



Station entrance at Unanderra incorporating Aboriginal design integration celebrating local Dharawal culture and storytelling.



Towradgi Station. Outcomes improved accessibility via new lifts, a footbridge connecting both of the stations and upgraded facilities throughout the station.

As part of Transport for NSW's Transport Access Program, Degnan delivered accessibility upgrades at Unanderra and Towradgi stations, creating safer, more accessible and inclusive journeys for customers while achieving industry-leading sustainability outcomes.

Despite being relatively small projects with limited budgets and scope, both upgrades achieved outstanding Infrastructure Sustainability (IS) ratings. Unanderra achieved an As Built rating of 84.06 points, while Towradgi achieved 82.66 points, demonstrating that meaningful sustainability outcomes can be delivered at any scale.

The projects included new footbridges, lifts, accessible parking, kiss-and-ride facilities and upgraded amenities, improving access for customers of all abilities. Beyond physical upgrades, Degnan worked closely with Transport for NSW and local stakeholders to embed Designing with Country principles, incorporating Aboriginal stories, artwork and cultural narratives into the station environments to create places that reflect and celebrate local Dharawal heritage.

Innovation played a key role in project delivery. At Unanderra, Degnan partnered with Makinex to develop and trial an Australian-first container-top solar system, reducing construction energy use and emissions. At Towradgi, Degnan collaborated with the University of Wollongong to introduce an innovative low-carbon foamed concrete solution, creating a new pathway for sustainable construction materials within the rail corridor. These initiatives demonstrated how industry partnerships can drive practical innovation while delivering lasting environmental benefits.

The projects also achieved **significant sustainability outcomes**, including reductions in whole-of-life energy consumption, greenhouse gas emissions, water use and embodied carbon. Through innovative design, collaboration and a commitment to sustainability, Degnan delivered infrastructure that not only improves accessibility today but creates long-term benefits for the community and environment

Key outcomes included:

- Industry-leading IS Design and As Built ratings.
- Improved accessibility through new lifts, footbridges and upgraded facilities.
- Australian-first sustainability innovations delivered in partnership with industry and academia.
- Significant reductions in energy use, carbon emissions and water consumption.
- Aboriginal design integration celebrating local culture and storytelling.
- Long-term social, environmental and community benefits.



The Unanderra Station upgrade is an accessible and welcoming station, connected to Country and the local community.



The Infrastructure Sustainability Council (ISC) is a not-for-profit organisation promoting sustainable infrastructure across Australia and New Zealand. Its mission is to enhance productivity and liveability through a sustainability rating scheme, education and training, and a community of experts for knowledge sharing.



EXCELLENCE IN ENVIRONMENTAL OUTCOMES - FINALIST | INFRASTRUCTURE SUSTAINABILITY COUNCIL
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DEGNAN

TOWRADGI & UNANDERRA STATION UPGRADES



In 2024, Degnan was a proud finalist at the Infrastructure Sustainability Council's Awards for achievements across the Towradgi and Unanderra Station Upgrade Projects. The projects were recognised for their innovative environmental and social initiatives, including:

Cultural Integration through co-design – Collaborated with Aboriginal Elders and Knowledge Holders to incorporate culturally significant designs, including sperm whale motifs and the Two River Story, enhancing community pride and preserving Indigenous heritage.

Community Support Initiatives – Supported the Unanderra Community Centre with weekly food pantry donations, Christmas hampers, and a tutoring program, addressing local food insecurity and educational needs.

Heritage Celebration – Installed educational signage at Unanderra Station to showcase its history and strengthen the community's connection to local heritage.

Australian Wildlife Mural – partnered with a local school and a local artist to bring a mural to life at Towradgi Station, inspired by students' artwork. The mural enhances the station aesthetics while building community pride.

Environmental Sustainability – Introduced a containerised solar PV system at Unanderra and low-carbon foamed concrete at Towradgi, alongside ecological improvements like native plantings to boost urban biodiversity.



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The Unanderra Station Upgrade was delivered as part of Transport for NSW's Transport Access Program (TAP), improving accessibility and customer experience while achieving outstanding sustainability outcomes. The project included the installation of new lifts, an accessible footbridge, upgraded amenities and improved station access, making public transport easier to use for all members of the community.



Despite the project's relatively small scale, the upgrade achieved a leading Infrastructure Sustainability (IS) Design and As Built rating score of 84.06 points, demonstrating that strong sustainability outcomes can be achieved regardless of project size.

Project Legacy

The Unanderra Station Upgrade incorporates Aboriginal stories and imagery to create spaces that are culturally meaningful and connected to Country. Through the use of sandblasted concrete featuring Indigenous artwork, biophilic design elements and thoughtfully designed gathering spaces, the station reflects the stories, landscape and heritage of the Dharawal people. The integration of Aboriginal culture into infrastructure design required extensive engagement and collaboration with the right stakeholders to ensure cultural narratives were represented respectfully and authentically. By embedding these elements within the broader urban design while meeting technical requirements and long-term asset performance standards, the project demonstrates how culturally informed design can enhance the customer experience, strengthen community connections and create lasting social value when delivered with care and consideration.



Australian First Innovation: container-top solar photovoltaic system



Design elements that celebrate the stories and connection to Country of the Dharawal people

Sustainability Outcomes

Through careful design and construction planning, the project delivered measurable environmental benefits, including

- 59% reduction in whole-of-life energy consumption
- 275 tonnes of carbon emissions avoided
- 23% reduction in material impacts measured through IS EnviroPoints
- 17.7% reduction in whole-of-life water consumption

Australian-First Innovation

A standout achievement was the development of an Australian-first container-top solar photovoltaic system through a partnership between Degnan and Makinex.

The prototype system was designed to connect directly to site offices and temporary construction facilities, reducing reliance on traditional power sources during construction. Compact, portable and capable of generating approximately 10-12 kWh per day, the system successfully demonstrated a practical approach to reducing construction emissions while maintaining operational efficiency. Following the trial at Unanderra, the technology was further refined and commercialised for wider industry use.

Designing with Country

Working closely with local stakeholders, the project incorporated Aboriginal design elements that celebrate the stories, history and connection to Country of the Dharawal people.





The Towradgi Station Upgrade transformed the station into a more accessible and inclusive transport hub, improving the customer journey while delivering significant sustainability and innovation outcomes.

The project included new lifts, accessible pathways, upgraded station facilities and improved connections throughout the precinct, ensuring the station is accessible to customers of all abilities.



Sustainability Outcomes

- 39% reduction in whole-of-life energy consumption
- 140 tonnes of carbon emissions avoided
- 12% reduction in material impacts measured through IS EnviroPoints
- 17.8% reduction in whole-of-life water consumption
- 9,969 kL of water savings across the asset life cycle



Australian-First Innovation

In partnership with the University of Wollongong's Sustainable Building Research Centre, Degnan delivered an Australian-first application of innovative foamed concrete façade panels within a live rail environment. Incorporating crushed glass, carbon fibre reinforcement and specialised foaming agents, the lightweight material provides a lower-carbon alternative to conventional concrete while supporting the reuse of waste materials. Successfully introducing the product required close collaboration between Degnan, Transport for NSW and the research team to overcome fabrication, installation and technical approval challenge.



Solar-Powered Street Lighting

To further reduce operational energy demand, the project incorporated solar-powered street lighting throughout the station precinct. The initiative delivers ongoing energy savings while reducing whole-of-life operating costs for the asset owner.

Aboriginal Design Integration

Located on Dharawal Country, Towradgi Station was designed to bring the stories and symbolism of the Wodi Wodi Dharawal people to life. Aboriginal design elements are embedded throughout the station, including imagery inspired by the forest canopy and the Seven Trees, expressed through the footbridge steel structure and other architectural features. These elements create a stronger connection to Country and provide customers with a station environment that reflects the cultural heritage of the local area.

Project Legacy

The Towradgi Station Upgrade demonstrates how accessibility improvements, sustainable design and innovation can be successfully combined within a live rail environment. The project leaves a lasting legacy through improved customer access, reduced environmental impacts and the integration of culturally significant design elements that strengthen connections to place.

