



## Building the capacity to future-proof structures

---

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

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

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

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

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

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

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

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

## IN THEIR WORDS



### Sam Leslie, Technical Sales Manager, Red Stag TimberLab

#### Why did you use the new BRANZ structures laboratory?

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

#### What kind of tests did the product need?

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

#### Why is it important to have these larger testing facilities at BRANZ?

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

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



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