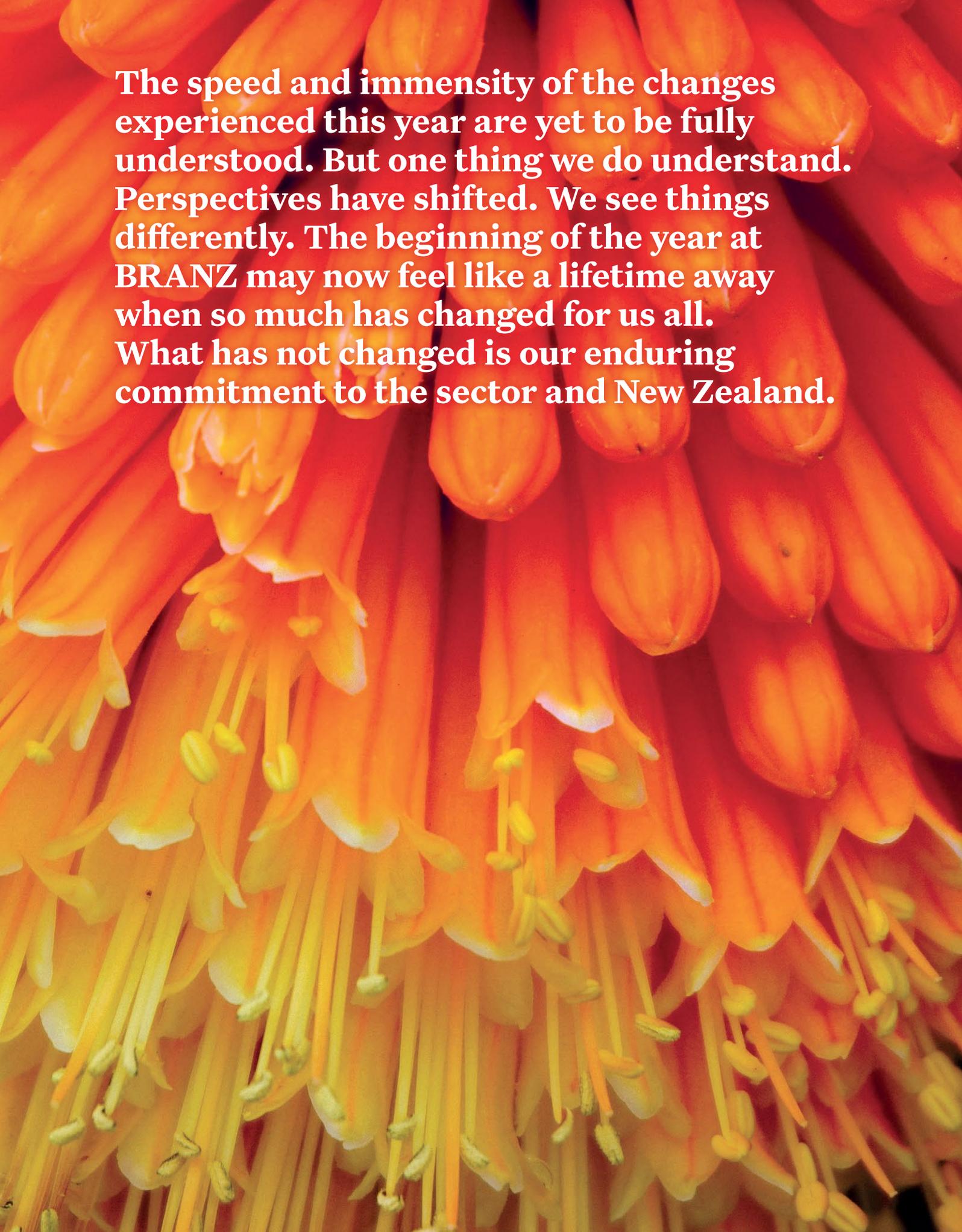


**Annual Review
2020**





The speed and immensity of the changes experienced this year are yet to be fully understood. But one thing we do understand. Perspectives have shifted. We see things differently. The beginning of the year at BRANZ may now feel like a lifetime away when so much has changed for us all. What has not changed is our enduring commitment to the sector and New Zealand.

Contents



4

Time to reflect

with the BRANZ
Chair and CEO



10

Committed to the long game

- 12 Celebrating 50 years
- 16 Five decades of BRANZ
- 18 Providing readable,
reliable research
- 20 Our commitment to
sector transformation
- 22 Building for climate change



24

Committed to seeing the micro and macro

- 26 Keeping Kiwi schools warm and dry
- 28 Preparing and planning with
national projections
- 29 Testing to inform,
improve and innovate
- 30 Improving products
from the ground up



32

Committed to the wellbeing of New Zealanders

- 34 Taking a people-focused approach to defining quality
- 35 Understanding liveability for medium-density housing dwellers
- 36 Protecting the youngest Kiwis
- 38 Slowing the spread of fire



58

Leading BRANZ

- 60 BRANZ directors
- 62 Executive team
- 63 Building Research Advisory Council
- 64 BRANZ directors – register of interests



40

Committed to working together

- 42 Piloting a collaboration to improve housing
- 44 Taking collaboration to new heights
- 45 Breaking down barriers with BIM
- 46 Setting firm foundations for the future
- 48 Working together to create windows of opportunity
- 49 Talking timber designs



66

Financial performance

- 68 Our financial performance



50

Committed to a high-performing industry

- 52 Building innovative tools for industry change
- 54 Standing shoulder to shoulder with your mates
- 56 Supporting smarter solutions for smaller footprints



80

Levy investments

- 82 Levy investments in 2019/20



Time to reflect
with the BRANZ Chair and CEO



BRANZ is a multi-faceted science-led organisation unified by a commitment to make a difference for all New Zealanders. In this Annual Review, we reflect on how this shared commitment anchored us and wove through all our work in this extraordinary year.

We entered the year preparing to honour the 50th anniversary of BRANZ. We ended the year moving into COVID-19 lockdown knowing in our hearts the future could now never be what we thought it would be.

The BRANZ Annual Review 2020 spans an incredible 12 months. Looking back, even in ordinary times, can reveal a different sense about what was most important than perceived at the time. But time itself seemed to warp this year. We began the year confident about the future.

When the year ended, all we knew with certainty was that the future would not be what we thought it would be. BRANZ and the wider world was in COVID-19 lockdown.

Many achievements and milestones were met at BRANZ this year. We want to share some of these achievements and tell the story of our special milestones. These stories are captured here should you delve into this document further.

From a post-COVID lockdown perspective, some shine especially brightly. None, we believe, are diminished by COVID-19 in what they mean for the sector.

More importantly, we see the multiple facets of our work anchored together by our absolute commitment to foster a building system that delivers better outcomes for all in Aotearoa New Zealand.

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From left: Chelydra Percy (BRANZ CEO), Hon. Dr Megan Woods (Minister of Housing) and Dr Helen Anderson (BRANZ Board Chair).

BRANZ celebrated our 50th anniversary, a very special milestone, in February 2020. At that time, COVID-19 hovered on the fringes of how we lived and worked. Speaking to staff and stakeholders at this event, the Hon Dr Megan Woods, Minister of Research, Science and Innovation as well as Housing, said *“The people of BRANZ have been constantly adapting to meet the ever-evolving needs of our building and construction sectors.”*

Her words resonated for the people of BRANZ and our stakeholders. BRANZ’s ability to keep evolving, adapting and learning, not just over years but decades, has ensured that BRANZ has grown into the resilient and knowledgeable organisation we are today.

A few weeks after our 50th anniversary event, the BRANZ team was able to swing into action to deliver support for practitioners across the sector grappling with the impact of COVID-19. Our commitment to assist quickly marshalled information, resources and expertise into a kete of practical tools for industry practitioners and home occupants during and beyond lockdown.

Reflecting on this extraordinary year in our world, we have seen how commitment has always been a keystone of BRANZ.

It anchors and define us. It underpins all our work across research, consultancy services, knowledge dissemination and systems improvement. It drives our ambition for the sector in New Zealand and our passion for industry transformation. As we explored what work we are especially proud of this year and want to share in our Annual Review, it began to feel we had a more fundamental story to tell. This is the story of our commitment in its many dimensions.

We have thought carefully about these dimensions, where our commitment most matters, and share this thinking here:

- We talk about our commitment to the long game, especially as BRANZ turns 50.
- We talk about our commitment to the micro and macro, where we acknowledge that every detail can be critical within technical systems, as can the line of sight to the bigger picture.
- We talk about our commitment to wellbeing in the industry and to knowing more about how the built environment plays a role in everyone's wellbeing.
- We expand on our commitment to collaborate, co-create and work together across BRANZ and with external stakeholders.
- We reaffirm the core commitment of BRANZ to a high-performing industry that delivers better outcomes for all.



An Annual Review is a time to account for ourselves, tally up achievements and spotlight what we have delivered. In fact, if we are honest, it is often a time when we shout out about the hard-won achievements we are super proud of.

This year, the perspective feels very different. With COVID-19 yet to reveal its full impact and the future rocking with uncertainty, we feel more gratitude than pride. Gratitude and not a little humility that our commitment remains so steadfast.

The path ahead is not entirely clear, and we are acutely aware we will need to make adjustments to our plans and pace.

While decisions are yet to be finally made, our campus redevelopment remains important, as does our work with industry researchers and government agencies to champion warmer, drier, healthier homes.

The development of a national research programme to drive the transition to a zero-carbon built environment for New Zealand remains on course.

Our expertise and capabilities for fire safety in construction will continue to be strengthened. Our knowledge sharing through publications such as *Build*, and our online information services will carry on.

And our BRANZ economists will continue analysing trends and fast-changing data to help government advisors and industry planners, including ourselves, to accommodate at least some of the impact of COVID-19.

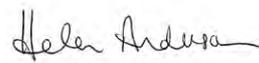
As we turn to face the uncertain future, we are aware that nobody has been untouched by COVID-19, and many in our community and our country are hurting. We are all walking in shoes that are no longer the comfortable fit they once were.

The path ahead may become a bit rocky, but we are confident it will never be impassable.

In the short term and into the more distant horizon, we have much important work to do for the industry, our community and New Zealand.

Our commitment to our vision remains firm.

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



Dr Helen Anderson
BRANZ Board Chair




Chelydra Percy
BRANZ CEO



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**Committed to
the long game**



Strong organisations of enduring value renew and reinvent themselves over time. They do this not just to survive but to stay relevant, improve services and where necessary, change directions and build new capabilities to better support the people they serve. BRANZ is such an organisation. This year, we honour reaching the milestone of 50 years of committed service and plan ahead to deliver more.



Celebrating 50 years

In 1970, the Building Research Association of New Zealand (BRANZ) opened its doors in Wellington. Its goal was to undertake a programme of research and development that the industry could draw on to the benefit all New Zealanders.

The decades of the 1960s and 1970s heralded an exciting time for New Zealand. The 1960s counter-culture movement was a catalyst to explore new ways of doing things. The building industry fully embraced these winds of change and was keen to tap into new building science insights. Discussions between the industry and government led to agreement it was time



for a more coordinated research resource, and in the late 1960s, these parties joined forces to set up BRANZ.

In 1969, Parliament passed the Building Research Levy Act to take effect in 1970. Since our doors opened for the first time that year, we have been 100% committed to serving the building sector and New Zealanders.

Looking back, facing forward

Fifty years on, at BRANZ's anniversary celebration in February, we came together to celebrate the very real difference BRANZ has been able to make.

Representatives from across industry and government joined both past and present BRANZ staff at Te Papa to acknowledge five decades of achievement.

Guest speaker, the Hon Dr Megan Woods, Minister of Housing and Minister of Research, Science and Innovation, was emphatic about BRANZ's impact.

“BRANZ has shaped the way we approach housing quality, building safety and the reduction of our carbon footprint in the construction industry. All of these are critical issues that significantly impact and improve the lives of people and their communities.”

“BRANZ has shaped the way we approach housing quality, building safety and the reduction of our carbon footprint in the construction industry. All of these are critical issues that significantly impact and improve the lives of people and their communities.”

BRANZ expertise has influenced standards and policy and helped the industry prove and improve the durability and performance of materials and systems.

We have been passionate about ensuring the knowledge that the research unlocks is made accessible and actionable to industry practitioners.

We have shared our research in newsletters and websites and established the influential industry magazine *Build*. And we have continuously provided professional support to practitioners through seminars, webinars, workshops and e-learning opportunities.

It's been a privilege.

Research that makes a difference

BRANZ's first research paper tackled thermal insulation and informed the 1977 legislation that required all new houses to be insulated.

These insulation requirements set the trajectory for BRANZ's work to help make our houses warmer, drier and healthier. This work continues to this day and benefits both new and older properties, whether owner-occupied or rented.

Most homes in New Zealand benefit from BRANZ research and expertise. For example, our work underpins the guidelines used for building safe and durable timber frames, quality double glazing and insulation standards now accepted across New Zealand.

Building a body of knowledge

BRANZ has worked relentlessly to build a body of knowledge to make New Zealand homes more liveable. We have undertaken the national House Condition Survey every five years since 1994. This survey has consistently revealed that renters are most vulnerable to our poor housing conditions.

This evidence informed the 2016 reforms to the Residential Tenancies Act, which made insulation compulsory in New Zealand's 180,000 rental homes from July 2019.

BRANZ's research also played a crucial role in shaping the Healthy Homes Guarantee Act 2017. The Act, which came into effect in July 2019, sets minimum standards for heating, insulation, ventilation, draught stopping, drainage and the control of moisture in rental properties.

This year we have set ourselves a new challenge. We have launched a new strategy with an ambitious vision – challenging Aotearoa New Zealand to create a building system that delivers better outcomes for all.

Building on this legacy and looking to the next 50 years, we plan to upgrade our research and testing facilities and introduce new research programmes that reflect emerging issues.

Adapting and improving

This year we have set ourselves a new challenge. We have launched a new strategy with an ambitious vision – challenging Aotearoa New Zealand to create a building system that delivers better outcomes for all.

We will apply our energy, passion, expertise and commitment to co-create enduring solutions that will, over time, transform the way the built environment performs.



More information

www.branz.co.nz/ourhistory



BRANZ celebrates its 50-year anniversary at Te Papa in February.

Five decades of BRANZ

For 50 years, BRANZ research, testing and consulting has quietly made a big difference to the ability of New Zealand's building sector to deliver the built environment New Zealand needs.

1972

First research report published: Insulation requirements in the New Zealand Building Code.



1974

First BRANZ Appraisal is issued for a building strap tensioner.

1975

Purpose-built fire research and testing laboratory up and running.



1980

Annual Loss Factor (ALF) tool to calculate and compare heating efficiency is published.



1986

The library's catalogue is computerised, giving access to external audiences.



1988

Structural engineering lab opens.



1990

First edition of *Build* magazine published.



1994

First New Zealand House Condition Survey completed.



1996

Good Practice Guide series launches.

2000

Results from 10-year study of corrosion rates of steel, galvanised steel and aluminium at 181 sites around New Zealand form the basis of a corrosion map.



2003–2004

Weathertightness and cavity test building constructed on site.



2005

HEEP (Household Energy End-use Project) data collection is completed, providing data on energy use for an entire sector.

2010–2013

Following the Canterbury earthquakes, BRANZ helps with building assessments, ensuring buildings are safe for occupants.



2016

The Building Better Homes, Towns and Cities National Science Challenge launches.



2019

BRANZ launches Artisan.



Providing readable, reliable research



Since first rolling off the press 30 years ago, *Build* magazine has become the go-to source of ideas and information for the industry. *Build* material is now eagerly devoured by thousands of building professionals keen to stay in touch with changes across the industry.

Covering everything from how-to guides to scientific research to technical insights, the magazine provides a unique and valuable service within the sector. It offers practical ideas and insights to help support the industry to deliver the best that it can.

Build also supports the sector to think differently, turning the latest science, research and building requirements into thought-provoking, useful information. Ultimately, *Build* seeks to help practitioners design and construct better buildings of all kinds for New Zealand.

In the beginning

Back in 1990, the Building Act of 1991 was just around the corner. To BRANZ, this signalled the need for a credible and trusted voice to provide new and needed

industry knowledge. We also saw that our research and information needed to be made more readily accessible to those working on the frontline. *Build* magazine's mandate was clear: unlock and share insights on best practice for builders, designers, architects and engineers.

Staying relevant

Build has continued to evolve alongside the industry in order to remain a relevant, well-read and vital reference.

The first edition, published in October 1990, had a print run of 5,000 and a readership of 10,000. *Build* now has a readership reach of almost 70,000 people. A digital library gives industry professionals online access to all *Build* stories, ensuring a valuable archive is a ready reference for the industry.

Our stories have changed over the years but have always been relevant and pertinent to the times and the industry at that moment. The first edition in 1990 included a special feature on moisture and the common causes of related problems and offered practical solutions. Other features explored the trend of building bigger homes and looked at the latest developments with structural steel.



Fast forward to this past year. During this year, *Build* has highlighted advances in technology and automation that are enabling new methods of construction. It has explored the call to adapt buildings for climate change. And it has featured a number of stories on how to improve quality by building above and beyond the requirements of the Building Code.

A particular highlight of 2019 was the inclusion of *How to have a conversation about mental health* in issue 175, done in partnership with Construction Health and Safety New Zealand (CHASNZ). Released in December 2019, the guide provided handy tips on how to have a real conversation with team members on site about mental wellbeing.

84% of survey respondents said that they changed the way they worked because of something they had read in *Build*.

It delivered immediate assistance to workplaces on how to identify and better manage mental health in the construction industry.

A read that changes how we work

The 2019 *Build* reader survey gave us a measure of what a difference *Build's* insights and information can make.

84% of survey respondents said that they changed the way they worked because of something they had read in *Build*.

Build has thrived by staying adaptable and agile. By putting the right information into the hands of those that shape the built environment, *Build* will continue to be a valued resource for the sector.



More information

www.buildmagazine.org.nz

Our commitment to sector transformation



Nothing less than enduring collaborative effort across the whole system will achieve the much-needed transformative renewal of the sector. BRANZ remains committed to working with other sector leaders to catalyse change across the system that will ensure we deliver what is ultimately needed – better outcomes for New Zealanders.

In 2016, BRANZ began driving industry-wide commitment to change by championing the use of the Industry Transformation Framework in New Zealand. Originally developed by the World Economic Forum, BRANZ worked with key industry partners to modify the Framework for the New Zealand context.

This developed into the Industry Transformation Agenda (ITA) – a call to action to the industry to unite around the framework and deliver transformative change. The call resonated with stakeholders across the industry and within government.

We are delighted that this foundational work helped pave the way for the development of the Construction Sector Accord with a shared vision by both government and industry to transform the sector.

BRANZ's core work on the ITA also informed our ambition to address the need for better systems knowledge and skills. This has now developed into a key workstream of BRANZ's organisational strategy.

Supporting new ways of thinking across the sector

Throughout 2018 and 2019, BRANZ hosted a series of 10 leadership conversations and workshops as part of our ITA work on driving industry transformation. The work looked at the urgent need to change and the importance of collaborative leadership across the sector.

In April 2019, BRANZ wrapped up this series with a workshop for industry leaders led by Sean Tompkins, Global CEO of The Royal Institution of Chartered Surveyors. Talking to the theme of ‘Time for a culture change?’, Sean spoke about the critical role of standards, ethics and professionalism in achieving industry transformation.

A kete of resources has been developed this year to ensure the highlights from each of the 10 leadership events remain accessible.

Partnering with the Construction Sector Accord

Since the launch of the Accord in April 2019, we have been privileged to partner with the Accord and identify research and activities that support Accord outcomes.

BRANZ staff were able to contribute to the Accord’s Sector Transformation Plan in its formative phase. BRANZ CEO Chelydra Percy, as a member of the Accord’s independent Challenge Panel of sector experts, later supported its testing phase before its release in January 2020.

With the emergence of the COVID-19 pandemic, the Accord temporarily refocused to support a response plan for the sector. BRANZ has participated in an expanded Industry Focus Group formed to support this effort.

As the work of the Accord focuses on the sector-wide recovery from COVID-19, BRANZ will remain a committed partner, sharing connections, knowledge and insights to support the sector-wide effort.

Ensuring our collective efforts have impact

BRANZ itself has a unique system-wide perspective of all the different aspects of the industry. We are increasingly using this perspective to develop deeper systems capability.

We are focusing on how to measure system health and have begun to identify indicators that will give better insight and perspective on how the sector is performing.

This is long-term work that BRANZ is uniquely positioned to be able to undertake.

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Building for climate change

No one in New Zealand will escape the consequences of climate change. The sooner we address the challenges of climate change with strategies and infrastructure changes to mitigate its impact, the less it will cost us all.

Over their entire life cycle, buildings have a significant effect on the environment, people and economy. BRANZ research is contributing to shifting the construction industry to deliver net-zero carbon buildings in an affordable way. Two of our areas of focus are increasing the energy efficiency of buildings and reducing the embodied carbon in construction materials.

Calculating the carbon budget

Since 2018, Massey University and BRANZ scientists have worked together to develop a national building carbon emissions profile to encourage carbon reduction.

The Carbon Budget project provides a pathway to meet the 2050 target by informing reduction strategies and initiatives to address climate action.

The Carbon Budget project asked two key questions.

First, if each building had a carbon budget, what would it look like? The second asked how might we empower immediate interim action on climate change?

The outputs of this project have helped make a building's carbon footprint more visible, understandable and actionable within people's daily lives.

As part of this work, in late 2019, BRANZ and Massey University co-released the report *A science-based approach to setting climate targets for buildings: The case of a New Zealand detached house*. Its research findings were picked up by New Zealand media and widely communicated.

The media coverage highlighted the fact that a typical, new home in New Zealand emits five times more carbon dioxide than permissible if we are to meet New Zealand's Paris Agreement obligations.

Another key finding demonstrated that occupant energy use inside the home is the biggest portion of a Kiwi home's carbon footprint. This insight spotlights what we can all take control of – how we use our dishwashers, TVs, fridges, washing machines and online devices and how we heat our water. Suddenly, contributing to a reduction of carbon emissions becomes immediately entwined with everyday choices we make in our homes.



Transitioning to a zero-carbon built environment

This year, BRANZ also continued foundational work on a new programme of research, *Transition to a zero-carbon built environment*, in collaboration with key industry partners. The programme is being launched later in 2020.

The programme's vision is to provide research support for an industry-led transition to a zero-carbon built environment in an affordable way. It aims to do this by decarbonising across the whole building life cycle and encouraging industry leadership and decision making to manage climate change mitigation.

Current BRANZ-led research projects:

- Household Energy End-use Project 2 (HEEP 2)**
 Energy insights from our homes - an update of the original, which ran from 1996–2010. HEEP provided an understanding of how, where, when and why energy was used in New Zealand homes.
- Building Energy End-use Study 2**
 Examining energy demand and flexibility within non-residential buildings.
- Low-impact buildings project**
 How to shift to life cycle net-zero impact buildings to address climate change and other environmental impacts of the construction sector.
- Innovative low-carbon residential water heating solutions project**
 Comparing new water heating systems for New Zealand homes, as water heating contributes up to 30% of a typical household's operational carbon and energy use.

Making zero count

Our actions today count, not just now but far into the future when it comes to addressing climate change. BRANZ research aims to support the transformation of the building and construction industry to make it more responsive now and equipped to readily adopt innovative climate action solutions.



BRANZ scholarship spotlight

Study focus: Future life-cycle-based environmental impacts of New Zealand's grid electricity

Louise Bullen
Massey University, master's degree

Louise is researching models used to measure buildings' future greenhouse gas impacts. Her research aims to understand the potential greenhouse gas trade-offs between energy efficiency improvements for buildings and how this might change electricity demand mixes in the future.



More information

www.newsroom.co.nz/new-houses-emitting-five-times-too-much-carbon-and-thats-good-news-study

www.branz.co.nz/sustainable-building/climate-change/



**Committed to seeing
the micro and macro**



The ability to zoom in and zoom out, to be able to move across a continuum of perspectives, is essential for effective problem solving. It is an ability enabling BRANZ to solve problems big and small. It ensures BRANZ keeps an active line of sight on the overall building system while being unafraid to address the detail that can either cloud or clarify a knotty issue.



Keeping Kiwi schools warm and dry

At the beginning of 2020, more young New Zealanders started school in sleek, modern buildings complete with climate control, ergonomic furniture and state-of-the-art learning technology. Gone were the cold, draughty classrooms of the past. Welcome to school in the 21st century.

Increased levels of insulation and improved thermal performance for buildings are great steps towards ensuring all New Zealanders live and work in healthy, sustainable environments.

However, more work is needed. Lack of ventilation in classrooms can result in high indoor moisture levels – potentially causing condensation issues in roofs of conventional designs.

This problem, has come to the fore particularly in schools, where many students may be gathered in one space creating high internal moisture loadings in the room.

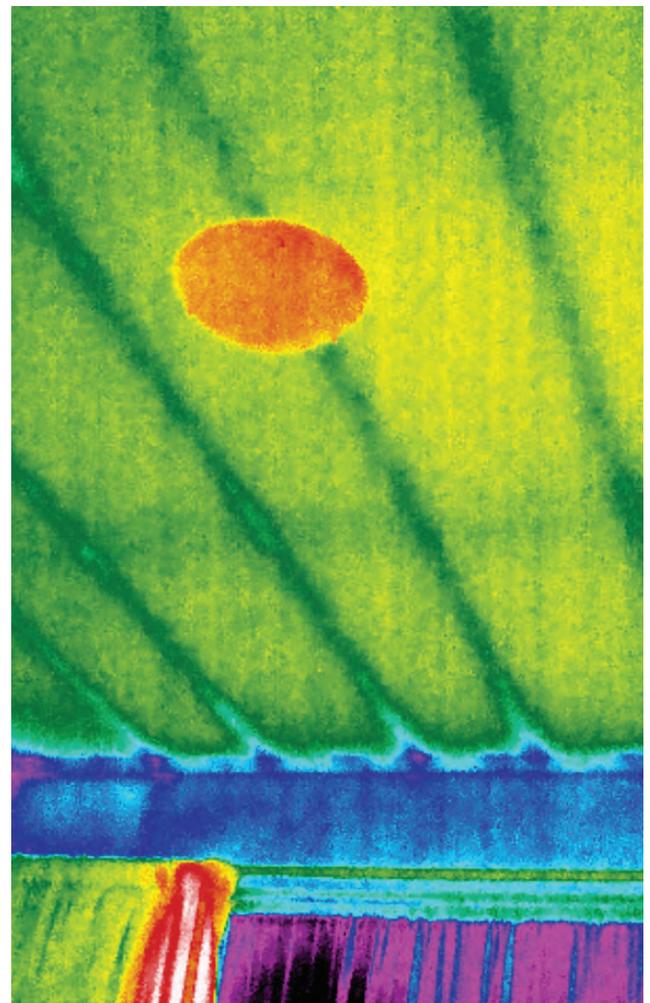
This year, our experts have continued to monitor the points where high levels of moisture is a potential issue in schools. They worked closely with industry and the Ministry of Education to evaluate and test solutions looking at four potential roofing solutions in particular.

The research showed that improved ventilation and additional insulation under a metal roof can help schools to create flexible building environments that keep the students warm and dry.

In 2019, a solar-powered ventilation system was installed in conjunction with BRANZ in an intermediate school in the lower North Island. It operates during the day when there is a greater drying potential than night-time. This is one example of a remediation-based approach to address the problem that we are continuing to evaluate.

Our findings on high internal moisture loadings and our experimental work is helping to shift school roof designs towards a more resilient approach. But there is more work to be done. We expect the modernisation of our schools will go on for another 10 years across the country.

New modern school designs aim to incorporate more open areas and natural lighting. Being able to provide ‘warm roofs’ will be a necessity to ensure our youngest Kiwis can stay healthy and safe in their learning spaces.



Ceiling joists act as heat-conductive paths (thermal bridges) connecting the ceiling lining and roof space.

Preparing and planning with national projections

The 2019 National Construction Pipeline Report provides a forward view of construction value to 2024. Covering residential and non-residential forecasts, it allows the industry to plan, schedule and coordinate to meet future demand.

You can't predict the future, but you can carefully plan for its ups and downs so that, when the dust settles, you've got a strong foundation from which to move forward.

Take the last ten years: the impact of the global financial crisis, the Canterbury and Kaikōura earthquakes, regular extreme weather events and now a global pandemic.

Major events like these have a profound impact on our lives and can shatter well-founded plans and expectations.

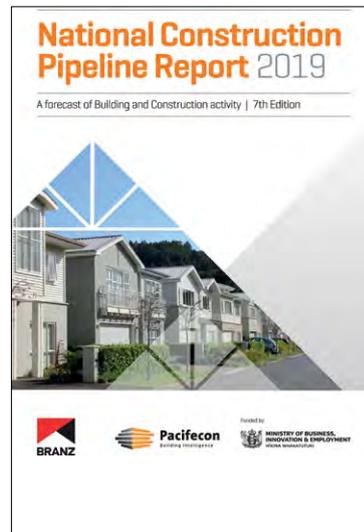
A tool for industry and government

This is where having robust planning frameworks and datasets can help us.

The National Construction Pipeline Report, first commissioned in 2013, is an invaluable tool to help building sector professionals and decision makers plan for the future and navigate uncertainty and change.

The report provides a six-year projection of national building and construction activity. Its analysis is based on building and construction forecasting by BRANZ and Pacifecon's construction project intentions database. The database contains expected costs over time for non-residential building and infrastructure projects.

The report means that organisations throughout New Zealand's construction sector are able



to plan work, investment in skills and capital and coordinate projects more effectively.

The ability to plan ahead on current data is crucial in uncertain times. Along with BRANZ's bimonthly report on Building Levy forecasts to Ministry of Business, Innovation and Employment colleagues, the 2019 National Construction Pipeline Report is proving useful for post-COVID planning.

The next National Construction Pipeline Report is due for release in December 2020. It will be a vital source of information to inform ongoing post-COVID planning and assist the sector and government to take steps to maintain a resilient and profitable building sector.



More information

www.mbie.govt.nz/building-and-energy/building/supporting-a-skilled-and-productive-workforce/national-construction-pipeline-report

Testing to inform, improve and innovate

Building Code compliance is crucial to the credibility and success of innovative products. BRANZ undertakes rigorous testing methods to inform innovative product development, improve quality and help meet compliance standards.

Today, the building and construction industry has access to new technologies, more-advanced construction methods and a vast choice of materials.

BRANZ research helps the industry understand the impact of significant shifts in building techniques and materials on construction and long-term performance within the built environment.

The research also develops reliable and unbiased testing procedures that help product manufacturers and distributors provide confidence to the market about their products.

Take structural insulated panels (SIPs), which are used for wall, roof and floor systems. SIPs are made up of a layer of rigid insulating material between metal, timber or cement-based outer skins.

The benefits of SIPs include lower construction costs, faster construction, improved insulation performance, lower emissions and reduced heating and cooling costs.

While SIPs are widely used throughout North America and Europe, they are relatively new to New Zealand. With a growth in popularity, it has become important to understand SIPs' durability in our environment.

A clear-cut method to demonstrate durability establishes a pathway towards Building Code compliance. Until last year, there was no definitive, easy way to do this. Achieving compliance was less certain and more costly as a result.

To address the problem and ensure fairness, BRANZ tested a generic in-house SIP system under a range of accelerated weathering conditions. The conditions were drawn from international standards and designed to replicate the New Zealand environment.

The research findings were used to develop a robust test to assess SIPs against the 50-year durability requirements of the Building Code. The testing provided a blueprint for proving compliance and underpinned the first Appraisal for SIPs, issued in 2019.

New BRANZ work is under way to refine the durability assessment method and ensure its applicability to a range of SIP types. Seismic resilience and fire performance will also be tested.

The use of SIPs will grow, driven by factors such as large-scale manufacture of prefabricated housing. Ongoing impartial research will allow a pathway for compliance under the current regulatory framework that offers reassurance to both industry and consumers.



More information

www.buildmagazine.org.nz/articles/show/assessing-structural-insulated-panels



Improving products from the ground up

BRANZ's consultancy services and specialised testing capabilities are in constant demand from innovative product developers in the market. Sometimes, a product's impact reaches beyond the sphere of buildings when working with product manufacturers for industries such as agriculture and horticulture. That's when we often learn new and curious things about materials. Our work with Proline is one such example.

Proline is a New Zealand business that specialises in horticultural products. The Proline team developed an innovative reflective groundcover to help boost the growth of fruit from below. Woven through with special mirrored strands, the silvery covering is laid beneath orchard trees to reflect light into the foliage canopy. It aims to significantly increase yield, quality and therefore the value of a crop.

Proline needed to know how its new product would perform over time for their orchardist clients. However, testing the groundcover's longevity in real time to deliver reliable test results would take far too long. In fact, it would take years.

Proline came to BRANZ for advice on how to solve this problem. This is where BRANZ's purpose-built UV chambers came to the fore, being able to deliver a far speedier result.

Welcome to the time machine

In the UV chamber, the effects of sunlight, heat and rain on materials can be accelerated. The chamber effectively speeds up time. By simulating the natural process, researchers can discover how different materials react over, say, 20 years in a much shorter span of time.

Usually, the chambers are used to discover whether building materials are durable and comply with the Building Code and access areas for improvement. For the Proline product, it was about doing the groundwork for a different outcome.

Testing in the UV chamber revealed that Proline's prototype groundcover would only last three years. After that, sunlight would break down some of the reflective strands.

Testing also revealed that the reflective aluminium on the strands had not failed. Instead, the plastic on the back was the weak link. The reflective strands twist when they are woven into the fabric, which exposes some of the plastic to the sun. This was a flaw invisible to the naked eye.

Proline now had a clear understanding from the test results of why the failure occurred. It was able to update the product specification to increase the groundcover's service life to about six years.

Most importantly, like all rigorous product tests, it is the end user who really benefits – in this case, orchardists and their customers.

In the UV chamber, the effects of sunlight, heat and rain on materials can be accelerated. The chamber effectively speeds up time. By simulating the natural process, researchers can discover how different materials react over, say, 20 years in a much shorter span of time.





**Committed to the wellbeing
of New Zealanders**



The built environment is intrinsically linked to the wellbeing of people, impacting on our emotional, social, cultural and community health as well as addressing our physical need for warmth and shelter. Developing a deeper understanding of how our built environment can nourish or hinder the multiple dimensions of human wellbeing is guiding us to find new ways to measure building quality.

Taking a people-focused approach to defining quality

Home is where the heart is is an old cliché that holds the essence of truth. Good-quality, warm, dry homes are good for us – and not just for our physical health. They provide emotional comfort, a sense of safety, an anchor in our community and a greater sense of wellbeing.

The challenge is that, while it has been easy to measure the physical characteristics of quality housing and buildings, social and community factors have remained more elusive in agreed quality frameworks.

To tackle this, BRANZ has co-designed a framework that incorporates the more diverse components that make up wellbeing and applied these to measuring the quality of housing for New Zealanders.

By bringing together a team from Stats NZ, the Ministry of Business, Innovation and Employment, Māori advisors and others, a new Framework for Quality Housing was forged in June 2019.

This framework takes a people-centred approach. It identifies four interconnected elements: housing habitability, housing functionality, environmental sustainability, and social and cultural sustainability.

It defines housing quality as the degree to which housing provides a healthy, safe, secure, sustainable and resilient environment for individuals, families and whānau to live in and to participate within their kāinga, natural environment and communities.



Stats NZ noted that the framework would be more than a narrow statistical aid: “By incorporating things like cultural values and community connections alongside physical considerations like design and construction we get a much fuller picture of what ‘housing quality’ really means to New Zealanders.”

The framework acknowledges people’s need for social connectivity and emotional wellbeing and measures how effectively housing facilitates social, economic, spiritual and cultural wellbeing. From an environmental perspective, it also looks at responsiveness to our changing climate and how well housing supports more sustainable living.

We anticipate this more-sophisticated suite of quality measures, based on what deeply matters to people, will provide a more inspirational and creative picture about quality homes and housing for New Zealanders. Quality that supports happier, healthier living in New Zealand.



More information

www.stats.govt.nz/methods/framework-for-housing-quality

Understanding liveability for medium-density housing dwellers

Medium-density housing (MDH) may be a solution to building more quality homes at scale and at pace. It could also address priorities around key issues such as liveability, sustainability and affordability in housing.

As New Zealanders, we like to think of ourselves as 'more country folk than town'. We still hold dear the image of New Zealand as a rural nation, with plenty of land to sprawl across. The idea of living in a house set in spacious gardens remains an appealing ideal for many.

The truth is we're an urban people, with the vast majority of us living in cities.

These cities are now under pressure. Available land for housing developments can seem hard to access. Adequate roading, transport facilities and basic services are not always readily supplied. Our need for more effective urban planning is accelerating as our urban population changes and grows and MDH developments, semi-detached dwellings and multi-storey terraced apartments proliferate.

As building researchers and scientists, BRANZ people know a great deal about how buildings are designed and constructed and perform. We are also learning more about how our built environment has a profound effect on our wellbeing. With more New Zealanders experiencing MDH environments, understanding what factors contribute to their liveability has been a significant thread of our MDH research.

Our recent research finds that most MDH residents enjoy a high level of satisfaction with their homes. As one might expect in the heart of the city, natural light, warmth, build quality and good design also add to

improved levels of liveability. Neighbourhood services also matter, including access to amenities such as hospitals, schools, libraries, shops and transport.

After four years, our MDH research programme wrapped up in March 2020 with one of its enduring legacies being the MDH assessment framework.

This is now available for planners to utilise when assessing the liveability of MDH projects.

Most importantly, our MDH research has analysed how legislation and regulations can improve or reduce the liveability of MDH developments. This research will help building developers and planners at national and local levels to collaborate more effectively to achieve better outcomes for MDH communities.

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Protecting the youngest Kiwis

BRANZ researchers are collaborating with young school students to address an issue that can directly affect them – cold and damp houses. And yes, the students are doing some of the science stuff.

Research has shown that poor-quality indoor environments have a negative effect on the health and wellbeing of their occupants. Cold, damp and mould take their toll.

Children are particularly susceptible. Those growing up in poor-quality housing are more likely to have respiratory problems, be at risk of infections and develop mental health issues.

Children are particularly susceptible. Those growing up in poor-quality housing are more likely to have respiratory problems, be at risk of infections and develop mental health issues.

With the help of a team of young students we're building a clear picture of the conditions found in the places where our children live and learn.

Children at the heart of the research

Growing Up in New Zealand is New Zealand's largest longitudinal study of child development. The study follows a diverse group of 6,000 children, with the aim of finding out what life is like for children growing up in 21st century New Zealand.

The passionate team driving this extraordinary project is working with school students in the BRANZ-funded *Keeping our children warm and dry* project. Their efforts are helping us shed new light on how indoor climates impact on Kiwi kids' health and wellbeing.

The project has children around New Zealand gathering and sharing information about their time at home and school. Using digital sensors, they collect key data on temperature, humidity and other environmental conditions. They also record what they collect in their own time-use diaries.

Not only are these students gathering data that adds a rich dimension to its long-term research on indoor environments, they're also getting an early taste of being researchers.

The study is due to finish in late 2020. It will provide evidence to help shape both the policy and practice needed to support the health and wellbeing of Kiwi children into the future.



BRANZ scholarship spotlight

Study focus: Impact of poor home maintenance on interior dampness

Phoebe Taptiklis
Massey University, PhD

Phoebe's project contributes to the ongoing investigation into the contribution that small improvements to the housing stock make to reducing dampness and cold in New Zealand houses. It builds on the work of the BRANZ House Condition Survey and the Household Injury Prevention Study. The project aims to identify ways to reduce mould and dampness and hence improve the health of occupants and the durability of the housing stock.



More information

www.growingup.co.nz

Slowing the spread of fire

BRANZ fire research and testing ensures that, as housing density increases and new materials multiply, our buildings protect the safety and wellbeing of people throughout New Zealand.

Many people have been stunned by the sheer ferocity, intensity and speed with which fire can engulf the outside of buildings that use some type of modern façade configurations. Right now, BRANZ fire research is investigating how best to evaluate New Zealand building façade configurations so that external fire spread can be better managed.

The rapidly changing built environment means that, 45 years after our first purpose-built fire lab was commissioned, fire safety research remains a priority for BRANZ.

Full-scale façade testing at BRANZ

Fast forward to 2019, and BRANZ has just completed the first fire tests of full-façade cladding for multi-storey buildings in New Zealand.

These tests were made possible with the installation of a new rig nine metres high, built on a concrete pad near paddocks at our facility in rural Judgeford.

The rig enables us to look at heat exposure, temperature and flame spread in configurations similar to real buildings. Testing with this equipment gives us more confidence in how a building will perform in a fire.

This is an important step in looking at the outside of buildings as an overall system rather than analysing the properties of various individual components. The tests will help BRANZ determine the fire safety of the type of walls now commonly constructed in New Zealand.

Our decision to invest over the last year in new kit to test full-scale façades reflects a range of factors. As part of our organisational strategy, we have focused on proactively identifying industry needs. This process identified the shift in New Zealand to more multi-storey buildings and changing design and construction practices. It also reflects changing perceptions of risk due to high-profile fires and the dangers inherent if combustible materials are used and installed in certain configurations.

BRANZ's façade testing facility will also be used for commercial testing in accordance with BS 8414, which demonstrates that a proposed cladding system is safe for construction.

Understanding the fire risk in high-density housing

A huge amount of international media has focused on the loss of lives in recent fires, heightening the importance of understanding the fire risk in multi-storey claddings.

BRANZ's full-scale façade testing capability will be an important cornerstone of our newly funded fire research programme. The programme focuses on innovative and cost-effective ways to keep high-density housing residents safe from fire.

It will also look at the performance of façade systems and solutions to limit the external spread of fire, safe use of engineered wood products and solutions for egress in high-density housing.

This research means that, as housing density increases and designs and construction methods evolve, we will continue to ensure that our buildings protect people and property throughout New Zealand.



More information

www.buildmagazine.org.nz/articles/show/fighting-fire



BRANZ's latest facility makes it possible to fire test full-scale façade systems.



**Committed to
working together**



BRANZ initiates and maintains a wide span of networks, partnerships and relationships across all parts of the building system, including industry, government, community and research agencies. Our unique position of being independent, impartial, science-led and evidence-driven informs our ability to work alongside others as trusted co-creators and change leaders. We are committed to the growth of a truly collaborative culture across the sector. We need this to deliver the high performance New Zealanders seek and deserve from the industry.

Piloting a collaboration to improve housing



BRANZ is continually evolving the way we approach our research, expanding both our collaborative process and leveraging partnerships to increase the scope and the reach of our work.

Our houses are where we enjoy life, grow, raise our families and need to feel safe and secure. Whether we own or rent, we have a powerful emotional attachment to our homes.

New Zealand has made a big investment in increasing its housing stock. Now, we need to ensure that stock is well maintained and provides safe, warm, dry, healthy places to live.

In 2018/19, BRANZ undertook a review of our House Condition Survey. Since 1994, the survey has been completed every five years. The comprehensive survey provides detailed data on physical property characteristics, including how well homes are maintained and the general conditions people are living in.

A collaborative approach for better housing data

BRANZ has recently trialled a new approach to collecting objective data on the condition of New Zealand housing. The trial included development of new data collection and survey management tools, including the creation of a mobile and web-based application.

BRANZ also partnered with Stats NZ, using its 2018 General Social Survey (GSS) to recruit participants. The GSS, undertaken every two years, asks questions about the wellbeing of thousands of New Zealanders.

The research data will be analysed in close partnership with Stats NZ and the Ministry of Housing and Urban Development, maintaining a collaborative approach to the survey's design and delivery.

Stats NZ was interested to work with BRANZ in this capacity because of our capability to conduct large, physical housing survey projects and our ability to analyse the findings.

Each analysis phase will provide new insights on housing statistics, housing and occupancy socio-demographics and housing condition and wellbeing. Such results will help produce updated statistics on key measures of warm, dry, healthy homes. This includes measures of insulation levels, heating, ventilation and visible mould.

Following 2020, the analysis will expand its focus to determine whether certain housing conditions are more likely to occur amongst particular demographic groups. Such insights will provide an understanding of how housing problems are distributed across the population.

The project's final phase will be completed in 2021. It will assess the existence of a correlation between indicators of poor housing condition and self-reported wellbeing.

Such collaborative efforts allow BRANZ to expand our scope to analyse housing characteristics, particularly through a social science lens. It enables us to continually evolve the way we approach our research. Further, it helps us shed a light on the condition of New Zealand homes and protect them for future generations.

Taking collaboration to new heights

High and mid-rise residential buildings are appearing much more frequently in our towns and cities. It is a significant change to our built environment not only in building style, but also in compliance requirements.

Up until recently, much of our building guidance and, industry knowledge and skills, around weathertightness focused on relatively low-rise buildings.

Evaluation Method 7, or simply EM7, now addresses a gap in the guidance around the performance of cladding systems used on taller buildings. The evaluation method is a series of tests to prove the performance of cladding systems for use on buildings between 10 and 25 metres in height.

It is still early days in the life of EM7, and its long-term benefits are yet to be seen. The first tests are only just being conducted by the industry, and BRANZ will continue to refine the method as necessary, based on industry feedback.

Bringing the right people together

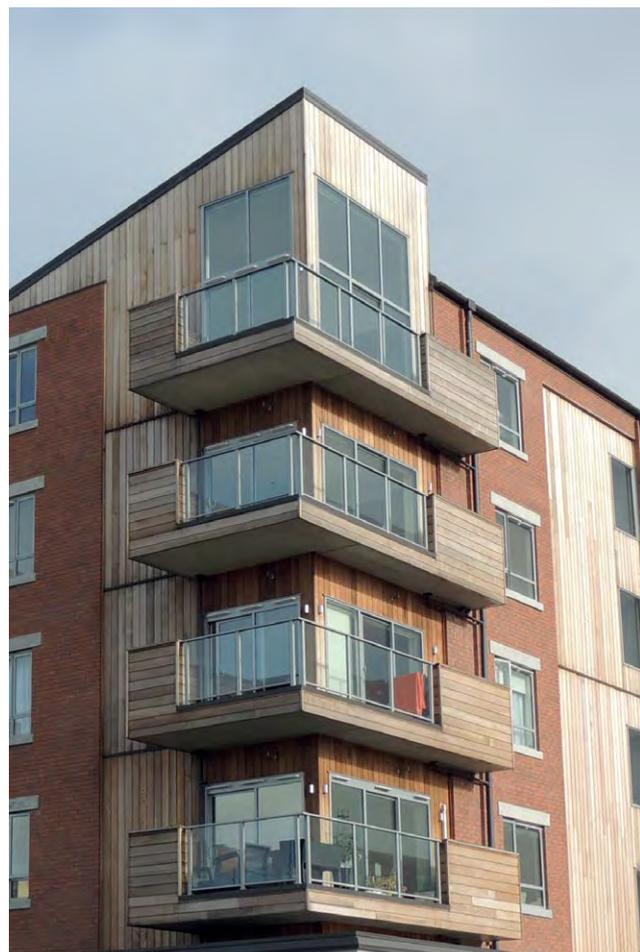
EM7 represents the latest in BRANZ's ongoing weathertightness research.

BRANZ coordinated an expert group made up of a number of organisations including local councils, the Ministry of Business, Innovation and Employment (MBIE), building surveyors, architects and façade engineers.

The group worked together with a clear aim: to provide guidance with a consistent set of parameters that could be used in the design of claddings for mid-rise buildings. EM7 was the result of this collaboration and was completed in late 2019.

EM7 will make consenting easier for mid-rise buildings while improving building quality. Its adoption by MBIE as a Verification Method is a positive outcome and an indicator of future ways of working where collaboration helps to make building standards more robust across the board.

It is likely that EM7 will also increase collaboration among manufacturers. Rather than making separate components, designers and manufacturers will be more likely to work together to design complete well-integrated systems.



Breaking down barriers with BIM

Project collaboration has the power to transform how we build and maintain assets. BRANZ continues to champion collaborative methods that benefit the performance and productivity of the industry.

Getting things done. It is something that the building industry has always been very good at. It is not a generalisation to say that our architects, engineers, quantity surveyors and building teams are masters of the practical.

However, the building and construction industry is undergoing transformational change. And the best way to get things done is to increase focus on collaboration and effective sharing of information. This helps to lift both performance and productivity.

BRANZ, partnering with building and construction industry leaders, is supporting a focus on technologies that improve information flows and data. This focus has included our active and ongoing support of building information modelling (BIM).

BIM is a way of sharing information using a digital model. In essence, BIM is a virtual environment depicting the project. It becomes the central collaborative hub for everyone working on it – architects, contractors, quantity surveyors and engineers. Everybody can access and update the model in the common virtual environment.



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The inaugural BIMinNZ conference was held on 8 May 2019 at Te Papa in Wellington. It showcased how BIM is part of an industry-wide transition towards a digitally enabled and more collaborative future.

This year, BRANZ released a BIM feature series in issue 171 of *Build* magazine. The series looked at BIM from multiple perspectives including how BIM can address construction waste in New Zealand's building sector.

As a virtual tour that invites collaboration, BIM has the power to transform how we design, build and maintain assets.



Setting firm foundations for the future

The widespread devastating damage of the Canterbury earthquakes has led to useful collaborative testing and research to ensure New Zealand homes and buildings are better able to withstand future earthquakes.

In the aftermath of the 2010/11 Christchurch earthquakes, BRANZ engineers who were working on recovery efforts noticed something interesting. Homes in Port Hills areas, like Cashmere and Redcliffs, appeared to suffer much greater damage than homes built on the flat. This was despite all of these homes experiencing similar levels of shaking.

While many homes built on the flat had been impacted by liquefaction, they still seemed to have fared much better than homes on sloping sections. These observations prompted BRANZ to investigate the cause of these differences and seek solutions to prevent it from happening in the future.

BRANZ leaned on professional partnerships to bring together the expertise needed to explore this interesting challenge.

A partnership between Victoria University of Wellington (VUW), the Earthquake Commission (EQC) and BRANZ was forged. BRANZ and VUW brought technical and research expertise to the project. EQC's involvement was driven by a real interest in reducing the risk for homeowners across the country.

Wellington, with its hills, valleys and earthquake faultlines, was chosen as the ideal place to look for answers. As it happened, a site in Judgeford, near BRANZ, was found, with a friendly BRANZ neighbour giving permission for the collaboration to proceed.

The research team built four different foundation types on the slope, using both modern detailing and traditional foundations. Weight was added to the floors of each foundation to replicate the mass of a house. The building foundation designs were then put to the test, using a counter-rotating shaker that could simulate earthquakes at various intensities.

The beauty of the shaker was that it could be turned off at any point in the process. Being able to stop at different stages before the foundations were irreparably damaged meant the researchers could try out different techniques to reduce damage and then start the shaking again.

This approach of building a field laboratory out in the neighbour's paddock and creating a shake was extensively covered in New Zealand media. It showed community interest in gaining knowledge into research that takes place in real-world environments.

Many houses built on hills use timber pile foundations. They are light, easy to use and work well on steep sites. However, New Zealand timber building standards are based on historical practices and have largely been tested on level sites. In other words, they were tested with loadings considerably below those that are used on a sloping site.

The project aims to provide updated guidance for house foundations on sloping sites for new homes as well as existing properties. EQC Head of Resilience Strategy and Research Dr Jo Horrocks said the tests were important for learning the weaknesses Kiwi homes had and figuring out the best ways to fix them.

"A lot of houses in New Zealand towns are built on slopes. It's important we understand what's going to work best on that type of land, not just on flat land where most of the research has been done until now," she said. "It's all about making New Zealand homes more resilient to earthquakes."



BRANZ scholarship spotlight

Study focus: Self-centring dual-steel frames using buckling restrained braces

Audsley Jones
University of Otago, PhD

Audsley's research looks at the behaviour of buckling restrained braces (BRBs), compositionally and in interaction with surrounding members. A BRB is a structural brace in a building, designed to allow the building to withstand cyclical lateral loadings, typically from earthquakes. From her analysis, design guidelines will be developed for engineers to design BRBs, the connections and the surrounding members. A testing protocol will also be introduced for braces designed outside the scope of the guidelines.

Working together to create windows of opportunity

For over 25 years, BRANZ's collaborative effort with glazing manufacturers has been instrumental in developing robust methods and undertaking rigorous testing to support the local manufacture of quality insulating glass units (IGUs).

In years gone by, the idea of double glazing was considered a luxury for many New Zealanders. A hardy bunch with modest budgets, we grew used to toughing it out over our winters in relatively cold and draughty homes.

In the 1990s, double-glazing systems IGUs started to be used more frequently in New Zealand housing. Their thermal benefits had long been acknowledged internationally. As the local housing market developed, IGUs were seen more often in new house builds.

However, transporting IGUs from overseas was not easy. More local manufacturers began making units for domestic supply. The New Zealand makers had also observed that issues were emerging overseas and wanted to ensure similar problems did not happen in New Zealand.

Consequently, the Insulated Glass Unit Manufacturers Association (IGUMA) was formed in 1992, in liaison with BRANZ, to help address issues associated with these units.

Fast forward to the present day. Our long-standing relationship with IGUMA has enabled New Zealand's industry to design better products, specify installation best practice and establish manufacturing standards. We've also worked with IGUMA over this time to develop a robust testing platform.

“IGUMA and BRANZ have worked closely together over many years, BRANZ conduct the tests for all our members, and by doing that help ensure ongoing compliance to the New Zealand Building Code”

Steve Wynn, IGUMA Chair

This year, BRANZ has continued to support the insulating glass panel industry in the development of quality products by future-proofing our testing capability. We have expanded our facilities to include additional climate testing chambers, which are heavily used for IGU testing.

Our climate chambers use accelerated weathering and moisture exposure to test the mechanical strength, retention and durability of building materials and products.

This investment in our facilities will ensure that BRANZ can remain a trusted provider of accelerated environmental testing and service life prediction of products and materials to local markets.

These products are in increasing demand, and their performance is critical to homes being warmer and healthier. We see this as an investment in getting a better environment for house occupants in New Zealand.



More information

www.branz.co.nz/materials-testing

Talking timber designs

Evidence-based research and collaborative efforts are playing a crucial role in an initiative designed to make it easier to construct more low-carbon higher-density timber buildings in New Zealand.

At a practical level, the building industry needs a strong understanding of the materials that architects include in their designs. This includes how to work with them, how to apply them and how to achieve the right results.

Recently, industry called for guidance on new materials, systems and techniques needed to construct timber buildings beyond the 2.5-storey scope of New Zealand's current standard.

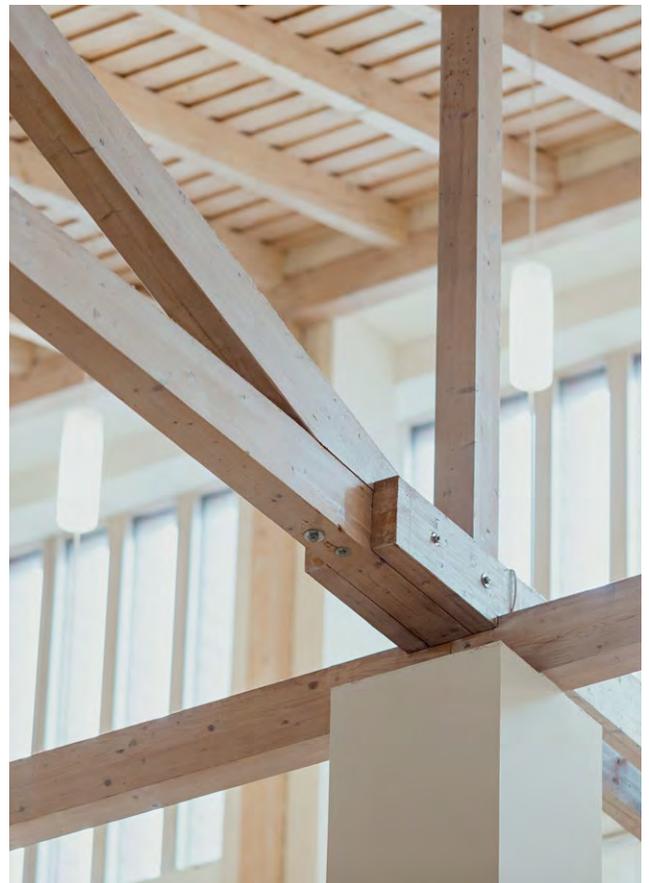
BRANZ teamed up with industry organisations to pool resources and produce a comprehensive series of one-stop shop design guides for timber.

Guiding the way

The NZ Timber Design Guides are informing developers, engineers, architects, quantity surveyors, building consent officials and other professionals about new, engineered wood products and timber systems.

Innovative modern construction techniques mean timber can help meet growing demands for the use of sustainable materials in our homes and buildings. Further, the high strength-to-weight ratio of wood means timber buildings perform well in earthquakes - important for a seismically active country.

Support for this project is widespread across the industry. Manufacturers, fabricators, professional service providers and construction companies are actively sharing existing standard industry practices and design thinking.



To ensure the guides are robust, BRANZ contributed advice from our latest research on fire safety, carbon and the environment and the social and health benefits of timber construction.

The first NZ Timber Design Guides were launched in April 2019. They are on track to becoming trusted sources of information on the use of timber construction systems and engineered wood products across New Zealand. BRANZ research and expertise will continue to feed into the remaining planned guides.



**Committed to a
high-performing industry**



BRANZ has led the call for system transformation to deliver improved built environment outcomes. This requires a richer understanding of how the myriad of players and parts intersect and might be influenced to change for the better. Applying systems thinking to the sector helps with this by utilising different perspectives to understand core issues and co-create enduring solutions. This is a big job and needs system-wide collaboration but will be essential if we are to achieve a high-performing industry in New Zealand.

Building innovative tools for industry change



The building inspection process is being streamlined with the launch of Artisan 2.0, a BRANZ-developed solution that promises to lift build quality and improve industry productivity.

It has been said that life is a series of tests, and when you work on site in the construction industry, constructive criticism is an essential part of doing a great job.

The most important tests faced by builders are the regular site visits from building consent authority inspectors. It is the moment of truth. Will the quality of work be approved or rejected? It can be a testing and stressful time for builders and building owners.

Artisan provides proof that they have delivered quality every step of the way, along with ready access to shared problem solving throughout the build. It offers an efficient and effective way to showcase a job well done.

BRANZ has progressed a staged roll-out of Artisan since 2017. This has enabled us to work out how councils and build teams can implement Artisan within their organisation as smoothly as possible. It is not a case of just getting a new app and using it. It requires a change in thinking. If that happens, the technology can deliver huge productivity gains for the sector.

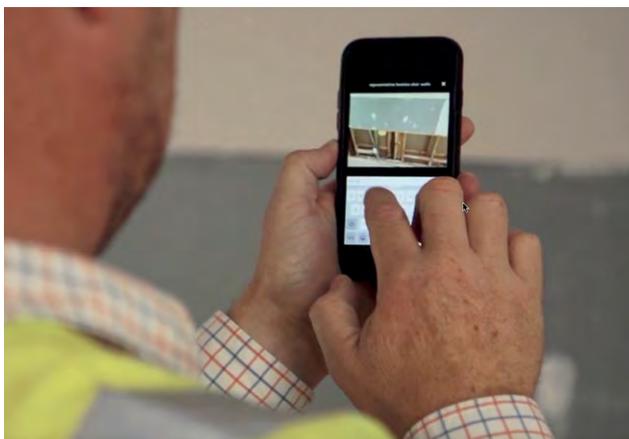
The latest version, Artisan 2.0, was rolled out in August 2019. It incorporates improvements based on insights from council and build team collaborators. It continues to gain momentum as an innovative digital solution that enables an enduring record of the quality of work to be captured. After the work is captured, it is reviewed and approved, thereby speeding up the overall time taken for an inspection.

For architects and designers, Artisan provides a record of confirmation that their design has been implemented as intended. For manufacturers and suppliers, it provides the assurance that their products are being correctly installed or employed. For homeowners and occupiers, it provides genuine peace of mind and confidence in the quality of their home.

For the industry, it means improved productivity, better build quality, higher customer satisfaction, reduced rework and stress, lowered health and safety risks and improved records. By giving build teams a better understanding of what inspectors look for, Artisan has proven it improves Code compliance and lifts build quality.

The building industry is adapting at a fast pace. As our world changes, our industry's tools and solutions must change with it. The uptake of Artisan demonstrates that there's an appetite for change, for doing things differently and for doing things better.

There is a massive opportunity for those who embrace new technology and tools to reduce gaps, improve efficiency and boost the bottom line. For the sector as a whole, Artisan provides the opportunity to lead and demonstrate transformation at scale.



BRANZ scholarship spotlight

Study focus: Semi-autonomous off-site production

Armano Papageorge
Victoria University of Wellington, PhD

Armano aims to redefine automation and industrialisation in New Zealand's building sector, specifically incorporating new technologies into a system that could be applied to full-scale residential homes. Working with Callaghan Innovation, Armano will develop an innovative 3D concrete construction printer to demonstrate how to produce high-quality buildings and components, more quickly, more cheaply and with less waste and improved sustainability.

More information

www.branzartisan.nz



Standing shoulder to shoulder with your mates

BRANZ is committed to fostering a sea change in attitudes toward mental health in construction. A change that will make a real difference to the lives of many New Zealanders.

Shining a light on a hidden problem

The mental health and wellbeing of those who work in the building and construction industry is essential for the long-term performance of the sector. Mental health impacts a worker's self-esteem, confidence and the ability to perform well. It also affects their colleagues, their whānau and society.

In the past, the physical health and safety of workers in workplaces and on worksites has been a priority for safety planning. But mental health is equally as important. Work undertaken by BRANZ is helping the industry change sector-wide attitudes and perceptions around the importance of mental health. Working closely together, BRANZ and the industry are driving changes that will make a real difference to the lives of many New Zealanders. In fact, it will save lives.

Growing awareness

The size of the problem and complexities it held were starkly revealed in BRANZ's 2018 scoping study. The study showed major challenges faced by the industry, including a worrying culture of 'toxic masculinity'. A crucial catalyst for change, the study put the issue of mental health firmly on the industry's workplace safety agenda.

In October 2019, Site Safe launched MATES in Construction. The on-site programme aims to reduce the industry's suicide rate by fostering more communication, encouraging conversations about suicide prevention and, perhaps most challenging of all, changing on-site culture. The programme was based on the 2008 initiative MATES in Construction in Australia.

Subsequent Building Research Levy-funded work carried out by Site Safe continued to explore the problem further. The work revealed unacceptable levels of mental health fragility that appear to have led to high rates of suicide among construction workers. MATES in Construction aims to reduce these numbers.

The programme aims to increase awareness and initiate conversations and actions to address mental health issues. From the boardroom to the building site, individuals and businesses have opened up about their own experiences, and industry leaders have stepped up to proactively champion change.

The programme is now being used on building sites across the country. The mental health and wellbeing of hundreds of workers is now a serious priority. MATES in Construction's ultimate goal is to reach and support every individual who makes up the building and construction workforce.

Keeping the conversation going

By working hand in hand with industry leaders, BRANZ has been instrumental in developing New Zealand's first construction industry mental health strategy.

In February 2020, Site Safe took a further step and launched a new pocket guide, *How to have a conversation about mental health*. The guide shows workers how to talk about their mental health and is accompanied by a range of helpful videos and training modules.

BRANZ has worked closely with Construction Health and Safety New Zealand (CHASNZ) to amplify these initiatives. *Build* magazine's 175 issue, distributed in early 2020, included a pull-out version of the pocket guide, reaching 40,000 industry workers. The guide is also accessible to another 30,000 workers through *Build's* online archive.

Attitudes towards mental health and care for workers in New Zealand's construction industry are changing dramatically. It is the start of a positive journey towards a healthier, happier and more resilient workforce. But there is still a huge amount of work to be done. BRANZ will continue to support the research and initiatives that help people in the industry speak up and act.



More information

www.mates.net.nz

Supporting smarter solutions for smaller footprints



A life cycle assessment tool developed by BRANZ calculates the climate change and environmental impact of building design, highlighting hotspots and their causes. It offers an easy way to reduce greenhouse gas emissions in a building.

The latest version of Life Cycle Assessment Made Quick (LCAQuick) dropped in March this year, enabling residential builds to take a whole-building whole-of-life approach.

We build more houses than we do offices each year. We are also building more medium-density housing and apartments. The latest release is an important progression for this innovative tool, making it much more widely applicable.

Supporting the industry

A building built today can last 50 years or more. Tools that ensure new buildings will have minimal environmental impact over a long period of time are key to a high-performing building and construction sector in New Zealand.

13-20% of New Zealand's greenhouse gas emissions come from the built environment.

BRANZ commenced research into environmental profiling and whole-building whole-of-life assessment in 2010. This early research aimed to help answer questions raised by the construction industry about evaluation of environmental performance on the construction product and building scale.

LCAQuick, a free Excel-based tool, was launched at BRANZ seminars in Auckland, Wellington and Christchurch in 2016.

Developed with the support of a Callaghan Innovation grant, it evaluates the environmental impact of a building by assessing its entire life cycle.



The life cycle of a building.

LCAQuick version 3.4 released in March 2020 now makes the tool more widely applicable. The tool's reference library includes stand-alone single and double-storey houses, medium-density housing and an apartment building.

The stand-alone houses also include examples designed to exceed minimum requirements set out in New Zealand Building Code clause H1 *Energy efficiency*.

LCAQuick continues on an exciting trajectory. The tool is broadening its capacity to help designers and their clients better understand how to evaluate the potential environmental impacts of their buildings.

A building built today can last 50 years or more. Tools that ensure new buildings will have minimal environmental impact over a long period of time are key to a high-performing building and construction sector in New Zealand.



More information

www.branz.co.nz/lcaquick



Leading BRANZ



BRANZ directors

BRANZ Incorporated and BRANZ Limited are governed by directors with extensive building and construction, science, business and senior public sector expertise. Five directors of both BRANZ Incorporated and BRANZ Limited are elected by the Building Research Advisory Council (BRAC). In turn, the elected Board can appoint up to three independent directors. At 31 March 2020, the BRANZ Board has seven directors.



Dr Helen Anderson, QSO

Dr Helen Anderson (Chair) is an independent director of several organisations and former Chief Executive of the Ministry of Research, Science and Technology. She is Chair of Scion and Studio Pacific Architecture Ltd. Helen is also a chartered fellow of the Institute of Directors in New Zealand (IoD NZ). She joined BRANZ in 2011.



Lesley Haines

Lesley Haines has an extensive public sector background, including senior roles in the Treasury, the Ministry of Business, Innovation and Employment and the Department of the Prime Minister and Cabinet. She is a trustee of Motu, New Zealand's premier economic research organisation. Lesley joined BRANZ in 2014.



Stephen Titter

Stephen Titter combines many years of practical financial and investment experience. Formerly a senior partner and board member for Ernst & Young, he is now a director/trustee on several boards, including the American Chamber of Commerce in NZ Inc., Haumaru Housing, Sargon (NZ) Ltd and the Selwyn Foundation. Stephen is also a business strategy advisor for the Jennian Group, a member of IoD NZ and a chartered accountant. He joined BRANZ in 2014.



Alan Bickers, MNZM, JP

Alan Bickers has had a lengthy career in civil engineering, management, consulting and governance. He is experienced with building regulatory functions, including building consents and compliance. He is a chartered fellow of IoD NZ and a past President and Distinguished Fellow of Engineering New Zealand. Alan was the formative Chair of the Building Practitioners Board and is currently Chair of the Ministry for Primary Industries Partnership Programme for Engineered Timber Buildings. He joined BRANZ in 2015.



Pamela Bell

Pamela Bell is an international construction innovation consultant with work spanning the globe across Sweden, Singapore, Canada and Australia. Closer to home, she is working with innovative building systems, stakeholder engagement and strategic planning across corporate, government and start-up enterprises. She joined BRANZ in 2017.



John Brockies

John Brockies has over 20 years' experience as CEO and COO of large infrastructure organisations. He is an independent director with Resolve Group Ltd, a board member of the NZIST and Chair of the Waiari and Te Maunga Boards. John joined BRANZ in 2019.



Nigel Smith

Nigel Smith has over 30 years' experience in the 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, the Registered Master Builders Association and as a trustee of Construction Health and Safety New Zealand. He joined BRANZ in 2019.

Executive team



Chelydra Percy, Chief Executive Officer

Chelydra Percy joined BRANZ in 2013. Prior to starting with BRANZ, Chelydra held a range of leadership roles with science and innovation organisations such as Callaghan Innovation, KiwiStar Optics and Scion. Chelydra has also worked in the electricity supply and telecommunication industries. She is a graduate of Victoria University of Wellington and a Companion of Engineering New Zealand.

| Name | Position |
|---------------------------|---|
| Laurel Lee Berkett | PA to CEO/Company Secretary (retired 19 February 2020) |
| Margaret Ninness | PA to CEO/Company Secretary (started 27 January 2020) |
| Richard Capie | General Manager, Research Investment |
| Janet Geritzlehner | Human Resources Manager |
| David Johnson | General Manager, Consultancy Services (resigned 13 September 2019) |
| Brock Jera | Acting General Manager, Consultancy Services (started 1 October 2019) |
| Dr Chris Litten | General Manager, Industry Research |
| Kaetrin Stephenson | General Manager, Corporate Services |

Board remuneration

Directors' fees for the BRANZ Group are reviewed biennially. The Board seeks independent advice to help with this process. A proposal to increase the fees was outlined at the BRANZ Inc. AGM on 1 August 2019. At its subsequent meeting on 19 August 2019, the Board confirmed that fees would be increased with effect from 1 September 2019. The Board also agreed to retain the rates for the Building Research Advisory Council (BRAC) honoraria.

BRANZ directors' fees

| Board roles | Annual fees |
|---|-------------|
| Chair | \$56,700 |
| Deputy Chair | \$35,250 |
| Director | \$28,400 |
| Committee Chair | \$6,550 |
| Representative on external board | \$6,550 |

| BRAC honoraria | Meeting fees |
|----------------|-----------------------|
| Chair | \$2,900 (per meeting) |
| Members | \$1,200 (per meeting) |

Building Research Advisory Council

The Building Research Advisory Council (BRAC) plays a vital role in ensuring BRANZ's accountability and responsiveness to the New Zealand building and construction industry.

It meets twice a year to elect the BRANZ Board and advise on industry issues for BRANZ's consideration.

BRAC has 18 members representing 13 nominating bodies from the industry and trades, the business sector, consumers and the government.

In 2019/20, BRAC welcomed seven new members:

- Richard Arkinstall, representing the New Zealand Specialist Trade Contractors Federation
- Graham Burke, representing the New Zealand Specialist Trade Contractors Federation
- Carol Caldwell, representing Engineering New Zealand
- Paul Campbell, representing Engineering New Zealand
- Monique Fowler, representing Kāinga Ora
- Sharon Jansen, representing the New Zealand Institute of Architects
- Bruce Kohn, representing the Building Industry Federation

Two members resigned:

- John Beveridge, representing the Building Industry Federation
- Anna Butler, representing the Ministry of Business, Innovation and Employment

The following members completed their terms on BRAC:

- John Melhuish, representing the New Zealand Institute of Architects
- Jacqui Bensemman, representing the New Zealand Specialist Trade Contractors Federation
- Grant Price, representing the New Zealand Specialist Trade Contractors Federation
- Richard Sharpe, representing Engineering New Zealand

| Name | Nominee of |
|--|---|
| Ian McCormick (Chair) | Local Government New Zealand |
| John Macdonald (Deputy Chair) | Registered Master Builders Association |
| Richard Arkinstall | New Zealand Specialist Trade Contractors Federation |
| John Beveridge (until Aug 2019) | Building Industry Federation |
| Graham Burke | New Zealand Specialist Trade Contractors Federation |
| Anna Butler (until Jan 2020) | Ministry of Business, Innovation and Employment |
| Carol Caldwell | Engineering New Zealand |
| Paul Campbell | Engineering New Zealand |
| Mike Craig | New Zealand Certified Builders Association |
| Michael Davis | New Zealand Institute of Architects |
| Monique Fowler | Kāinga Ora |
| Marshall Hudson | Business New Zealand |
| Sharon Jansen | New Zealand Institute of Architects |
| Bruce Kohn | Building Industry Federation |
| Kieren Mallon | Registered Master Builders Association |
| Alastair Miles | Business New Zealand |
| Don Tilbrook | Civil Contractors New Zealand |
| Bill Whitley | Consumer New Zealand |
| Jon Williams | Property Council New Zealand |

BRANZ directors – register of interests*

| Director name | Directorships with | Director name | Directorships with |
|-----------------------|---|-----------------------|---|
| Helen Anderson | Dairy NZ Ltd NIWA Massey University Council Antarctica NZ Institute of Directors, Wellington Branch National Council of Institute of Directors ClearPoint Ltd Anderson Associates NZ Ltd Scion Studio Pacific Architecture Ltd Other relevant interests: Member, Ministry for Primary Industries Risk & Assurance Committee Member, NZ Police Assurance and Risk Committee | Nigel Smith | JCRK Ltd Milestone Homes Canterbury (2012) Ltd Jennian Homes Canterbury (2012) Ltd Jennian Homes Canterbury South Registered Master Builders Association Mstone Holdings Ltd Ashborn Management Ltd Ashborn Investments Ltd NSR Investments Ltd Milestone Homes South Canterbury Ltd Sitesoft New Zealand Ltd CHASNZ |
| Pamela Bell | Other relevant interests: MBIE Building Advisory Panel Innovation Consultant | Stephen Titter | American Chamber of Commerce in NZ, Inc. Guildford Investments Ltd Hahei Consulting Ltd Selwyn Foundation Haumaru Auckland Ltd Sargon (NZ) Ltd Other relevant interests: Business Strategy Advisor, Jennian Group |
| Alan Bickers | Jayal Enterprises Ltd Ministry for Primary Industries – Partnership Programme, Engineered Timber Buildings | | |
| John Brockies | Resolve Group Ltd Waiari PAB Walworth Ltd Other relevant interests: Member, RoVE Governance Board, Tertiary Education Commission Member, Unitec Commissioner’s Advisory Committee | | |
| Lesley Haines | Motu Economic and Public Policy Research | | |

Standard disclosure statement to be 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.

*Disclosure of significant shareholdings only, e.g. not shares held by family trusts.



The BRANZ Board and CEO Chelydra Percy at our 50th anniversary celebration at Te Papa.



Financial performance



Our financial performance

BRANZ has positioned itself to be able to adjust its investment plans and pace through a variety of economic conditions.

In contrast to 2019, today's operating environment is more challenging with the social and economic impacts of the COVID-19 pandemic likely to be far reaching. At the time of writing, the impact of the COVID-19 lockdown on the New Zealand economy, including the construction section, is still unclear.

This has a flow-on impact for BRANZ as it 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 five 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 10-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 doesn't 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. We anticipate that this financial approach will assist BRANZ's financial stability despite the current economic uncertainty.

Long-term Levy utilisation policy

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

- determining a Baseline Levy Investment Sum using the 10-year model – this is incorporated into the annual BRANZ Group budget for investment in Levy-funded activities
- investing the Baseline Levy Investment Sum in internal and external research and knowledge dissemination
- 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 so as 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 biennially and was last reviewed in 2019.

Our 2019/20 financial performance

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

Total income for 2019/20 was \$32.15 million, consisting of:

- \$22.70 million from the Building Research Levy to fund industry research and knowledge transfer
- \$8.40 million from commercial services
- \$1.05 million of other income.

This compares with \$31.16 million for the previous year.

Expenditure directly managed for 2019/20 was \$28.60 million. This was used to operate the business, directly deliver research outcomes and testing services, inform the industry and invest with other research providers. Also included within this expenditure was \$0.50 million of costs relating to operating the Artisan technology platform, which was launched during the year.

Expenditure in the previous year amounted to \$29.03 million. Included within this expenditure was \$1.45 million of Phase 1 development costs for Artisan relating to a change to a new technology platform.

During the year, BRANZ, as host of National Science Challenge 11 (NSC 11): Building Better Homes, Towns and Cities, was contracted for a further five years with associated funding of \$24.3 million.

By 31 March 2020, contracts were under way and \$5.26 million had been invested. In 2020, the accounting treatment has been changed for the funds received for NSC 11 to more fairly reflect the substance of the relationship as a contractor of research or agent. Details of the change are shown in Note 5 of the financial results.

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

Cash reserves

The BRANZ Group has investment in cash reserves and corporate bonds of \$33.55 million as at 31 March 2020. This balance includes \$1.98 million of NSC 11 funding that has yet to be spent. The Board manages and allocates cash reserves across the key areas below. Over the next 2–5 years, the investment in capital assets will significantly reduce cash reserves to normalised operating levels. All funds and the level of cash reserves are held in accordance with the BRANZ Group investment and reserves 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 during the year and ensures that our facilities meet the 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 six years with an estimated investment of around \$50–55 million. The most significant element of this plan is the redevelopment of the Judgeford campus. A detailed investment case is developed for each project in the plan, and BRANZ's ability to fund any such investment is rigorously tested. This will be particularly so in the post-COVID environment.

During the year, \$1.43 million was invested in projects that enable and support the redevelopment of the Judgeford campus. The projected level of cash reserves is reviewed to ensure that this work can be undertaken without seeking additional funding from industry or the government.

Critical and strategic industry issues

BRANZ also needs the ability to respond to critical issues affecting the industry. Provision of \$1 million is made in the cash reserves for this. For example, in the aftermath of the Canterbury earthquakes, BRANZ was able to draw on its reserves for critical issue funding even during a time when the Group was running a deficit.

During the year, BRANZ launched Artisan, a transformative quality assurance software tool used as part of the residential building inspection process, with a capital investment cost of \$1.8 million. It provides a workflow to capture real-time photographic evidence of the quality of work for critical elements of a build, corresponding to the stage checks undertaken.

BRANZ has also taken a strategic leadership role in supporting the Construction Sector Accord as part of our industry transformation initiative.

Emergency operating costs

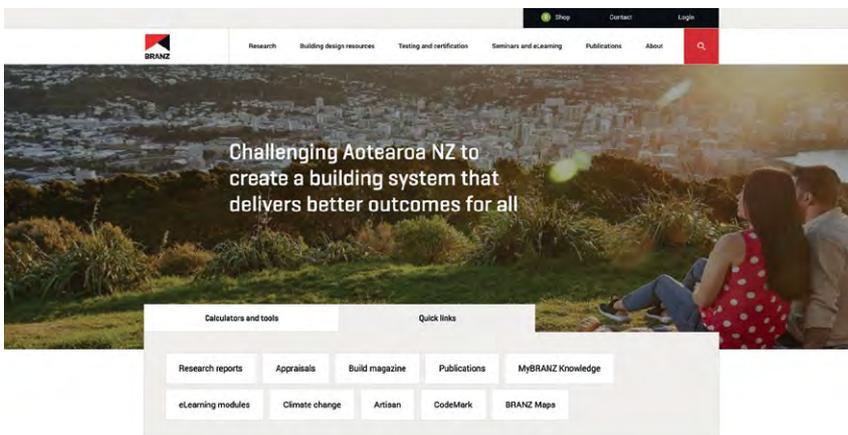
BRANZ also ensures that it holds enough cash in reserve to be able to have access to a minimum of three months of operating costs in the case of an emergency. This provision is currently \$6.4 million. Should the need arise, the cash reserves would help to cover these funding requirements.

Cash float to fund day-to-day operations

BRANZ has cash float reserves in keeping with normal business practices. This currently stands at \$2.9 million. These funds are used to cover day-to-day activities.

Recent investments

In the last year, we've invested in projects that enable and support the redevelopment of the Judgeford campus. We completed our new car park and progressed the design stages for the campus redevelopment. We've also invested in our digital future, with a refresh of our corporate website and the launch of our digital solution Artisan.



Building Research Association of New Zealand Inc.

Summary statement of comprehensive revenue and expenses

For the year ended 31 March 2020

| | Group | |
|--|-------------------|-------------------|
| | 2020 | 2019 |
| | \$ | \$ |
| Operating income | | |
| Revenue from non-exchange transactions | | |
| Building Research Levy Act levies | 22,697,417 | 21,528,415 |
| Revenue from exchange transactions | | |
| Commercial work fees | 8,403,679 | 8,575,899 |
| | 31,101,096 | 30,104,314 |
| Other income | | |
| Interest received | 1,000,665 | 1,051,609 |
| Gain on disposal of assets | 49,248 | 0 |
| | 1,049,913 | 1,051,609 |
| Total income | 32,151,009 | 31,155,923 |
| Expenditure | | |
| Personnel costs | 12,613,147 | 12,152,908 |
| Other operating costs | 15,988,359 | 15,421,183 |
| Artisan Phase 1 development costs | 0 | 1,453,475 |
| Total expenditure | 28,601,506 | 29,027,566 |
| Surplus before income tax | 3,549,503 | 2,128,357 |
| Income tax expense | (83,486) | (96,171) |
| Surplus for the year | 3,466,017 | 2,032,186 |
| Total comprehensive revenue and expenses for the year | 3,466,017 | 2,032,186 |

Building Research Association of New Zealand Inc.

Summary statement of changes in net assets/equity

For the year ended 31 March 2020

| | Group | | |
|---------------------------------|---|----------------------------|-----------------------|
| | Foreign currency translation reserve \$ | Retained earnings \$ | Total equity \$ |
| Balance at 1 April 2018 | 26,686 | 41,099,253 | 41,125,939 |
| Movement for year | (2,268) | 2,032,186 | 2,029,918 |
| Balance at 31 March 2019 | 24,418 | 43,131,439 | 43,155,857 |
| Balance at 1 April 2019 | 24,418 | 43,131,439 | 43,155,857 |
| Movement for year | (2,027) | 3,466,017 | 3,463,990 |
| Balance at 31 March 2020 | 22,391 | 46,597,456 | 46,619,847 |

Building Research Association of New Zealand Inc.

Summary statement of financial position

As at 31 March 2020

| | Group | |
|--------------------------------------|-------------------|-------------------|
| | 2020 | 2019 |
| | \$ | \$ |
| Assets | | |
| Current assets | | |
| Cash and cash equivalents | 4,279,771 | 4,004,444 |
| Term deposits | 26,900,000 | 23,250,000 |
| Corporate bonds | 2,374,825 | 3,543,285 |
| Other current assets | 3,068,212 | 4,182,206 |
| Total current assets | 36,622,808 | 34,979,935 |
| Non-current assets | | |
| Property, plant and equipment | 12,540,312 | 11,720,688 |
| Intangible assets | 3,018,426 | 2,567,375 |
| Deferred tax assets | 90,253 | 0 |
| Total non-current assets | 15,648,991 | 14,288,063 |
| Total assets | 52,271,799 | 49,267,998 |
| Liabilities | | |
| Current liabilities | | |
| Trade and other payables | 1,966,568 | 2,903,004 |
| Other current liabilities | 3,532,961 | 3,060,348 |
| Total current liabilities | 5,499,529 | 5,963,352 |
| Non-current liabilities | | |
| Deferred tax liability | 0 | 25,060 |
| Other non-current liabilities | 152,423 | 123,729 |
| Total non-current liabilities | 152,423 | 148,789 |
| Total liabilities | 5,651,952 | 6,112,141 |
| Equity | | |
| Total equity | 46,619,847 | 43,155,857 |
| Total equity and liabilities | 52,271,799 | 49,267,998 |

Building Research Association of New Zealand Inc.

Summary statement of cash flows

For the year ended 31 March 2020

| | Group | |
|--|------------------|------------------|
| | 2020 | 2019 |
| | \$ | \$ |
| Net cash from/(used in) operating activities | 5,411,841 | 3,029,232 |
| Net cash from/(used in) investing activities | (5,136,514) | (2,289,175) |
| Increase/(decrease) in cash and cash equivalents | 275,327 | 740,057 |
| Cash and cash equivalents at 1 April | 4,004,444 | 3,264,387 |
| Cash and cash equivalents at 31 March | 4,279,771 | 4,004,444 |

Building Research Association of New Zealand Inc.

Notes to the summary financial statements

For the year ended 31 March 2020

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 2020 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 25 June 2020.

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 for 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 (PBE 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.

Comparative restatement

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

Impact of COVID-19

On 11 March 2020, the World Health Organization declared the outbreak of a coronavirus (COVID-19) pandemic, and two weeks later, the New Zealand Government declared a State of National Emergency. The country was moved to COVID-19 Alert Level 4 and put into lockdown. As a result of both the outbreak and the response of government in dealing with the pandemic, economic uncertainties have arisen that could affect our operations, services and financial results going forward.

While there remains a significant amount of uncertainty, there are a number of potential risks for the Group. The possible effects on BRANZ as a result of the COVID-19 pandemic include:

- there could be an impact on Levy revenue to the extent consent volumes decrease
- there could be an impact on both commercial revenue and the collectability of amounts owed by commercial debtors as entities come under a greater degree of financial pressure
- from an operational perspective, it may be more inefficient for the BRANZ workforce to work remotely.

At this time, it is difficult to determine the full effect of the COVID-19 pandemic or the government's varying efforts to combat the outbreak and support businesses, and there could be other related matters that affect BRANZ. The Group has adopted a 10-year Levy funding model, which will allow continued investment in research to support the building and construction industry. To the extent possible, we have considered the likely impact of COVID-19 in areas such as our provisioning for doubtful debts. As at the date of signing these accounts, there is no indication that any of these impacts will impact on the going concern assumption.

3. Contingencies

The Group had no contingent liabilities as at 31 March 2020 (2019: Nil).

4. Related parties

| Group entities | Country of incorporation | Ownership interest | |
|-------------------|--------------------------|--------------------|-----------|
| | | 2020 % | 2019 % |
| BRANZ Limited | New Zealand | 100 | 100 |
| BRANZ Pty Limited | Australia | 100 | 100 |

Building Research Association of New Zealand 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 2020, this amounted to \$1,946,412 (2019: \$2,016,240).

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 management team costs, provision of accounting, IT, support, health and safety and quality services, and its share of insurance and marketing costs. In 2020, this amounted to \$13,036,488 (2019: \$12,661,582). In the Group accounts, these charges are eliminated on consolidation.

All charges are reviewed 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 Ltd provided sponsorship of \$3,500 (2019: \$6,900) to ProductSpec Ltd, of which Richard Carver (BRANZ Director until 31 August 2019) is a director. During the prior year, BRANZ Inc. provided funding of \$3,220 to PrefabNZ Incorporated, of which Pamela Bell was Chief Executive at the time.

5. National Science Challenge (NSC 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 statement 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.

In 2020, the accounting treatment has been changed for funds received from the Ministry of Business, Innovation and Employment for the NSC 11 to more fairly reflect the substance of the relationship as a contractor of research or agent.

The funds received and paid are shown as movements on the statement of financial position. In prior years, the NSC 11 funds were held as deferred revenue on the statement of financial position and recognised as revenue and expenses in the statement of comprehensive revenue and expenses as expenses were incurred. Prior year comparative figures in the statement of comprehensive revenue and expenses have been reclassified to reflect the change in accounting treatment, which has no impact on total comprehensive revenue and expenses.

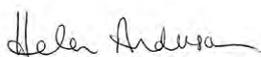
Movement in funds received in advance is as follows:

| | Group | |
|---------------------------------------|------------------|------------------|
| | 2020 | 2019 |
| | \$ | \$ |
| As at 1 April | 1,818,063 | 3,927,775 |
| Funding received during the year | 5,421,587 | 7,106,809 |
| Funding applied during the year to: | | |
| - Governance group meetings | (84,333) | (86,000) |
| - NSC 11 cost of undertaking research | (5,179,810) | (9,130,521) |
| As at 31 March | 1,975,507 | 1,818,063 |

6. 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 by:



Helen Anderson
Board Chair

25 June 2020



Stephen Titter
Audit and Risk Management
Committee Chair

25 June 2020



Independent auditor's report

To the Members of Building Research Association of New Zealand Incorporated.

Report on the Summary Financial Statements

The summary financial statements on pages 72 to 78, which comprise the summary statement of financial position as at 31 March 2020, the summary statement of comprehensive revenue and expenses, summary statement of changes in equity and summary statement of cash flows 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 2020.

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 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 25 June 2020.

Those Charged with Governance Responsibilities for the Summary Financial Statements

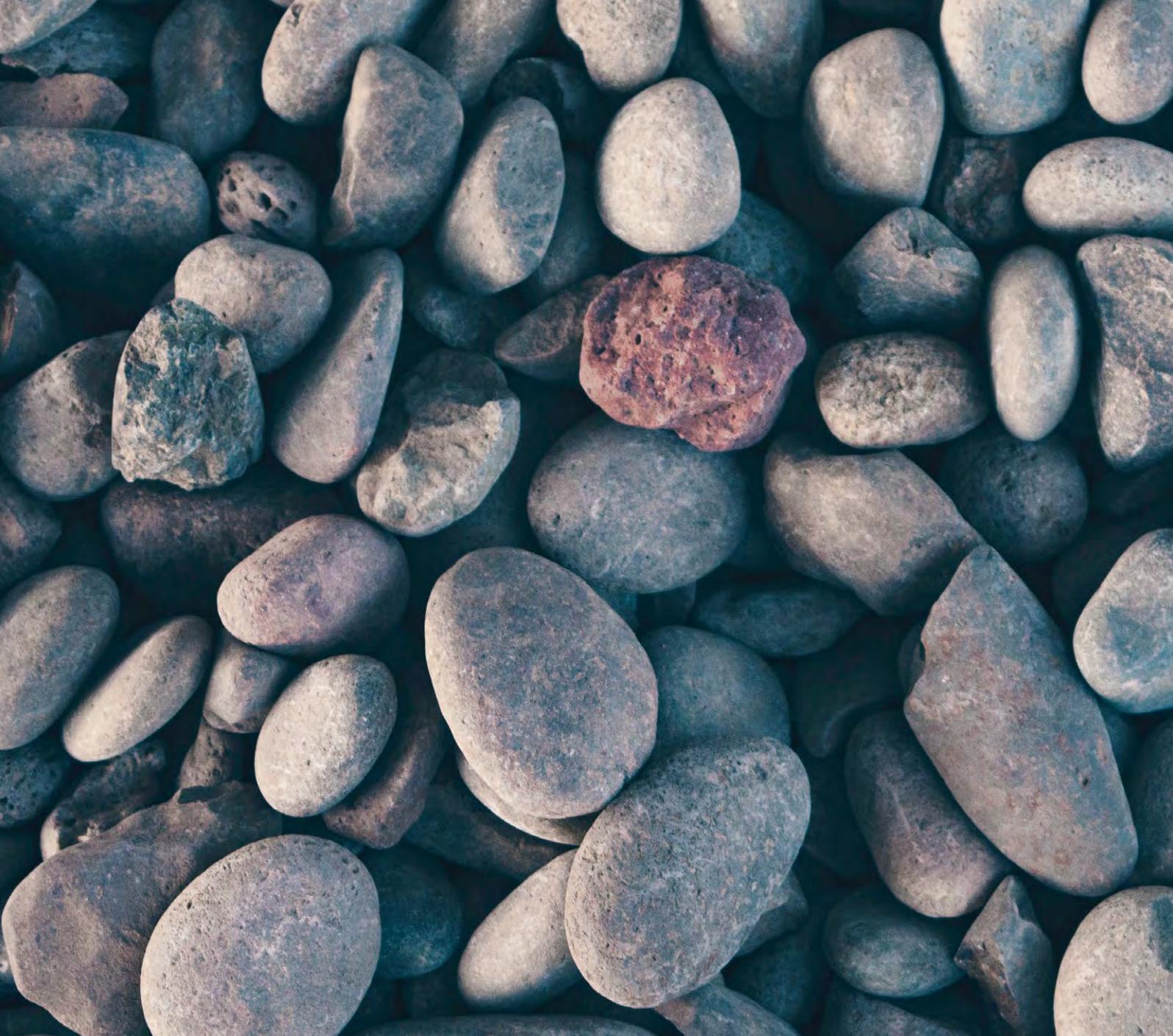
Those charged with governance are responsible on behalf of the Group for the preparation of the summary financial statements in accordance with *FRS-43: Summary Financial Statements*.

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.

Chartered Accountants
Wellington
25 June 2020



Levy investments



Levy investments in 2019/20

The Building Research Levy plays a key role in improving all aspects of New Zealand buildings. BRANZ is committed to ensuring New Zealanders receive the greatest possible benefits from Levy investment. To do this, BRANZ is responsible for providing effective stewardship of the Levy. This demands robust decision-making processes, a commitment to transparency and disciplined management of the Levy investments.

BRANZ’s portfolio

The building and construction industry impacts New Zealand’s economy and environment and people’s wellbeing. BRANZ, along with other research organisations, carries out research to better understand the nature of particular issues and their underlying root causes. This allows us to challenge the building system to deliver better outcomes for all.

The graphic adjacent sets out key areas in which BRANZ undertakes research and its relative strengths (red shading), the depth of research effort across New Zealand (grey shading) and areas where research has opportunity for increased effort (indicated by the arrows).

The Building Research Levy investments for 2019/20 follow.

Note that these amounts are subject to change.

For a full list of Levy-funded projects under way this year, refer to Levy in Action 2019.



- BRANZ research and its relative strengths
- Depth of research effort across New Zealand

Shaded content denotes projects led by external partners.

| Research investment | Total budget \$ |
|---|------------------------|
| Eliminating quality issues | |
| Programme communications and knowledge transfer | 50,000 |
| Programme leadership | 110,000 |
| EQI knowing enough to ask | 200,000 |
| EQI measuring new build quality | 170,000 |
| EQI procurement | 230,000 |
| New House Owners' Satisfaction Survey | 250,000 |
| Persistence of weathertightness issues | 150,000 |
| The economic cost of quality defects | 96,370 |
| Exceeding the minimum | |
| Building beyond minimum requirements: a literature review | 30,450 |
| CBA methodologies | 150,000 |
| ETM encouraging better building | 120,000 |
| Exceeding the minimum for volume home builders and their clients | 78,540 |
| Programme communications and knowledge transfer | 125,000 |
| Programme leadership | 110,000 |
| Financial incentives to exceed the minimum | 64,925 |
| Home performance – SCOPE | 120,000 |
| LCAQuick - residential | 243,000 |
| Measuring the extent of thermal bridging in timber-framed walls | 166,850 |
| Performance of higher specced windows | 312,000 |
| Quantifiable evidence of going beyond code | 204,000 |
| Scholarship Louise Bullen: Environmental impacts of NZ's grid electricity | 20,000 |
| Scholarship Sanjeev Ganda: LCA of thermal envelopes | 20,000 |
| Tools for young people | 110,836 |
| Fire-safe densified housing | |
| B-RISK continuous integration V&V stage II - end-user approach | 164,000 |
| B-RISK support 2020-21 | 74,000 |
| Fire performance of hollowcore floors | 475,000 |
| Fire safe use of timber construction II | 1,120,000 |
| Fire safety of combustible façades in NZ | 1,030,000 |
| Indoor pollutants in buildings exposed to fire | 119,000 |
| Industry knowledge of building assembly fire performance evaluation | 215,000 |
| International guidelines for fire design of timber buildings | 89,000 |
| Lithium batteries: fire risks associated with buildings | 360,000 |
| Property file data mining – fire risk | 178,000 |

| Research investment | Total budget \$ |
|--|-----------------|
| Medium-Density Housing (MDH) | |
| Building and maintaining MDH for long-term performance | 225,000 |
| Community acceptance of MDH | 320,000 |
| HDH for people and communities | 200,000 |
| Programme communications and knowledge transfer | 50,000 |
| MDH post-occupancy evaluations | 129,950 |
| Programme leadership | 110,000 |
| MDH residents' perspectives on maintenance | 130,000 |
| MDH technical issues | 162,000 |
| Understanding resource consent processes in NZ | 92,190 |
| Warmer, drier, healthier buildings | |
| Programme communications and knowledge transfer | 90,000 |
| Airtightness of apartments | 650,000 |
| Chemical contamination of building materials | 800,000 |
| Corrosion rates in vented cavities | 187,000 |
| Effective window coverings | 45,000 |
| Experimental buildings | 35,000 |
| Feasibility of an updated residential energy-use study | 280,000 |
| Fungal exposure in NZ homes | 325,000 |
| Growing up in NZ | 720,840 |
| HEEP2 energy insights from our homes | 2,250,000 |
| High-performance assemblies | 117,000 |
| Housing and wellbeing: analysis of new housing survey data | 174,000 |
| HRV performance measurements | 60,000 |
| Indoor air quality research centre for New Zealand | 545,000 |
| Model buildings for the next generation of the NZBC | 1,600,000 |
| New Zealand's experimental buildings | 395,000 |
| Pollutant levels in modern homes | 515,000 |
| Programme leadership | 650,000 |
| Regional healthy housing stocktake | 30,000 |
| Retrofit insulation | 364,000 |
| Risk assessment tool for roof ventilation | 470,000 |
| Roof ventilation calculator | 150,000 |
| Scholarship Jarred Butler: Mould in NZ bathrooms | 20,000 |
| Scholarship Karin Henshaw: Public housing transitions | 20,000 |
| Scholarship Phoebe Taptiklis: Maintenance and dampness | 75,000 |
| Smart ventilation and IEQ | 1,250,000 |
| Warm roofs – understanding recent trends in NZ | 96,000 |

| Research investment | Total budget \$ |
|---|-----------------|
| Zero-carbon built environment | |
| BEES 2.0: addressing energy demand | 500,000 |
| Home heating left cold | 180,000 |
| Innovative low-carbon residential water heating solutions | 175,000 |
| Programme leadership | 100,000 |
| Low-impact buildings | 1,575,000 |
| Regional waste minimisation | 175,000 |
| SCMs in concrete production | 150,000 |
| Programme communications and knowledge transfer | 287,000 |
| Carbon budget | 185,000 |
| Assessing potential for new research programme | |
| Building for wellbeing: scoping a research programme | 170,000 |
| Knowledge transfer and other core capability | |
| Advisory services 2019/20 | 430,000 |
| Annual publications review 2019/20 | 32,000 |
| BRANZ Find 2019/20 | 56,400 |
| BRANZ Levy forecasts | 35,000 |
| B-RISK support 2019/20 | 74,000 |
| Build magazine 2019/20 | 883,000 |
| Builder's Mate 2019/20 | 150,000 |
| Bulletins and factsheets 2019/20 | 174,000 |
| Durability verification database 2019/20 | 10,000 |
| Education 2019/20 | 549,000 |
| Good Practice Guide Waterproof Decks BK200 | 100,000 |
| Guideline 2019/20 | 30,000 |
| Level 2019/20 | 72,000 |
| Materials and characteristics survey | 95,000 |
| Weathering site 2019/20 | 30,000 |
| Strategic initiatives | |
| Artisan | 1,432,000 |
| Industry Transformation Agenda (ITA) | 2,461,997 |
| Stand-alone research | |
| 2016/17 residential water use | 656,468 |
| A real-world investigation: seismic performance of precast floors | 245,000 |
| Applying blockchain to product compliance and assurance | 178,875 |
| ArchEngBuild 2019 | 98,000 |
| ArchEngBuild 2020 | 74,000 |
| Automated Building Code compliance checking for prefab designs | 130,442 |

| Research investment | Total budget \$ |
|---|-----------------|
| BIM initiative | 520,000 |
| BRANZ monitoring network | 460,000 |
| B-RISK continuous integration V&V | 75,000 |
| Building a team with He Kāinga Oranga | 580,000 |
| Campus refresh – BRANZ experimental buildings | 97,000 |
| Census data quality | 10,060 |
| Chip off the NEW block: blockchain in the construction sector | 181,490 |
| Compliance and assurance prototypes for manufactured buildings | 50,000 |
| Compliant Materials verification | 275,000 |
| Construction sector performance: learning lessons and finding opportunities | 197,000 |
| Corrosion in the Bay of Plenty environment | 665,000 |
| Development of fire research programme | 185,300 |
| Digital product data for lifting productivity | 154,062 |
| Durability evaluation framework for innovative materials | 570,000 |
| Durability within wall cavity and subfloor space | 564,000 |
| Fire performance of precast floors | 37,000 |
| Foundations on sloping sites | 95,000 |
| Future connections with consenting systems and third-party technology | 74,880 |
| Future design thinking for construction – a partnership pilot | 99,000 |
| HCS - tier 1 stat and housing quality data contribution | 1,302,500 |
| Improving the uptake of mental health support | 94,980 |
| Knowledge transfer stand-alone projects | 309,983 |
| Let-in plywood bracing evaluation | 84,500 |
| Mapping the consumer landscape 2020/21 | 150,000 |
| Mental health and the builder-client relationship | 99,740 |
| Mental health build supplement | 5,280 |
| Monitored at work? Real-time employee monitoring technology | 139,274 |
| Monitoring industry performance | 180,000 |
| Mould-resistant surface | 55,000 |
| Multi-storey LTF buildings: architectural design 2019/20 | 40,000 |
| NZ's private rental sector 2020 | 249,918 |
| Performance and effectiveness of smoke management | 125,560 |
| Performance measurement in building and construction | 40,000 |
| Performance of magnesium oxide (MgO) boards | 169,000 |
| Plumbing and drainage guide – new edition 2019/20 | 50,000 |
| Positional material deterioration over building envelope | 540,000 |
| Precast floors | 635,000 |

| Research investment | Total budget \$ |
|---|-----------------|
| Preparing the foundation for risk-informed FSD | 270,000 |
| ReCast floors | 1,053,161 |
| Risk management strategies | 191,000 |
| Robust building system testing | 50,000 |
| Scholarship Andy Walmsley: Investigating men's help-seeking behaviour | 75,000 |
| Scholarship Armano Papageorge: Semi-autonomous off-site construction | 75,000 |
| Scholarship Audsley Jones: Design and behaviour of BRBs | 75,000 |
| Scholarship Beth Noble: Autism and lighting | 75,000 |
| Scholarship Dan Court-Patience: Buckling restraining brace connections | 75,000 |
| Scholarship Emily Newmarch: Performance of thermal envelopes | 20,000 |
| Scholarship Emily Newmarch: The identity of a low-carbon home | 75,000 |
| Scholarship Gerard Finch: Prefab architecture | 82,000 |
| Scholarship Jack Steele: Reliable early-stage simulation of CAD models | 20,000 |
| Scholarship Jono MacIntyre: Predicting structural fire severity | 75,000 |
| Scholarship Julia Thompson: Natural ventilation for large audience spaces | 75,000 |
| Scholarship Mohamed Mostafa: Seismic performance, precast floors | 20,000 |
| Scholarship Nicole Allen: Multi-volcanic hazard impacts | 75,000 |
| Scholarship Peter Marriott: Fire safety design | 20,000 |
| Scholarship Ting Yen Khor: Pre-contamination of wallboard with fungi | 20,000 |
| Scholarship Rochelle Ade: Performance of Homestar rated homes | 75,000 |
| Scholarship Sandi Sirikhanchai: Balancing building energy | 20,000 |
| Scholarship Shannon Griffiths: Mid-rise commercial timber construction | 20,000 |
| Scholarship Vicky Southworth: Stormwater management and WSUD | 20,000 |
| Scoping research requirements for engineered wood products | 120,000 |
| Seismic design of low-rise and mid-rise hybrid residential buildings | 1,153,000 |
| SIPs – durability, seismic and fire performance | 620,000 |
| Structural adhesives | 1,040,000 |
| The future landscape for residential landlords in New Zealand | 50,000 |
| Thermal bridging in external walls – stage two | 149,560 |
| Thermal performance of houses is in the detail | 158,000 |
| Towards durable timber structures | 400,000 |
| Towards durable timber structures – phase 2 | 1,120,000 |
| Towards effective use of technology: improve performance of construction | 200,000 |
| Toxicity of combustible building materials in fires – scoping study | 101,000 |
| Upgrading durability verification database – scoping | 50,000 |
| Value proposition for data standardisation | 35,780 |
| Working towards suicide prevention for the construction industry | 100,000 |

BRANZ staff, 2019



‘Ehara taku toaite toa takitahi,
engari he toa takitini’
— success is not the work of an
individual, but the work of many.





BRANZ

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