



1 Point Cloud Data for the Hawera 110kV bus captured by laser scanners. 2 A render of an early concept of the switchyard extension. 3 New Gantry Structure

## HAWERA SUBSTATION REFURBISHMENT

BECA for Transpower

Project Location: Wellington



The Hawera Substation Refurbishment involved a complex 17 stage construction sequence. This enabled the substation refurbishment to be completed without disruption of supply to Transpower's customers, including PowerCo, Origin Energy and Fonterra.

The key objective for this project was to increase site capacity while providing security of supply to all stakeholders. Essential success factors to Transpower included; safety, accelerated programme, design/construction cost certainty, and meeting stakeholder requirements.

The project was challenging and technically complex due to the multidisciplinary nature, spatial constraints of the site and electricity needs of project stakeholders requiring work to be carried out within a live site. Through the use of new technologies, including laser scanning and three dimensional (3D) modelling, and development of a complex staged construction sequence, the objectives of the refurbishment were achieved.

The innovation and technical expertise Beca brought to the project cumulated in a transparent and well-structured set of design documentation. The constructor, ABB, followed the design documentation and together, with visibility and alignment with the project objectives successfully commissioned each stage. The final stage was completed in July 2017, three months ahead of schedule and under budget.

Key outcomes for the project include:

- No safety incidents during the project
- Constructability of the complex works addressed through the use of a 3D model, the first in New Zealand for a Substation Refurbishment of this scale
- A System Project Overview (SPO) document that detailed the complex construction stages and was commended by Transpower and the Contractor.
- Achieving key project objectives including; delivering to programme and completion under budget, this delivered a successful outcome for the project stakeholders.

### Judging & Copyright Statement

This project is an entrant in the 2018 INNOVATE NZ Awards of Excellence competition. The winners will be celebrated at our Awards Gala Dinner on Friday, 3rd August 2018 in Hamilton.

Images and text remain copyright of ACENZ and the consultant firm entering the project. Users are asked to give credit to the photographer where this is specified. ACENZ and INNOVATE NZ are trademarks of the Association of Consulting Engineers New Zealand.