



New growth

Cutting edge timber tech inspires and supports innovative research headquarters in Rotorua.

As the saying goes, you are only as good as your last performance. Though it may have originated in Hollywood, it's a sentiment that resonates with other creative sectors, too. Sharing your accomplishments is an exciting way to demonstrate to others how you are evolving and the calibre of work you're capable of – even if your business is, say, a Crown Research Institute specialising in research and technology development for the forestry, wood and other biomaterial sectors.

Scion's new headquarters, named Te Whare Nui o Tuteata, has become an internationally recognised icon of timber innovation, and its structure is a testament to the organisation's industry-leading work. Believed to be the world's first commercial building constructed using a three level, engineered timber diagrid while also being embodied-carbon neutral, the striking and airy structure has rightfully become the crown jewel of the campus. Since its completion last year, the project has been the centre of much buzz and acclaim and, to date, has impressively racked up 15 awards – including a Resene Total Colour Neutrals Award. Not only is it a feat of timber engineering, but it's also positively stunning.

Head to Rotorua and you'll find Scion's campus nestled against the redwood-lined edge of Whakarewarewa Forest Park. Since 1898, the site has held importance for the country's forestry industry. It was once the headquarters for a forest nursery for a large government-run afforestation programme, where more than 60 exotic species were planted

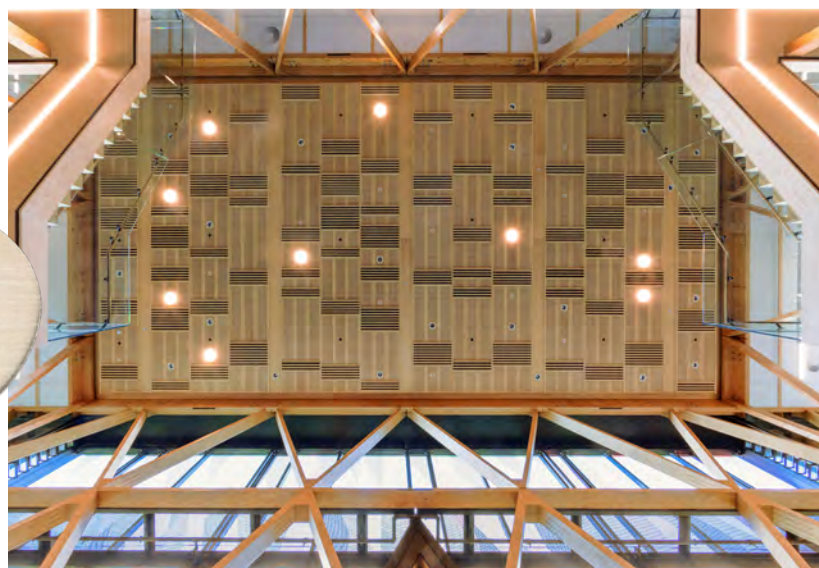
opposite, above and right: Along with 250m³ of FSC and PEFC structural timber, all of the interior finishing timbers in Te Whare Nui o Tuteata are New Zealand grown and FSC certified. Painted ceiling in Resene Ceiling Paint tinted to Resene Rice Cake, bulkheads in Resene SpaceCote Low Sheen tinted to Resene Bokara Grey, decorative interior timber stained in Resene Colorwood Rock Salt and clear coated in Resene Aquaclear satin, structural timber in Resene Aquaclear satin and exposed steel in Resene Uracryl 404 low sheen tinted to Resene Black.

Resene
Colorwood
Rock Salt

Resene
Rice Cake

Resene
Bokara Grey

Resene
Black



across 5,000 hectares to determine which species grew best in New Zealand conditions. Research started on the campus in 1947 as a government-owned forest experimental station which, in 1949, was officially named Forest Research Institute (FRI). The FRI went on to become the internationally-recognised leader in plantation forestry science now known as Scion.

For two architectural firms, RTA Studio and Irving Smith Architects, it was a dream project to work together with such an incredible client to reimagine both the form and function of Scion's sizeable campus. Their collective design work sought to bring a previously siloed workforce together into a central innovation hub while creating a defined arrival point to strengthen the public interface – something they successfully achieved through a great deal of research and thoughtfulness.

Named after Tuteata, an ancestor of the three local subtribes, Te Whare Nui o Tuteata is a cutting-



left: An exhibition area offers the public a showcase of the exciting research-led timber innovation that occurs within the building. Display stands in Resene Lustacryl tinted to Resene Bokara Grey, decorative interior timber stained in Resene Colorwood Rock Salt and clear coated in Resene Aquaclear satin, structural timber in Resene Aquaclear satin and exposed steel in Resene Uracryl 404 low sheen tinted to Resene Black.

- Resene Rice Cake
- Resene Bokara Grey
- Resene Black

edge showcase for engineered timber – not only in terms of the aesthetic but what it contributes to a carbon-zero future. A trio of glulam timber ‘peaks’, representative of the three hapū in the region, stand proud and tall at the entrance. Visitors pass through this portal to a lofty atrium where a curated exhibition of wood-fibre technology and a café welcomes them. The upper levels above provide a more private, acoustically considered open-plan office and collaboration spaces.

Extensive glazing to the building’s exterior offers an abundance of natural light and warmth and views to Whakarewarewa forest. A fritted pattern was incorporated to evoke a leafy forest canopy draping over the timber structure within. Its colours were inspired by the evergreen natives and deciduous exotics surrounding the building, both of which are used in the scientific studies carried out by Scion in their endeavour to promote forestry-based technology.

While the coloured frit not only adds further decorative beauty to the building, Adam Dwen – who served as the Project Architect on behalf of RTA Studio – says it was also vital to their

thermal strategy. “Used in conjunction with low-e performance glazing, the frit density changes depending on the shade and density of the colours in the pattern. A denser pattern was applied to north and western façades, which alter in gradient up the height of the building to help regulate internal temperatures. Conversely, the colour pattern density is sparser on the eastern and southern elevations.”

Upon entering the building, the structural timber diagrid makes an immediate impact as it rises three storeys to form the skeleton of the facility. “This high-performance laminated veneer lumber structure provides the gravity and lateral framework, with dovetail node joints which slot and glue together in an expression of craftsmanship,” explains Adam. “The diagrid demonstrates that timber structural buildings do not need to be designed like steel and concrete buildings but instead can act more like trees, where strength follows the continuous grain of the wood.

“Irving Smith Architects had a wealth of experience in designing and constructing with engineered timber through their NMIT project and others, which was hugely beneficial to the

project,” he adds. “This experience of designing with engineered timber and other wood products will definitely have an impact on future RTA Studio projects. We have high aspirations for reducing the carbon footprint with our architecture, and using wood as a material of choice will help us accomplish this.”

Though its elegant timber forms might be what draws the most attention, it’s impossible not to credit the colour scheme and the carefully curated selection of paint, stain and clear finishes as an important part the design’s success.

“The sole focus of the colour scheme was to showcase the timber elements of the building in their most favourable and natural light,” says Adam. “This steered the design team toward a selection of Resene clears that met the various technical functions but also made the timbers appear very natural. Wood stains were also selected to assist in controlling the appearance of certain timbers as they age.”

But when you’re using multiple different products to cover off different purposes, getting consistency between them is tricky. Even between one clear formula and another, there can



above and left: Core Building Protection, who completed the decorative painting, intumescent coatings and passive fire protection services for the project, is a proud member of the Resene Eco.Decorator programme (www.ecodecorator.co.nz). Owner Philip Reinecke says that the service he and his team receive is a big part of the reason they enjoy using Resene for their projects. “We like the staff’s helpfulness and product knowledge. We have never encountered a grumpy employee when we’ve gone into our local Resene ColorShop. In fact, leaving the shop, you feel rejuvenated and your spirits lifted.” Decorative timber in Resene Colorwood Rock Salt and Resene Aquaclear satin, structural timber in Resene Aquaclear satin, painted ceiling in Resene Ceiling Paint tinted to Resene Rice Cake, reception bulkhead and walls in Resene SpaceCote Low Sheen tinted to Resene Bokara Grey and exposed steel in Resene Uracryl 404 tinted to Resene Black.

Resene Colorwood
Rock Salt

be perceptible differences in the colour and sheen they impart. Among Resene’s range of products, a satin finish from one formula will appear virtually the same as a satin finish in another. However, there were some surfaces which were to be coated in only Resene Aquaclear and others that also required an intumescent coating. While Resene supplies that coating, it does not manufacture it.

“We had samples of pine wood sent to the office so that we could test both the Resene Colorwood stains and clears and check them for ourselves. For the interior structure, we wanted a finish that was as close to natural as possible so we compared different sheen levels of Resene Aquaclear with the clear intumescent coating that was required for the ground floor ceilings to ensure the two finishes looked the same side by side – and Resene Aquaclear satin was the winner.”

The design team also wanted there to be a distinguished difference between the structural versus decorative timbers, which led them to choose Resene Colorwood Rock Salt, a slightly white-hued timber stain, to colour the non-structural elements. “Resene Colorwood Rock Salt was an easy decision – the tricky part was deciding how to apply it so we got the desired level of stain,” says Adam.

Philip Reinecke, Project Director and owner of Core Building Protection, and his team were charged with decorative painting, intumescent coating and passive fire protection services for the project. To give the timber the look that the design team was after, Philip says they used Resene Colorwood Rock Salt to lighten the timber, leaving the product on for a period of time before wiping off the excess and then clear coated it in Resene Aquaclear, or Fireshield 1FR Clear Intumescent Timber Coating where required. On the exterior, they applied Wood-X Damper mineral wood oil – available from Resene ColorShops – for the glulam entry canopy to try to achieve a natural looking finish while also protecting the substrate and controlling the weathering process.

For the painted surfaces throughout the building, a restrained palette of Resene Rice Cake, Resene Bokara Grey and Resene Black was used across fibreboard ceilings, internal walls, bulkheads and structural steel. “We used Resene A4 drawdown paint swatches in order to make our selections to ensure the colours we chose complemented the timber,” says Adam.



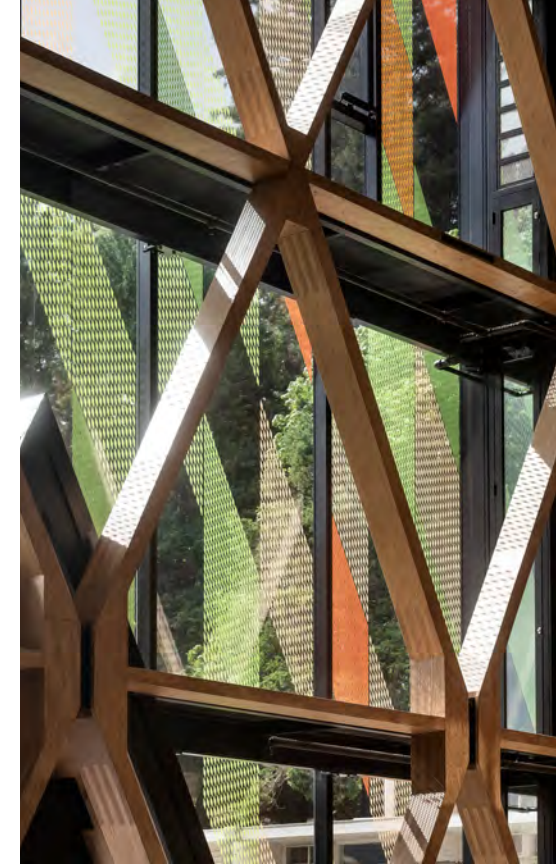
left and right: The project team's favourite details include the carved external entrance canopy finished in Wood-X mineral wood oil in Damper – available from Resene ColorShops – and the inventive three-storey engineered timber diagrid, which is clear coated in Resene Aquaclear satin. Exposed steel in Resene Uracryl 404 tinted to Resene Black and exterior fibre cement in Resene Sonyx 101 tinted to Resene Bokara Grey.

“We use Resene frequently on other projects and are familiar with what products to use to meet the level of quality we need. The paints and coatings we select are always based on the substrate or surface material but also the desired durability and finish for each situation – and they needed to be hard wearing and low maintenance. We prefer paint systems to have a minimum of three coats, be low sheen and resist ultraviolet radiation to the highest level possible. We also prefer the coatings we choose to be waterborne where possible with low volatile organic compounds – and Resene has plenty of options in this regard.”

“After some basic in-house testing carried out by Andrew Irving, we chose to use Resene Lignaguard as a temporary protective coating for the timber. This meant other Resene coatings applied over were compatible. It proved very useful in controlling the exposure of timber structural elements during the construction phase.”

From an applications standpoint, Philip says the detail of where the Resene Bokara Grey painted bulkheads met the timber was among the most challenging parts. “Those areas had near black paint butting up against light timber that had to be cut in freehand. To do that, we used artist brushes and steady hands to complete what felt like miles and miles of detailing.”

Philip says painting during the winter was also tricky. “The timber had a high moisture content due to the building’s proximity to the forest and an increase in humidity from the cooler, wetter weather. At times, it took a few heaters and dehumidifiers to regulate the temperature in order to apply the intumescent coating under the proper conditions. We had to warm the product as well as the lines feeding the coating to ensure we achieved a smooth and consistent finish on the timber.”



But despite these hurdles, Philip is proud to have been a part of the project and how it was finished. “We’re proud of the uniqueness of the building – particularly the openness and the amount of timber it features. By bringing in colours that complemented the look and feel of timber and the wide open spaces, it came out great.”

“This project needed all the trades to work together to achieve the outcome, and it was one of those great projects where it just worked. Watts & Hughes, the main contractor, was organised and supportive of the trades and there was a really good vibe overall.”

Andrea Stocchero, Scion’s Sustainability Architect and Portfolio Leader ‘Trees to High Value Wood Products’, was part of an internal advisory group that was set up by Scion to interact with the design team, outline the requirements and provide feedback on plans and designs. The group supported internal decision-making by giving technical advice. He says working with the design and construction project

teams was a great experience. “We had an open and direct communication approach with RTA Studio and Irving Smith Architects, and regular meetings and catch-ups ensured the design solutions and the final building delivered on our expectations. From a client perspective, we felt very involved in the process, which was fantastic – almost like we were part of the design team. During the construction phase, our internal project manager ensured ongoing communications and alignment with the construction team, which was another great teamwork experience.”

“If you look from the outside, you see a simple building with fascinating colours that match the forest and at the entrance, engaging Māori carvings which tell the story of mana whenua,” says Andrea. “But, architecturally, it is when you walk inside that the magic happens; the contrast between the simple aesthetic outside and the shock of entering a huge void hits. You see striking timber structure, architectural lines and natural materials in harmony with one another – that is what is so impactful.”

“We are really happy with all the architectural choices. The chosen finishes enhance the wood aesthetics while maintaining its natural look and vibe. This ended up being very respectful to our natural material of choice, but also very clever from a visual point of view.”

“We are really proud of our building. Seeing the reactions of wonder and amazement from people when they come in and admire the timber structure and the architecture confirms we achieved our aim of showcasing what timber can do.” **BW**

right: Extensive glazing allows the beauty of the internal timber diagrid structure to be viewed from the outside of the building while the coloured frit that overlays it evokes a leafy tree canopy. Peaked entrance canopy finished in Wood-X mineral wood oil in Damper – from Resene ColorShops – fascia in Resene Sonyx 101 tinted to Resene Black, exposed steel in Resene Uracryl 404 tinted to Resene Black and exterior fibre cement in Resene Sonyx 101 tinted to Resene Bokara Grey.

Resene
Black

Resene
Bokara Grey

design RTA Studio, www.rtastudio.co.nz, and Irving Smith Architects, www.isarchitects.nz

build Watts & Hughes Construction, www.whconstruction.co.nz

painting/coating Core Building Protection, www.corebp.co.nz

structural engineering Dunning Thornton Consultants, www.dunningthornton.co.nz

services engineering eCubed Building Workshop, www.e3bw.co.nz

electrical engineering Professional Consulting Services, www.pcsltd.co.nz

fire engineering Cross Fire, www.xfire.co.nz

project management RDT Pacific, www.rdtpacific.co.nz

images Patrick Reynolds, www.patrickreynolds.co.nz

