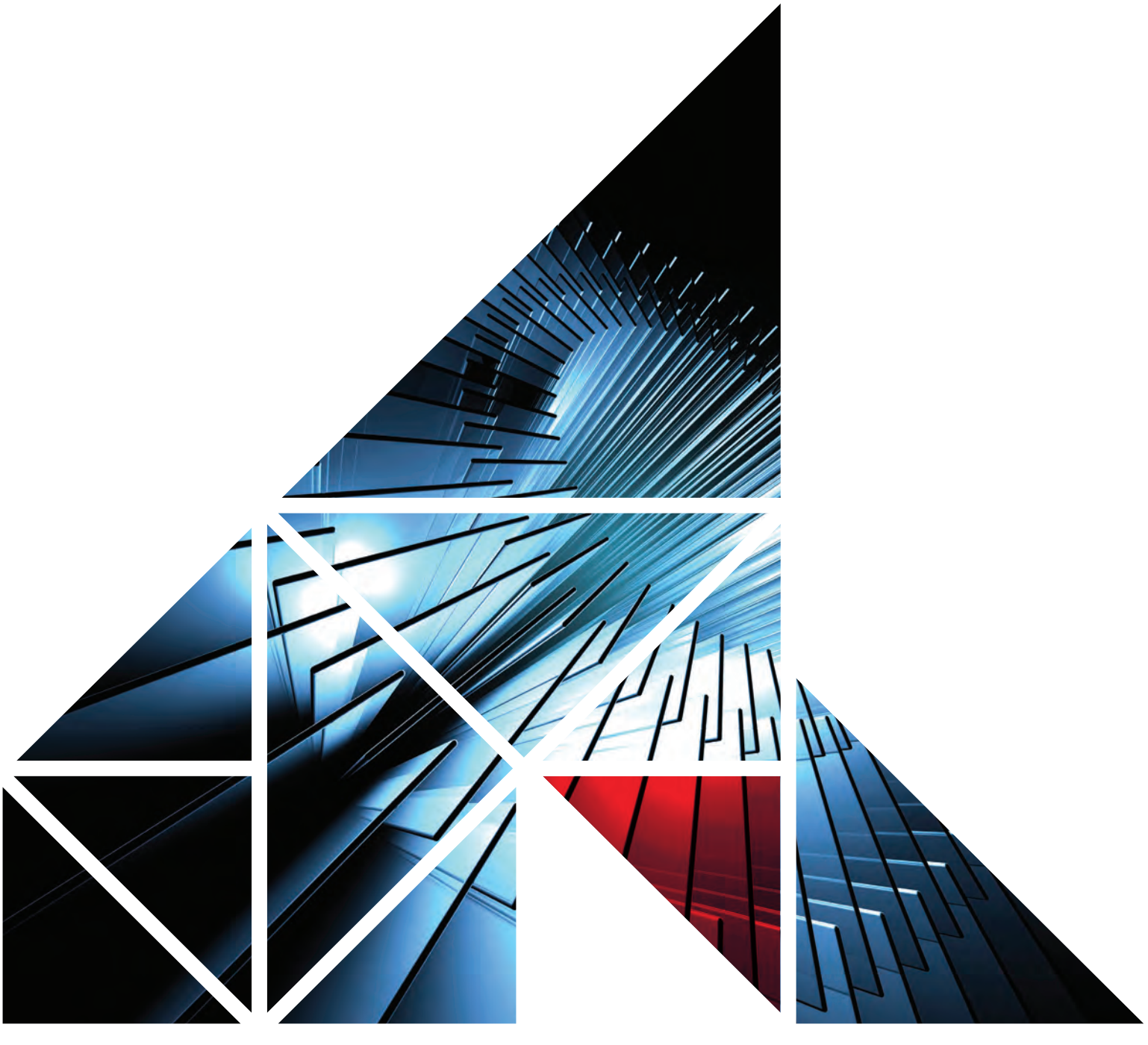
BRANZ

Inspiring Better Buildings

Annual Review 2015



"This bright restart mall encapsulates the spirit of Christchurch to refresh and renew following devasting loss. Such spirit inspires us to honour the learnings from Christchurch and support the built environment across all New Zealand to be similarly imbued with courage, strength and service for New Zealanders."

Chelydra Percy

BRANZ CEO

A CITY IN TRANSITION - RESTART MALL MADE OF SHIPPING CONTAINERS, CHRISTCHURCH

Contents

The Year in Review

Message from the Chair and Chief Executive Officer

Dr Helen Anderson, BRANZ Chair

Chelydra Percy, BRANZ CEO

Change

This year has seen the demand for building and construction industry services across New Zealand grow at a pace unprecedented in the past decade.

Housing consents in 2014/15 were around 70% higher than they were three years ago.

The Christchurch rebuild has shifted focus from the installation of infrastructure to commercial and residential builds.

Auckland recorded an estimated shortfall of 20,000 dwellings. The shortfall is forecast to continue for another five years. Overall demand is estimated to exceed supply for the next decade.

The shortfall contributes to reduced housing affordability – an issue that remains a flashpoint for media debate, government attention and community concern.

Meanwhile, migration and investment in the built environment continue to grow.

Net inward migration is at its highest level ever recorded, 62,000 for the March 2015 year, and a number of significant infrastructure projects are rolling out. Treasury estimates central government investment in infrastructure and buildings will total $49 billion over the forecast horizon, with $9 billion to be spent in the next three years.

A legacy of the Canterbury earthquakes means more earthquake strengthening and resilience improvements to the built environment right across the country.

Challenge

These expanding demands are matched by new challenges.

One in three homes now built in New Zealand is multi-unit compared to one in five just 10 years ago. Also, one-third of new homes built now are multi-storey compared to 25% a decade ago.

The sector is working hard to meet these demands and challenges.

One in four new jobs created in New Zealand in 2014/15 was in the building and construction sector. The number of new jobs totalled 25,000. For the past year, the sector has delivered 55% of all new investment in the economy with only 9% of the workforce.

This cycle of growth presents unprecedented opportunities for innovation, improved productivity and better performance in the sector. It also carries inevitable risk.

These growth pressures create issues of quality delivery, skill shortages, material shortages and a requirement for rapid response, which can compromise standards.

For the sector to remain responsive, and stay agile, planning for short and long-term skill requirements is required.

Boom times in the industry are inevitably followed by slow times. The cyclical nature of the industry is a given.

BRANZ trends analysis shows that 2014/15 sits at the mid-point of a cycle of escalating demand and industry expansion. The residential demand cycle is expected to peak in late 2016 and then return to longer-term averages.

Action

Managing these challenges wisely is an urgent imperative for New Zealand's existing and future wellbeing. BRANZ is uniquely positioned to help build the right capabilities that New Zealand needs to address the changes under way.

BRANZ is the central knowledge broker – researching and assembling the evidence for the impartial, independent advice that the sector and government needs for good practice and decision making.

We bring industry, community and government leaders and experts to the same table. We broker honest conversations to achieve shared outcomes.

We translate research into solution-focused action.

We provide independent technical advice on products and systems to underpin the delivery of innovation and new services by the sector.

We have been equipping ourselves to be more proactive and future focused during these challenging times.

This year, we have:

- reviewed and strengthened the BRANZ governance structure
- welcomed two new independent directors, Lesley Haines and Stephen Titter, to the BRANZ Boards in October
- renewed the BRANZ vision
- formalised a long-term Levy utilisation policy to smooth annual fluctuations in the Building Research Levy which helps ensure consistent levels of research activity through boom and bust cycles
- released our first Building Research Levy in Action publication which records all Levy-funded projects so information about investment decisions is public and available to the research community and industry
- completed the refurbishment of our fire testing laboratory.

Vision

Our new vision **is inspiring the industry to provide better buildings for New Zealanders.**

It has been crafted with care.

It acknowledges that 85% of the building stock in New Zealand that will exist in 10 years time already exists now.

It acknowledges that we support and inform the building industry of New Zealand.

It acknowledges that we do this to benefit all New Zealanders so we live, work, learn and play in safe and healthy homes, offices, schools and public places.

To bring our vision to life at BRANZ, we have adopted three guiding principles to inform all we do:

- Our passion is to help the industry identify and solve challenges.
- Our drive is to be the best at transforming insightful research into accessible and actionable knowledge.
- Our engine room, driving us to reduce the total ownership cost of quality buildings.

Inspiring the industry to provide better buildings for New Zealanders

BRANZ uses three guiding principles in everything we do:

- Our passion is to help the industry identify and solve challenges.
- Our drive is to be the best at transforming insightful research into accessible and actionable knowledge.
- Our engine room, driving us to reduce the total ownership cost of quality buildings.

Leadership

Our role in the built environment requires us to exercise leadership, explore new ways of thinking and facilitate collaborative and connected action between players to deliver results.

The Minister for Science and Innovation, the Hon Steven Joyce, and the Minister for Building and Housing, the Hon Dr Nick Smith, launched National Science Challenge 11 in September 2014. We immediately pledged support.

Our leadership brought together 200 researchers and 25 research organisations to craft a compelling proposal. The team that has been forged includes all eight of New Zealand's universities, four Crown Research Institutes (CRIs) and 11 independent organisations.

We will work more this way in the year ahead. We will work to facilitate stronger cooperation and connections between the industry, researchers, community and government.

We will ask the tough questions, listen hard, prioritise ruthlessly, collaborate and deliver results.

We will stimulate new thinking to help deliver solutions for the challenges ahead. We have invested in sharpening the BRANZ vision and strategy this year precisely so we can nurture the big-picture thinking needed alongside the technical expertise and research we provide.

This time of challenge and change for New Zealanders and our built environment calls for urgent action. In response to this, we are targeting three areas on which to accelerate action:

1. Enabling the industry to address quality issues emerging during the building boom by:
   a. understanding the causes and impacts of quality issues
   b. providing easily accessible resources to address skills and productivity gaps.
2. Informing affordable and accessible housing solutions through:
   a. collaborative approaches to deliver diverse housing needs
   b. removing barriers to mixed-used and medium-density housing
   c. researching ways to improve rental housing to ensure it is fit for purpose over the lifetime of its occupants.
3. Improving ways buildings protect our lives and assets through better performance in earthquakes, fires and floods by:
   a. addressing the risks posed by non-structural elements in earthquakes
   b. undertaking research into safe and accessible exits from buildings in fires
   c. identifying practical ways to improve performance of houses prone to flooding.

And our thanks

At the core of BRANZ is the delivery of impartial and independent advice based on robust science and authoritative evidence.

This relies on our formidable team of specialist researchers, engineers, technicians, writers, designers and support staff. Together, they assemble the hard evidence behind the advice to deliver practical solutions for today's problems alongside longer-term and systemic innovations.

They also ensure our laboratories, equipment, assets and resources are well maintained.

This is a small sample of the team's achievements this year:

- Contributing to significant breakthroughs on improving weathertightness and moisture control in homes, multi-storey dwellings, classrooms and recreational facilities in New Zealand. This work has saved millions on construction costs of the nation's classrooms and is helping make social housing healthier and warmer.
- Working with the Ministry of Business, Innovation and Employment (MBIE) on national priorities including capturing learnings from Christchurch and the Canterbury rebuild.
- Expanding the delivery channels of knowledge and information to better suit contemporary requirements of the industry. *Build* magazine, for example, is now online.
- Co-hosting and co-creating the inaugural Building a Better New Zealand Conference held in September 2014/15 in partnership with the Construction Industry Council, the Construction Strategy Group, Beacon Pathway and MBIE.
- Supporting 386 industry clients with insulation, glazing, durability and structural tests.

We were especially pleased that Professor Philippa Howden-Chapman, with a team of 28 scientists, won the Prime Minister's Science Prize in December 2014 for work on health and housing.

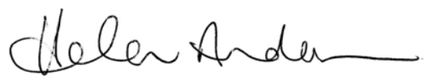
He Kainga Oranga, the Housing and Health Research Programme collaboration, was built on foundational research undertaken by BRANZ. Dr Malcolm Cunningham, a founding member of the collaboration, played a decisive role as lead Building Science researcher at BRANZ and as director on the governing board of the collaboration. Dr Cunningham developed the idea of the Healthy House Index, which played a central diagnostic and quantifying role in many of the collaboration's research projects. It was groundbreaking work, and the science award affirms that sometimes it takes a long time for our investments to deliver gold.

Of course, what we deliver is always a team effort.

Thanks must first go to all members of the BRANZ team who have worked hard this year to deliver results and make a difference. Together, directors and staff have been staunch about ensuring our Levy stewardship, research, advice and services maintain relevance and deliver value. We are proud of everything our team has achieved this year.

Thanks must also go to our partners, colleagues, mentors and advisors from the building and construction industry, research agencies, government departments and communities. Only by continuing to work together can we achieve the best results for New Zealand. And we at BRANZ can only realise our vision by working through the industry to inspire better buildings for New Zealanders.

We look forward to working together to meet the exciting challenges that lie ahead.

Chair 

Chief Executive Officer 

Levy Stewardship

Ensuring the industry gets the greatest benefits possible from Levy investment

BRANZ is committed to robust, transparent and wise management of the Building Research Levy.

In the past 10 years, Levy receipts have ranged between $8.6 million to $12.5 million per annum. To smooth the impact of such volatility, we implemented a long-term Levy utilisation policy this year. This ensures our investment in innovation and research can remain stable over any rolling 10-year period and sustain core capability, research and facilities through up and down cycles.

Further information on how the long-term Levy utilisation policy works is outlined on page 42 of this document.

The Building a Better New Zealand research strategy, developed by BRANZ, the industry and government, remains the guide for all Levy investment decisions.

Our publication *Investing in Better Buildings for New Zealand, Building Research Levy in Action – Investment 2014/15* brings together information about each project that received Levy investment in 2014/15. It makes for tantalising reading. Every project invites closer scrutiny, hinting at new knowledge, improved techniques, innovative materials and richer understandings being explored to provide better buildings for New Zealanders.

The call for proposals elicited 68 proposals from over 25 research organisations

Levy scholarships

Each year, graduate students with outstanding academic credentials can apply for scholarships funded through the Levy.

This programme is one way BRANZ supports the future research capability of the sector. Scholars receive $20,000 for a master's degree or $25,000 per annum for up to three years for a doctorate. This year, BRANZ awarded four new scholarships to join the 14 already underway.

Sally Coughlan
Massey University, PhD

Sally is undertaking a comprehensive assessment of small and medium enterprises (SMEs) in the New Zealand construction industry and the methods in place, both domestically and internationally, for environmental profiling. From this, an overview of SMEs and options for environmental profiling will be developed, piloted and evaluated with selected case studies in the construction industry.

Yusef Patel
University of Auckland, PhD

Yusef's research is looking at the advantages and disadvantages of current international and domestic innovations in digital fabrication (CNC routers, robotics, 3D printers and so on). It will focus on exploring construction innovation that could be relevant to the New Zealand market. His work aims to improve productivity and quality through utilising existing high-value manufacturing technology.

Victoria Toner
Victoria University, Master's

Victoria is developing a tool that enables professionals in the construction industry to compare urban forms and take into account the surrounding outdoor thermal comfort. This will provide more sophisticated methods to quantify design trade-offs. Pocket parks and green spaces within inner cities are important for workers and residents. However, creating these spaces can be difficult because surrounding buildings can make them too shady and windy for comfort.

Sara Wareing
Victoria University, Master's

Sara's project aims to review existing New Zealand and international dwelling rating tools. It will compare their estimates of thermal performance based on four criteria. These criteria are: time required for assessment, complexity of the tool, how consistently different tools rate the same dwellings, and consistency of possible answers within a tool. The research outcome will be to identify which rating tool would be more suitable for the New Zealand market. There is a growing interest in the introduction of mandatory standards for rental properties, commonly proposed as a Warrant of Fitness. Thermal performance will be a particularly important component of any such "warrant of fitness".

Go to www.branz.co.nz/scholarships for more information on the BRANZ scholarship programme and all current scholars.

Levy partnerships

An important touchstone BRANZ has with industry to test Levy investment priorities is the biennial Industry Needs Survey, an analysis of sector trends and needs co-developed and funded with MBIE. The 2014 Industry Needs Survey confirmed the relevance of the nine investment themes outlined in the Building a Better New Zealand research strategy. It helped prioritise on four investment areas to target for new external Levy investment in 2015/16. We then invited proposals on these four areas in our second Levy prospectus. This resulted in 68 expressions of interest from 25 research organisations. Eleven partnership projects are now proceeding with Levy funding of close to $1 million in total.

This investment in the work of other research providers allows BRANZ to draw on the extensive expertise within universities, CRIs and independent research providers. Their skills complement the work of BRANZ-based specialist teams. It also strengthens the partnerships and collaborative approach we believe will deliver the best value from the Levy for New Zealanders.

Case study: Scion Partnership

Our partnership with Scion this year illustrates such benefits. In 2014/15, we invested $93,000 in Scion to develop practical solutions to reduce noise transfer between apartments.

This investment, combined with Scion expertise, has now led to the development of a better-performing structural connection system.

The connection system developed provides high acoustic insulation between light-framed timber multi-residential units as well as the structural connection needed to transfer seismic and wind loads. This will enable taller light-framed systems to be built with fewer design compromises.

The Auckland market is hungry for this form of innovation, given increasing demand for more multi-residential buildings. The connection system has significant commercial benefits alongside improved liveability outcomes. Scion is currently in discussion with a manufacturer who wishes to take the product to market.

Industry Research and Knowledge Dissemination

Applying our industry-leading expertise to produce accessible and actionable knowledge for the industry

The Building Research Levy funds research and projects to support the provision of better buildings in New Zealand, develop innovative solutions and inform and grow the industry.

Section 8 of the Building Research Levy Act 1969 provides that the Building Research Levy "be used by the association for the purposes of promoting and conducting research and other scientific work in connection with the building construction industry".

This year, BRANZ invested Levy funding of $10.3 million in industry research and knowledge dissemination projects.

> Great ideas, pragmatic solutions and improved performance are needed and expected of the industry as demand for new and better buildings continues to grow across New Zealand.
>
> BRANZ's effective stewardship of the Building Research Levy means our investment in research and education can play a significant role in supporting this.

Chelydra Percy, BRANZ CEO

Investments in Industry Research and Knowledge Dissemination focus on the nine research priorities identified in Building a Better New Zealand, the industry research strategy.

Building a Better New Zealand investment priorities are:

- Better Buildings
- Materials Performance
- Maintaining and Improving the Performance of Existing Buildings
- Sustainability
- Automation, Industrialisation and New Technologies
- Operating Environment
- Productivity
- Meeting the Housing Needs of New Zealanders
- Building Better Cities and Communities.

Key research progressed by the BRANZ team this year has included work on the following:

- Improving seismic resilience and resilience features in our housing stock
- Healthier classrooms for children
- Improving weathertightness, ventilation and moisture problems in buildings
- Testing new technology and materials
- Flooding buildings to measure how houses better withstand extreme flooding events
- Making apartments warmer and drier in New Zealand, piloted through a partnership with the Wellington City Council on the refurbishment of the Kotuku Apartments
- Partnerships with MBIE including assembling evidence for a new document – *Guide to tolerances, materials and workmanship in new residential construction in 2015*.

Of course, it is not enough to undertake research and testing without ensuring that the knowledge is available and accessible to the right people at the right time. BRANZ has invested in a targeted knowledge dissemination programme across multiple formats in 2014/15 to ensure useful research is more widely available.

Build was launched online, with the creation of the new *Build* website. The website contains all issues of the magazine, a full repository of articles and a newsletter update for subscribers. The response has been excellent, rising to 38,000 session users per month.

Additional channels include a BRANZ YouTube channel, all publications and bulletins available in both hard copy and digital formats, online digital tools and a nationwide seminar programme. The BRANZ website also serves as a central link to other BRANZ content sites such as Renovate, Level, Weathertight and Maintaining My Home.

Industry Research and Knowledge Dissemination

Better Buildings

Buildings are fundamental to our way of life – they are the foundations of our economy and represent the majority of fixed assets in New Zealand

Investment focus

Improving the quality, function and performance of our buildings is vital for New Zealand's economic growth.

Providing good-quality buildings, including housing, schools and workplaces, matters for all New Zealanders.

This priority focuses on these areas:

- Resilient buildings
- Moisture in buildings
- Indoor air quality and moisture control
- Ventilation
- Acoustic performance
- Fire.

$3,026,164
Total investment in 2014/15

Case study: Providing Healthier Classrooms

BRANZ has worked this year to resolve some important design challenges where large institutional buildings in New Zealand generate too much moisture in the roof cavities.

A process called aggravated thermal bridging can cause serious moisture damage to structural components in steel-framed buildings such as schools, gymnasiums and warehouses. Using pioneering methods to research moisture load in wall and roof cavities, BRANZ has begun to identify some solutions.

An immediate beneficiary of the research to date has been the Ministry of Education (MOE). Findings from BRANZ research are assisting the MOE in the design of 'modern learning environment' open-plan classrooms.

Ultimately, this research will translate into construction of open-plan classrooms that require less maintenance, are more efficient to run and, most importantly, provide healthier environments for children to learn in.

BRANZ will ensure the findings of this on-going research are more widely available, given its valuable application across a range of public and commercial buildings in New Zealand.

Case study: Flood It!

BRANZ built and flooded small houses at our Judgeford campus this year to pilot research on the effects of water damage on building materials.

Our goal is to understand the effect of floods on materials and buildings.

Designers and homeowners can then make informed choices when building and remediating homes in areas prone to flooding.

Our first house was flooded in February. Floodwater was maintained for 24 hours before being pumped away. The effectiveness of typical approaches to drying out a house after a flood were then tested.

Data from sensors was continuously monitored for six weeks. The walls were then opened up to look at the physical condition of the wall cavities.

Three more small-scale houses are now being built and will be flooded repeatedly over the next 12 months. Simple changes to existing building practice, such as painting all sides of skirting boards rather than just the exposed faces, will be tested for possible benefits. Other testing will explore the relative benefits of drying methods (such as heating, dehumidifiers and ventilation) and house-level protective measures.

Investment continuing in 2015/16

- Improving the resilience of non-structural building components
- New insight into building moisture and indoor environmental quality – the Weathertightness, Air quality and Ventilation Engineering (WAVE) programme
- Subfloors and roofs – moisture management, corrosion prevention, thermal performance
- Vapour controls in walls
- Simulating the airflow of a roof with detailed roof geometry
- Analysis of new housing – a national survey
- Non-residential rainwater and greywater feasibility
- Performance-based fire safety engineering – limiting fire spread by design
- Specific design for light timber-framed buildings
- Seismic response of buildings – cost/benefit of increased resilience
- BRANZ expert input into the MBIE Engineering Advisory Group
- Revisions of NZS 3603:1993 *Timber structures standard*
- Sector performance – effectiveness of passive fire protection.

New investment beginning 2015/16

- Passive fire protection guide
- Reducing the effects of flooding
- Occupant behaviour – ventilation and temperature
- Weathertightness
- Deck details
- Indoor air-quality knowledge in New Zealand
- Energy-efficient ventilation
- Removing contaminants from indoor air spaces
- Interstitial moisture in roof cavities
- Development of the WUFI tool.

Industry Research and Knowledge Dissemination

Materials Performance

Research into materials and their performance is an area that is consistently rated as an innovation priority

Investment focus

New Zealand needs to understand how materials used in our built environment perform, both as distinct products and as part of increasingly complex systems.

As the range of materials used in the built environment changes, the opportunities presented by investing in materials performance are significant. These opportunities exist both within New Zealand and for businesses looking at the export potential of their ideas.

This priority focuses on strengthening our understanding about how materials will perform and underpins the development of new and innovative products to meet the requirements of the New Zealand Building Code.

$1,171,901
Total investment in 2014/15

Case study: Seismic Resilience

This year, BRANZ has investigated the performance of seismic bracing in light timber-framed houses, following the Canterbury earthquakes. The research demonstrates that changes are needed and has informed a step-by-step seismic design procedure we have developed. This is being released in the new study report *Design guidance of specifically designed bracing systems in light timber-framed residential buildings*.

Factsheets and a website will be available online from mid-2015 and will provide technical information on how to better incorporate earthquake resilience into buildings. They incorporate the learnings from the Canterbury earthquakes and from other seismic events in New Zealand and around the world. The online material will also act as a unique central source of this information.

Topics addressed include new and renovated commercial, low-rise and residential building carried out in New Zealand. The topics cover the following areas:

- Seismic science and site influences
- Planning for resilience
- Superstructure
- Foundations
- Building envelope
- Strengthening strategies
- Non-structural systems.

Case study: Update of New Zealand's Atmospheric Corrosivity Map

The performance-based New Zealand Building Code requires that only components that meet or exceed the minimum durability expectations can be used for construction. Specification of materials during the design stage starts with identifying the building location's atmospheric corrosivity zone, and it is critical that this is accurate. However, the New Zealand atmospheric corrosivity map that is currently used was established on data that is now 30 years old.

BRANZ recently completed a project to check the on-going validity of this map, which is shown in NZS 3604:2011 *Timber-framed buildings*. Measurements at more than 60 sites across New Zealand were compared with previous measures and then successfully incorporated into the New Zealand atmospheric corrosivity map. This map is notable as it is the only atmospheric corrosion rate dataset for New Zealand that was derived from actual measurements.

The more complete dataset now available indicates that the current map has limitations in exposure zone boundary definition. New regional corrosivity maps have consequently been established with adjustments of boundaries in some areas within Auckland, Wellington, Christchurch and Dunedin. For example, the zone B/C boundary within Christchurch has been pushed further towards the east.

Some areas affected by the new data and re-classification have been re-zoned by the Christchurch City Council. This will guide the building of more than 20,000 homes in coming years. Revision and improvements to corrosivity maps informs decisions about materials to be used in the construction of these homes and helps reduce the risk of poor performance.

Investment continuing in 2015/16

- Research around the performance of materials within geothermal environments
- Research into improving resilience – notably how materials and systems can be made more resilient
- Development of improved materials performance testing methodologies
- Research into floor slab perimeter insulation
- BRANZ scholarship – Gye Simkin, PhD, University of Auckland
- BRANZ scholarship – Audsley Jones, PhD, University of Canterbury
- BRANZ scholarship – Van Tran, PhD, AUT University
- BRANZ scholarship – Samia Ali Tariq, PhD, University of Canterbury
- Maintenance and development of weathering sites located across New Zealand
- Development of a durability verification database.

New investment beginning 2015/16

- Positional material deterioration over the building envelope
- Structural adhesives
- Seismic joints for cross-laminated timber
- Effects of humidity on gypsum plasterboard.

Industry Research and Knowledge Dissemination

Maintaining and Improving the Performance of Existing Buildings

85% of the current building stock will still be with us in 2025

Investment focus

The condition of New Zealand's existing building stock is a critical item in the nation's future.

Existing stock is a key focus for building owners and the building industry. More buildings are renovated than are built in a typical year.

The 2010 House Condition Survey (carried out every five years as part of a survey programme jointly funded by BRANZ and MBIE) found that:

- 41% of houses were in good condition and well maintained
- 59% of houses were in moderate or poor condition
- 25% of houses had defects that needed attention within three months.

This priority focuses on making homes warmer and drier, making public buildings safer and upgrading commercial buildings to improve the quality of existing buildings for New Zealanders.

$496,356
Total investment in 2014/15

Case study: Good Repair Guides

Good Repair Guides provide practical advice on repairs. The guides support tradespeople who work on repairing existing properties and are tailored to the less-experienced builder still developing their knowledge and experience. Both industry and building owners benefit from the quality improvements that these guides deliver. Six have been published this year:

- *Driveways and Paths*
- *External Timber Steps*
- *Insulating Timber Windows*
- *Subfloor Timber*
- *Timber Decking*
- *Timber Floorboards.*

Case study: Designing for Maintenance

A new resource released by BRANZ this year is *Designing for Maintenance* – a publication developed for building designers. It sets out maintenance issues to be considered as part of the design process so that completed buildings can be effectively and economically maintained. It builds on the premise that all parts of a building deteriorate over time, and decisions made at the design stage of a building significantly affect its future maintenance requirements and costs.

It brings to the fore an awareness of the maintenance of buildings that should be considered by building designers. This awareness can be easily ignored when the project is driven by initial costs rather than longer-term maintenance cost benefits.

Case study: National Seminar Series for Industry Practitioners

Reaching over 3,300 building professionals in 2014/15, BRANZ seminars provide building professionals with information on the latest innovations, research outcomes, compliance and good practice.

Seminars held throughout 2014/15 included:

- ***You asked: 24 Critical Questions Answered***
  22 locations
  1,333 participants
- ***Building Energy End-use Study***
  5 locations
  203 participants
- ***Building Science at Work***
  8 locations
  440 participants
- ***From She'll Be Right To Build It Right***
  (in partnership with MBIE and WorkSafe)
  28 locations
  1,323 participants

The seminar *From She'll Be Right To Build It Right* assisted industry with changes to the Building Amendment Act 2013 and new consumer protection measures that came into effect in January 2015. It also provided advice on how to prepare for the new health and safety regime.

Over 1,300 attended the seminar. Of the 60% who completed the seminar evaluation, 97% rated the seminar as meeting or exceeding expectations.

For more information on BRANZ seminars, go to www.branz.co.nz/seminars.

Investment continuing in 2015/16

- 2015 House Condition Survey
- Develop and test a framework for improved decision making about existing homes (renovate or retire) at the level of a neighbourhood development.

New investment beginning 2015/16

- Good Repair Guides 2015/16.

Industry Research and Knowledge Dissemination

Sustainability

Sustainable building technologies provide the means to significantly reduce resource intensity while retaining high-quality builds

Investment focus

The building and construction industry is a significant source of economic growth and prosperity. However, construction techniques and building choices can have a significant impact on the environment. Commercial buildings account for around 9% of total energy use and 21% of New Zealand's electricity use, which costs New Zealand businesses around $1.25 billion every year.

This priority focuses on measuring how efficiently buildings use resources, such as water and energy, and on technologies that increase efficiencies in the use of these resources.

$862,345
Total investment in 2014/15

Case study: Valuing Sustainability

Research under way at BRANZ includes analysis of how resilience features such as solar hot water, better-than-Code insulation and more durable building materials are valued by homebuyers.

Resilient homes perform well in natural disasters such as flooding, when power, water or sewerage services may be lost. Occupants' lives are less disrupted, and recovery times and costs are lower.

The research to date shows that:

- Purchasers seldom value sustainability and resilience features over smarter kitchen fit-outs, for example
- Builders, real estate agents and valuers need more independent information to better advise homebuyers on how to value these features
- Regardless, there is a price premium on certain sustainability features at resale
- The premium paid on the house resale may not accurately reflect the value of the sustainability features in the home.

Case study: Assessing Environmental Impacts

BRANZ is developing a whole-building whole-of-life framework that will provide consistency for calculating building environmental impacts based on a technique called Life Cycle Assessment (LCA). The framework is based on international standards.

Assisted by a Callaghan Innovation Research and Development Career Scholarship, BRANZ was able to apply research on calculation of material quantities from building information modelling (BIM). This is helping with the development of a free to use calculation and analysis tool called LCAQuick. LCAQuick's purpose is to make conducting a whole-building LCA easier and faster than traditional methods. It is being developed specifically to apply the whole-building whole-of-life framework for use during concept design.

LCAQuick provides a platform for calculation of building life cycle environmental impacts, drawing on BRANZ research on New Zealand whole-building whole-of-life, Building Energy End-user Study (BEES) and water use in commercial buildings. The tool can take outputs from BIM based on sketch models instead of traditional detailed modelling methodologies and will also take manually entered square metre rates. It is currently being beta tested by Jasmax, Architectus and Holmes Consulting.

The purpose of LCAQuick is to help raise awareness and improve accessibility to an LCA-based analysis of concept building designs for designers. Combined with Environmental Product Declarations (EPDs) from construction product manufacturers and importers, LCA methodology can provide more opportunity to realise buildings with lower environmental impacts.This will lessen any negative legacies for future New Zealanders.

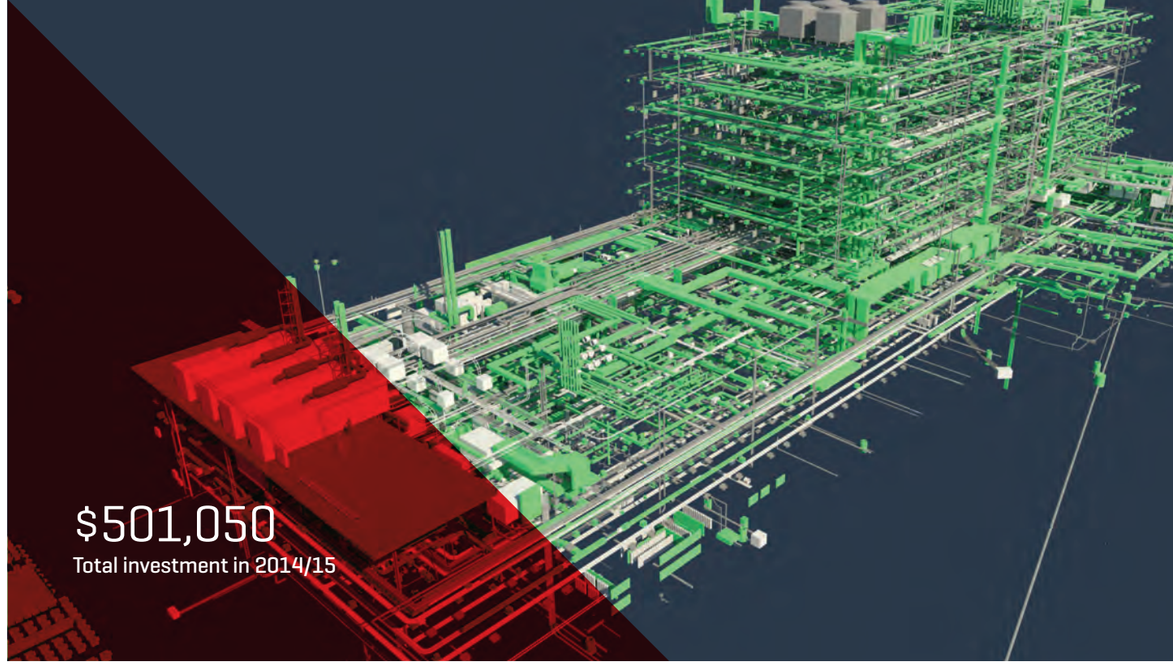
Investment continuing in 2015/16

- Environmental profiling
- Maintaining ALF 3.2
- Materials and characteristics of new buildings
- Measuring the value of sustainability and resilience features in housing
- Waste Management Fund – timber and wallboards
- Construction waste REBRI accreditation
- BRANZ scholarship – Agneta Ghose, PhD, Massey University
- BRANZ scholarship – Sally Coughlan, PhD, Massey University
- BRANZ scholarship – Sara Wareing, Master's, Victoria University
- On-going development and maintenance of the Level sustainability website.

Industry Research and Knowledge Dissemination

Automation, Industrialisation and New Technologies

Innovative technologies can significantly boost productivity



Investment focus

This priority focuses on how innovative technologies can be applied in the building and construction industry to power transformative development and improve performance.

It aims to support the industry to engage with emerging technologies more confidently and effectively.

$501,050
Total investment in 2014/15

Case study: New Capability for Chemical Analysis of Polymeric Materials

BRANZ invested $80,000 this year to purchase a hand-held Fourier transform infrared (FTIR) spectrometer. The FTIR spectrometer represents a new capability that will be used for research projects and commercial materials testing.

FTIR is a well established technique for chemical analysis of polymeric materials. At the simplest level, it can be used to identify an unknown polymeric material. BRANZ is collating a database of FTIR spectra of polymeric materials used in buildings. This database can be used to verify that the composition of BRANZ Appraised polymeric materials remains unchanged.

FTIR can also be used for more complex issues such as measuring the chemical changes that occur in polymeric materials that are exposed to the environment. Polymeric materials can be degraded by exposure to UV radiation, temperature variations, humidity and so on.

FTIR has a number of advantages over other analytical methods. It is non-destructive and relatively quick. The hand-held spectrometer version chosen by BRANZ can be taken out of the laboratory and used on building sites or manufacturing plants.

The FTIR spectrometer is already showing itself to be an exciting new capability for BRANZ. It is being used in a research project looking at predicting the durability of polymers in outdoor exposure based on accelerated ageing methods. This has the potential to make it quicker and easier to introduce new products to the New Zealand market.

On the materials testing side, it has been quickly able to identify that a product being assessed was made of a different material to the other samples provided.

Case study: BIM

BRANZ is supporting the work of the BIM Acceleration Committee to promote and accelerate the adoption of BIM in New Zealand.

An increase in the adoption of BIM is seen as key to increasing industry productivity.

BRANZ has made available $250,000 per annum for the Committee to direct towards its acceleration strategy.

In the past year, the Committee has produced the New Zealand BIM handbook, five BIM in action case studies and a brochure outlining the productivity benefits of BIM. The Committee also ran a workshop recently for government procurement clients, is running BIM for practitioners and train the trainers courses and will expand the suite of case studies.

Investment continuing in 2015/16

- Building façade thermal performance
- Levers for prefab action plan
- BRANZ scholarship – Yusef Patel, PhD, University of Auckland
- Investment in the national BIM initiative.

New investment beginning 2015/16

- Second phase development of the BRANZ 3D and 4D library
- Assessing the value of traceability to New Zealand construction
- Specific design for multi-storey light steel-framed housing
- High-value manufacturing in construction
- Zero net-energy schools.

Industry Research and Knowledge Dissemination

Operating Environment

An effective operating environment is essential to the industry's prosperity

$2,681,000
Total investment in 2014/15

Investment focus

The regulatory environment plays an important role in the building and construction sector where so many small and medium-sized enterprises operate.

Underlying economic conditions and trade agreements also have a large impact.

This research priority focuses on improving efficiencies within the regulatory environment and standards development. BRANZ also contributes to a number of technical committees supporting better standardisation and industry access to technical information.

$2,681,000
Total investment in 2014/15

Case study: Creating a Single Point of Access to Authoritative, Regulatory Information

In 2014, MBIE, Standards New Zealand and BRANZ initiated a project to deliver information directly cited in the New Zealand Building Code via a single point of access. The project will enable easier, faster access to current, authoritative building information, which, in turn, will help lift the quality of consent information.

The building controls system consists of regulatory (Building Act, Regulations and Code) and non-regulatory documents that help users comply with building regulations. There is currently no single point of access to authoritative regulatory information. Access is fragmented, building documents are complex and there can be confusion over what is authoritative in a particular situation. It can be hard to determine currency and accuracy of information. This makes it more costly to comply with the New Zealand building controls system.

During the 2014/15 financial year, the initial business case and rationale for this project was completed. It indicated a strong market desire for the project. Now involving a wider group of stakeholders including the key industry organisations and independent industry experts, the project has progressed to defining user requirements and product parameters.

The central information source is due for launch in 2016. It is expected that the new innovative website will assist the industry to deliver accurate consenting documents and provide clarity around the use of authoritative information. End users will be able to locate information in real time via direct links to the content provider, and the service will be suitable for use on mobile devices.

Case study: *Build*

Published bimonthly in hard copy and online, *Build* is the premier source of practical technical advice and insights for builders, designers and the wider industry.

The print magazine remains popular, with an audited circulation of 17,534 copies as at 31 December 2014. A readership survey in late 2014 found:

- 85% rated *Build* magazine as essential or very useful
- 70% of users rated *Build online* as essential or very useful
- 94% put their overall satisfaction with *Build* as very good or good
- 70% of readers had discussed an article with others
- 69% archived articles for future reference.

Investment continuing in 2015/16

- Asbestos-contaminated soils
- Work with MBIE on combustible ducting materials
- BRANZ scholarship – Brian Guo, PhD, University of Auckland
- On-going publication of *Build* magazine
- Investment, alongside MBIE, in the development of a business case around a single, authoritative online portal for the building industry
- Publication of *Guideline*, bulletins and *Builder's Mate*
- Development and running of a number of industry seminars on key topical issues
- Delivery of the 0800 technical helpline
- Investment to provide expert input into the on-going development of the New Zealand Building Code and standards (above and beyond individual projects)
- Maintenance and development of the Building Industry Library.

New investment beginning 2015/16

- Acceptable construction industry resource
- Preparing clause H1 *Energy efficiency*
- B-RISK user support
- Seismic design of screwed timber joints.

Industry Research and Knowledge Dissemination

Productivity

Boosting productivity in the building and construction industry is a national priority

Investment focus

When the Productivity Commission looked at the New Zealand building industry, it found its productivity growth was below that of other New Zealand industries. It also found it was declining compared with construction sectors in other countries.

Subsequently, a goal of improving the productivity of the construction sector by 20% by 2020 was identified in a joint initiative between industry and government.

This investment priority focuses on work that underpins that goal. It includes work on industry performance measures, the New House Survey, partnerships with MBIE and the Natural Hazards Research Platform on resilience. It also provides support for productivity research through Massey, AUT and Auckland Universities.

$601,295
Total investment in 2014/15

Case study: Career Mapping

BRANZ has worked with Careers New Zealand, the MOE and industry to pilot the development of a new Career Development Map for the New Zealand construction and infrastructure industry.

Good information on roles and career pathways in the industry exists but is fragmented. This initiative is pulling together an integrated map of roles, skills and career opportunities for job seekers and workers across New Zealand. Ultimately, the project will produce an online interactive map for young people making initial career choices. It will also support career advisors, industry employers and skilled workers in the industry.

Such a map provides a much needed tool for sharpening the ability of the industry to attract and retain skilled workers in New Zealand. It will support high-calibre job seekers to see the full range of opportunities available to them. It will also help workers plan their career development within the industry.

Case study: New Home Owners' Satisfaction Survey

Since 2011, BRANZ has undertaken an annual survey to measure how well new-home owners rate their builder, based on the experience of having a home built in the past 12 months.

The survey informs designers, builders and workers in the residential construction industry on what is working well and what needs to improve. It also assists people planning to build a new home.

The survey covers 31 territorial authorities from Invercargill to the Far North.

The fourth national new-home owners' satisfaction survey released this year continued to provide useful messages for the residential building industry in New Zealand.

The survey signalled that 88% of respondents were satisfied with the overall quality of their home. Those who had built previously were the most satisfied. Those who had never built before were less so. However, the survey showed that satisfaction scores overall had trended downwards from previous years. It showed there is room for improvement particularly over call-backs and repair of defects.

Findings from the survey informed the seminar *Key to Quality*, which BRANZ is taking out to the industry across New Zealand from Invercargill to North Auckland in 2015/16.

Investment continuing in 2015/16

- Industry performance measures
- Productivity distribution and drivers of productivity growth in the construction industry
- The best and worst of buildings
- BRANZ scholarship – Johannes Dimyadi, PhD, University of Auckland
- BRANZ scholarship – Wajiha Shahzad, PhD, Massey University
- BRANZ scholarship – Garry Miller, PhD, University of Auckland.

New investment beginning 2015/16

- What builders need to tell first-home buyers
- Approach to government procurement of construction services
- Construction sector real productivity performance.

Industry Research and Knowledge Dissemination

Meeting the Housing Needs of New Zealanders

As New Zealand's population grows and changes, so do our housing needs

Investment focus

New Zealand's population is growing, and our demographics are changing.

Housing affordability has declined, as have home ownership rates. There is increasing demand for rental accommodation, multi-unit apartment buildings, more urban-based housing and more community housing.

This investment priority focuses on what these changes mean for the building and construction sector in New Zealand and how it can best deliver the houses New Zealanders need and want.

$737,293
Total investment in 2014/15

Case study: Making Apartments Warmer and Drier

BRANZ has been working with Wellington City Council to pilot a study on how social housing stock can be made warmer and drier. The pilot has undertaken extensive research on refurbishment options and testing possible solutions for best spend, maintenance efficiencies and healthier dwellings. Current work on the Kotuku Apartments in Kilbirnie is delivering the initial findings. The application of thermal simulation modelling by BRANZ identified better refurbishment options for the Kotuku Apartments upgrade.

Data demonstrated that, for over six months each year, the 103 bedsit units experienced temperatures lower than 18°C. This temperature is below the World Health Organisation standard, with some rooms, depending on their location in the complex, even chillier. The BRANZ modelling examined heat distribution, cold spots, air leakage, dampness and water traps and how these might best be addressed. This has informed better refit decisions resulting in warmer and drier apartments at an affordable cost - a healthier outcome for both the Council and tenants.

The Kotuku case study is now in its fourth and final year, and the results will have significance beyond Wellington. BRANZ will be sharing the learnings from the study to strengthen the capability of designers and builders across New Zealand. This will mean improved apartment design for the increasing number of New Zealanders who seek the option of apartment living.

Case study: Empowering Housing Decisions as We Age

For the past two years, the Centre for Research, Evaluation and Social Assessment (CRESA) has been undertaking the Community Resilience and Good Ageing: Doing Better in Bad Times research programme.

This research has been investigating how dwellings protect older people during adverse, natural events. It has also asked how restoration costs and time can be reduced to enable older people to resume active lives within their communities.

BRANZ has been contributing by looking at the physical and functional resilience of dwellings in adverse events.

BRANZ found that a third of the randomly selected dwellings in the BRANZ House Condition Survey had occupants living alone aged 65 years or older. This presented the opportunity to compare this group with the remaining general population sample.

Insights captured include the good news that these homes were more likely to be well maintained and occupants were not substantially more exposed to house resilience issues. The greatest vulnerability occurs when a resident, over 65, has only electrical heating and lives in the coldest climate zone.

BRANZ has also been able to apply research findings to support CRESA research on Ageing in Place: Empowering Older People to Repair and Maintain Safe and Comfortable Houses in their Communities. BRANZ participated in the project's research team and contributed to the content development of CRESA's Good Homes Repairs and Maintenance, Assessment and Solutions tools.

These tools provide practical house maintenance advice for older householders, for support service providers of the elderly, and for property providers and maintenance specialists.

Investment continuing in 2015/16

- Good homes for low-income tenants
- Accessible emergency egress
- CRESA downsizing project - finding the best fit.

New investment beginning 2015/16

- Intermediate housing market
- Community housing and the building industry
- BRANZ scholarship - Karen Henning, PhD, Victoria University
- BRANZ scholarship - Jade Kake, Master's, UNITEC.

Industry Research and Knowledge Dissemination

Building Better Cities and Communities

Thriving, sustainable cities are integral to New Zealand's long-term wealth and wellbeing

Investment focus

Cities are home for most New Zealanders. Approximately 87% of our population resides in urban areas, and in the next 20 years, three-quarters of all new construction will be in Auckland and Christchurch. High-performing urban environments are therefore increasingly central to our quality of life and much of our economic and cultural innovation.

This investment priority focuses on delivering affordable homes and liveable communities in increasingly dense urban environments.

$265,800
Total investment in 2014/15

Case study: Learning from Innovations

Innovative thinking and processes have been required in the rebuilding of Christchurch. This year, BRANZ invested $94,000 for researchers at the University of Auckland and the University of Canterbury to analyse innovations being produced by the Stronger Christchurch Infrastructure Rebuild Team (SCIRT). The project has ensured that SCIRT innovations have been identified, examined, categorised (process, products, organisational) and assessed for wider New Zealand construction industry adoption.

Throughout the project, members of the SCIRT alliance reported on innovations each month, as a Key Performance Indicator (KPI) reporting requirement. To date, more than 500 innovations have been reported, and the researchers have been given full access to SCIRT's innovation database.

Most of the reported innovations have been identified as tools or functions developed to overcome immediate problems facing operational teams. These innovations tended to focus on a single aspect of performance improvement. When more sophisticated types of innovation such as technology and methods were developed, the impact was more widespread and significant.

The research team is currently developing a more targeted KPI reporting system to help maximise productivity improvements in construction through innovation.

Investment continuing in 2015/16

- The SCIRT innovation project
- Novel hybrid damping devices and design techniques for damage-avoidance seismic repsonse of high-density urban housing.

New investment beginning 2015/16

- Legal frameworks for multi-residential ownership
- Mixed-use urban planning and development
- Value uplift in New Zealand cities
- Delivering affordable accessible housing.

Consultancy Services

Developing enduring relationships with clients to help them achieve benefits over the long term

BRANZ has built an international reputation and clientele for consulting and research expertise in a range of engineering and science disciplines. Our strength lies in the combination of sophisticated equipment, experience and in-depth analysis we use to deliver expert advice.

BRANZ staff regularly contribute towards the development of New Zealand, Australian and international standards. Our clients can be assured that advice BRANZ provides is informed by global developments, trends and requirements.

Our expertise and testing services deliver in the following areas:

- Economics and life cycle costing
- Fire safety engineering
- Fire testing
- Materials durability
- Materials performance
- Structural performance
- Thermal performance
- Ventilation and energy efficiency
- Water efficiency and environmental performance.

The BRANZ strategy highlights the importance and value of developing enduring relationships with clients of our consultancy services.

We are committed to strengthening these relationships so our clients engage more fully with our services to achieve greater benefits over the longer term.

BRANZ's new strategy positions consultancy services as one of the three integral components that deliver independent and impartial advice through the industry for the benefit of New Zealanders. The strategy highlights the importance and value of developing enduring relationships with clients of our consultancy services. We are committed to strengthening these relationships so our clients can engage more fully with our services and achieve greater benefits over the longer term.

As we work to be more client focused, we will continue to offer the full range of our product testing services, including BRANZ Appraisals, Type Tests and Technical Opinions. These provide the robust, independent technical evidence for clients to be confident that new products or systems will meet the requirements of the Building Code or appropriate standards.

This year we completed 1,073 contracts with commercial industry clients from across New Zealand and the world representing 200 significant and ongoing relationships. Income earned from these services totalled $6,532,989.

This year, we began to investigate and identify how we can better support MBIE's Product Assurance Framework with the consultancy services that BRANZ offers the industry. This review will continue in the coming year. Our aim is to help clients identify the best options for their product compliance requirements.

Fire testing services

Across our fire testing and consultancy services, 346 tests or assessments were completed in the 2014/15 year. This included full-scale room tests (ISO 9705) and cone calorimeter tests (ISO 5660) to derive a Group Number classification for fire spread on internal linings.

These tests assist manufacturers and distributors in meeting their requirements under the Building Code, due to a recent amendment to the protection from fire clauses.

To enable BRANZ to meet the needs of national and international clients, we invested $1.75 million in the fire lab facility. This fire lab is the only facility of its kind in the country. The fuel sources for the two fire lab furnaces were converted from diesel to gas, which will significantly improve the accuracy and range of tests. In addition, the fire lab chimney was replaced, asbestos material removed and the overall facility modernised.

Economics services

BRANZ provides quarterly market share monitoring reports for various product groupings across the industry to manufacturing-based clients. The data is gathered through regular postal and online surveys to builders.

Clients using this service value the independent and impartial analysis of changes in the marketplace impacting on their products.

Testing services for other key sectors within New Zealand

BRANZ has developed long-term relationships with many clients to support their day-to-day business requirements. While most are within the building and construction industry, we also provide services for clients outside the industry. For example, BRANZ completed the fourth year of environmental monitoring for Ravensdown, a leading company in the agricultural sector.

Case study: Ravensdown

The testing work for Ravensdown provided evidence to allow them to comply with a condition of their resource consent. In 2014/15, nearly 500 samples were collected and analysed to determine the effects of emissions from the Ravensdown fertiliser works on building materials in the local area. Test materials representing the range of building materials potentially exposed to degradation were selected, and placed at various sites surrounding the fertiliser works' buildings and facilities. Test materials were also placed in other representative industrial zones to act as control sites. The results showed the rate of degradation of building materials was within the normal range found across New Zealand for areas influenced by industrial activity.

Ravensdown is very happy with the progress of the programme. BRANZ is now preparing samples for testing to be completed later this year.

Case study: Appraisal for Fletcher Aluminium

Through the Appraisal process, BRANZ has been able to support a new innovative window and door joinery system developed by Fletcher Aluminium. The evaluation included testing and assessment to demonstrate compliance against the performance requirements of the Building Code.

BRANZ provided scientific expertise that challenged the technical basis of their system. This ultimately gave Fletcher Aluminium the confidence to proceed with a joinery system that departs markedly from traditional construction techniques and installation methods.

"It was important for us to have BRANZ along to help us prove that our Smartfit concept was as good as we thought it was. We were determined to make sure that all aspects of compliance were covered off thoroughly. BRANZ provided the necessary tools and expertise during the Appraisal process to challenge, prove the idea and give us the certainty we needed to move to the product launch phase with absolute confidence.

We had not undertaken an Appraisal prior to this so had little idea of what was involved. I was impressed at the rigour and quality of questions put to us by the BRANZ team and the advice given in return. Interaction with the scientists was never off limits, and we valued that time as great learning opportunities well beyond the project itself.

It was fantastic to have been part of this process where you know that the people that you are dealing with are true professionals."

David Burggraaf, Fletcher Aluminium

Case study: EPD Service

The Trans-Tasman Environmental Product Declarations (EPD) Programme was launched to the construction industry in early September 2014. The launch was quickly followed by Allied Concrete announcing it had achieved a first for New Zealand businesses – publishing an Environmental Product Declaration in the International EPD System in September 2014.

This work followed up from BRANZ research in 2011 that identified EPDs to be an effective tool for manufacturers to inform customers on environmental aspects of their products.

Governance

Governing boards have real work to do. It is inspired work that helps ensure an effective present but, even more importantly, leads an organisation into its preferred future.

The work of BRANZ is managed by two separate organisations – BRANZ Incorporated and BRANZ Limited.

BRANZ Incorporated is a significant investor in research and innovation that supports the provision of better buildings in New Zealand. Its key role is to ensure the Building Research Levy is invested to benefit owners and occupiers by improving the knowledge base of the New Zealand building and construction sector.

BRANZ Limited is an operating arm of BRANZ Incorporated. Its role is to deliver independent and impartial research, testing and consulting services and transform research into accessible and actionable knowledge.

Thanks to all members of the BRANZ team, both directors and staff. We are proud of everything our team has achieved this year.

Thanks must also go to our partners, colleagues, mentors and advisors from the building and construction industry, research agencies, government agencies and communities. Only by continuing to work together can we achieve the best results for New Zealand. And we at BRANZ can only realise our vision by working through the industry to inspire the provision of better buildings for New Zealanders.

We look forward to working together to meet the exciting challenges that lie ahead.

Dr Helen Anderson, BRANZ Chair

From left to right (back row): Ken Stanton, Kevin Stanley (Deputy Chair), Richard Carver, Richard Merrifield
From left to right (front row): Lesley Haines, Dr Helen Anderson (Chair), Stephen Titter, Chelydra Percy (CEO)

BRANZ Boards

BRANZ Incorporated and BRANZ Limited are governed by Board members with extensive building and construction, science, business and senior public sector expertise.

Five Board members of both BRANZ Incorporated and BRANZ Limited are elected by the Building Research Advisory Council. The elected Board members can in turn appoint up to three independent directors.

The BRANZ Boards currently have seven directors.

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 a Chartered Fellow of the Institute of Directors New Zealand. She joined BRANZ in 2011.

Kevin Stanley (Deputy Chair) has more than 25 years' experience in the construction industry and is currently Managing Director of the Stanley Group. He joined BRANZ in 2012.

Richard Carver has a background in business management and governance and is co-owner of Jennian Homes and Construction Marketing Services. He joined BRANZ in 2013.

Lesley Haines is a former Deputy Chief Executive of the Ministry of Business, Innovation and Employment with an extensive public sector and client-focus background. Lesley was also a board member of IPANZ in 2014. She joined BRANZ in 2014.

Richard Merrifield is former Chair of the Certified Builders Association of New Zealand and former Chair of the Building Research Advisory Council. He joined BRANZ in 2011.

Ken Stanton is Principal of architectural and engineering practice Stephenson & Turner. He joined BRANZ in 2012.

Stephen Titter combines many years of practical financial and investment experience. Formerly a senior partner and board member for Ernst & Young, he currently holds a number of independent directorships including the Real Estate Institute of New Zealand. He joined BRANZ in 2014.

Building Research Advisory Council

The Building Research Advisory Council (BRAC) meets twice a year to elect the BRANZ Board, and advise on industry issues that will benefit from research and innvoation investment.

BRAC membership is made up of people from national bodies of builders, contractors, subcontractors, property owners, territorial authorities, engineers, architects and manufacturers.

This year, as proposed by the governance review, BRAC representatives from Consumer New Zealand and MBIE became full members of the Electoral College.

The current members of BRAC and their nominating bodies are:

- Victoria Troake (Chair)	New Zealand Specialist Trade Contractors' Federation Incorporated
- John Melhuish (Dep. Chair)	New Zealand Institute of Architects
- Simon Barber	Registered Master Builders Association
- David Brown	Certified Builders Association of New Zealand
- Lou Cadman	Business New Zealand
- John Coop	Property Council of New Zealand
- Michael Davis	New Zealand Institute of Architects
- Marshall Hudson	Business New Zealand
- John Macdonald	Registered Master Builders Association
- Grant Price	New Zealand Specialist Trade Contractors' Federation Incorporated
- Adrian Regnault	Ministry of Business, Innovation and Employment
- David Rolfe	Local Government New Zealand
- David Russell	Consumer New Zealand
- Debbie Scott	Institution of Professional Engineers New Zealand
- Richard Sharpe	Institution of Professional Engineers New Zealand
- Stephen Walker	Building Industry Federation.

Financial Performance

The BRANZ Group derives its total income from a combination of Building Research Levy investment, government science funding and commercial services

Total income for 2014/15 was $22.43 million. This consisted of $14.57 million from the Building Research Levy to fund research and knowledge transfer, $6.53 million from commercial services, $0.36 million from Government grants and $0.97 million of other income. This compares to $20.88 million for the previous year. Construction activity drives the Building Research Levy and in 2014/15 activity was significantly above forecast.

Spending was tightly managed, limiting expenditure to $19.94 million for the 2014/15 financial year. This was used to operate the business, directly deliver research outcomes, inform the industry and invest with other research providers. Expenditure in the previous year amounted to $19.66 million.

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

Long-term Levy utilisation policy

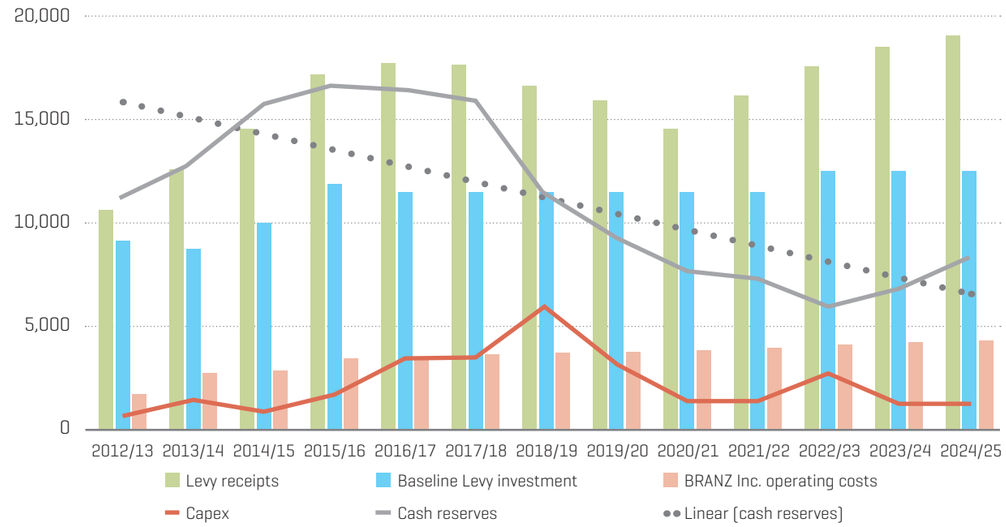
BRANZ gets its research income from Building Research Levy receipts, which are directly linked to the levels and values of building consents. This means Levy income is subject to the same boom-bust cycles as the industry. BRANZ aims to be a good steward of the Levy by investing it wisely on research and knowledge dissemination that supports the construction industry to provide better buildings for New Zealanders. These research projects often take a number of years to produce the required outcomes.

BRANZ has a long-term Levy utilisation policy in place that helps manage these ups and downs in Levy income receipts, which are directly linked to construction activity. 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 so when Levy income decreases, BRANZ doesn't have to make unnecessary or drastic cuts. The aim is to invest in research at a consistent sustainable level throughout the construction cycle.

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 external and internal Levy-funded activities
- investing the baseline Levy investment sum in:
  - core internal capability
  - external capability
  - capital investment in internal and external facilities
  - maintenance of operating reserves
- 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
- maintaining appropriate cash reserves.

BRANZ Inc. long-term Levy stewardship model



The long-term Levy utilisation policy is reviewed annually and BRANZ is currently increasing the Levy investment in quality projects.

Cash reserves

The BRANZ Group had cash reserves of $18.5 million as at 31 March 2015. These funds are held in accordance with the BRANZ Group investment policy. The level of cash reserves is determined as part of the long-term Levy utilisation policy.

Funding for investment in property, plant and equipment

BRANZ funds the maintenance and development of facilities at Judgeford and elsewhere in New Zealand. A new Asset and Campus Management Plan is currently being developed to ensure that our facilities meet the industry's research and testing needs for the future. The current level of cash reserves ensures that this work can be undertaken without seeking additional funding from industry or the government. For example, in 2014/15, as well as funding normal repair, maintenance and replacement of assets, $1.75 million was invested by BRANZ to replace ageing fire research infrastructure.

Initial work on the Asset and Campus Management Plan has begun. It indicates that, over the next 3-5 years, around $10-15 million will be required to retire, replace and refurbish ageing plant, equipment and property.

Critical and 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. BRANZ has also begun a project to identify opportunities for investment alongside industry in multi-year transformative initiatives. If this project is taken forward, funding will be provided from cash reserves.

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 $5 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 $2.5 million. These funds are used to cover day-to-day activities.

Independent review

In 2014, BRANZ commissioned an independent review of our approach to reserves to ensure that the levels held are appropriate. The review noted that our approach is consistent and in line with other organisations that are similar to BRANZ.

Financial Statements

Building Research Association of New Zealand Inc

Summary statements of comprehensive income

for the year ended 31 March 2015

	Group		Parent	
	2015 $	2014 $	2015 $	2014 $
Operating income				
Building Research Levy Act levies	14,572,305	12,476,366	14,572,305	12,476,366
Commercial work fees	6,532,989	7,457,689	0	0
Government grants	355,563	421,556	0	0
Charges to BRANZ Limited	0	0	1,445,000	1,291,100
	21,460,857	**20,355,611**	**16,017,305**	**13,767,466**
Other income				
Interest received	684,099	525,067	621,986	483,456
Dividend received	278,000	0	278,000	0
Other income	4,522	703	4,522	703
	966,621	**525,770**	**904,508**	**484,159**
Total income	**22,427,478**	**20,881,381**	**16,921,813**	**14,251,625**
Expenditure				
Personnel costs	9,995,865	9,872,442	977,415	704,380
Contracts – BRANZ Limited	0	0	8,450,814	7,549,186
Other operating costs	9,945,594	9,785,053	5,031,876	4,778,592
Total expenditure	**19,941,459**	**19,657,495**	**14,460,105**	**13,032,158**
Operating surplus/(deficit) for the year	**2,486,019**	**1,223,886**	**2,461,708**	**1,219,467**
Share of surplus/(deficit) of equity accounted investment	(260,213)	49,507	0	0
Surplus/(deficit) before income tax	**2,225,806**	**1,273,393**	**2,461,708**	**1,219,467**
Income tax (expense)/benefit	0	0	0	0
Surplus/(deficit) for the period	**2,225,806**	**1,273,393**	**2,461,708**	**1,219,467**
Total comprehensive income/(expense) for the period	**2,225,806**	**1,273,393**	**2,461,708**	**1,219,467**

Building Research Association of New Zealand Inc

Summary statements of changes in equity

for the year ended 31 March 2015

	Group		Parent	
	Retained earnings $	Total equity $	Retained earnings $	Total equity $
Balance at 1 April 2013	27,369,506	27,369,506	25,693,365	25,693,365
Total comprehensive income/(expense) for the period	1,273,393	1,273,393	1,219,467	1,219,467
Balance at 31 March 2014	**28,642,899**	**28,642,899**	**26,912,832**	**26,912,832**
Balance at 1 April 2014	28,642,899	28,642,899	26,912,832	26,912,832
Total comprehensive income/(expense) for the period	2,225,806	2,225,806	2,461,708	2,461,708
Balance at 31 March 2015	**30,868,705**	**30,868,705**	**29,374,540**	**29,374,540**

Building Research Association of New Zealand Inc

Summary statements of financial position

as at 31 March 2015

	Group		Parent	
	2015 $	2014 $	2015 $	2014 $
Assets				
Current assets				
Term deposits	14,271,500	11,958,911	13,521,500	11,358,911
Other current assets	6,352,636	5,390,158	2,720,433	2,052,178
Total current assets	**20,624,136**	**17,349,069**	**16,241,933**	**13,411,089**
Non current assets				
Property, plant & equipment	12,960,714	13,719,335	12,960,714	13,719,335
Investment in subsidiaries	0	0	1,000,000	1,000,000
Other non current assets	165,295	466,487	165,295	206,274
Total non current assets	13,126,009	14,185,822	14,126,009	14,925,609
Total assets	**33,750,145**	**31,534,891**	**30,367,942**	**28,336,698**
Liabilities				
Current liabilities				
Trade and other payables	1,630,506	1,770,888	941,284	1,414,941
Other current liabilities	1,146,553	969,370	51,837	8,735
Total current liabilities	**2,777,059**	**2,740,258**	**993,121**	**1,423,676**
Non current liabilities				
Non current liabilities	104,381	151,734	281	190
Total non current liabilities	**104,381**	**151,734**	**281**	**190**
Total liabilities	**2,881,440**	**2,891,992**	**993,402**	**1,423,866**
Equity				
Retained earnings	30,868,705	28,642,899	29,374,540	26,912,832
Total equity	**30,868,705**	**28,642,899**	**29,374,540**	**26,912,832**
Total equity and liabilities	**33,750,145**	**31,534,891**	**30,367,942**	**28,336,698**

Building Research Association of New Zealand Inc

Summary statements of cash flows

for the year ended 31 March 2015

	Group		Parent	
	2015 $	2014 $	2015 $	2014 $
Net cash from/(used in) operating activities	3,750,506	2,618,633	2,863,603	2,537,947
Net cash from/(used in) investing activities	(2,185,839)	(2,016,943)	(2,096,697)	(2,065,618)
Net cash from/(used in) financing activities	0	0	0	0
Increase/(Decrease) in cash and cash equivalents	1,564,667	601,690	766,906	472,329
Cash and cash equivalents at 1 April	2,646,058	2,044,368	1,496,956	1,024,627
Cash and cash equivalents at 31 March	**4,210,725**	**2,646,058**	**2,263,862**	**1,496,956**

Notes

Building Research Association of New Zealand Inc.

Notes to the summary financial statements for the year ended 31 March 2015.

1. Reporting entity

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

Financial statements for the Parent and consolidated financial statements are presented. The consolidated financial statements of Building Research Association of NZ Inc as at and for the year ended 31 March 2015 comprise the parent, its subsidiaries (together referred to as the "Group"), and the Group's interest in associates and jointly controlled entities.

Building Research Association of NZ 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 2015.

2. Basis of preparation

Statement of compliance
The full financial statements have been prepared in accordance with New Zealand Generally Accepted Accounting Practice (NZ GAAP). They comply with the New Zealand equivalents to International Financial Reporting Standards (NZ IFRS). The full financial statements have been audited and the auditor has issued an unqualified audit report.

These summary financial statements are prepared in accordance with Financial Reporting Standard No. 43 "Summary 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 are available on our website at www.branz.co.nz.

Basis of Measurement
The financial statements are prepared on the historical costs basis. The accounts are prepared on a going concern basis.

Presentation currency
These 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. Certain comparatives have been amended to match current period presentation.

3. Contingencies

The Group had no contingent liabilities as at 31 March 2015.

4. Related parties

Group entities	Country of incorporation	Ownership interest	
		2015	2014
BRANZ Limited	New Zealand	100%	100%
BRANZ Pty Limited	Australia	100%	100%

BRANZ 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 cost.

BRANZ Limited charges fees for research work and administration services carried out on behalf of BRANZ Inc. BRANZ Limited also charges BRANZ Inc for its share of the Group Executive Management Team costs, provision of accounting and IT services, and its share of insurance and marketing costs.

In addition BRANZ Limited charges its subsidiary BRANZ Pty Limited fees for the technical services that it provides.

5. 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:

Dr Helen Anderson
Board Chair
25 June 2015

Richard Carver
Chair Audit & Risk Management Committee
25 June 2015

EY
Building a better working world

Chartered Accountants

Independent Auditor's Report

To the members of Building Research Association of New Zealand Inc

The summary financial statements on pages 44 to 46, which comprise the summary statement of financial position as at 31 March 2015, the summary statement of comprehensive income, summary statement of changes in equity and summary cash flow statement for the year then ended, and related notes, are derived from the audited financial statements of Building Research Association of New Zealand Inc (the 'incorporated society') for the year ended 31 March 2015. We expressed an unmodified audit opinion on those financial statements in our report dated 25 June 2015. Those financial statements, and the summary financial statements, do not reflect the effects of events that occurred subsequent to the date of our report on those 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, therefore, is not a substitute for reading the audited financial statements of Building Research Association of New Zealand Inc.

This report is made solely to the incorporated society's members, as a body, in accordance with Generally Accepted Accounting Practice in New Zealand and the New Zealand Incorporated Societies Act 1908. Our engagement has been undertaken so that we might state to the incorporated society's members those matters we are required to state to them in our report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the incorporated society and the incorporated society's members as a body, for our work, for this report, or for the opinions we have formed.

Directors' Responsibilities / Responsibilities of the Members of the Governing Body
The directors are responsible for the preparation of summary financial statements in accordance with FRS-43: *Summary Financial Statements*.

Auditor's Responsibilities
Our responsibility is to express an opinion on the summary financial statements based on our procedures, which were conducted in accordance with International Standard on Auditing (New Zealand) (ISA(NZ)) 810, "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 and group.

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.

Opinion
In our opinion, the summary financial statements derived from the audited financial statements of Building Research Association of New Zealand Inc for the year ended 31 March 2015 are consistent, in all material respects, with those financial statements, in accordance with FRS-43.

Ernst + Young

25 June 2015
Wellington

Thanks to all members of the BRANZ team who have worked hard this year to deliver results and make a difference. We are proud of everything our team has achieved this year.

Acknowledgements

Photograph page 2 courtesy of David Wall.

Photograph pages 11 and 33 courtesy of MBIE.

Photograph page 19 courtesy of Ruamoko Solutions.

Photograph page 23 courtesy of Fearon Hay Architects.

Photograph page 25 courtesy of Warren and Mahoney.

Photograph page 27 courtesy of Melissa O'Keefe.

Photograph page 29 courtesy of Jasmax.

Quote page 38 The Future of Boards Governance, Joe Inskeep, March 2015.

BRANZ Incorporated
1222 Moonshine Road, RD1, Porirua 5381, New Zealand
T +64 4 237 1170 F +64 4 237 1171
branz@branz.nz
www.branz.nz