



## Making our buildings recyclable

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

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

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

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

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

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

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

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### READ MORE



Ged's TEDx Wellington talk.  
[youtube.com](https://www.youtube.com/watch?v=...)

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## IN THEIR WORDS



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

#### Where did your passion for recyclable buildings come from?

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

#### What has been your research journey to date?

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

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

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



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

#### How has the BRANZ scholarship programme helped you get to where you are today?

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

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