**Key Facts**

- **Client:** Transpower
- **Location of the project:** Auckland, New Zealand
- **Quantity of order:** A 220 kV turnkey cable system
- **Total cable route length:** 19 km
- **Duration:** 2011 – 2014

**Scope**

- Design and engineering of a turnkey cable system.
- Manufacturing of single core XLPE insulated cable with stranded copper conductor 2500 mm².
- Cable-laying and installation.

**Location**

![Location Map]

**Upgrading the North Auckland and Northland grid**

NKT’s cable system ensures additional transmission capacity in New Zealand.
Reliable improvement of New Zealand’s national grid

Safety focus from planning to installation paved the way for success.

The project

The electricity transmission in the Auckland urban area had to be carefully reinforced.

The work was initiated by Transpower, the state-owned enterprise responsible for electric power transmission in New Zealand. The North Auckland and Northland grid upgrade project, the NAAaN, included the supply and installation of an underground cable system under challenging conditions that called for the highest possible operational and safety standards.

Among the challenges were a 9 km tunnel installation alongside other live circuits and installation along roads and bridges in a heavily populated urban environment. In addition to the operational, technical and logistic challenges, it was important to manage cultural and geographical differences in this global project involving players in New Zealand and Australia as well as across Europe and in other locations around the world.

The NAAaN project included new substations and a 220 kV (kilovolt) cable link to meet the long-term electricity needs of the regions concerned. NKT was selected to complete the link between the Pakuranga and Hobson Street substations – which covered a distance of 19 km and included installation in tunnels, across bridges and through the busy urban area.

The solution

We designed, manufactured and installed a project unique 19 km turnkey cable system.

To meet the requirements, we developed a 2500 mm² CU conductor with enamelled wires as well as a new methodology to remove the enamel without damaging the conductor.

We produced the cables in our ultra-modern facility in Cologne, Germany, and supplied them on huge drums, each weighing over 60 tonnes.

Each project section presented its own particular challenges. The Penrose to Hobson Street section involved the 9 km tunnel. Health and safety issues were in focus due to installation in a 60 m deep shaft and work in a tunnel with live 110 kV, 33 kV and 22 kV circuits running above and through the joint bays. Our project team developed measures to deal with the risks, and the customer was especially impressed by a joint bay tent that we created to allow jointing operations to proceed safely and smoothly.

Our team was also involved when the customer developed a special cable-laying machine.

In the Pakuranga to Penrose section, we had to handle traffic management and the crossing of two rivers. We installed the cables onto existing bridges which were reinforced. Minimizing the impact on residents and businesses and keeping the local community updated were important factors for the successful completion of this prestigious project.

“We delivered a perfectly suited cable system all while taking care of safety issues and minimizing disturbance for local residents and businesses.”