

MIL-OSI New Zealand: iTwin – we win! Takitimu North Link wins international award

New Zealand Transport Agency

The Takitimu North Link project has been recognised as world-class for a model-based digital approach to its design and construction that will reduce carbon emissions and improve construction efficiency.

The project won the significant global award in London in November, taking out the Roads and Highways category at the Bentley Systems 2022 Going Digital Awards in Infrastructure.

“This is outstanding recognition for the Takitimu North link team. We’re extremely proud of the builder’s lead designers, Beca for implementing an integrated, model-based digital approach that continues to support the work being delivered by Fulton Hogan and HEB Joint Venture and the design subconsultant Holmes,” says Jo Wilton, Regional Manager of Infrastructure Delivery for Waka Kotahi NZ Transport Agency.

The model-based approach that won the team the award is known as a digital twin, or iTwin®.


“The use of a digital twin as the Takitimu North Link project model provides better outcomes for the community, the environment and the budget,” says Ms Wilton.

A digital twin (iTwin) is a 3D visualisation tool that designers, builders, and Waka Kotahi can use to understand the evolving plan. It means all the different disciplines involved in building a road, such as designers, geotechnical, structural, and environmental engineers can share their designs and information in one place.

And while the digital twin is virtual, it’s benefits are real life.

The use of the iTwin to design the Takitimu North Link has reduced carbon emissions for the construction of the project by at least 10 percent. For example, the iTwin has helped enable earth cuts to be used as fill or deposited onsite. No imported fill is required, and no material is carted offsite. The local road network has been freed of 22,000 truck movements, 900,000km of journeys, which equates to a 560-tonne reduction in carbon emissions.





A focal point in designing and delivering the Takitimu North Link has been around sustainability as part of the New Zealand Upgrade Programme.

Once completed the New Zealand Upgrade Programme project will better travel options and improved safety in the western Bay of Plenty, supporting economic development and population growth.

As well as better environmental outcomes, the use of a digital twin has enabled a host of benefits throughout the design stage and the benefits will continue through the construction phase.

- ◆ The twin was used to determine the most cost effective, environmentally, and socially beneficial design option before spades went in the ground.
- ◆ Designing the eight bridges with this method resulted in significant efficiencies compared to previous manual methods, as the design was linked to the road alignment and quick real time updates were possible.
- ◆ With an integrated road model with road furniture, utilities and now the drainage network linked to the road model, design productivity became 25% more efficient.

“Using digital solutions like this is a key focus for Waka Kotahi to help improve construction efficiency and sustainability,” says Ms Wilton.

The true value of this approach will be revealed as construction continues, with a reduction of rework.

The annual Bentley Systems 2022 Going Digital Awards in Infrastructure celebrates the work of Bentley software users who are progressing infrastructure design, construction, and operations throughout the world.

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