

## Charissa Snijders Architect realises world first!



Charissa Snijders Architect is thrilled that the Unison Network's Windsor Substation Switchroom has received the FIRST Living Building Challenge vs. 4.0 Petal Certification awarded through the International Living Future Institute for an Infrastructure & Landscape Typology project. First, not only in the world, but for her practice as well. A definite milestone moment to celebrate.

This ground-breaking achievement demonstrates Unison's commitment to a sustainable energy future and sets a new standard in regenerative architecture.

The Windsor Substation Switchroom, the first of its kind in New Zealand, has been meticulously and collaboratively designed by a carefully constructed team, primarily comprising of Charissa Snijders Architect, Tricia Love Consultants and the key driver within Unison, engineer Paul Humphreys.

Unison's brief was clear – to pilot a building that was innovative, low carbon, relocatable, modular, scalable and sustainable. One that could change the way substations are designed and built in the future. To do so required the team to challenge the status quo at every turn, including design, material selection, alternative solutions, education and demonstration to gain Council approvals. Under challenging circumstances including COVID lockdowns, they methodically broke down every barrier to demonstrate that infrastructure can be sustainable and even go further – one that can positively contribute to both the environment and community. The level of change realised is transformational. Initial targets were surpassed and significant outcomes beyond the original expectations of Unison were realised.



Te Kāhui  
Whaihanga  
Practice 2023





Some very notable ESD (Environmentally Sustainable Design) achievements for this Petal Certification (Energy, Equity + Beauty) which lead the way in resilient infrastructure design are:

- Materials: 4 Our team were committed to going beyond CORE requirements – we used Red List free' materials as a priority, including 8 DECLARE products. Also repurposed 40 salvaged 1950s Unison power poles for the canopy, screens and internal furniture. Minimised carbon emissions through sourcing 48.5% of materials within 2,000km of site.
- Construction waste: Through strong waste management during design and building, the team was able to divert 99% waste from landfill.
- Net positive water: rainwater harvesting supplies all water on site
- Net positive energy: Thermal modelling was done pre construction using Design Builder modelling package – enabled us to not use the typical 2 Airconditioning units and instead used a passive heating/cooling/humidity monitoring MVHR system. Solar energy powers 100% of Windsor switch room's needs and more. The switch-room produces more energy than it requires, (last year there was an excess of 3,315 kWh + additional energy storage to Dual 110V DC Lithium Ion battery for additional resiliency). Energy produced above and beyond its requirements is sent back to the grid for community use.
- Compared to a typical switchroom of equivalent size we achieved 209% less carbon associated with primary materials (walls, structures and internal finishes – and embodied carbon + 363% in absolute carbon reduction – which includes embodied and operational (over a lifetime of 60 years) than a typical substation
- biophilic design is incorporated throughout the project
- native ecology is restored on site
- two organisations have received the JUST Label which addresses diversity and equity





This has been a rewarding project to be a part of and so beautifully demonstrates the power of architecture to facilitate collective and transformational change. Only by working together within our construction industry can we bring positive change to ourselves, our environment and our communities. One project at a time.

