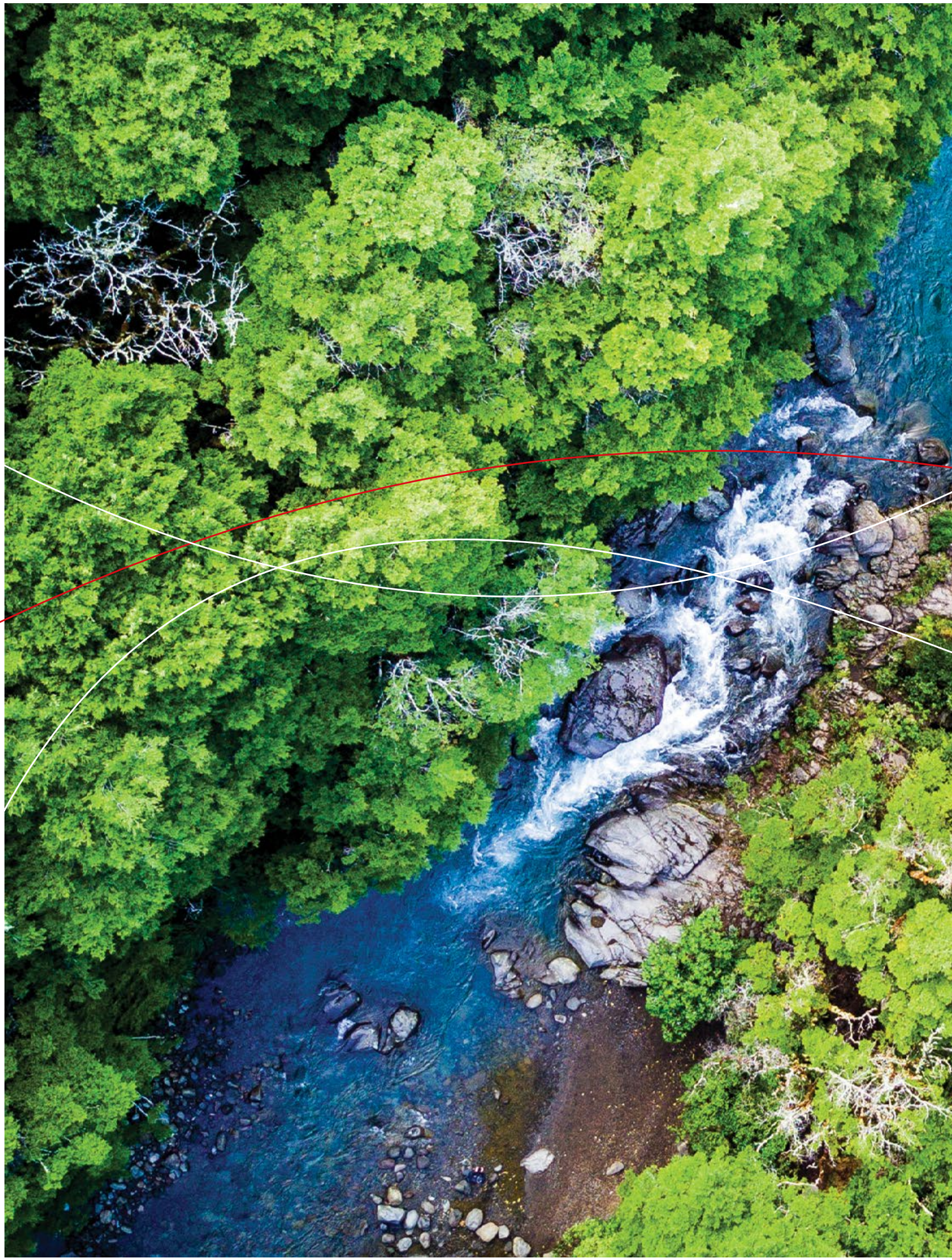
As a result of Chelydra's strategic vision, BRANZ is now actively embracing a systems transformation methodology to find and fund solutions to 'root cause' system capability issues as a key pillar of our strategy. We are able to take a helicopter view of the building system – and to join the dots – to ensure the industry can collaborate and work as one to achieve genuine transformational change.

In my view, this is legacy work that BRANZ – and Chelydra – can be particularly proud of.

Chelydra has been a tireless champion of transformation, burnishing the reputation of BRANZ in the process and earning the respect of her team, colleagues and peers. She will be missed.

Kia ora mai, Chelydra!

Nigel Smith
Board Chair



Acting on **climate change**

Responding and building resilience to an increasingly volatile climate

The devastating floods that hit the North Island in early 2023 were a stark reminder of how vulnerable New Zealand's homes and communities are to the impacts of climate change. While our zero-carbon programme is aimed at mitigating climate change, another focus of our work is strengthening the built environment to withstand extreme weather events.

In 2023, tragic and devastating weather events spiked concern about climate change. As affected communities moved from rescue to recovery, attention soon turned to how we could ready our homes for the inevitability of more-frequent severe storms.

In the immediate aftermath of the Auckland floods and Cyclone Gabrielle just 2 weeks later, distraught homeowners needed information on how to restore their properties safely and effectively.

BRANZ was quick to respond by widely sharing our practical guide *Restoring a home after flood damage*. Published in 2021, the free online guide draws together knowledge from BRANZ experts and emergency response agencies. It steps homeowners through the important phases of restoration following a flood – from safely re-entering a home and cleaning up to drying out and undertaking repairs.

In the weeks following the floods, the guide was downloaded from the BRANZ website more than 2,000 times. Recognising the value of the guide to homeowners, Hīkina Whakatutuki | Ministry of Business, Innovation and Employment (MBIE) funded the production of 10,000 hard copies for distribution in the worst-hit areas. BRANZ experts gave interviews to media to provide further guidance and support.

Identifying the risks and challenges of an increasingly volatile climate to Kiwi homes and communities is an ongoing research focus for BRANZ.

This year, for example, a new national study got under way that will identify marae vulnerable to the impacts of climate change. This will lay the foundation of working with iwi and hapū to co-develop culturally relevant adaptation strategies (see story on pages 12-13).

As climate change is predicted to increase windspeeds in some areas of Aotearoa New Zealand, this sparked another research question to understand the impact. A WSP-led research project assessed the effects of a 5–15% increase in windspeeds on our light timber-framed houses. This comprehensive analysis, which involved scrutinising the relevant building standards, provides reassurance that the predicted increase in windspeeds should not cause significant issues for light timber-framed houses.

At BRANZ, we know there is more to learn about how climate change will impact our homes and communities and what we can do to adapt. Understanding these impacts and how to build for resilience is an ongoing focus of BRANZ research. Ultimately, our goal is to ensure the built environment has the best possible chance of withstanding the brunt of a changing climate and that any impact on people's lives is minimised.

READ MORE

- BRANZ (2021). Bulletin 666 *Restoring a home after flood damage*. branz.co.nz/pubs/bulletins/bu666
- BRANZ (2022). External Research Report 75 *Adaptation of new buildings for climate change*. branz.co.nz/pubs/research-reports/er75

IN THEIR **WORDS**

Building Performance, MBIE

What role did MBIE's Building Performance have in the aftermath of the recent flooding events?
When an emergency event takes place, Building Performance provides technical and regulatory guidance and advice to territorial authorities and practitioners. In response to the emergency situations that unfolded during the Auckland flooding and Cyclone Gabrielle events, we were on hand to support the territorial authorities with damage assessments to buildings, as required under the Building Act 2004.

How did the BRANZ guide *Restoring a home after flood damage* help?
Te Kaunihera o Tāmaki Makaurau | Auckland Council sought advice from Building Performance on how best to provide accurate and helpful advice to homeowners affected by flooding and land stability issue. The BRANZ guide *Restoring a home after flood damage* contains useful public information for homeowners whose buildings or homes have been affected by flooding. Auckland Council included BRANZ's authoritative guide alongside MBIE guidance in the thousands of printed information packs that distributed to impacted homeowners.

What feedback has there been on the guide?
The feedback via Auckland Council was that people were generally reassured by having a source of information they could go to. They said that homeowners often know something needs to be done – just not always what. The timely BRANZ update helped homeowners to better understand the things they needed to think about or talk to their insurer about.

The BRANZ guide *Restoring a home after flood damage* contains useful public information for homeowners whose buildings or homes have been affected by flooding.

Understanding the impacts of climate change on marae

Many marae are built near waterways or coastal areas, placing them in a vulnerable position to the impacts of climate change. A new research project aims to map risks, understand challenges and co-create solutions with whānau and hapū to adapt and protect their marae for future generations.

Flooding, landslides, wildfire and rising sea levels are projected to become more frequent and severe. It is estimated that 30–50% of all marae across Aotearoa New Zealand are likely to be significantly impacted by climate change.

It is time for urgent decision making. However, whether to remain or relocate is a difficult choice for komiti marae (marae committees) and marae trusts. Marae and wharenui are more than buildings – they are a stronghold for iwi and Māori cultural identity, a connection to whenua (land) and whakapapa (genealogy).

Starting in July 2022, the *Climate change impacts on marae* research project is the first nationwide survey of all marae and is funded by the Building Research Levy. The project is led by Kiri Maxwell of Build Back Better Aotearoa New Zealand, with support from Professor Suzanne Wilkinson and Professor Regan Potangaroa of Te Kunenga ki Pūrehuroa | Massey University School of Built Environment. The research team is working in close partnership with iwi and marae.

Their research brings together issues and decision making that are often being faced alone by whānau and hapū living on their marae. It will identify which marae are most vulnerable to climate change and the challenges they are facing and then co-develop culturally relevant and meaningful adaptation actions for decision making. The aim is to create a kete (basket) of knowledge and practice for whānau, hapū and iwi to share, learn and collectively manage the impacts of climate change.

Due to the existing gaps in academic research, the project has needed to build many of its own foundations. To understand which marae are at risk, researchers first had to develop a database of all marae across Aotearoa New Zealand. This level of detailed and centralised data has never been compiled before and will be made available for future research, government and public groups.

Due to be completed in late 2023, the project looks to positively contribute to the wellbeing, resilience and sustainability of marae, the core of Māori culture. It will support whānau, hapū and iwi to identify, adapt and protect the marae and its taonga against climate impacts. The effects of these decisions made today will be felt for generations to come.

IN THEIR **WORDS**

Kiri Maxwell, Build Back Better Aotearoa

Ko Tainui te waka,
Ko Hoturoa te rangatira,
Ko Torerenuiārua te puhi ariki,
Ko Kapuarangi te maunga,
Ko Wainui te awa,
Ko Ngāi Tai te iwi,
Ko Kiri Maxwell tōku ingoa.

I whakapapa back to a beautiful part of Te Moana-a-Toi | Bay of Plenty, a place called Torere, so this mahi is very close to my heart. The team at Build Back Better Aotearoa is committed to working with whānau and communities to build climate resilience.

What impact do you hope this research will have?
This is extremely important mahi. This will be the first time we will have a view across the motu on how climate change is impacting our marae. This research will give those who are making decisions about our culturally significant places at risk some cost-effective, innovative and practical solutions to adapt to the impacts of climate change that uphold mātauranga Māori.

Who will benefit from this project?
In Aotearoa, whānau, hapū and iwi must remain at the forefront of climate action and the solutions must be our own. The kete of knowledge and learning will be shared with all marae and will grow and evolve over generations.

This research will give those who are making decisions about our culturally significant places cost-effective, innovative and practical solutions to adapt to the impacts of climate change that uphold mātauranga Māori.

Why is this research important to you?
We know that the impacts from climate change are only going to get more frequent and severe. During the recent devastation caused by Cyclone Gabrielle, it was heart-breaking seeing marae, whare and people's livelihoods destroyed.

Climate change is one of the greatest challenges Aotearoa will ever face. It poses an existential threat to our culture, our whakapapa, our economy and our natural environment. Protecting, saving and respecting buildings and cultural heritage of our marae are the core value of this research.

Tackling net-zero carbon targets with strategies for Aotearoa's housing

For Aotearoa New Zealand to reach its 2050 zero-carbon target, we need to make drastic and systemic changes to the way we build and live in our homes. This year, BRANZ developed and tested strategies for potential carbon reduction in our housing to support decision makers to prioritise policy development and make informed changes for tomorrow.

Hailed as a survival guide for humanity, the 2023 report by the United Nations Intergovernmental Panel on Climate Change stressed that huge changes are needed, fast, to stave off the worst climate change predictions.

Aotearoa New Zealand is one of the largest carbon emitters per capita in the OECD and yet is one of the few OECD countries that has not yet made significant reductions to our emissions. Our homes play a big role in carbon emissions – building and living in residential dwellings accounts for 10% of New Zealand's total carbon footprint.

Based on current projections, our research shows that, between 2018 to 2050, New Zealand dwellings could emit six times more carbon than is consistent with keeping global temperature rise under 1.5˚C.

It is a wake-up call for the sector. To help protect future generations from the potential impacts of climate change, we need to cut carbon emissions intensively, systemically and quickly. Widespread behaviour change, driven by both regulation and incentives, is needed from all corners of the industry – from consumers to builders to decision makers.

In February 2023, BRANZ published its own survival assessment for building and living in lower-carbon homes in Aotearoa. The *Housing stock strategies* report outlines key areas for policy development so that New Zealand is better able to meet our climate commitments. The research combines expertise from Manatū Mō Te Taiao | Ministry for the Environment, MBIE, Te Tari Tiaki Pūngao | Energy Efficiency and Conservation Authority (EECA), thinkstep-anz and BRANZ.

For the study, researchers developed three scenarios, each one examining progressively faster and deeper implementation of changes to reduce carbon in our dwellings. They found that, even with the most ambitious interventions modelled and with full backing from consumers and industry, our housing stock is still estimated to have sizeable carbon emissions by 2050.

We need to be building smaller, more efficient houses with lower-carbon materials and retrofitting existing housing using lower-carbon materials to reduce operational energy use.

The research outlines early actions that can make the biggest difference quickly. These include accelerating limits on embodied carbon in new builds, upgrading to energy-efficient appliances and transitioning away from natural gas use. It also proposes medium-term and longer-term carbon-reduction measures such as increasing renewables supplying grid electricity and development and testing of alternative low-carbon building materials.

Our expectations of the way we live and build in Aotearoa New Zealand need to change. By evaluating potential scenarios for reducing carbon in our housing, BRANZ has created a guide for policy makers and key system players to make the changes today to protect our future.

READ MORE

- BRANZ (2023). Study Report 478 *Housing stock strategies responding to New Zealand's 2050 carbon target.* branz.co.nz/pubs/research-reports/sr478-housing-stock-strategies-responding-to-new-zealands-2050-carbon-target
- IPCC (2023). *Climate change 2023: Synthesis report.* ipcc.ch/report/ar6/syr

Progressing energy performance certificates for homes

The introduction of home energy performance certificates (EPCs) has the potential to improve housing conditions, reduce home energy costs and cut carbon emissions. New BRANZ research provides valuable insight into the style of EPC that could best fit the Aotearoa New Zealand context.

The carbon emissions from the day-to-day energy use of Kiwi homes are responsible for approximately 60% of a residential building's carbon footprint. Residential operational energy results from energy used for heating, lighting and cooking in the home.

By focusing consumer attention on home energy performance – in the way EECA energy ratings do for appliances – home EPCs have the potential to drive positive behaviour change among consumers and the industry.

In Australia, Europe and parts of North America, EPC schemes give people information on how energy is consumed in their homes. By understanding how any given home performs against universally accepted metrics and benchmarks, consumers can make informed purchasing, rental and home renovation decisions.

In New Zealand, energy performance ratings are commonplace for commercial buildings and are often a key consideration in the design of new-build homes. The government is proposing to make energy performance ratings mandatory for new and existing public, industrial and large-scale residential buildings.

This BRANZ research, which started in 2019, is providing valuable evidence on the challenges and success factors of methodologies used in Australia and the UK. It offers insights into how Kiwis perceive EPCs and their potential benefits and how a certification scheme could be introduced for maximum uptake and success.

The potential impacts of home EPCs for New Zealanders are widespread – from educating and influencing purchasing decisions to long-term policy making. For consumers, EPCs will help with estimating annual energy bills and assessing whether a prospective property would make a warm, dry and healthy home.

At a national level, aggregated data from EPCs would help capture the energy performance of the country's housing stock to inform future policy making. An EPC scheme would make it possible to identify the worst-performing homes where improvements could be targeted to make the biggest positive difference to living conditions, and overall carbon emissions.

This evidence suggests that home EPCs could be a practical tool to reduce emissions and move towards reaching climate change goals.

Influencing energy efficiency regulations to reduce carbon emissions

BRANZ provided research and expertise to help inform changes to the New Zealand Building Code minimum thermal performance requirements (H1). These new H1 requirements are a significant shift in the way buildings are designed and constructed, with the aim of making homes healthier and cheaper to run, and reducing carbon emissions.

Providing expert advice to MBIE, BRANZ research is helping the industry on its journey towards net-zero carbon emissions by 2050. The move to make residential buildings more energy efficient is an important step in preparing the industry for the government's *Building for climate change* programme to come.

BRANZ scientists played a key role in advising MBIE on the risks and benefits of proposed changes to the thermal performance requirements for windows, floors and roofs. Overall, our recommendations were reflected in the new requirements under the Acceptable Solutions and Verification Methods for New Zealand Building Code clause H1 *Energy efficiency*.

Together, these changes to thermal performance requirements are the most significant increase in residential energy efficiency regulations in over a decade. Windows will now have higher thermal efficiency – double what was previously required in some of our coldest climate zones.

For roofs, new guidance in the updated Code allows more accurate calculation of the thermal performance across all six climate zones. This guidance incorporates our scientists' innovative thinking on how to calculate thermal performance while allowing for the limited insulation space in the junction where a ceiling meets a sloping roof.

Floors also play a key role in a building's energy efficiency. A new calculation method will enable the industry to more accurately establish the thermal performance of slab-on-grade concrete flooring systems.

All these improvements in energy efficiency contribute towards new homes being warmer, drier, and healthier. They are also expected to reduce home heating costs by up to 40% in some parts of the country. And, of course, increased energy efficiency of new-build homes means lower carbon emissions from day-to-day living, which is a win for the environment.

READ MORE

- BRANZ's submission to the Building Code update 2021 consultation – 31 May 2021. branz.co.nz/news
- H1 Energy efficiency support. branz.co.nz/energy-efficiency/h1-support

Supporting the industry's transition to the new H1 requirements

To smooth the industry's transition to the new thermal performance requirements for housing (H1) – and healthier homes for people and planet – BRANZ has created a toolbox of resources for industry professionals.

This year, the industry adapted to important changes to thermal performance regulations that should lead to warmer, drier, healthier homes, lower energy costs and reduced carbon emissions. Recognising the industry need for information and knowledge to smooth the transition, BRANZ and industry players leapt into action.

While the ink was still drying on the new regulations, BRANZ set to work on developing a toolbox to support industry professionals. The suite of tools, some new and some updated, is aimed at helping industry professionals navigate the regulatory changes and supporting them to achieve – and exceed – future compliance requirements.

The toolbox includes the H1 Calculation method tool, *House insulation guide* (see pages 18–19), H1 Schedule method tool and BRANZ Maps. In addition, a series of H1-focused research updates, published as bulletins, provides essential information for builders, designers and building consent authorities.

Working with partner organisations, BRANZ also led the creation of the online H1 Hub, a one-stop search tool to help people find H1-related content across partner websites. The H1 Hub uses machine learning to fine-tune search results and identify knowledge gaps, which is helping guide BRANZ and our partners to create new resources to meet industry needs.

Industry players are picking up our toolbox. As at 25 June 2023, the H1 Hub had received approximately 18,000 visits and bulletin downloads had reached approximately 2,000. The three H1-related webinars attracted 4,000 registrations, including more than 1,200 first-timers to BRANZ educational events.

This increased appetite for practical information demonstrates BRANZ's unique ability to support the industry in adapting to regulatory changes, now and in the future.

BRANZ H1 TOOLS AND RESOURCES

- Webinars: H1 Calculation method; H1 Window, doors & skylights; H1 Roofs
- H1 Hub: a one-stop online search tool
- eLearning module: unpacking the changes to H1 and key challenges
- Bulletins and *Build* magazine articles
- Updated *House insulation guide*
- Updated H1 Calculation tool and H1 Schedule method tool – both compliance checking tools
- Updated BRANZ Maps – an online interactive map with information about natural hazard, land and climate zones

READ MORE

- BRANZ Maps zone information. branz.co.nz/branz-maps-zones
- BRANZ H1 Hub. h1hub.branz.nz
- H1 Energy efficiency support. branz.co.nz/energy-efficiency/h1-support

Improving home energy efficiency with a new digital calculator

Designers can now see the effects of changing their construction methods and materials with the first interactive edition of the BRANZ *House insulation guide*. The free digital guide can demonstrate the thermal performance of house designs and explore options to improve energy efficiency.

The BRANZ *House insulation guide* has long been the go-to tool for calculating house thermal performance and the insulation needed to achieve a warm, dry and healthy home. The guide is backed by years of BRANZ's independent research in house energy efficiency. When used by designers, the guide provides assurance to building consent authorities that a house will meet the thermal performance requirements under the New Zealand Building Code.

Since November 2022, the new 6th edition has been available to download for free from the BRANZ website. It includes explanatory information and drawings, like the earlier editions, and a series of tables with changeable parameters to calculate the thermal efficiency of house designs.

Other revisions include thermal performance data for higher-performance construction types, updated climate zones and an upgraded feature to evaluate the percentage coverage of timber wall framing. This last feature encourages designers to consider the impact of excessive timber framing, which can cause thermal bridging and reduce thermal performance, by showing the mitigating effects of reducing the framing and/or increasing the insulation. It will help meet the higher overall thermal performance targets for new homes.

From the 1st edition in 1995 through to the 5th edition in 2014, the guide has been available in hardcopy as an essential reference guide for house designers. This year, the guide required an extensive update to meet the new higher thermal performance requirements under the H1 *Energy efficiency* clauses in the Building Code. Due to the exponential growth in construction options – from insulation types to roofing, flooring and walls – this year, there were too many to fit into one book. Instead, BRANZ researchers created an interactive digital solution.

BRANZ liaised with MBIE to ensure the guide aligned with the new H1 requirements. Key industry stakeholders such as insulation manufacturers, Concrete New Zealand, Insulation Association of New Zealand and the steel industry also provided input to ensure the guide included all the latest construction types.

At BRANZ, we are excited to offer this new-generation *House insulation guide* as part of our low-carbon toolbox to help the industry journey towards building for climate change. As new building methodologies and regulations evolve, the guide can nimbly incorporate new elements of building design and performance criteria.

Uptake of the new tool has been encouraging, with approximately 8,000 unique downloads as at 25 June 2023. Feedback so far on the new tool has been positive.

READ MORE

- BRANZ *House insulation guide* 6th edition. branz.co.nz/energy-efficiency/house-insulation-guide
- BRANZ *House insulation guide* goes digital. buildmagazine.org.nz/articles/show/branz-house-insulation-guide-goes-digital

IN THEIR **WORDS**

Bruce Sedcole, NZIA Registered Architect, Director of BSA Architects Ltd*

What do you think the benefits are of the *House insulation guide*?
The *House insulation guide* allows you to enter different variables into the tool's fields – for example, for insulation values, framing sizes and spacings – and get real-time results. You can evaluate lots of different design options quickly to come up with the optimum design for aesthetics and structural and thermal performance.

Has the guide becoming digital made a difference?
The old-school way was to run your finger along a line to get a value from a printed table. The digital version gives you so many different variables to evaluate and instant results.

Are there new features of the guide that you're particularly enjoying?
The interface is really user friendly and the guide booklet that comes with it is written in plain English, with clear informative diagrams, and provides all the theory behind the tool. It's a must-read for designers but is also accessible for builders, which means they can understand how designers are making decisions.

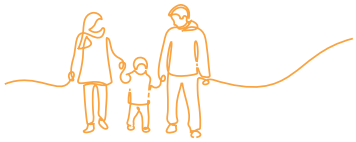
When builders understand what contributes to thermal performance, they are better placed to advise designers on what might work best in practice ... This can result in real cost efficiencies for the client.

When builders understand what contributes to thermal performance, they are better placed to advise designers on what might work best in practice. They know about product availability and cost and can feed that information into the design-build process much earlier. This can result in real cost efficiencies for the client.

What impact do you think the guide will have on reducing carbon emissions from buildings?
The guide is helping identify the best way to insulate homes to meet – and exceed – compliance with new thermal regulations. Better insulation means better heat retention, lower energy for heating and, consequently, reduced carbon emissions to run the home.

* Bruce is a principal writer at BRANZ but was not directly involved in the development of the *House insulation guide*. His opinions expressed here are his own in his capacity as a practising architect.

Improving safety and wellbeing **for Kiwis**



Joining the dots on housing conditions, health and wellbeing

The evidence linking poor-quality housing with poor health and wellbeing outcomes just got stronger. With a better understanding of how poor-quality housing impacts people and who is most at risk, policy makers can more successfully target interventions to make the biggest difference to Kiwis' lives.

In Aotearoa New Zealand, cold, damp and mouldy homes are far too common, and it is an issue that has been around a long time. Dampness is present in one in five homes, and patches of mould (larger than A4 paper size) are found in one in six homes, according to 2018 Census data. This is expected to be consistent in the 2023 Census data.

Far from being havens of comfort, damp and mouldy Kiwi homes are likely harming the people who live in them. It is a problem that directly impacts our communities unevenly and has negative implications throughout our society. Improving housing conditions for better health and wellbeing would likely result in improved whānau and community relationships, higher school and workplace attendance and a lower burden on our health system.

Fixing the cold, damp, mouldy home problem is complex. Effective solutions rely on an accurate understanding of how widespread the problem is, what contributes to it and how it affects different communities.

BRANZ partnered with MBIE and Tatauranga Aotearoa | Stats NZ to collect new data on housing condition and occupant wellbeing. Te Tūāpapa Kura Kāinga | Ministry of Housing and Urban Development was connected in, once it was stood up, in late 2018.

Information on the internal and external condition of housing for more than 800 houses nationwide was collected via BRANZ's Pilot Housing Survey. Household wellbeing information was collected by the Stats NZ General Social Survey. It is the first time that data from any BRANZ housing assessment survey has been collected, linked and analysed in parallel with a Stats NZ survey.

Analysis of the linked data showed poor-quality housing was linked to lower levels of occupant wellbeing and comfort in the home. Households most likely to experience issues due to poor housing are single-parent households on a lower income and/or include people who identify as Māori and/or Pasifika. These findings strengthen support for investment in targeted interventions for those most at risk.

BRANZ will continue its work monitoring housing quality and occupant wellbeing and use its unique industry standing and networks to help drive positive change. Furthermore, BRANZ data is now incorporated into Stats NZ's secure data warehouse, the Integrated Data Infrastructure (IDI), and is easily accessible to other researchers. This allows for further exploration and understanding of the relationship between housing quality, occupancy and occupant wellbeing in New Zealand.

Strengthening the evidence will drive momentum towards all Kiwis having a warm, dry, healthy home regardless of background, income, ethnicity, or household composition.

READ MORE

- BRANZ (2023). Study Report 482 *Housing condition and occupant wellbeing. Findings from the Pilot Housing Survey and General Social Survey 2018/19*. branz.co.nz/pubs/research-reports/sr482
- BRANZ Research Now: Pilot Housing Survey 2018/19 #4 *Findings on housing condition and occupant wellbeing.* branz.co.nz/pubs/research-now/warmer-drier-healthier/pilot-housing-survey-4-findings-on-housing-condition-and-occupant-wellbeing
- Stats NZ. *Housing in Aotearoa: 2020*. stats.govt.nz/reports/housing-in-aotearoa-2020

IN THEIR **WORDS**

Dr Rosemary Goodyear, Principal Analyst in Census Insights, formerly Senior Design Analyst in the Wellbeing and Housing Team at Stats NZ

How did the partnership with BRANZ on this project come about?
The government's review of tier 1 statistics in 2012 identified an information gap in understanding housing quality. Also, previous BRANZ surveys had revealed that people often considerably underestimate the poor quality of their housing.

I'd been working on housing statistics and published research on ways to measure housing quality in New Zealand. It identified that one of the best ways to measure housing quality is to combine the self-reported housing quality information from one of Stats NZ's household surveys with objective information obtained from independent expert assessments.

BRANZ was keen to follow up on this recommendation and suggested carrying out a pilot housing survey to test the idea.

What made the collaboration successful?
BRANZ, MBIE and Stats NZ came together with a common vision and goal – better measurement of housing quality, especially a greater understanding of the wellbeing effects of poor-quality housing.

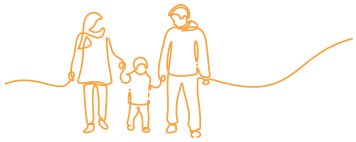
MBIE led the work around measuring and defining housing quality. Stats NZ included a question in the General Social Survey granting BRANZ permission to contact participants to carry out follow-up assessments. BRANZ provided funding and expertise, carried out the physical housing assessments and led analysis of the data. It was the boost of funding from MBIE that enabled BRANZ to assess 800-plus homes. Stats NZ supported the data analysis, linking data between the surveys and making it available in the IDI.

> **This research means we can now better understand the links between physical housing conditions and mental and physical wellbeing.**

The collaboration has resulted in the most comprehensive housing survey in New Zealand since the 1930s. We'd like to thank all survey participants as they are the ones that have made these insights possible.

Why is this research important and who will benefit?
This research means we can now better understand the links between physical housing conditions and mental and physical wellbeing. It also shows inequalities in housing quality, including the variations in the quality of owned or rented homes, and how people of different ethnicities and incomes are affected.

What are the next steps you'd like to see for this research?
It would be great to see the data used more widely and to repeat the research. The data we collected in 2018 provides a baseline from before the healthy housing legislation was put in place. Repeating this measurement would allow better monitoring of policy initiatives.



Reimagining rental housing for a changing population

The quarter-acre dream has long been part of Kiwi culture. But for a growing proportion of the population, private homeownership is no longer an affordable option. By investigating experiences and challenges in today's rental landscape, BRANZ is developing viable models for medium-term housing alternatives to better meet society's needs, now and in the future.

The way we live in Aotearoa New Zealand is changing. With the increasing cost of living and high demand for housing, the private rental sector is under enormous pressure.

Between 2018 and 2022, the number of households in rental accommodation increased by 36%. During that same period, the total number of all households increased by just 6%. More people were feeling financial pressure due to increased rental costs – the number of households in rental homes classified as being in need increased by 18%.

With a suite of research projects on housing affordability and the rental sector, BRANZ is investigating the medium-term housing market and developing alternative models for living.

The New Zealand Rental Sector Survey, published this year, is a cross-sectional study supported by BRANZ and led by Massey University. First conducted nationwide in 2015, the survey collects the experiences and attitudes of landlords and tenants to measure changing trends every 3–5 years.

The power imbalance between tenants and landlords is a well-known issue. Recent changes to rental regulations, informed by the 2015 survey results, aimed to increase tenant security, flexibility and wellbeing. This included the removal of no-cause tenancy terminations and the healthy homes initiative.

This year's survey suggests these regulatory changes have had variable effects. We found that, while the physical conditions of rental housing have improved, tenant insecurity is still a significant issue. There were also indications of hidden overcrowding, with 10% of tenants reporting a household member sleeping in a space other than a bedroom.

More intervention is needed to improve the rental system. Using the survey data, BRANZ commissioned research led by Livingston and Associates investigating alternative options for affordable medium-term housing.

With an advisory group of government, non-government and iwi and Māori organisations, *Alternative housing tenures* explores many different models for living, including hybrid renting, collective ownership and cooperatives. For instance, the research team took an in-depth look at the collaborative lower-cost living model set up by the Peterborough Housing Cooperative in Ōtautahi Christchurch.

To understand opportunities and barriers, the researchers have also surveyed the perspectives of key stakeholders, including iwi and hapū, philanthropists, cooperative housing groups, community finance experts, developers and government entities.

Seven new research updates exploring alternative tenures have been published this year, with the final publication due in June 2023. BRANZ has also commissioned related research, including BRANZ Scholar Sam O'Brien's analysis of the inclusionary approach used by the Queenstown Lakes Community Housing Trust.

Housing affordability and availability remain an ongoing national issue. By using people-centred research, BRANZ is helping to imagine new ways to live in our homes, to reduce power imbalances and to increase security in New Zealand's medium-term housing.

READ MORE

BRANZ (2022). External Research Report 78 *The New Zealand rental sector.* www.branz.co.nz/pubs/research-reports/er78

IN THEIR **WORDS**

Steph Pole, trustee and resident, Peterborough Housing Cooperative

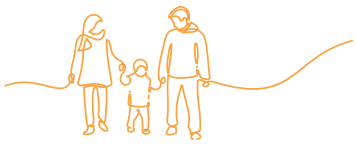
Why is it important that we explore different ways of living in Aotearoa New Zealand?
Housing has become so expensive. We need to find better ways for people to live in warm and healthy homes. We also need to provide living situations that support emotional and physical wellbeing. Looking at different ways of living can allow us to develop the homes and community connection that everybody needs.

What is the Peterborough Housing Cooperative?
The Peterborough Housing Cooperative is a project of the Ōtākaro Land Trust, which is a not-for-profit charitable trust. It addresses the need for lower-cost housing and living in a sustainable way. Our residents all help with running the cooperative, which has a shared common space and amenities surrounded by clusters of independent housing units.

Why did you decide to be involved in this research?
It was an easy decision as we all like to talk about living here! We think it is important for people to learn about different ways of living. In the past, it was commonly believed that you had to own your own house, without connection to the people living around you. I hope this research will help people consider how to live more cooperatively and share resources. The climate and our society need this.

What impact has this cooperative had on the people who live there?
It has a huge impact. It gives people a sense of control, security and a voice in the way they live. Our community assists and supports people when they are unwell and provides childcare, friendship and socialisation for children. Children who have lived here have grown up to have incredible confidence and social skills due to being raised 'by a village' (we think so anyway!).

> **Looking at different ways of living can allow us to develop the homes and community connection that everybody needs.**



Collaborating to keep people safe in earthquakes

About 60% of multi-storey commercial buildings in Aotearoa New Zealand use precast concrete hollow-core flooring, which performed poorly in the 2016 Kaikōura earthquake. A major industry-wide collaboration, backed by BRANZ, has led to a Building Code update and practical strengthening solutions to help keep people safe.

The collapse of flooring in several major buildings during the Kaikōura earthquake in 2016 raised alarm bells. The industry needed urgent collaborative action to address the faults in precast concrete hollow-core flooring systems and reduce the risk of building collapse during future earthquakes.

Hundreds of commercial buildings around the country have precast concrete hollow-core floors, which were near universal in building design during the 1980s and early 1990s. The widespread use of these flooring systems in areas of high seismic activity is unique to Aotearoa New Zealand. There is little existing international research to understand their expected performance or guidance for retrofitting and strengthening.

With funding from the Building Research Levy and led by Waipapa Taumata Rau | University of Auckland researchers, the *ReCast floors* project gathered a large team of experts from around the country. Their aim was to understand the likely behaviour of precast floors during earthquakes, including already-damaged floors, and develop retrofit methods for improving the performance of existing flooring.

Collaborators included MBIE, Toka Tū Ake | Earthquake Commission, Me Heke Ki Pōneke | Wellington City Council, Property Council New Zealand, Te Ao Rangahau | Engineering New Zealand, Concrete NZ, Te Kāhui Inihua o Aotearoa | Insurance Council of New Zealand, and the New Zealand Society for Earthquake Engineering as well as BRANZ researchers.

This collaborative project has effectively stopped precast hollow-core concrete flooring being installed in new buildings. The findings were used as evidence to update the Building Code, making current hollow-core concrete flooring practice non-compliant for new builds.

To help strengthen existing flooring, the researchers have created practical and actionable solutions that can be applied across the country. With publications and seminars reaching over 3,000 engineers, the research has accelerated retrofit flooring solutions and informed new content for a postgraduate course on seismic assessments. Widespread media coverage has led to increased awareness from many Kiwis, who are demanding change from building owners and landlords.

With industry-wide collaboration and strong momentum, the *ReCast floors* project tackled a major risk in our built environment. It has delivered reliable evidence to help policy makers, engineers and building owners make informed decisions to keep people safe if disaster strikes.

READ MORE

BRANZ (2022). External Research Report 74 *ReCast Floors project*. branz.co.nz/pubs/research-reports/er74-recast-floors-project

Promoting fire-safe design to save lives

As timber becomes an increasingly popular sustainable building material, BRANZ has contributed to a new guide to help manage fire risk to people and property. This free global guide is promoting the latest developments in fire safety design internationally.

As a natural and sustainable material choice, timber is more commonly being used as a structural element in taller buildings. However, in many countries, fire safety regulations are based on non-combustible structural materials and have not been updated to reflect this growing use.

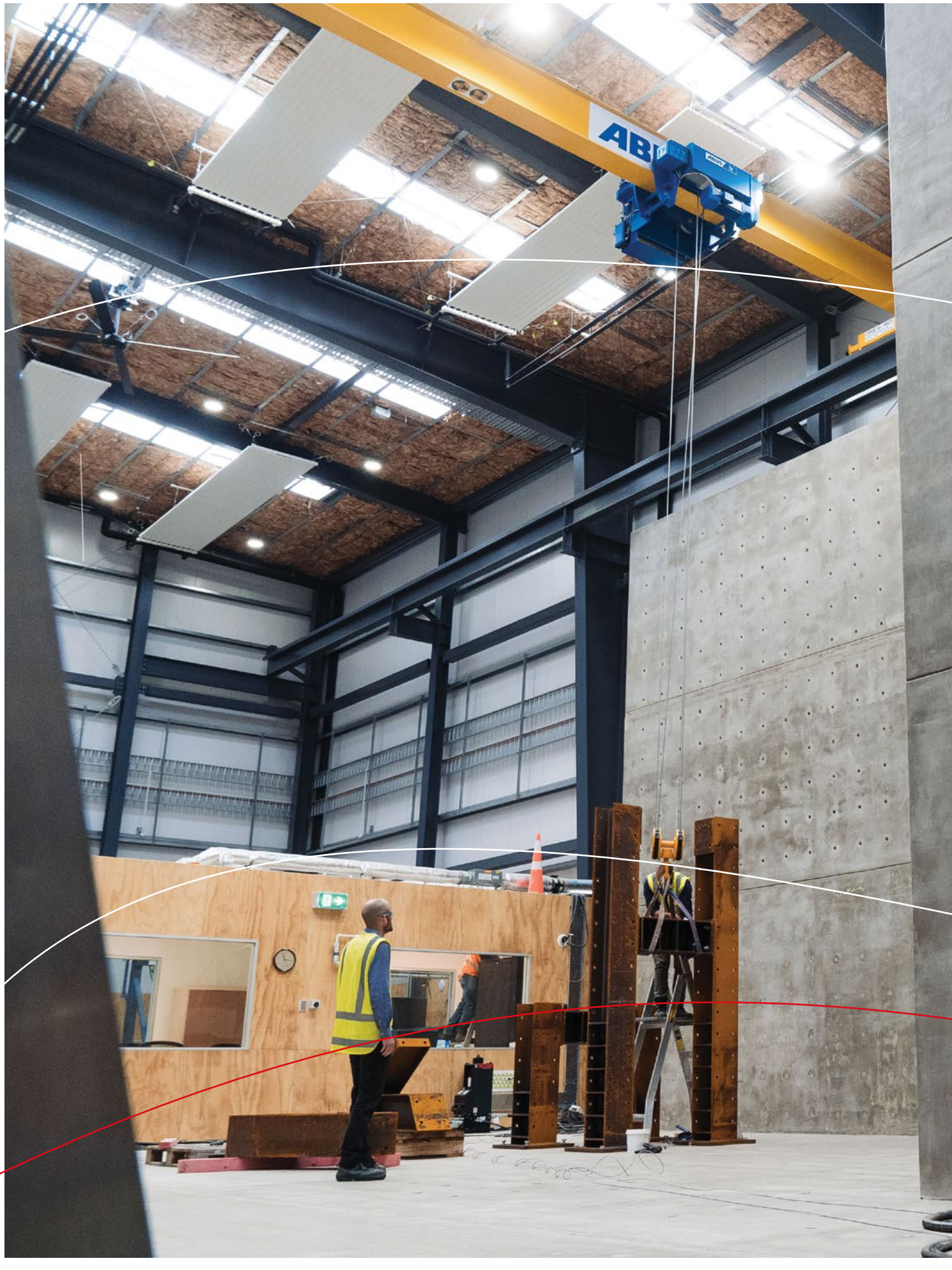
This year, through funding and expertise, BRANZ supported the development of guidance to address this issue based on the latest research from Aotearoa New Zealand and around the world.

Fire safe use of wood in buildings – global design guide is a summary of the latest international best practice in wood fire safety design from 14 countries. Importantly, an online version of the guide is available to download for free. This means building designers in different countries can easily access the latest guidance and advice based on analytical and experimental research into the fire safety performance of wood in buildings.

As New Zealand and other countries continue the journey towards a net-zero carbon future, the industry is turning to timber more often and for use in new ways. The guide is an important step to helping keep people safe in the event of fire.

READ MORE

CRC Press (2022). *Fire safe use of wood in buildings – global design guide.* taylorfrancis.com/books/oa-edit/10.1201/9781003190318/fire-safe-use-wood-buildings-andrew-buchanan-birgit-%C3%B6stman



Collaborating to build a higher-performing industry

Building the capacity to future-proof structures

For the first time, BRANZ can test the resilience of 3-storey buildings thanks to our new structures laboratory. The new facilities can apply larger forces, such as those from earthquakes or wind, to ensure that today's buildings can withstand whatever the future holds.

Completed in February 2023, our new structures laboratory is the first stage of a major campus redevelopment that is positioning BRANZ to support industry needs for the next 50 years.

Structural testing helps ensure the resilience of buildings for the long term. The new laboratory enables us to test buildings up to 8 metres high – an essential capability as more medium-density housing is developed. The bigger space also means more tests can run concurrently and allows flexibility to respond to the development of new building materials, systems and products.

We can test how buildings respond to earthquakes in real time, with double the load and stroke bearing capabilities available in the new facility. This means we can shake buildings harder and faster than ever before. It also allows earthquake testing of non-structural building parts such as suspended ceilings, mechanical plant and components, partitions and claddings.

Our researchers will throw everything they can at the buildings to make sure that walls, glazing and roof claddings can stand up to the impact of soft and hard objects. The new laboratory allows us to better evaluate the resistance of these impacts so we can see how materials respond to different uses and events.

Our pressure chamber can assess how roof and cladding systems perform against a differential air pressure of up to 7 kPa, which is equivalent to windspeeds of more than 200 km/h.

After years of planning, it is exciting for our team to have cutting-edge facilities in which to continue practising our world-leading science. The next stage of the campus redevelopment is a new fire laboratory, currently under construction. These facilities will help improve understanding of how modern building practices impact on fire risk. Among our new testing capabilities, we will be able to undertake large-scale calorimetry testing, which assesses the heat release rate of a fire.

Together, our new fire and structures laboratories will enable BRANZ to carry out advanced research and testing at scale and in close-to-realistic – but controlled – conditions. This work is laying the foundations for advanced research and commercial testing capability to benefit Aotearoa New Zealand for decades to come.

IN THEIR
WORDS

Sam Leslie, Technical Sales Manager, Red Stag TimberLab

Why did you use the new BRANZ structures laboratory?
In February, we tested some new product combinations that will let us design, build and deliver bespoke buildings faster. To validate the performance for use in multi-storey buildings, we needed to do full-scale destructive testing to determine the specific strength and stiffness of the connections. We're based in Auckland and having the new BRANZ laboratory in the North Island made it easy for us to deliver and test large-scale specimens.

What kind of tests did the product need?
We needed a large facility to exert a certain amount of force to accurately measure the limits of the connection details. Knowing the exact thresholds will help us optimise our designs and save materials. Without specific testing, more raw materials are often used in a project than necessary, which can lead to excess and reduce a building's sustainability. At Red Stag TimberLab, we're very focused on efficiency and sustainability, so understanding and using precise amounts of materials is exciting.

Why is it important to have these larger testing facilities at BRANZ?
Having access to the leading-edge laboratory at BRANZ will allow us to continue innovating at speed to ensure our products remain at the forefront of engineered timber technology.

The team at BRANZ is quick and responsive – and watching the tests from the new viewing room is a bonus.

> **Having access to the leading-edge laboratory at BRANZ will allow us to continue innovating at speed to ensure our products remain at the forefront of engineered timber technology.**

Transforming the building inspection process with Artisan

A free-to-use digital inspection app is transforming quality assurance processes across the industry. Powered by BRANZ, Artisan streamlines, standardises and provides an enduring record of building inspections – increasing efficiency and reducing risk.

Artisan is transforming the way Kiwi homes are inspected. The technology is encouraging people across the system, including building consent authorities (BCAs), inspectors, tradespeople and major building companies, to work differently.

The app allows tradespeople to photograph key compliance elements of a building project as they go on their smartphones for remote verification by the BCA. The inspectors can view the images in real time, approve the work or make recommendations for change – without leaving their desk.

Using Artisan, the BCA can schedule and manage quality assurance aspects of a project with significantly less travel and reduced wait times, benefiting inspectors, tradespeople and their clients. Artisan also creates an accurate and enduring inspection record for new builds and renovations.

The app has been adopted by significant players in the industry who together represent 45% of all new residential building consents in Aotearoa New Zealand. Adopters include Auckland Council, Kāinga Ora, and Marlborough District Council.

Artisan has also been adapted for a major group-home builder for internal quality assurance, proving compliance with Green Star ratings and enhancing record keeping. An industry association is also trialling Artisan to potentially move towards its members becoming self-certifying.

Feedback continues to endorse the transformational value of the app, and efficiency gains from the tool have been significant. Wait times for some inspections have reduced from days to hours, and typically that results in cost savings for all parties. Builders can run their sites more efficiently, and BCAs can enable their inspectors to work more flexibly and productively.

New features released this year are helping to further streamline processes. These include a record of works completion module, remote video screen sharing for builders on site, enhanced workflow management tools, automated reports and an inspection deadline facility to ensure prompt reviews.

Artisan was developed by BRANZ as part of its strategy to transform the building system. It supports BCAs and build teams to deliver new residential housing efficiently and effectively for Aotearoa New Zealand. The future of building inspections is digital.

READ MORE

» BRANZ Artisan.
branzartisan.nz

IN THEIR **WORDS**

Dhyanom Gala, Senior Building Control Officer, Marlborough District Council

Why did you start using Artisan?
The Marlborough District Council inspection area includes the Marlborough Sounds and remote backcountry areas. Travel times are long, and when bad weather hits, access can be extremely challenging. Travel fatigue was a real issue for our inspectors so we could see the potential benefits of off-site inspections.

What impact has using Artisan had for your team?
Marlborough District Council has been using Artisan since mid-2021. In that time, we've completed 300 inspections using the app. The team has saved over 9,500 km in travel, while inspection times have reduced by an average of 1.1 hours per inspection.

The efficiency gains have been considerable, and they continue to grow. These gains have, in turn, significantly reduced the overall workload of my team, which has enabled some inspectors to lend a hand in other areas of the business at busy times. Feedback from the building industry is very positive as a result of the reduced inspection waiting time and the ease of using Artisan.

What other benefits have you seen?
Artisan's transparency is particularly appealing, which is helping to foster a culture of collaboration and a commitment to quality. Artisan's inspection records are also more robust and transparent than those we typically prepare on site. I personally believe they will stand much stronger scrutiny should any issues arise.

> **This technology is just phenomenal. We now have an invaluable time-saving tool that is steadily improving our efficiency and auditability.**

How did BRANZ help you adapt to Artisan?
With the support of the BRANZ Artisan team, we trained our inspectors and realigned internal processes to allow Artisan to integrate smoothly. Artisan has dovetailed effortlessly with the on-site inspections process.

Why would you encourage others to use Artisan?
This technology is just phenomenal. We now have an invaluable time-saving tool that is steadily improving our efficiency and auditability. There is a massive opportunity for those who embrace this technology to improve performance of the whole team.

Strengthening relationships between home builders and clients

Amid the housing shortage, building a new house needs to be an appealing option for homeowners. By identifying key issues and tensions during the new-build process, BRANZ is helping the industry build fit-for-purpose homes with less stress for builders and clients alike.

The home-building process can be challenging for both builders and clients. With the percentage of first-time home-building clients increasing from 47% in 2013 to 66% in 2022, it is even more important to help builders and clients navigate the process well.

For people not well versed in the industry, it can be difficult to understand build practices and technical aspects. Clients, particularly those lacking build experience, are often confused about the process and find communicating with their builder challenging.

These miscommunications also have a negative impact on builders. Disagreements during builds are common, and if poorly resolved, they cause significant stress for builders. Nearly 75% of builders surveyed by BRANZ said tension in their relationships with clients affected their mental health, with over half experiencing moderate to high symptoms of depression and anxiety.

This year, BRANZ completed a series of research projects to better understand expectation gaps and tension points in the builder-client relationship. The research showed that industry practices need to change to provide more client support and better communication during the build process.

In response, BRANZ is developing resources and tools to help builders better manage client expectations and provide support for navigating conflict.

The *Building together* guide, released in March 2023, is one example. The guide outlines the key areas that can cause tensions and the essentials for setting up a positive relationship.

This is one of a range of ways that BRANZ is supporting the industry to reduce stress and tension for them and their clients. It is another small but important step towards making it easier and more efficient to build new high-performing and liveable homes in Aotearoa New Zealand.

READ MORE

BRANZ (2023). *Building together: A guide for building strong client relationships.*
branz.co.nz/pubs/research-now/building-sector-wellbeing/building-together-a-guide-for-building-strong-client-relationships

Accelerating industry action on waste management

Waste not, want not. From 2024, new regulations will require waste minimisation plans for all construction projects. To ensure the sector is ready, BRANZ is collaborating with key industry players to transform waste management behaviour.

The building and construction industry is one of Aotearoa New Zealand's largest waste producers, contributing up to 50% of all waste going to landfills and cleanfills. Research has shown that construction of a typical house generates about 4 tonnes of waste, with the average cost of materials sent to landfill valued at more than $31,000 per house.

With timely new regulations being phased in from 2024, the industry has no time to waste on addressing key challenges such as waste management literacy and infrastructure.

Bringing together key government agencies, industry and researchers, BRANZ has facilitated and coordinated a waste action group to drive collaborative change within the sector.

Key government partners include:

- Kāinga Ora
- Ministry for the Environment
- Te Tāhuhu o te Mātauranga | Ministry of Education
- MBIE *Building for climate change* Programme
- Manatū Kaupapa Waonga | Ministry of Defence
- Tonkin + Taylor
- Beca
- Auckland Council
- Wellington City Council
- Te Kaunihera a-rohe o Ōtepoti | Dunedin City Council.

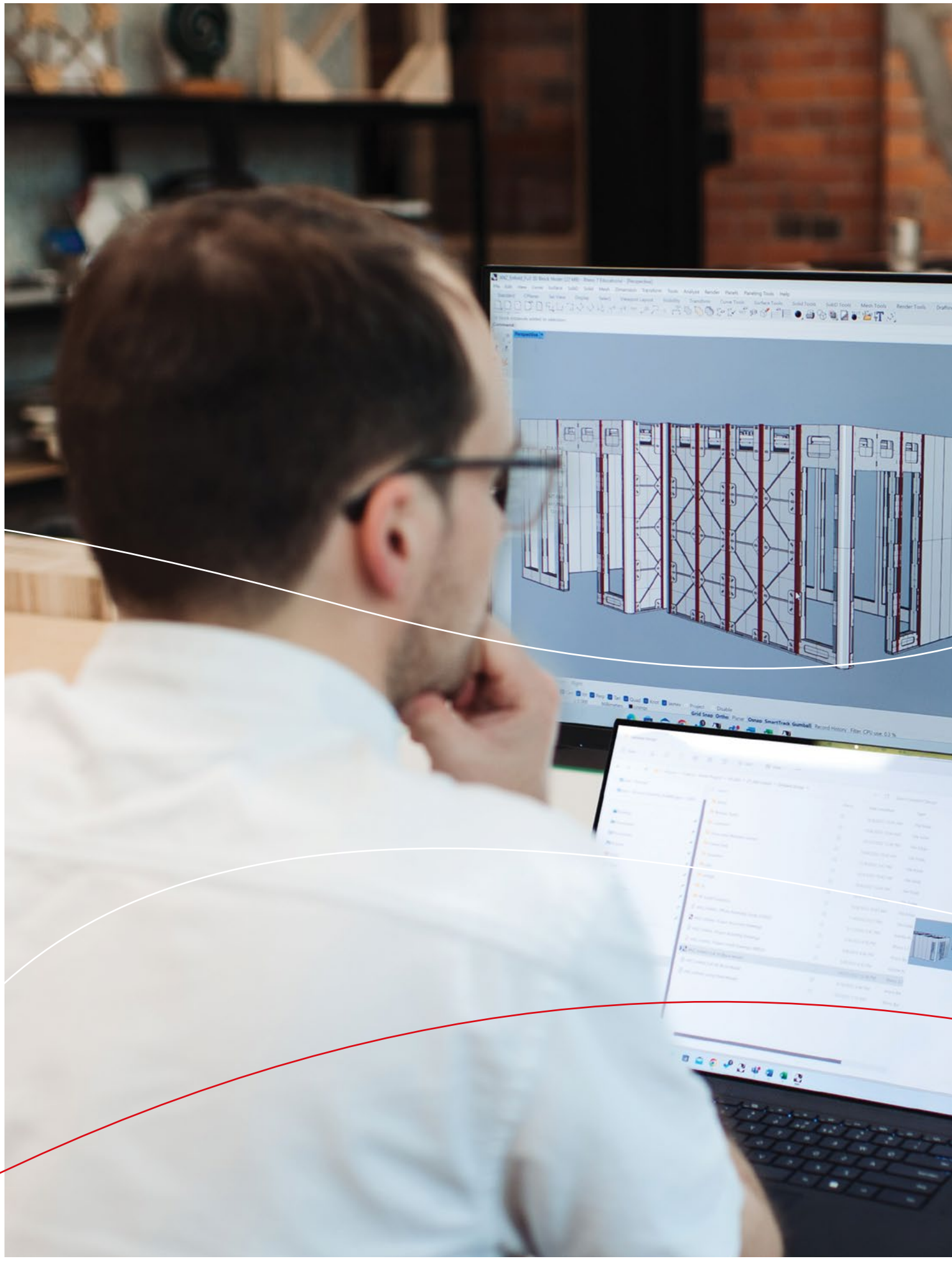
By gaining insight into information gaps and barriers and sharing learnings, the group is turning research and experience into working solutions. Together, members have co-created an action plan to stimulate new waste minimisation behaviours across the industry, targeting everyone from builders on site to major decision makers.

The plan, implemented since March 2023, includes free independent resources and educational opportunities. After these are developed, a digital behaviour change campaign will help all corners of the industry adapt to new regulatory requirements. The goal is to encourage robust decision making around waste by reducing barriers, increasing awareness and shifting attitudes.

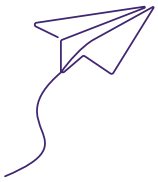
Through impartial strategic action, BRANZ is in a unique position to drive industry change in reducing waste, building towards a more circular and sustainable sector.

READ MORE

Resource efficiency in the building and related industries (REBRI).
branz.co.nz/sustainable-building/reducing-building-waste/rebri



Investing in **future leaders**



Upskilling industry professionals to meet the climate change challenge

Industry professionals are increasingly committed to acting on climate change, but many feel they don't have the skills or knowledge to do so. Led by committed researchers, BRANZ and Massey University have established a new postgraduate qualification to build construction industry capabilities to address climate change.

The Master of Construction with specialisation in the built environment is a degree for construction sector professionals. With the knowledge and skills they acquire, graduates are equipped to support their organisation and the industry in the transition to a net-zero carbon built environment into the future.

This transition will require a paradigm shift in the design, construction and operation of buildings. It will affect processes, products, and technologies across the sectors and it will require industry people, including designers, engineers and manufacturers, to have the right knowledge and skills.

Seeking to address this issue, BRANZ and Massey University School of Built Environment collaborated on an initiative to build industry capacity in the transition to zero carbon.

An early pilot programme involved seven Master of Construction students currently working in the industry who took the opportunity to undertake a carbon-focused industry research project. The quality of these student outputs, which included papers in peer-reviewed journals and conference presentations, helped lay the groundwork for the new degree, which was first offered in 2021.

Since then, graduates have shown they not only have the knowledge and skills to help industry but also the passion and drive that will help embed change over their careers. Thanks to their efforts, initiatives under way include the use of building information modelling to accurately calculate carbon emissions and embedding sustainability into company-wide project management.

Every year, they will be joined by a cohort of graduates with the skills, knowledge and desire to be a catalyst for change. Together, their passion and commitment will be key if Aotearoa New Zealand is to achieve its ambitious climate change goal of transitioning to net-zero carbon by 2050.

READ MORE

- Te Kunenge Ki Pūrehuroa | Massey University. massey.ac.nz

IN THEIR **WORDS**

It's crucial that we train current and future industry professionals with the skills to adopt new sustainability initiatives and meet the country's zero-carbon goals.

Dr Niluka Domingo, Senior Lecturer in Quantity Surveying, Massey University

Why is it important to include zero-carbon research as part of the Master of Construction with specialisation in the built environment?
The construction industry has a significant role to play in achieving the national zero-carbon agenda. It's crucial that we train current and future industry professionals with the skills to adopt new sustainability initiatives and meet the country's zero-carbon goals.

Can you share some highlights from the students' research?
There are many projects under way exploring carbon-reduction options for the built environment. Our students are researching waste reduction, energy efficiency, carbon calculations and life cycle assessment as well as contractual, political, technical, and economic implications. Their findings contribute to a wealth of evidence-based knowledge, that will help the industry achieve the zero-carbon targets faster.

A highlight is the students completing the first research project into reusing wind turbine blades in New Zealand. They developed a framework to determine the most viable repurposing options, waste-reduction benefits and carbon dioxide emissions benefits (using the BRANZ CO_2NSTRUCT tool to make these calculations). They also drafted initiatives to improve the uptake of blade repurposing across the country.

How are the students applying what they learned?
By selecting students who are currently employed in the industry, our graduates have the potential to immediately act as change agents within organisations. Many students are already working as quantity surveyors, project managers and engineers and are collaborating directly with their company's sustainability teams to accelerate the transition to low-carbon practices.

Why was this collaboration between BRANZ and Massey important?
Massey University has the only built environment faculty in New Zealand in the tertiary education sector. It prepares more than 200 students to enter the industry every year. The Building Research Levy funding through BRANZ encourages students to focus on research projects related to carbon reduction.

This year, we've received an overwhelming number of requests from students who are eager to participate in the programme. By upskilling today's workforce with knowledge of low-carbon practices, this partnership aims to help improve the future of the industry.

Making our buildings recyclable

The new buildings of today that are given no consideration to their end-of-life deconstruction and recovery add to the mounting problem of waste destined for landfill. Ged Finch, PhD student at Te Herenga Waka | Victoria University of Wellington, this year completed his BRANZ scholarship research to evaluate the recyclability of building materials and identify solutions to achieve a circular economy for construction waste.

The way buildings today are designed and constructed can result in piles of waste at their end of life or as parts need to be replaced. Modern construction materials such as plasterboard, treated pine framing, construction adhesives, expanding foams and wire nails are either irreversibly damaged on removal or cannot be recycled at all. The recovery and reuse of most material is uneconomical, which leads to it ending up in landfill.

The building and construction industry is the largest producer of solid waste in Aotearoa New Zealand. Construction, renovation and demolition are jointly responsible for 50% of New Zealand's annual waste – more than 5.5 million tonnes – and because so few materials can be recovered, the industry is also New Zealand's largest consumer of new materials.

To significantly reduce consumption and waste, building and construction practices need to prioritise building materials that are recoverable and recyclable. With funding and support from the BRANZ scholarship programme, Ged's PhD research takes a step towards designing a circular economy, identifying economical and Building Code-compliant solutions to reusing materials to reduce waste.

Ged created a framework to evaluate the recyclability of building components from floors to roofs and almost everything in between. As an example, the research shows the best way of attaching wall linings to framings so they can be recovered for reuse. His research also gives guidance on the type of materials that could be used to make components more recyclable if they cannot be recovered.

His research shows that industry players need to work together to break the cycle of low-cost, unrecyclable materials destined for landfill. It will require a whole-of-system approach to change building practices across manufacturing, design, construction and demolition.

Ged's ambition and drive to solve this issue has led to him co-founding the recyclable building system X-Frame, which has been nominated for a prestigious Earthshot Prize.

READ MORE

» Ged's TEDx Wellington talk.
youtube.com

IN THEIR **WORDS**

Ged Finch, PhD graduate and lecturer, Victoria University of Wellington and co-founder of X-Frame

Where did your passion for recyclable buildings come from?
My interest in solving the construction waste issue started 5 years ago when I worked on building sites overseas. I realised what a big global issue it was. There was already a lot of excitement about the need for a circular economy solution in construction. I thought that if we, in high-income countries, hadn't been able to solve the problem yet, what hope was there for low-income nations?

What has been your research journey to date?
In 2017, I started a master's degree investigating how we could use materials more efficiently and reuse the materials on site. My thinking moved to how we could design buildings created with recyclable or reconfigurable structures.

During my study, I was lucky enough to receive funding from New Zealand Institute of Building Charitable Trust to build a prototype, which got a lot of positive feedback. This motivated me to continue my research involving active prototyping. That's really what I wanted to do. I wanted to build.

The next step was my PhD, funded by the BRANZ scholarship programme, which gave me the opportunity to be hands on for 3 years, building, testing and prototyping.

Without BRANZ's support, with its expertise in building technology and building relationships and with the access to testing, I would not be where I am today.

How has the BRANZ scholarship programme helped you get to where you are today?
The support from BRANZ has been incredibly important. BRANZ scholarship funding came with a 'yes, we believe in what you're doing' and 'what you're doing can make a real tangible difference to the environment and society'. BRANZ's belief in me fuelled my motivation.

Without BRANZ's support, with its expertise in building technology and building relationships and with the access to testing, I would not be where I am today. BRANZ's backing added great credibility to my work, opened doors to other industry players and enabled me to take subsequent steps.

Innovating with 3D-printed building materials

Three-dimensional (3D) printing an entire building is not as far-fetched as it might have once seemed. PhD graduate and BRANZ scholarship recipient Armano Papageorge of Victoria University of Wellington has developed a solution to streamline the 3D printing of building parts. These findings aim to drive greater efficiencies in building design and construction.

Innovative technology is a catalyst for new and improved ways of working. However, as innovation comes with economic risk and liability issues, the speed of change within the building and construction industry remains slow. Research that proves the effectiveness and reduces uncertainty of modern technologies can help drive uptake and efficiency gains.

In Aotearoa New Zealand, research and development has focused on off-site prefabrication of timber construction systems and concrete precast elements. However, overseas 3D printing is at the forefront of research, with promising results. Construction components can be printed out of a variety of materials such as plastic, resins, metals and concrete and include cladding, structural panels and columns.

With funding from the BRANZ scholarship programme, 3D-printing pioneer Armano Papageorge created and tested a computer-aided design (CAD) workflow to generate 3D-printable construction components.

A current challenge with 3D printing for construction is that each phase of a project requires a different CAD software package and transferring data between them results in information loss. Armano designed an integrated computerised workflow to successfully generate 3D-printable products.

To prove it worked, he produced two different construction components – a concrete masonry unit and a precast concrete wall panel. He showed that alterations could be made efficiently and quickly to achieve a range of different architectural aesthetics such as different shapes, sizes and textures.

Armano's research shows the potential of computational design in improving common yet inefficient processes within the briefing, design, documentation and construction of buildings. The role of 3D printing for the mass manufacture of easily customisable building components looks promising.

By awarding funding to innovative research, BRANZ is investing in new technologies to help solve issues facing our society such as housing shortages and affordability. Both these Industry 4.0 technologies – CAD and 3D printing – have a role to play in transforming the building system for the future.

IN THEIR **WORDS**

Armano Papageorge, PhD graduate, Victoria University of Wellington

What sparked your interest in 3D printing for construction?
My passion for computational construction 3D printing began in 2017 with my master's thesis. During my initial research, I discovered just how powerful the combination of computational design, robotics and 3D printing could be for the construction industry. That's why I decided, there and then, to commit my career to digital and manufacturing innovation within architecture and construction.

Why do you think 3D printing is so transformational?
The ability to automate 3D printing is what makes the innovation so impactful. You can create complex structures with high levels of precision at almost no additional cost. The technology can also save time, reduce waste and improve on-site and off-site health and safety.

What does the future hold for 3D printing?
Even during my PhD years, there has been exponential growth in construction 3D printing – most typically overseas but there are some interesting new projects developing in New Zealand too. Within the next 5-10 years, I think this construction technology will only continue to grow, especially with the growth of artificial intelligence making big moves across the globe.

What has being part of the BRANZ scholarship programme meant to you?
Receiving funding from the BRANZ scholarship programme was incredibly helpful. I am very grateful to BRANZ and the people who I've had the pleasure of working with.

What's next now that you have finished your PhD project?
I have dived straight into the workforce as the BIM lead for a quantity surveying company. I also perform some computational BIM consultancy for a high-end residential architecture firm. I'm embarking on my own 3D printing business, which will be up and running in a couple of months.

I am very grateful to BRANZ and the people who I've had the pleasure of working with.

About the BRANZ scholarship programme

Every year, BRANZ awards Building Research Levy funding to outstanding postgraduate scholars in tertiary institutions. The BRANZ scholarship programme is part of our portfolio of investments to support innovative research and the next generation of research talent.

Read more at branz.co.nz/investing-research/building-research-scholarships

Challenging the industry leaders of tomorrow

Take 30 students, 3 days and one critical industry challenge. This year marked the ninth ArchEngBuild, a BRANZ-led opportunity for top students in architecture, engineering and construction management to compete, collaborate and innovate on real-world issues.

It was full steam ahead for ArchEngBuild after a 2-year hiatus. The annual challenge brings together the industry's future leaders from around Aotearoa New Zealand to compete in multi-disciplinary teams.

In late 2022 at the University of Auckland Faculty of Engineering, 10 teams had just 3 days to design low-carbon medium-density housing. Their concepts needed to make a long-term positive impact on both the environment and people's wellbeing.

The top prize went to architectural designer Theresa Epton (Ara Institute of Canterbury), engineer Wenxian Hu (Te Whare Wānanga o Waitaha | University of Canterbury) and construction manager Jason Webb (Unitec). Their environmentally friendly community and ecosystem combined sheltered private spaces and open semi-public infrastructure such as communal gardens. With natural light, ventilation, solar energy, and low-carbon materials such as 3D-printed concrete, they presented a strong vision for accessible, affordable and healthy housing.

ArchEngBuild gives students an early taste of working across disciplines, gaining insight into how their counterparts think and make decisions and their perspectives, priorities and language. They quickly learn that effective communication is essential to the design process. Previous participants have highlighted that ArchEngBuild gave them a strong foundation to collaborate in the workplace and has made a real difference to their careers.

By nurturing communication and collaboration at the beginning of students' careers, the challenge develops industry champions who can drive cross-sector innovation to solve future issues.

ArchEngBuild is funded by BRANZ through the Building Research Levy, organised in partnership with Concrete NZ. Special thanks to sponsors Concrete NZ, New Zealand Timber Design Society and Wood Industry Development and Education Trust. The challenge is also supported by Te Kāhui Whaihanga | New Zealand Institute of Architects, Engineering New Zealand and the New Zealand Institute of Building.

IN THEIR **WORDS**

Theresa Epton, architectural designer, and ArchEngBuild 2022 participant

What were the biggest highlights of ArchEngBuild?
It was an incredible experience. Meeting like-minded people from different disciplines was a huge highlight, and we bonded very quickly. It was incredible to work with such supportive and competent people. The competition was set up to foster connections, and I made friends who I hope I'll talk to throughout my career.

What were the most important skills you gained through ArchEngBuild?
I learned how to make quick decisions, and the ability to delegate and collaborate as a team. It showed me what I'm capable of and helped me gain confidence in my skills. It was super stressful with a crazy brief but, somehow, we pulled it off. It was such a worthwhile competition.

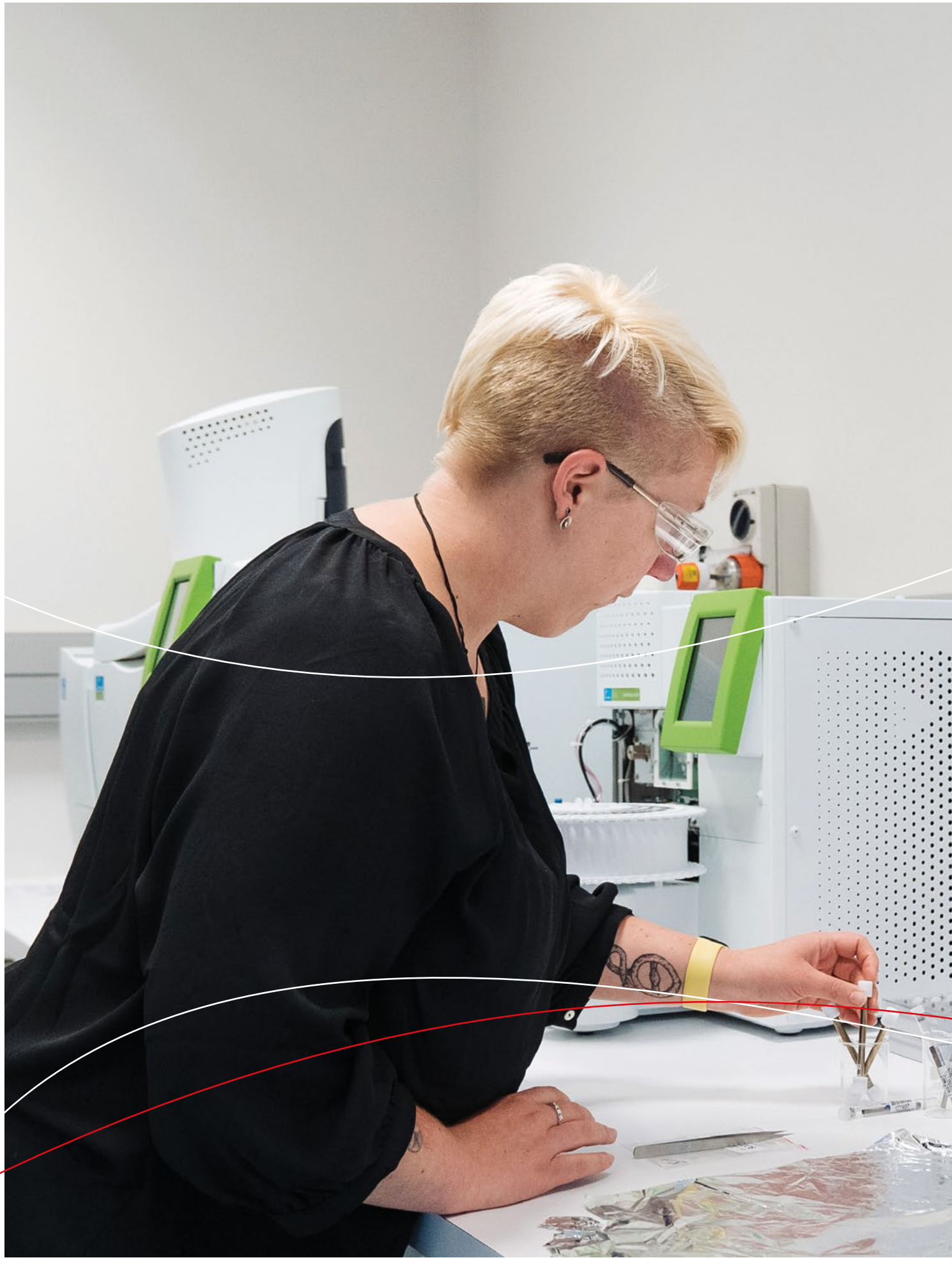
What interested you most about the competition?
I'm really interested in sustainability, so that aspect of the brief intrigued me. We decided to investigate innovative new technologies that I'd never heard of before. I learned about carbon costing, carbon neutrality, minimising waste and the entire life cycle of a home. It's opened my eyes to the field, and it's something I want to pursue further. Sustainable design is the future of architecture.

How do you think this will help you in your career?
Being able to work as part of a team is huge, and the competition gave me insight into how to collaborate. In the industry, you always work in teams. No one has all the knowledge, so it's good to get different perspectives, take on ideas and incorporate different things. The goal is to make the best buildings possible, and the way to do that is by collaborating.

> **The goal is to make the best buildings possible, and the way to do that is by collaborating.**

About ArchEngBuild

To find out more about this exciting annual competition that supports collaboration and inspires future building and construction system leaders, visit branz.co.nz/archengbuild.



Driving change within BRANZ

Investing in our people for transformational returns

BRANZ's strategic focus on transforming the building and construction system is underpinned by the need to encourage and support positive, lasting behaviour change. It's helpful that BRANZ itself is successfully 'walking the talk' when it comes to effecting transformative outcomes.

When BRANZ first embarked on a leadership development and communication and collaboration journey in 2016, it was with a unique vision that former CEO Chelydra Percy was certain would be successful. While professional development and learning is always ongoing, the journey to date has been genuinely transformational.

IN THE BEGINNING

Chelydra strongly believed that the organisation needed well-rounded leaders who possessed the skills, knowledge and experience to guide their teams, achieve BRANZ's goals, execute its strategy and drive transformational change. Her view was that the right leadership development approach would not only improve communication and internal collaboration across the business but that the flow-on effects would benefit relationships with external stakeholders as well.

Investment in the programme was predicated on the belief that it would help BRANZ lay the foundations and then build the momentum required to achieve the organisation's transformational strategic goals.

Marie Richards-Hodge of Collaborative Innovations co-created the initial leadership development programme with Chelydra, and they were soon joined by BRANZ General Manager People and Capability Janet Geritzlehner.

The programme was based on answering three key questions:

- How can this programme support our business ambitions?
- What are our people and leaders ready for?
- What skills do they need to achieve success?

Each development session was – and continues to be – freshly designed with content driven by the specific needs of the business to achieve its strategy and support the desired culture.

The eight inaugural 2-day leadership development sessions held that first year were centred on complementing the leaders' technical skills with what Marie refers to as 'emotionally based' leadership training. The focus was on improving collaboration and communication skills, which everyone agreed would be key to achieving BRANZ's strategic outcomes.

BEYOND THE LEADERSHIP TEAM

Over the course of that first year, the impact of the leadership development programme began to be felt beyond the training room.

The wider BRANZ team began commenting on the changes they were seeing in their leaders. They were more collaborative, having better conversations with their teams and sharing more information due to the skills they were learning.

As a result, a longer-term plan to expand the communication and collaboration aspects of the programme to all BRANZ team members was introduced in year 2.

The organisation took the view that it could and should share what its leaders were learning so the whole team could understand the genesis of these new behaviours and benefit themselves. The programme then moved beyond leadership in its strictest sense and grew to include a communication and collaboration programme for everyone.

It's probably one of the most exciting and gratifying aspects of this work to see how much more has become possible – both within the programme and as an organisation – as time has gone on and trust has been built. Our people have really embraced the learning.

Janet Geritzlehner, General Manager People and Capability

Personality profiles were used to explore and understand individual strengths, preferred styles and how similarities and differences can be leveraged. Tools are provided to enhance effective collaboration, including conflict, problem solving and negotiation skills.

"It's probably one of the most exciting and gratifying aspects of this work to see how much more has become possible – both within the programme and as an organisation – as time has gone on and trust has been built. Our people have really embraced the learning," says Janet.

The skills learned are not only helping support internal operational activities but are in many cases improving communication and collaboration with external stakeholders.

Applying the skills learned in the communication and collaboration training is now enabling BRANZ to be more ambitious and to think about the entire building system, not just its own organisation.

TAKING ON A LIFE OF ITS OWN

Designing the programme each year begins with a blank sheet of paper, a look behind to where BRANZ has come from and ahead to where it needs to go. The same three questions that guided the programme's original development remain foundational, ensuring that the programme continues to deliver or further develop the skills required to support BRANZ's annual and longer-term business ambitions.

As a result, the interconnected leadership development and communication and collaboration parts of the programme are thriving on the unique energy created through design, delivery and participation.

"By designing the programme from scratch each year, it has grown into something quite remarkable … it's taken on a life of its own," says Janet

Each session is tailored depending on what BRANZ needs at that particular time. Consideration continues to be given to what's been learned in past workshops before getting into the content of the session. Sometimes, there's new content. At other times, it may be an exercise approaching a topic from a different angle to practise skills or deepen and further embed what has already been learned.

EVOLVING, EXPANDING AND RAISING THE BAR

A big factor in the programme's continual evolution and expansion is the increasing confidence and genuine engagement of the BRANZ team. The feedback after each session is as much about contributing new ideas or topics to explore as it is a critique of what's been learned.

Today, as people become more engaged in their learning and confident in practising their communication and collaboration skills and sharing their views with their peers, new aspects can be added to the programme.

Ensuring that all new people understand, have experience and are up to speed with the 'BRANZ way' of doing things is also key to the programme's continued success. All new recruits complete an introductory 4-day communication and collaboration workshop, while new people leaders also attend workshops to complete essential leadership development modules. They can all then happily slot in to that year's activities, confident they have foundational skills and without feeling they have missed out on what has come before.

All three of the programme's architects credit its success to the fact that each session continues to be relevant, applied and meaningful.

"The BRANZ programme and approach is truly unique in my experience. From the word go, it has been tailor-made to meet the needs of individuals and the organisation as a whole. Every year, the programme grows and morphs because we ask what do we need now?", says Janet.

"It is incredibly exciting to see how our people have grown and become so invested in learning more," she says.

THE KEYS TO SUCCESS

Understanding why the BRANZ programme has been so successful is difficult to put into words, but there are a few factors at play in the 'secret sauce'. While the bespoke nature of annual planning and exceptional staff engagement have been mentioned, the cumulative impact of the programme cannot be overstated.

Ongoing learning each year, applied learning and practice have paid considerable dividends – the culture shift within BRANZ has been transformative and the baseline rises each year. Leaders note that the organisation is more flexible, and individuals are better able to deal with ambiguity and to pivot to respond to new challenges and opportunities. Resilience has also improved as a result of the training, which was especially highlighted during the pandemic.

"We had the tools to deal with the changes that impacted us both professionally and personally. We had such a strong team that we could help each other through those tough times," says Chelydra.

THE IMPACT AND BENEFITS OF INVESTING IN PEOPLE

Before departing, Chelydra noted that the biggest impact of the programme has been the palpable change in culture at BRANZ.

"I am really proud of the way the entire BRANZ team has grown as a result of this programme. Collaboration is so hard-wired into the organisation now that it is almost invisible. It's simply become the BRANZ way.

The BRANZ programme and approach is truly unique in my experience. From the word go, it has been tailor-made to meet the needs of individuals and the organisation as a whole. Every year, the programme grows and morphs because we ask, what do we need now?

Janet Geritzlehner, General Manager People and Capability

"I see our leaders problem solving and having strong coaching and accountability conversations. Without these skills, we would not have been able to deliver our current strategy. And these skills are also being brought to bear outside our organisation," says Chelydra.

Janet concurs: "We identified the behaviours that support collaboration internally and externally. We've built a warm, high-performing collaborative culture by learning how to build trust, build openness and how to step into that space with each other, our clients and stakeholders."

As the facilitator of the programme, Marie lives these changes every time she leads a session.

"From being uncertain or even unwilling in the early days, participants now want to contribute positively to each session. There's a great energy, genuine empathy and tremendous ability to problem solve. The culture shift has been enormous. Across the board, self-belief and trust in each other has grown. It has been transformative," says Marie.

But what about how BRANZ team members feel? A quote from a recent evaluation form says it all:

"I much prefer the BRANZ we have become to the BRANZ we were."

BRANZ team member

Taking strides on sustainability

As an organisation, BRANZ is on a journey to become more sustainable. Our focus continues to be on reducing our carbon footprint – and meeting our commitment under our Toitū net carbonzero certification. Our aim is to become a net-zero emissions business by 2035 – if not before.

NET CARBONZERO CERTIFICATION ACHIEVED FOR A SECOND YEAR

This year, BRANZ attained Toitū net carbonzero certification – previously known as carboNZero. This certification meets and exceeds international environment management best practice (ISO 14064-1) and is accredited by the Joint Accreditation System of Australia and New Zealand. With Toitū certification, we are part of a collective of organisations leading the way towards a lower-carbon future.

To achieve the certification, we demonstrate compliance with measuring our greenhouse gas (GHG) emissions and have strategies to measure, manage and reduce our impacts. Our remaining emissions are offset through the purchase of verified carbon credits to achieve a neutral balance.

CHANGING THE WAY WE MEASURE OUR CARBON FOOTPRINT

Carbon emissions are measured and reported under three scopes. Scope 1 includes direct emissions, Scope 2 indirect emissions from imported energy and Scope 3 indirect emissions from other sources, which include but are not limited to transportation, staff commuting, accommodation and water supply.

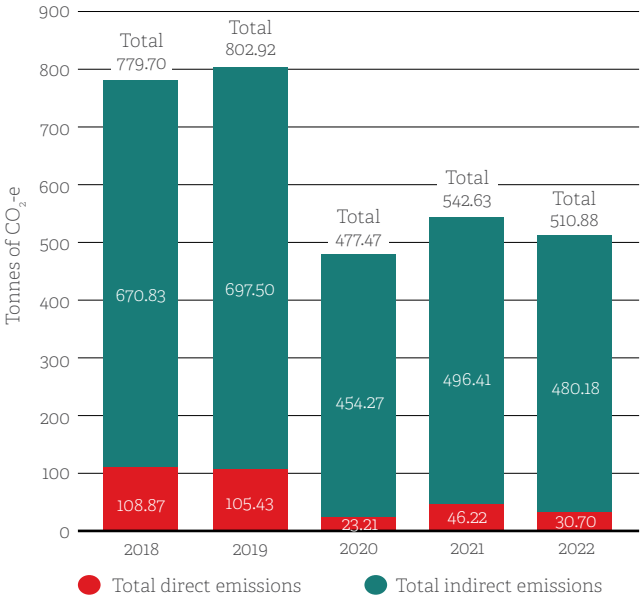
In 2024, new reporting requirements are being introduced on the Toitū carbon programmes. They include some significant changes and broaden emissions reporting to include indirect emissions for both upstream and downstream activities, the latter being a new requirement. This move requires a transition period prior to the new reporting requirements taking effect in 2024.

During the transition this year, our reporting is focused on direct and indirect emissions only (see graph). Where we have 2022 data available for the upcoming requirements, it has been included in the diagram on page 52. The diagram also helps show how the current and new ways of reporting align.

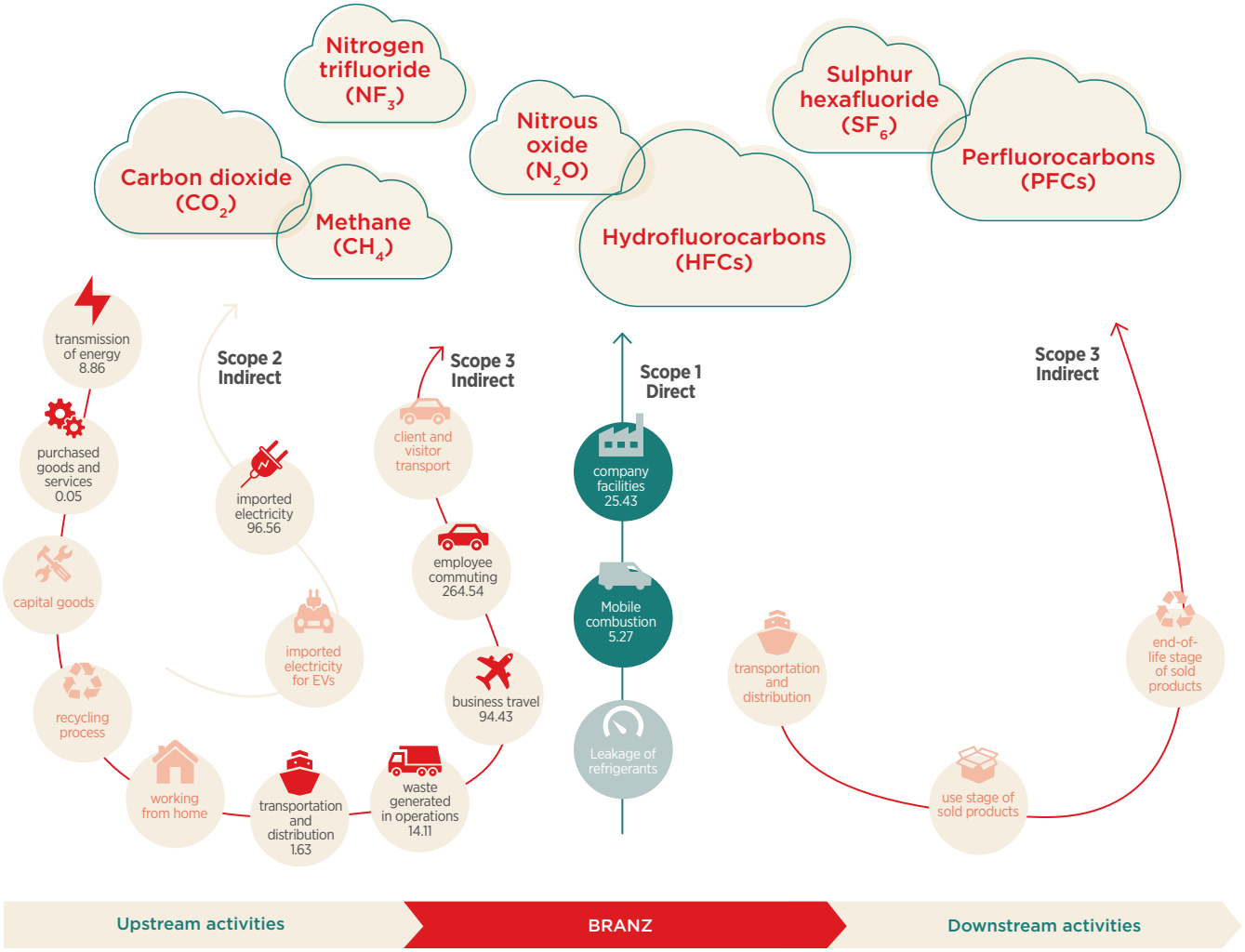
By next year, the plan is to report 2023 data plus comparative data for the 4 years prior to comply with the new reporting requirements.

BRANZ GREENHOUSE GAS EMISSIONS 2018–2022

Our carbon footprint for the 2022 calendar year was 510.88 tonnes of carbon dioxide equivalent (tCO_2-e). This is our total gross emissions including direct and indirect emissions. This is a 6% reduction in total gross emissions compared with last year and 34% lower than our 2018 base year total of 778.41 tCO_2-e.



Expressed in tonnes of CO_2-e, the graph above shows BRANZ's annual gross GHG emissions, direct and indirect, over the past 5 years of monitoring.



The diagram shows the breakdown for BRANZ 2022 emissions where data is available for the new reporting requirements and how these requirements align with the current method of reporting under Scopes 1, 2 and 3. Where the new data is not currently available, the icons are muted.

As seen in previous years, our highest amount of direct GHG emissions (264 tCo_2-e or 51%) is generated by BRANZ people commuting to our campus. This is a significant challenge area for us given our semi-rural location that is not served by public transport. Staff commuting emissions were calculated based on a car average and an estimated 999,540 vehicle kilometres in 2022. Staff commuting will likely continue to be a significant source of emissions in the near to medium term. As such, reducing this figure is an ongoing focus in our Emissions Management and Reduction Plan and essential to unlocking our 2035 ambitions.

KEY ACTIONS TAKEN IN 2022 TO REDUCE OUR CARBON FOOTPRINT

Our aim is to decarbonise BRANZ activities wherever possible, while remaining operationally effective.

During the 2022 calendar year, we had 13 active projects in our Emissions Management and Reduction Plan to target the areas in which we can make the biggest difference.

Last year, in the first year of implementing our plan, we evaluated options for the installation of eight electrical vehicle

(EV) charging stations. This year, we are now considering our approach to implementation. Other projects over the longer term focus on increasing our vehicle fleet of hybrid vehicles or EVs and eventually eliminating internal combustion engines (diesel and petrol vehicles) in our company-owned fleet and for rental vehicles.

Air travel is another key target area for emissions reduction. All long-haul international travel is subject to increasing scrutiny and sign-off protocols. The carbon impact of international travel is an important consideration in booking flights – especially given our increased experience and comfort with using online conferencing as an alternative. For domestic flights, employee travel on jet planes is encouraged over flights on smaller aircraft.

ACTION PLAN PRIORITIES TO REDUCE CARBON IN 2023

During 2023, we are continuing our work to understand, document and report emissions across the value chain. This year, we have 11 projects in progress across the three scopes, as described below.

Scope 1 – direct emissions and removals

1. Eliminate petrol or diesel vehicles from the company-owned or leased fleet.
2. Increase our company-owned fleet of EVs and hybrids to reduce staff use of their own petrol/diesel vehicles.
3. Upgrade our wastewater treatment plant and evaluate how to reduce emissions.
4. Purchase a furnace for the new fire laboratory that can use lower-carbon fuels.

Scope 2 – indirect emissions from imported energy

5. Explore working with energy management students on identifying options to inform an energy reduction plan.
6. Increase emissions from purchased electricity to support on-site EV charging and reduce the higher emissions associated with staff commuting in diesel/petrol vehicles.

Scope 3 – indirect emissions from transportation

7. Evaluate options and consider the implementation of preferred options to reduce emissions from staff commuting.
8. In line with or ahead of demand, implement and improve on-site charging infrastructure.
9. For business travel, reduce demand for rental vehicles and encourage EV rental over petrol/diesel vehicle rental.
10. Educate staff about carbon emissions associated with international flights.
11. Identify and evaluate options to improve data quality about staff commuting.

OUR WIDER SUSTAINABILITY INITIATIVES

Broader steps we are taking to improve sustainability across the organisation include:

- maintaining our memberships and certifications with Telarc, Tōitu and The Aotearoa Circle
- making recycling or reuse options available
- continuing to reduce the use of non-renewable, non-recyclable and non-reusable materials
- using environmentally friendly products wherever possible
- offering more recyclable packaging options in our on-site café
- monitoring our electricity consumption
- ensuring transparency of our sustainability activity, plans and performance in our reporting and on our website at branz.co.nz
- maintaining membership of sustainability-focused organisations The Aotearoa Circle and the Sustainable Business Council.

Low-carbon research is a key area in our research investment portfolio and includes the *Transition to a zero-carbon built environment* programme. Through this programme, we will continue to provide sustainability leadership to the building and construction sector by providing resources, science, experience and networks.

BRANZ is committed to supporting industry players to make positive change and contribute to the building and construction industry's and Aotearoa New Zealand's carbon-reduction goals.

BRANZ directors

BRANZ Incorporated (Inc.) and BRANZ Limited (Ltd) are governed by directors with extensive building and construction, science, business and public sector expertise.

Five directors are elected by the Building Research Advisory Council. These elected board members can appoint up to three independent directors. There were eight directors as at 31 March 2023.

NIGEL SMITH — CHAIR

Nigel Smith has over 30 years' experience in the Aotearoa New Zealand construction industry and manages a franchise building company. Nigel holds positions on various boards, including as a director of several Canterbury-based building companies, and is the current National Chair of the Registered Master Builders Association. He was a founding trustee of Construction Health and Safety New Zealand. Nigel joined the BRANZ Board in 2019.

STEPHEN TITTER — DEPUTY CHAIR

Stephen Titter combines many years of practical financial and investment experience. Formerly a senior partner and board member of Ernst & Young, he is now a director/trustee on several boards, including the American Chamber of Commerce in NZ Inc., Foundation North, Haumaru Housing and the Selwyn Foundation. Stephen is also a business strategy advisor for large private companies and their shareholders, a member of the Institute of Directors New Zealand and a chartered accountant. Stephen joined the BRANZ Board in 2014.

ALAN BICKERS, MNZM, JP

Alan Bickers has had a long career in civil engineering, management, consulting and governance. He is experienced in building regulatory functions, including building consents and compliance. He is a Distinguished Fellow of the Institute of Directors New Zealand and a past-President and Distinguished Fellow of Engineering New Zealand. Alan was the formative Chair of the Building Practitioners Board and Chair of the Plumbers, Gasfitters and Drainlayers Board. He is also a former Chair of the Ministry for Primary Industries Partnership Programme for Engineered Timber Buildings. Alan joined the BRANZ Board in 2015.

JOHN BROCKIES

(until 31 July 2022)

John Brockies is an independent director of consultant engineers Resolve Ltd, national vocational education institution Te Pūkenga and NorthTec Ltd. He is Chair of WBL Ltd and Te Manawataki o Te Papa civic redevelopment project and Waiari water infrastructure project in Tauranga. John's previous board appointments include commercial construction, infrastructure and joint-venture projects, and he spent 20 years in chief executive and chief operating officer roles. John joined the BRANZ Board in 2019.

LESLEY HAINES

Lesley Haines has an extensive public sector background, including senior roles at Treasury, MBIE and the Department of the Prime Minister and Cabinet. Lesley is a member of the Maritime New Zealand authority, and a trustee of Motu. Lesley joined the BRANZ Board in 2014.

DR LISBETH JACOBS

Dr Lisbeth Jacobs has over 25 years' global business leadership and corporate strategy experience and a deep knowledge of engineering, innovation and research. Lisbeth holds a PhD in materials engineering. She is currently CEO of Gallagher Animal Management, and prior to that, she was General Manager, Innovation and Sustainability at Fletcher Building. Lisbeth is a non-executive director of Goodnature Ltd since November 2022 and Honorary Consul of Belgium to New Zealand since 2013. Lisbeth joined the BRANZ Board in 2020.

ALISTER LAWRENCE

(appointed 1 September 2022)

Alister Lawrence is a Chartered Fellow of the Institute of Directors New Zealand and a director on several boards. With a background in building materials manufacturing, engineering and international project management, Alister holds an honours degree in civil engineering and a postgraduate diploma in business administration.

Alister is a director and shareholder of Enviroplaz International with insight into the technical development of building materials and their commercialisation and has great respect for the environment.

MIKE SANG

Mike Sang has 20 years' experience working with and on boards as a non-executive director. He has also been a chief executive and chief financial officer across multiple sectors, including 7 years as Chief Executive of Ngāi Tahu Holdings. Mike is on the boards of Orion New Zealand and the Government Superannuation Fund Authority. Mike joined the BRANZ Board in August 2021.

ERICA SEVILLE

(appointed 1 June 2022)

Erica Seville brings a depth of understanding of the construction, building and infrastructure sectors through a research perspective. She is co-founder of Resilient Organisations, a social enterprise undertaking public-good research and consulting to help organisations and communities to improve their resilience.

Erica has a Bachelor of Engineering and a PhD in risk management. She has led major research programmes in the fields of disaster management and reconstruction, economic and business recovery and resilience of the built environment. Erica is also a Commissioner with Toka Tū Ake | Earthquake Commission, a director for Resilient Organisations and Chair of Response & Recovery Aotearoa New Zealand.

REGISTER OF INTERESTS

Disclosure of significant shareholdings only, not shares held by family trusts, as at 31 March 2023.

Director name	Directorships
Nigel Smith	Ashborn Investments Ltd
	Ashborn Management Ltd
	Jennian Homes Canterbury South
	Milestone Homes Canterbury Ltd
	Milestone Homes National Ltd
	Mstone Holdings Ltd
	Registered Master Builders Association
	NSR Investments Ltd
Stephen Titter	American Chamber of Commerce in NZ Inc.
	Foundation North
	Guildford Investments Ltd
	Hahei Consulting Ltd
	Haumaru Auckland Ltd
	Selwyn Foundation
	Other relevant interests
	Business Strategy Advisor, Jennian Group
Alan Bickers	Jayal Enterprises Ltd
Lesley Haines	Maritime New Zealand
	Motu Economic and Public Policy Research
Lisbeth Jacobs	Goodnature New Zealand
	Other relevant interests
	Honorary Consul of Belgium
	Global General Manager, Gallagher Group Ltd
Alister Lawrence	Aquatherm Ltd
	Finesse Holdings Ltd
	Plazrok International Holdings Ltd
	Plazrok International Ltd
	Procare Networks Ltd
Mike Sang	Orion NZ
	Government Superannuation Fund Authority
Erica Seville	Resilient Organisations Ltd
	Response & Recovery Aotearoa New Zealand
	Other relevant interests
	Commissioner, Toka Tū Ake | Earthquake Commission
	Spouse to a senior manager/shareholder of Holmes Consulting Group

Standard disclosure statement affirmed at the beginning of every Board meeting:

It is recognised that some members of the BRANZ Board represent companies or organisations or interests that are, or may be, in competition with those of other Board members. Meetings of the BRANZ Board and communications between members of the Board will not be used as a forum for unlawful collusion or anti-competitive conduct.

REMUNERATION

Directors' remuneration for the BRANZ Group is reviewed biennially. The Board seeks independent advice to help with this process. No review was undertaken in the 2022/23 financial year.

Board role	Directors' fees per annum
Chair	$56,700
Deputy Chair	$30,000
Director	$30,000
Committee Chair	$6,550
Representative on external board	$6,550

Executive Leadership Team

BRANZ's top management team comprises eight senior leaders who provide strategic direction and set the organisational culture. It is a strong collective leadership body that is directing BRANZ into co-creating enduring solutions for better building system performance.

CHELYDRA PERCY
CHIEF EXECUTIVE OFFICER (until 5 April 2023)

Chelydra Percy joined BRANZ as Chief Executive Officer in 2013 following leadership roles within science, innovation and commercial organisations. These included Callaghan Innovation, Scion (New Zealand Forest Research Institute), the Electricity Supply Industry Training Organisation and Telecom. Chelydra is a graduate of Victoria University of Wellington, a Companion of Engineering New Zealand and Vice-President of the International Council for Research and Innovation in Building and Construction. Chelydra is an active participant in a number of key organisations such as the Construction Sector Accord, The Aotearoa Circle and the Business Leaders' Health and Safety Forum.

CLAIRE FALCK
ACTING CHIEF EXECUTIVE OFFICER (since 6 April 2023)

Claire Falck joined BRANZ as General Manager System Transformation in February 2021. In that role, she has overseen the successful development of system transformation capability within BRANZ and been responsible for the investment of the Building Research Levy.

Claire has enjoyed a wide-ranging career in both the public and private sectors, specialising in system design and complex transformation assignments. She has held senior roles with New Zealand Police, Te Manatū Whakahiato Ora | Ministry of Social Development and the former Housing New Zealand Corporation. Most recently, Claire was practice lead at MartinJenkins.

Claire has a Bachelor of Commerce and Administration from Victoria University of Wellington.

Mike Evans	General Manager Consultancy Services (until 23 December 2022)
Nick Marston	Acting General Manager Consultancy Services (since 4 January 2023)
Claire Falck	General Manager System Transformation (until 5 April 2023)
Sacha Haskell	Acting General Manager System Transformation (since 11 April 2023)
Janet Geritzlehner	General Manager People and Capability
Dr Chris Litten	General Manager Research
Kaetrin Stephenson	General Manager Corporate Services
Sunil Surujpal	General Manager Digital and Technology
Linda Vekula	Personal Assistant to Chief Executive Officer/Company Secretary

Building Research Advisory Council

The Building Research Advisory Council (BRAC) plays a vital role in ensuring BRANZ's accountability and responsiveness to the Aotearoa New Zealand building and construction industry. It has 18 members representing 13 nominating bodies from the industry and trades, the business sector, consumers and government.

BRAC advises on industry issues for BRANZ's consideration and elects the BRANZ Board of Directors. BRAC meets twice a year.

In 2022/23, BRAC welcomed five new members:

- Wayne Carson representing New Zealand Specialist Trade Contractors Federation
- Rick Osborne representing Business New Zealand
- Jeff Fahrensohn representing Ko Tātou | Local Government New Zealand
- Andrea Duncan representing Kāinga Ora.

The following members completed their terms on BRAC in 2022/23:

- Graham Burke representing New Zealand Specialist Trade Contractors Federation
- Ian McCormick representing Local Government New Zealand
- Rohan Bush representing Kāinga Ora
- John Sneyd representing Ministry of Business, Innovation and Employment.

MEMBERS (as at 31 March 2023)

Name	Nominee of
Kieren Mallon – Chair	Registered Master Builders Association
Jon Williams – Deputy Chair	Property Council New Zealand
Richard Arkinstall	New Zealand Specialist Trade Contractors Federation
Ewan Brown	New Zealand Institute of Architects
Carol Caldwell	Engineering New Zealand
Paul Campbell	Engineering New Zealand
Wayne Carson	New Zealand Specialist Trade Contractors Federation
Mike Craig	New Zealand Certified Builders
Andrea Duncan	Kāinga Ora
Jeff Fahrensohn	Local Government New Zealand
John Gardiner	Building Industry Federation
Vacant	Ministry of Business Innovation and Employment
Sanjesh Lal	Registered Master Builders Association
John Malthus	Business New Zealand
Rick Osborne	Business New Zealand
Don Tilbrook	Civil Contractors New Zealand
James Le Page	Consumer New Zealand
Karl Wipatene	New Zealand Institute of Architects

HONORARIA

BRAC role	Honorarium per meeting
Chair	$2,900
Members	$1,200

Our financial statements and service performance information

Our financial statements

BRANZ continues to position itself to be able to adjust its investment plans and traverse a variety of economic conditions.

Throughout the year, we carefully progressed our work and strategy implementation to adapt to the ever-changing economic and operating environment.

BRANZ gets its research income from Building Research Levy receipts, which are directly linked to the levels and values of building consents. This means Levy income is subject to the same economic cycles as the industry.

Over the past 8 years, BRANZ has positioned itself to be able to invest in and support industry research through economic cycles in a careful, transparent and considered way. BRANZ does this through its Long-Term Levy Utilisation Policy, which helps manage these ups and downs in Levy income. It uses a 20-year model to create a stable, sustainable platform for BRANZ to invest the Building Research Levy effectively.

In practice, this means that, when Levy income increases, BRANZ is prudent around expanding its investment. Then when Levy income decreases, BRANZ does not have to make unnecessary or drastic cuts.

This enables BRANZ to adjust its plans and pace of investment while still maintaining its core commitment to a high-performing industry. By taking a careful and considered financial approach, BRANZ made moderate adjustments to research investment in the year to maintain financial stability despite the current economic environment.

LONG-TERM LEVY UTILISATION POLICY

The policy sets out how BRANZ will effectively manage the Levy by:

- determining an investment sum using the 20-year model to incorporate into the annual BRANZ Group budget for investment in Levy-funded activities
- investing in research activities (operating and capital expenditure) in both internal and external capability
- investing the Levy in an open, transparent and contestable way, ensuring that any investment in core internal capability is linked to BRANZ's long-term strategic priorities
- investing through robust mechanisms to help ensure that quality investments are made and to avoid unnecessary duplication of capability and facilities across New Zealand
- ensuring availability of funding for maintenance and investment in property, plant and equipment.

The Long-Term Levy Utilisation Policy is reviewed every 3 years and was last reviewed in 2021.

OUR 2022/23 FINANCIAL PERFORMANCE

The BRANZ Group derives its total income from a combination of the Building Research Levy and commercial services.

Total income for 2022/23 was $40.50 million, consisting of:

- $31.53 million from the Building Research Levy to fund industry research and knowledge transfer
- $7.84 million from commercial services
- $1.13 million of other income.

This compares with $38.58 million for the previous year. The increased income in 2022/23 was mainly derived from additional Building Research Levy resulting from heightened industry and consent activity and increased average value of consents. An increase in interest rates contributed to additional interest income.

Expenditure directly managed for 2022/23 was $30.37 million. This was used to operate the business, directly deliver research outcomes and testing services, inform the industry and invest with other research providers.

Specific investment in research with BRANZ Ltd and other research providers amounted to $16.03 million, which is an increase on the previous year amount of $13.51 million. Expenditure in the previous year amounted to $27.12 million.

In 2019/20, as host of National Science Challenge 11 (NSC 11): Building Better Homes, Towns and Cities, BRANZ was contracted for a further 5 years with associated funding of $24.3 million. By 31 March 2023, contracts were under way and $19.75 million had been invested.

A breakdown of the BRANZ Group financial results can be viewed on subsequent pages.

CASH RESERVES

The BRANZ Group has investment in cash reserves of $34.10 million as at 31 March 2023. This balance includes $2.07 million of NSC 11 funding that has yet to be spent.

The BRANZ Group Treasury Policy recognises that, as a result of the investment in the campus redevelopment at Judgeford, BRANZ will move from being wholly 'cash in funds' to a mixed profile of 'cash in funds' and 'debt'. The policy states how BRANZ will manage its treasury activities and protect cashflows within an environment of control and compliance, within approved limits and according to stated objectives.

All funds and the level of cash reserves are held in accordance with the BRANZ Group Treasury Policy.

FUNDING FOR INVESTMENT IN PROPERTY, PLANT AND EQUIPMENT

BRANZ funds the maintenance and development of facilities at Judgeford and elsewhere in New Zealand. The Campus and Asset Management Plan was refreshed and adopted by the Board in February 2020 and ensures that our facilities meet industry research and testing needs for the future.

The plan identified over 15 projects that are required to retire, replace and refurbish ageing property, plant and equipment over the next 3 years with an estimated investment of around $30 million. The most significant element of this plan is completing the campus redevelopment at Judgeford.

The investment case for the construction stage of the campus redevelopment project was approved by the Board in July 2021. The investment case included the provision of access to a funding facility of up to $25 million from Westpac New Zealand Limited, which is secured on the assets of the Group. At 31 March 2023, no drawdown has been made on the facility.

During the year, $20.93 million was invested in the campus redevelopment projects.

Building Research Association of New Zealand Inc.

Summary statements of comprehensive revenue and expenses

For the year ended 31 March 2023

	Group	
	2023 $	2022 $
Operating income		
Revenue from non-exchange transactions		
Building Research Levy Act levies	31,532,855	30,398,955
Revenue from exchange transactions		
Commercial work fees	7,837,052	7,696,430
	39,369,907	38,095,385
Other income		
Interest received	1,118,810	479,096
Gain on disposal of assets	6,654	1,766
	1,125,464	480,862
Total income	**40,495,371**	**38,576,247**
Expenditure		
Personnel costs	14,753,590	13,368,346
Other operating costs	15,611,897	13,746,762
Total expenditure	**30,365,487**	**27,115,108**
Surplus before income tax	**10,129,884**	**11,461,139**
Income tax benefit	329,062	61,387
Surplus for the year	**10,458,946**	**11,522,526**
Total comprehensive revenue and expenses for the year	**10,458,946**	**11,522,526**

Building Research Association of New Zealand Inc.

Summary statements of changes in net assets/equity

For the year ended 31 March 2023

	Group		
	Foreign currency translation reserve $	**Retained earnings $**	**Total equity $**
Balance at 1 April 2021	29,616	53,854,501	53,884,117
Movement for year	(1,131)	11,522,526	11,521,395
Balance at 31 March 2022	**28,485**	**65,377,027**	**65,405,512**
Balance at 1 April 2022	28,485	65,377,027	65,405,512
Movement for year	(10,769)	10,458,946	10,448,177
Balance at 31 March 2023	**17,716**	**75,835,973**	**75,853,689**

Building Research Association of New Zealand Inc.

Summary statements of financial position

As at 31 March 2023

	Group	
	2023 $	2022 $
Assets		
Current assets		
Cash and cash equivalents	6,595,788	8,508,581
Term deposits	27,500,000	34,780,000
Other current assets	8,326,508	7,233,549
Total current assets	**42,422,296**	**50,522,130**
Non-current assets		
Property, plant and equipment	41,634,109	21,378,338
Intangible assets	310,316	741,377
Deferred tax assets	80,388	53,584
Total non-current assets	**42,024,813**	**22,173,299**
Total assets	**84,447,109**	**72,695,429**
Liabilities		
Current liabilities		
Trade and other payables	4,392,264	3,157,811
Other current liabilities	4,058,295	3,946,887
Total current liabilities	**8,450,559**	**7,104,698**
Non-current liabilities		
Other non-current liabilities	142,861	185,219
Total non-current liabilities	**142,861**	**185,219**
Total liabilities	**8,593,420**	**7,289,917**
Equity		
Total equity	**75,853,689**	**65,405,512**
Total equity and liabilities	**84,447,109**	**72,695,429**

Building Research Association of New Zealand Inc.

Summary statements of cash flows

For the year ended 31 March 2023

	Group	
	2023 $	2022 $
Net cash from/(used in) operating activities	11,178,950	13,248,264
Net cash from/(used in) investing activities	(13,379,299)	(8,827,454)
(Decrease)/increase in cash and cash equivalents	(2,200,349)	4,420,810
Unrealised gains/(losses) on foreign currency accounts	287,556	(172,606)
Cash and cash equivalents at 1 April	8,508,581	4,260,377
Cash and cash equivalents at 31 March	**6,595,788**	**8,508,581**

Building Research Association of New Zealand Inc.

Notes to the summary financial statements

For the year ended 31 March 2023

1. REPORTING ENTITY

Building Research Association of New Zealand Incorporated (Inc.), "the Parent", is an incorporated society registered under the Incorporated Societies Act 1908 and domiciled in New Zealand. The address of the Parent's registered office is 1222 Moonshine Road, Judgeford, Porirua.

The consolidated summary financial statements of Building Research Association of New Zealand Inc. as at and for the year ended 31 March 2023 are presented and comprise the Parent and its subsidiaries (together referred to as "the Group").

Building Research Association of New Zealand Inc.'s primary purpose is promoting scientific or industrial research for the building and construction industry.

These summary financial statements and the full financial statements were authorised for issue by the Board of Directors on 29 June 2023.

2. BASIS OF PREPARATION

Statement of compliance

The summary financial statements are an abridged version of the full financial statements. Their purpose is to provide an overview and as such do not provide an understanding as complete as the full financial statements. The disclosures included in these summary financial statements have been extracted from the full financial statements.

The full financial statements have been prepared in accordance with generally accepted accounting practice in New Zealand ("NZ GAAP"). As the primary objective of the Parent and the Group is to promote scientific or industrial research for the building and construction industry rather than making a financial return, the Parent and the Group are public benefit entities for the purpose of complying with NZ GAAP.

The financial statements of the Group comply with Public Benefit Entity Standards.

Basis of measurement

The summary financial statements are prepared on a historical cost basis. The accounts are prepared on a going concern basis.

Presentation currency

These summary financial statements are presented in New Zealand dollars ($), which is the functional currency of the Parent and BRANZ Limited. BRANZ Pty Limited's functional currency is Australian dollars.

Prior period restatement

Where necessary, comparative figures have been restated to facilitate comparison and to comply with current year classifications.

3. CONTINGENCIES

The Group had no contingent liabilities as at 31 March 2023 (2022: nil).

4. FUNDING FACILITY

During the prior year, BRANZ entered into a funding agreement with Westpac New Zealand Limited. Under this wholesale development facility, which is secured on the assets of the Group, BRANZ can access credit of up to $25 million to fund the redevelopment of the Judgeford campus. At 31 March 2023, no drawdown had been made on the facility.

5. RELATED PARTIES

Group entities	Country of incorporation	Ownership interest	
		2023 %	2022 %
BRANZ Limited	New Zealand	100	100
BRANZ Pty Limited	Australia	100	100

Building Research Association of NZ Inc. charges rent to BRANZ Limited for the use of property, plant and equipment as well as for its share of the Group CEO remuneration costs and other advisory services provided. In 2023, this amounted to $1,984,116 (2022: $2,046,516).

BRANZ Limited charges fees for research work and administration services carried out for Building Research Association of New Zealand Inc. BRANZ Limited also charges Building Research Association of New Zealand Inc. for its share of the Group Executive Leadership Team costs, provision of accounting, IT, support, health and safety and quality services and its share of insurance and marketing costs. In 2023, the fees for research work and share of management services amounted to $14,987,357 (2022: $13,665,122). In the Group accounts, these charges are eliminated on consolidation.

All charges are reviewed and approved by the Board on an annual basis.

BRANZ contracts with construction and research organisations to which BRANZ directors are either related or are also directors. Transactions undertaken with these organisations are entered into on an arm's length basis. Where the director has proximity to the transaction, disclosure is made below.

During the year, BRANZ Inc. provided external research funding of $55,015 to Resilient Organisations Ltd of which Erica Seville is an Executive Director. There were no transactions with related parties during the prior year.

6. NATIONAL SCIENCE CHALLENGE 11

NSC 11 funds are paid to BRANZ Ltd on a quarterly basis by the Ministry of Business, Innovation and Employment. The funds received are held in 'Funds received in advance' on the Statements of Financial Position until paid out to research and services providers. The 'Funds received in advance' is recorded as a current liability as BRANZ has an obligation to return all funding not spent and for which contractual liabilities have not been incurred at the date of termination or finalisation of the contract.

Movement in funds received in advance is as follows:

	Group	
	2023 $	2022 $
As at 1 April	2,429,662	2,250,279
Funding received during the year	4,860,000	4,860,000
Funding applied during the year to:		
- Governance group meetings	(109,500)	(109,500)
- NSC 11 cost of undertaking research	(5,107,044)	(4,571,117)
As at 31 March	**2,073,118**	**2,429,662**

7. SUBSEQUENT EVENTS

No significant subsequent events have occurred after balance date.

These summary financial statements are approved for and on behalf of the Board of Directors on 29 June 2023 by:

Nigel Smith
Board Chair

Stephen Titter
Chair Audit and Risk Management Committee

Service performance information

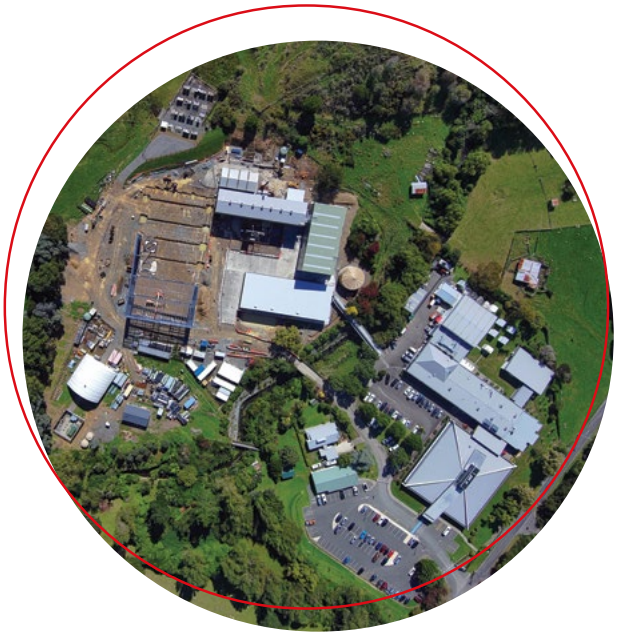
ABOUT THIS SECTION

BRANZ is now required to prepare service performance information in conjunction with its annual financial statements, which are both audited. The service performance information is prepared in accordance with the Accounting Standard issued by the External Reporting Board: *PBE FRS 48 Service Performance Reporting*.

Per the Standard: "Service performance information is information about what the entity has done during the reporting period in working towards its broader aims and objectives, together with supporting contextual information."

BRANZ has taken the approach of framing the service performance information reported in the context of the Building Research Levy Act 1969. The measures selected are intended to demonstrate the breadth and depth of BRANZ's role within the system supporting the building and construction industry.

Other publications and information that provide more detailed understanding of BRANZ's work include *Re:Invest*, Levy Investment Portfolio Statement and branz.co.nz.



WHO WE ARE AND WHY WE EXIST

BRANZ is a multi-faceted, science-led organisation. We use independent research, systems knowledge and our broad networks to identify practical solutions that improve Aotearoa New Zealand's building system performance.

BRANZ is driven by the knowledge that, to thrive as a society, New Zealanders need a built environment that is safe and healthy and performs well.

WHAT WE ARE WORKING TO ACHIEVE

Objective One: The Building Research Levy is invested in a high-quality, relevant portfolio of research that leads to accessible, actionable insights.

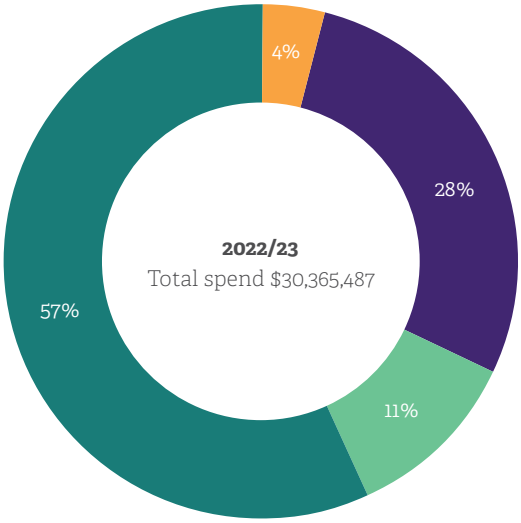
Objective Two: Our insights are used and valued by policy makers, industry and other system players.

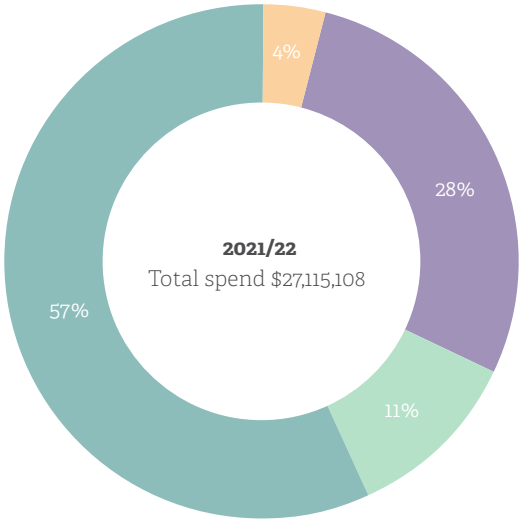
Objective Three: We support industry to understand and demonstrate product performance.

Objective Four: Our environmental, social and governance practices demonstrate, through the way we operate, that we care for our people, our country and the planet.

EXPENDITURE ACROSS THESE FOUR KEY OBJECTIVES

Expenditure across the four objectives for 2022/23 $30,365,487 (2021/22: $27,115,108)





Objective One Objective Two Objective Three Objective Four

Objective One Objective Two Objective Three Objective Four

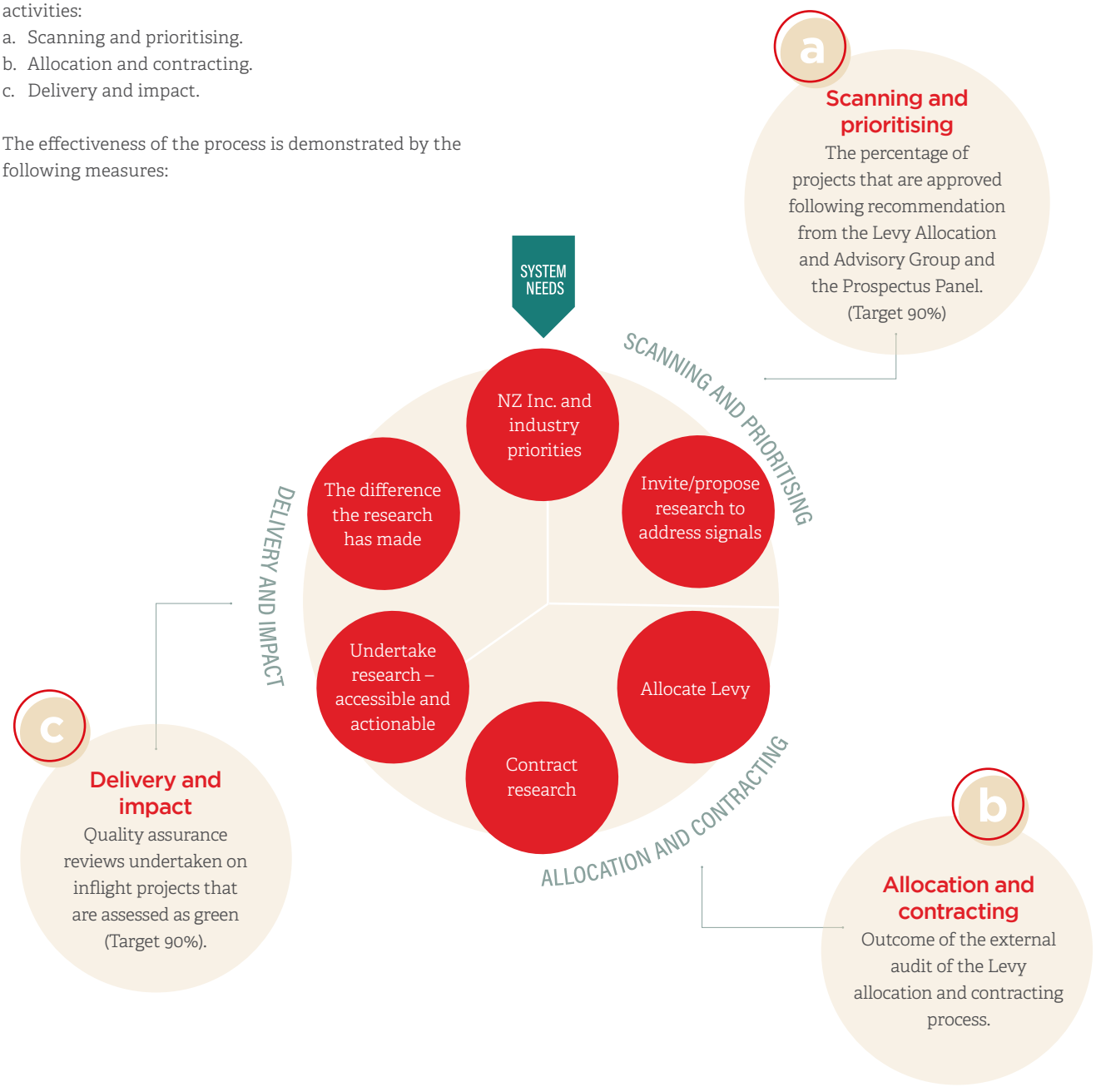
Objective One: The Building Research Levy is invested in a high-quality, relevant portfolio of research that leads to accessible, actionable insights.

MEASURE ONE: A ROBUST PROCESS IS FOLLOWED WHEN INVESTING THE BUILDING RESEARCH LEVY

The Building Research Levy is invested in an open, transparent and contestable way using robust mechanisms to help ensure quality investments are made. The process has three key activities:

a. Scanning and prioritising.
b. Allocation and contracting.
c. Delivery and impact.

The effectiveness of the process is demonstrated by the following measures:



a The percentage of projects that are approved following recommendation from the Levy Allocation and Advisory Group and the Prospectus Panel. (Target 90%)

BRANZ Inc. has two panels to assess and provide targeted advice to BRANZ on research funding proposals. Each panel has terms of reference approved by the Board that specifies the role, composition and required skill sets:

- The Levy Allocation and Advisory Group is an independent panel comprised of industry and government representatives with a broad range of experience. Its key function is to assess research proposals developed by BRANZ Ltd and provide a recommendation to the BRANZ Inc. Board on the merits of the work and the approaches proposed.
- The Prospectus Panel provides advice to the BRANZ CEO and Executive Leadership Team on research proposals submitted by external research providers in response to an issued prospectus.

Each panel provides a recommendation regarding the investment in research projects in line with the prioritised research investment signals, which are published annually in the Building Research Levy Investment Portfolio Statement. The percentage of projects that are approved following a panel's recommendation reflects alignment to our research investment priorities.

2023: 100%	**2022:** 100%

b Outcome of the external audit of the Levy allocation and contracting process.

Independent auditors are engaged biennially by the Board to provide an opinion on the Building Research Levy investment as part of BRANZ's commitment to transparency and accountability associated with Levy stewardship. The auditors, in forming their opinion, consider:

- the extent to which the Levy investment has been used to deliver on the agreed work and outputs
- the success of projects in delivering the planned knowledge transfer or emerging knowledge transfer opportunities
- the approach taken with respect to engagement with key stakeholders and expected project participants.

A traffic light system is used to rate overall performance.

Green	All projects are following established processes, no significant issues to address.
Amber	Most projects follow established processes, evidence that issues are being managed.
Red	Several projects are not following established processes, significant issues have been identified and need management attention.

In the year that the audit does not occur, an interim audit is carried out to review progress made implementing any actions arising from the recommendations identified in the biennial audit.

	2023	2022
Biennial audit	n/a	**Green rating** The auditors noted: "Relative to other organisations in the science sector (e.g., IROs, universities, CRIs), BRANZ's systems for managing Levy-funded research projects were found to be robust and exemplary, and the standard of delivery from the research is high."
Interim audit	Auditor concluded that all actions have been adequately addressed by management.	n/a

C

Quality assurance reviews undertaken on inflight projects that are assessed as green. (Target 90%)

The BRANZ Research Investment team undertakes reviews throughout the year of the health of the research portfolio against a set of criteria, which ensures all projects are reviewed at least once. A report is provided to the Board annually. Where a project is assessed as amber or red it signals the need for greater oversight to ensure the outcomes required for the Levy investment are met. This may result in an increase in monitoring point meetings to resolve issues and/or a variation to the project.

A traffic light system is used to rate each project.

Gold Exceeding: The project is exceeding expectations.

Green On track: The project is on time and scope, no issues to address.

Amber On track – issues being managed: The project is progressing but has encountered issues (due to internal or external factors), and these are being managed.

Red Off track: The project is significantly delayed or there are concerns that it may not deliver expected outputs/outcomes – the project is in need of management attention.

Table 1 below shows the status of the current and previous year's research portfolio against traffic light criteria. Excluded are scholarships, knowledge transfer (such as *Build*), enabling activities (such as the monitoring network) and strategic projects.

Table 1. Portfolio performance 2023 (2022 numbers in brackets).

	BRANZ Ltd projects	External projects	Total
Exceeding initial scope: gold	0 (2)	0 (0)	0 (2)
On track: green	73 (65)	18 (19)	91 (84)
On track – issues being managed: amber	3 (1)	1 (0)	4 (1)
Off track: red	1 (0)	0 (0)	1 (0)
Total	**77 (68)**	**19 (19)**	**96 (87)**

2023: Achieved
95% of projects are rated gold or green

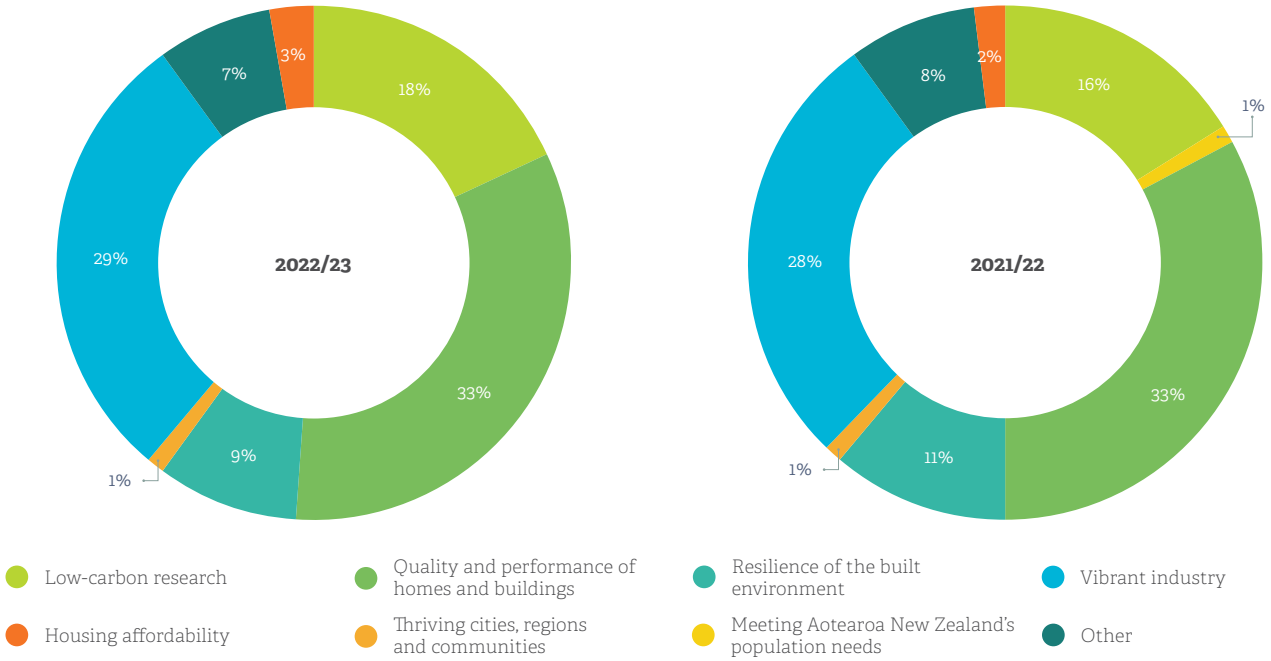
2022: Achieved
99% of projects are rated gold or green

MEASURE TWO: BUILDING RESEARCH LEVY INVESTMENTS

A key driver of the Levy investment is ensuring that all research is designed with the needs of the industry and ultimately all New Zealanders in mind. BRANZ maintains strong relationships with a wide range of system players active within New Zealand's built environment. By developing and nurturing connections with industry and government, BRANZ makes sure Levy-funded research is relevant and effective.

Our Long-Term Levy Utilisation Policy includes robust mechanisms to ensure that quality investments are made and to avoid unnecessary duplication of capability and facilities across New Zealand.

Portfolio investment by research focus area



MEASURE THREE: SCIENCE RECOGNITION

BRANZ is committed to an enduring collaborative effort across a range of system players. Our research exploring new ideas and finding practical frontline solutions is increasingly co-created alongside key users who have the ability to implement the research findings into their work.

The number of times researchers are formally recognised by external peers as collaborating and contributing to their success in advancing science demonstrates the value of our work. Advancing science includes co-authoring academic papers/articles, being a reviewer or committee member, mentoring or supervision of a PhD/master's student.

	2022/23	2021/22
Number of formal recognitions by external peers	38	36

Objective Two: Our insights are used and valued by policy makers, industry and other system players.

MEASURE FOUR: *BUILD* MAGAZINE REACH, VALUE AND QUALITY

Build is BRANZ's flagship magazine and New Zealand's premier building industry magazine and information resource. It is published bimonthly in hardcopy with an online version updated regularly to reach a wide audience and provide information and insights in a way people value.

	2022/23	2021/22
Average distribution of *Build* per issue (hardcopy)	34,024	34,445
Number of visits to *Build online*	451,498	412,815
Net promoter score for *Build**	n/a Every 2 years	+38

MEASURE FIVE: SEMINAR/WEBINAR REACH, VALUE AND QUALITY

BRANZ provides seminars/webinars where gaps in the technical information available have been identified. Seminars/webinars are targeted at various sectors of the industry. This is to ensure that the information covered is specifically relevant and of sufficient depth to produce the best learning experience possible for attendees.

	2022/23	2021/22
Seminars/webinars held	8	10
Number of registered attendees	4,018	3,797
Net promoter score for webinars*	+41	+47

In 2021/22, due to COVID-19 restrictions, BRANZ only ran webinars. We can track the number of registered attendees and anticipate the reach was far wider with the potential for multiple viewers on one registration.

* A net promoter score measures how likely someone is to recommend a service or product. As a rule of thumb, a net promotor score of 20 or above is favourable, above 50 is excellent and above 80 is world class.

Objective Three: We support industry to understand and demonstrate product performance.

MEASURE SIX: ACTIVE CERTIFICATES

BRANZ provides evidence-based advice at all phases of the product life cycle from preliminary R&D through to verifying end-use product proficiency. A BRANZ assessment provides assurance that the products should do what they say they will do. BRANZ CodeMark, Appraisal and product certificates are searchable and available via the BRANZ website branz.co.nz.

	At 31 March 2023	At 31 March 2022
CodeMark	18	17
Appraisal	500	490
Type test	287	240
Technical opinion	99	92
Report	4	0
Total	**908**	**839**

CodeMark is a voluntary product certification scheme. It provides an easily understood and robust way to show a building product, design or method meets the requirements of the New Zealand Building Code or the Building Code of Australia.

A BRANZ Appraisal is a robust, in-depth and independent evaluation of a building product or system to assess whether it is fit for purpose and meets Building Code performance requirements.

BRANZ type test and technical opinion services suit products that don't require the full rigour of a BRANZ Appraisal or CodeMark. They can be used to demonstrate compliance with a specific Standard or requirement of the New Zealand Building Code.

MEASURE SEVEN: CUSTOMER SATISFACTION

Customer satisfaction surveys are conducted each year and reported to the Board. The customer satisfaction surveys are a useful touchpoint that enables BRANZ to better understand our organisational performance, obtain trends and insights and ensure that we continue to improve our service levels. The surveys are comprised of projects for which we receive commercial income for consultancy work and *Build* magazine and *Build online*.

	Target: "Were your expectations met or exceeded?"	2022/23	2021/22
Consultancy work	80%	91%	90%
Build magazine (hardcopy)	90%	n/a	98%
Build online	90%	n/a	95%

Note: The *Build* readers' survey is only undertaken every second year so there is no result for 2022/23.

Objective Four: Our environmental, social and governance practices demonstrate, through the way we operate, that we care for our people, our country and the planet.

MEASURE EIGHT: INVESTING IN OUR PEOPLE

At its heart, BRANZ is a team of scientists, engineers and professionals passionately committed to ensuring the built environment is the best it can be. Supporting professional development and building skills to communicate, collaborate and co-create is a key investment in our people.

All staff participate in our communication and collaboration development programme.

Total investment in developing the skills of our people was $1,472 per FTE (2021/22: $1,913 per FTE).

MEASURE NINE: HEALTH, SAFETY AND WELLBEING

A health, safety and wellbeing (HS&W) survey is carried out annually and open to all staff and key contractors. The survey is one of several touchpoints with staff to help understand the health of our HS&W culture and practices and whether changes to the HS&W programme may be needed.

Willingness to participate with our HS&W culture is important for measuring engagement and developing the HS&W maturity of BRANZ.

	2022/23	2021/22
Participation rate in survey	95%	95%

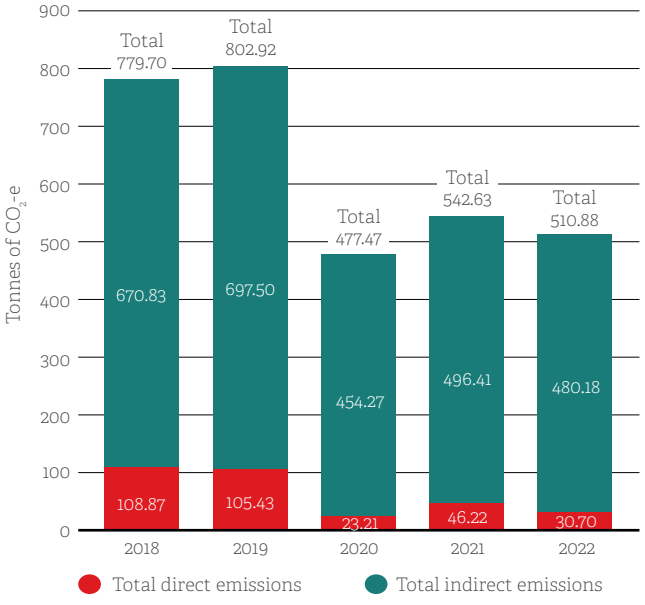
Comments collected in the survey indicate strong and open discussions are occurring about HS&W in teams and individual responsibility for HS&W is high.

MEASURE TEN: ENVIRONMENTAL

BRANZ's aim is to become a net-zero emissions business by 2035 – if not before. We continue to take actions to reduce our carbon footprint. In April 2022, we achieved the Toitū net carbonzero certification, which meets and exceeds international environment management best practice (ISO 14064-1). We measure our carbon footprint – total greenhouse gas emissions by scope – and offset our emissions through the purchase of verified carbon credits to achieve a net-zero balance.

Net carbon emissions have remained relatively static between 2017 and 2019, with a drop in 2020 and 2021 due to reduced transport emissions driven by travel restrictions in the COVID-19 environment.

More detail on our emissions and reduction plan can be found in the section Taking strides on sustainability on pages 51 –53.



JUDGEMENTS

In determining the costs associated with the Objectives, judgement has been applied using a cost allocation methodology. Direct costs are charged directly to the activities that fall within the Objective. Indirect costs are allocated to activities that fall within the Objective based on cost drivers and related activity or usage information. Depreciation and amortisation are allocated on the basis of asset utilisation.

Independent auditor's report to the Members of Building Research Association of New Zealand Incorporated

OPINION

The summary financial statements on pages 62 to 77, which comprise the summary statements of financial position as at 31 March 2023, the summary statements of comprehensive revenue and expenses, summary statements of changes in net assets/equity, summary statements of cash flows, and summary service performance information for the year then ended, and related notes, are derived from the audited consolidated financial statements of Building Research Association of New Zealand Incorporated (the "Incorporated Society" or the "Group") for the year ended 31 March 2023.

In our opinion, the accompanying summary financial statements are consistent, in all material respects, with the audited financial statements, in accordance with FRS-43: *Summary Financial Statements* issued by the New Zealand Accounting Standards Board.

SUMMARY FINANCIAL STATEMENTS

The summary financial statements do not contain all the disclosures required for full financial statements under generally accepted accounting practice in New Zealand. Reading the summary financial statements and the auditor's report thereon, therefore, is not a substitute for reading the audited full financial statements and the auditor's report thereon.

THE AUDITED FINANCIAL STATEMENTS AND OUR REPORT THEREON

We expressed an unmodified audit opinion on the audited financial statements in our report dated 29 June 2023.

OTHER MATTER

The corresponding figures in the service performance information of the Group, being those measures related to the year ended 31 March 2022, were not audited.

THOSE CHARGED WITH GOVERNANCE RESPONSIBILITIES FOR THE SUMMARY FINANCIAL STATEMENTS

Those charged with governance are responsible on behalf of the Group for the preparation of the summary financial statements in accordance with FRS-43: *Summary Financial Statements*.

AUDITOR'S RESPONSIBILITIES

Our responsibility is to express an opinion on whether the summary financial statements are consistent, in all material respects, with the audited financial statements based on our procedures, which were conducted in accordance with International Standard on Auditing (New Zealand) (ISA (NZ)) 810 (Revised): *Engagements to Report on Summary Financial Statements*.

Other than in our capacity as auditor we have no relationship with, or interest in, the Incorporated Society or any of its subsidiaries. Partners and employees of our firm may deal with the Incorporated Society on normal terms within the ordinary course of trading activities of the business of the Incorporated Society.

Ernst + Young

Chartered Accountants
Wellington
29 June 2023

Building Research Levy investments 2022/23

Building Research Levy investments 2022/23

The Building Research Levy plays a key role in improving all aspects of New Zealand buildings. As steward of the Levy, BRANZ is committed to robust decision-making processes, a commitment to transparency and disciplined management of the Levy investments.

BRANZ'S PORTFOLIO

BRANZ has adopted a research portfolio comprised of seven key categories that correspond with critical aspects of Aotearoa New Zealand's building system and, consequently, areas of investment for the Building Research Levy:

- Low-carbon research
- Quality and performance of homes and buildings
- Resilience of the built environment
- Vibrant industry
- Housing affordability
- Thriving cities, regions and communities
- Meeting Aotearoa New Zealand's population needs.

Research into improving outcomes in these areas through prudent investment of the Building Research Levy will make the biggest difference in the lives of people in Aotearoa New Zealand.

In 2022/23, much of our investment has been focused on supporting our zero-carbon programme to meet the needs of the building and construction system.

Our Levy investments for 2022/23 across our research portfolio are detailed in the following pages. Note that these amounts are subject to change.

Shaded rows denote projects led by external parties.

The Building Research Levy investments for 2022/23 follow. Note that these amounts are subject to change.

Shaded content denotes projects led by external partners.

Research investment	Total budget $
Low-carbon research	
Best-practice urban form for emissions reduction	139,649
Bio-based materials – New Zealand wood fibre insulation – proof of concept	447,600
Climate change impacts on marae	176,100
Climate impacts of medium-density housing expanded assessment tool	144,475
Future of work – what do we need to know to transition to zero carbon?	884,600
Get ready! Preparing building and construction businesses for the transition to zero carbon	401,700
Housing stock strategies for meeting New Zealand's 2050 carbon target	188,000
Innovative low-carbon residential water heating solutions	391,150
Keeping carbon current	485,000
Low-carbon concrete strategy	55,000
Low-carbon retrofit solutions for our changing climate	399,500
Low-impact buildings	2,118,060
Marginal abatement cost curves (MACCs) – phase 2	341,800
Materials under the changing climate	2,740,000
Measuring our sustainability progress – second update	226,500
Non-traditional construction systems	495,000
Overseas retrofit policies	124,000
Pathways to net-zero buildings in communities	150,440
Reducing greenhouse gas emissions in communities	220,350
Scholarship: Emily Newmarch – Designing low-carbon architecture in New Zealand	75,000
Scholarship: Rosa Gonzalez – Carbon case for resilient design	75,000
The future of work – accelerate skills level for zero-carbon construction	1,893,500
Transition to zero-carbon programme – communication and dissemination	300,000
Transition to zero-carbon programme – leadership 2019–24	527,200
Zero-carbon built environment science leadership 2021–24	454,300
Zero-carbon capability	327,000

Shaded content denotes projects led by external partners.

Research investment	Total budget $
Quality and performance of homes and buildings	327,000
BRANZ monitoring network	1,113,000
Building Energy End-use Study (BEES) 2.0 – addressing energy demand	500,000
Building for wellbeing	837,000
Chemical contamination of building materials	799,584
Cold-formed steel framing calibrating and modelling	40,000
Compliant materials verification	329,500
Durability verification database 2021–24	41,000
Healthy homes communication	226,883
HEEP2 – energy insights from our homes	6,530,100
Higher-performing buildings	2,195,000
Indoor Air Quality (IAQ/IEQ) Research Centre	1,204,300
Linking new-build mortgages with home performance	237,541
Mould: finding the invisible – phase 1 investigation	309,397
Potential unintended consequences of high-performance construction	964,000
Preservative-treated timber outgassing	700,000
Scholarship: Phoebe Taptiklis – Maintenance and dampness	75,000
Scholarship: Griffin Cherrill – Internal moisture from thermal bridges	50,000
Scholarship: Ting Yen Khor – Pre-contamination of wallboard with fungi	20,000
Simulation of optimised school buildings	200,000
Streamlined compliance through generic product specifications – scoping	289,500
Study of behaviour and change intervention in natural home ventilation	199,788
The future of national housing surveys – towards a collaborative approach	64,000
Towards better kitchen joinery outcomes	201,859
Towards durable timber structures – phase 2	1,186,755
Usage and uptake of engineered wood products in New Zealand	68,000
Warmer, drier, healthier homes: communication and dissemination 2021–23	180,000

Shaded content denotes projects led by external partners.

Research investment	Total budget $
Resilience of the built environment	
B-RISK continuous integration verification and validation Stage II – end-user approach	168,000
B-RISK future development roadmap	320,000
B-RISK support 2021–24	212,000
Building fire-safe densified housing programme – leadership 2020-24	361,000
Fire performance of hollow-core floors	480,000
Fire safety of combustible façades in New Zealand	1,169,750
Fire safety quality processes in the New Zealand built environment	507,000
From understanding to behaviour change in seismic risk communications	169,400
Indoor pollutants in buildings exposed to fire	94,154
Lithium batteries – fire risks associated with buildings	125,750
Scholarship: Gordon Chen – Steel beam-column connections in fire	75,000
Scholarship: Jono MacIntyre – Predicting structural fire severity	75,000
Scholarship: Kirill Panov – Metallic materials in geothermal environments	75,000
Scholarship: Luke de Schot – Human behaviour in fire	42,000
Scholarship: Mikhail Gedyma – Seismic performance and hybrid bracing	75,000
Scholarship: Mohamed Mostafa – Precast floors and torsion	75,000
Seismic design and retrofit of hillside houses	738,450
Seismic design of low-rise and mid-rise hybrid residential buildings	1,091,000

Shaded content denotes projects led by external partners.

Research investment	Total budget $
Vibrant industry	
Advisory services 2021–24	1,028,000
BRANZ Levy forecast 2021–24	429,000
Build magazine 2021–2024	2,910,000
Building controls 2021–24	990,000
Bulletins 2022–25	452,000
De-risking uptake of new technologies for effective change management	200,000
Education 2021–24	1,710,000
Guideline 2021–24	90,000
How do clients choose a quality builder?	131,100
Improving cost estimation	190,000
Improving design management	330,000
Library – information management 2021–24	922,000
Materials and characteristics survey 2021–24	310,000
Model-docs	200,000
MyBRANZ Knowledge and digital knowledge transfer	1,408,000
New House Owners' Satisfaction Survey 2021–2025	226,800
New house survey – update 2020–22	340,000
Plastic waste on construction sites – a cooperative approach	171,885
Psychologically safe workspaces	191,638
Role of scale and business model approach to improve resilience	95,380
Scholarship: Armano Papageorge – Semi-autonomous off-site construction	75,000
Scholarship: Ged Finch – Prefab architecture	82,000
Timber construction and demolition waste research	195,000
Understanding and redirecting waste in residential construction	79,699

Shaded content denotes projects led by external partners.

Research investment	Total budget $
Housing affordability	
Affordable housing for generations	158,000
Alternative tenure opportunities	247,500
Future landlords	339,800
New Zealand's private rental sector 2021	258,893
Scholarship: Nic Guerrero – The campaign for rent controls	20,000
Scholarship: Sam O'Brien – Application of inclusionary housing practices	20,000
Thriving cities, regions and communities	
Communities under construction	254,000
Disaster dashboard	199,000
Meeting Aotearoa New Zealand's population needs	
Connecting tangata to whenua through housing	50,371
Housing typology outcomes, market and demographic drivers – Christchurch	243,800
Scholarship: Jane Waterhouse – Visual comfort in housing for dementia	75,000
Scholarship: Danielle Smith – Sustainable housing for Māori	75,000
Scholarship: Karin Henshaw – Public housing transitions	20,000
Towards a New Zealand building stock model – scoping	170,000

BRANZ team, May 2023

Tēnā koutou

Preparing the BRANZ Annual Review provides a welcome opportunity to reflect on what we have achieved and importantly, to acknowledge everyone who has made a contribution.

Through these pages, we have told a story of how BRANZ continues to unlock momentum, with much of our work further deepening or expanding the evidence base needed to transform the building system. None of this would be possible without the dedicated and professional people – our terrific BRANZ team – who work so hard to ensure New Zealanders can enjoy a safer, more sustainable and efficient built environment.

From our directors providing good governance and wise counsel and our BRAC members relaying important industry insights through to our research, knowledge dissemination and commercial teams – your work has a positive impact on countless lives. I am incredibly proud to work alongside you. Thank you.

Ehara koe i a ia!

Falck

Claire Falck
Acting CEO

Thank you to our contributors

We wish to give special thanks to the following individuals and organisations for sharing what our research means to them:

- Building Performance, Ministry of Business, Innovation and Employment Hīkina Whakatutuki
- Kiri Maxwell, Build Back Better Aotearoa
- Bruce Sedcole, BSA Architects Ltd
- Rosemary Goodyear, Stats NZ
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- Sam Lesley, Red Stag TimberLab
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- Niluka Domingo, Massey University
- Ged Finch, Victoria University of Wellington and X-Frame
- Armano Papageorge, Victoria University of Wellington
- Theresa Epton, ArchEngBuild 2022 participant

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