



CASE STUDY: Larcomb Substation

To meet the increasing electricity needs from Larcomb, Rolleston and the surrounding districts, Orion New Zealand commissioned a greenfield substation project incorporating the latest technology.

HIGH VOLTAGE
+ INDUSTRIAL

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PROJECT SCOPE

Connetics was awarded the competitive tender to build the Larcomb substation in late 2008 with a tight completion deadline of 31st March 2009. The substation was commissioned by Orion to future proof the network for residents, businesses and the rural community in Larcomb, Rolleston and surrounding districts.

CHALLENGES

The short timeframe of only four months was the biggest challenge because this was effectively reduced to three months because of the Christmas break.

The Larcomb substation supplies electricity in multiple directions. Crossing a rail corridor and State Highway 1 meant that the cabling needed to be taken underneath the rail lines and road without disrupting the traffic flow or rail service. Working in the rail corridor and in close proximity to State Highway 1 presented its own challenges. The 33kV and 11kV overhead network needed to be realigned across State Highway 1 and a rural feeder road.

SOLUTIONS

Upon being awarded the tender, Connetics immediately engaged subcontractors and commissioned the manufacture of key materials. Martin Civil Construction were appointed the civil works to prepare as much as possible before the Christmas break. The critical path was established. Significant time savings were generated.

Most of the concrete foundation slabs were precast offsite. These were transported and installed onsite when earth works were complete. This technique was very successful and considerably reduced the critical path speeding up the construction process.

Routing cabling out from the substation in multiple directions, including under State Highway 1 and the main trunk rail line, without disrupting the traffic required considerable planning. The cables were laid in a steel pipe under the main trunk line and highway while the traffic continued to flow smoothly. Both thrusting and trenching techniques were deployed. In addition, cabling was laid at a busy intersection at the end of a passing lane on State highway 1, which required careful traffic management. In consultation with the authorities, Connetics made any necessary changes to the traffic management plan as required and laid the cables with minimal disruption to the traffic and no train delays.

This particular substation was designed with the future in mind and can be modified for greater capacity with only minor changes. It will initially be operated as a 33/11kV substation, but it can be converted to a 66kV supply as the region's needs change. It currently accommodates one transformer but can easily be configured to accommodate a second with minimal changes.

RESULTS

The Larcomb substation was commissioned to an adjusted deadline due to minor work that had to be completed after the original date. Orion visited the site regularly and were happy with the precise and timely reporting of all issues as well as the clear communication channels they had with Connetics at all times during the construction.

"The Larcomb greenfields project has progressed exceptionally well, with minimal delays. Due to the many faceted works (Overhead, Cables and Substations) the communication and planning needed to be at the highest level, and Connetics provided that. Any issues were sorted with a minimum of fuss, and the professionalism shown is something Connetics can be proud of."

Andy Parr
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