

Pā Reo



Overview

UN SDG	Aligned to NZIA Sustainable Outcomes
	Good Health and Wellbeing Design Principle: Healthy, comfortable spaces connected to nature
	Net Zero Operational Carbon Design Principle: Reduce demand first, then supply clean energy
	Social and Cultural Sustainability Design Principle: Honour Te Tiriti, strengthen belonging
	Protection of Papatūānuku and Ecological Systems Design Principle: Leave every site ecologically better

Pā Reo represents the latest evolution in a decades-long partnership between Tennent Brown Architects and Te Wānanga o Raukawa. This third major development on the Ōtaki campus replaces outdated, relocated buildings with a purpose-designed cluster of facilities that reflect both sustainable design leadership and the cultural values of the wānanga.

As part of a broader campus-wide business case, the project realises the long-term vision of removing vehicles from the heart of the campus and reinstating te taiao (the natural world) as a core element of place. The master planning – developed in collaboration with Wraight + Associates – established a pedestrian spine, connecting the campus from the earlier Ngā Purapura project through Pā Reo and into the re-landscaped central campus.

The result is a vibrant, regenerative campus core – a te reo Māori ānake (te reo Māori only) environment – featuring teaching and research buildings, landscaped open spaces, raingardens and plazas. Subtle and restrained in form, the architecture is designed for low maintenance, adaptability and long-term environmental stewardship, while fully reflecting and supporting the kaupapa of Te Wānanga o Raukawa.

Typology	Tertiary education campus (wānanga)
Architect	Tennent Brown Architects
Certification target	Living Building Challenge (Full Certification)

Key Sustainability Features

At a Glance

Client Te Wānanga o Raukawa	Location Ōtaki, Kāpiti Coast
Architect Tennent Brown Architects	Climate Zone 3
Cultural lead Te Wānanga o Raukawa	Gross floor area 1,752 m ²
Main contractor McMillan & Lockwood Central	Completion 2023
Photographer Andy Spain	



Water and Ecological Strategies

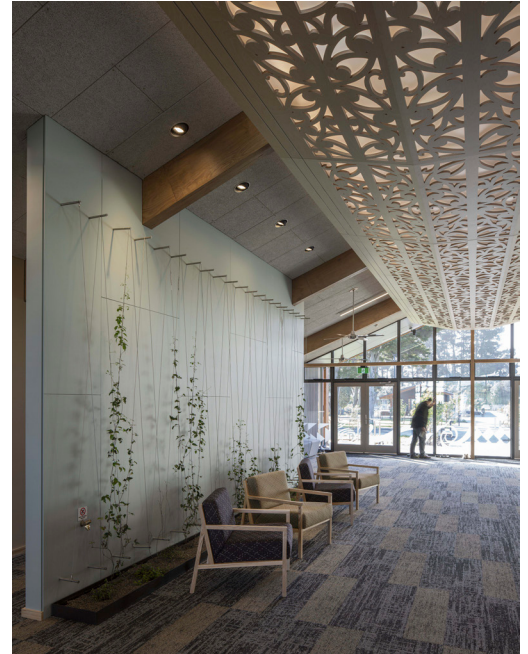
Stormwater management: - Integrated swales and raingardens - Minimal hard landscaping to maximise permeability - Onsite rainwater capture for all potable needs
Black water treatment: - Onsite septic and filtration system - Dispersal via drip irrigation to planted field
Ecological design approach: - Pre-development hydrology study used as a design benchmark - Two biophilic workshops informed a project-wide biophilic design strategy - Ecological health improvements targeted across six key indicators - Landscaping includes native planting, wetland restoration and enhanced biodiversity

Materials and Construction

Driven by the LBC's stringent requirements – particularly its prohibition of Red List chemicals – the materials strategy focused on natural, low-toxicity components, local sourcing and lifecycle carbon minimisation. Key construction features: Structure: - Combination of traditional and prefabricated timber framing - Mass timber portal frames Material selection: - No Red List chemicals (e.g. avoided CCA timber treatments; used MCA-treated timber) - Thermally modified New Zealand-grown pine for cladding - Heradesign acoustic panels, internal timber partitions - Terra Lana wool insulation - Raised timber floors in place of concrete slabs The contractors embraced the LBC philosophy, with a particular appreciation for healthier materials. Prefabrication reduced waste and build time, and Te Wānanga o Raukawa's preference for local suppliers further embedded circular economy principles.
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Sustainability Drivers

Pā Reo is designed and built to meet the Living Building Challenge (LBC) – the most rigorous sustainability certification system globally. As of 2026, only 38 buildings worldwide have achieved full LBC certification, with Pā Reo being one of them. The project aligns closely with kaupapa Māori values such as kaitiakitanga (guardianship) and kotahitanga (unity) and seeks to be both self-sufficient and regenerative. Key performance highlights: Embodied carbon: - Cradle to practical completion: 160 tonnes (91.3 kgCO₂e/m²) → 85% lower than BAU - Cradle to cradle: 810 tonnes (462.3 kgCO₂e/m²) → 48% lower than BAU Operational energy: - Predicted energy use: 78.6 kWh/m²/yr - Actual energy use: 63.6 kWh/m²/yr - Energy production: 229,100 kWh/yr → 238% of building needs Water resilience: 100% onsite water supply and wastewater treatment - One-week autonomy for water and energy systems Potable water use: 35 L/person/day for 246 people (8,632 L/day)
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Construction Waste Minimisation

Construction waste reduction was a major priority for LBC compliance, requiring diversion of at least 90% of waste from landfill. Pā Reo far exceeded this, achieving a 99.7% diversion rate across 3,060 tonnes of material, meaning only 3.8 tonnes went to landfill.

Strategies employed:

- Dedicated site waste sorting zone with full-time waste coordinator
- Use of offcuts in landscape and internal elements (e.g. timber blocking)
- Modular furniture procurement and reused furnishings
- BIM-led in construction coordination for material efficiency
- Prefabrication of roof cassettes and other structural elements
- Engagement workshops to align contractors with the kaupapa and LBC requirements
- Implementation of innovative materials such as Saveboard (made from recycled soft plastics)
- Adoption of take-back schemes and reuse of waste materials as garden fertiliser or biochar

The success hinged on early buy-in across the full team – architects, contractors, subcontractors and client. Collaboration under the shared kaupapa of kotahitanga was critical to building a cohesive, sustainability-focused construction culture.

Energy and Carbon Performance

Pā Reo is fully electric and renewably powered, generating over double its operational energy needs via an extensive PV array and battery system. All carbon emissions were minimised through design-first strategies, prioritising timber construction and reduced reliance on concrete and steel.

Resilience measures:

- One week of energy and water autonomy
- Onsite wastewater treatment
- Comprehensive IAQ (indoor air quality) monitoring

Tennent Brown Architects is a certified B Corp and have JUST certifications across the team – ensuring social justice and equity values are integrated into the project's delivery as well.

NZIA Targets for Commercial Builds

Metric	2030 Target	This project
Operational energy	<75 kWh/m ² /yr	63.6 kWh/m ² /yr metered
Embodied carbon	<750 kgCO ₂ e/m ²	91.3 kgCO ₂ e/m ²
Potable water	≥40% reduction	35 L/person/day from mains 100% potable water reduction as 100% rainwater supply
Overheating	<1% occupied hrs >28°C	Not yet measured
100% electric - No fossil fuels	100% Electric - No fossil fuels	Yes – 238% generation metered with 20 kWh battery capacity for resilience



Social, Cultural and Community Integration

Te Wānanga o Raukawa is inherently a cultural and educational institution, established in the 1980s by the ART Confederation to ensure the survival and advancement of te reo Māori and mātauranga Māori.

Cultural embedding:

- Monthly Project Steering Group (PSG) meetings ensured project alignment with the wānanga's 10 guiding kaupapa: Te Reo, Whakapapa, Manaakitanga, Wairuatanga, Ūkaipōtanga, Pūkengatanga, Kotahitanga, Rangatiratanga, Whanaungatanga and Kaitiakitanga
- Deep engagement with mana whenua throughout design and delivery
- Architecture references significant landscapes including the Tararua Ranges, Kāpiti Island, moana and repo

The LBC process, when woven with mātauranga Māori, creates a powerful synergy. As described by Rawiri Richmond (Kaihautū at Te Wānanga o Raukawa), the project stands as 'simple, but an expression of kaitiakitanga', providing a model of leadership for others to follow.



Conclusion

Pā Reo exemplifies how a culturally driven, sustainability-focused project can reach the highest international standards while remaining rooted in place, people and tikanga. Designed to regenerate both the natural environment and cultural identity, Pā Reo is not only an academic facility but a living expression of what it means to build for future generations in Aotearoa New Zealand.

By achieving the Living Building Challenge, Pā Reo sets a new precedent – proving that even smaller institutions can lead globally when the kaupapa is clear, the partnerships are strong and the commitment to kaitiakitanga is unwavering.



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