

# HVDC INTER-ISLAND LINK POLE 1 REPLACEMENT PROJECT FACT SHEET



The HVDC inter-island link is the transmission link between Benmore substation in the South Island and Haywards substation just north of Wellington. It enables the transportation of power between the North and South Islands.

The link consists of two separate circuits, with major converter systems at each end. These converter systems are called Pole 1 and Pole 2. They convert electricity from alternating current (AC), which runs through most transmission lines in New Zealand including the lines that run into Haywards and Benmore substations, to direct current (DC), which is more effective for transporting power over long distances and is used over the HVDC link.

The HVDC link also includes three undersea cables across the Cook Strait, two of which are connected to Pole 2 and one connected to Pole 1. These cables are in good condition.

## What is the HVDC Pole 1 replacement project?

The project, worth up to \$672 million, involves replacing the 43-year-old Pole 1 equipment at Haywards substation (north of Wellington) in the North Island and Benmore substation in the South Island, with new state-of-the-art thyristor valve units. The project will increase the capacity of the overall HVDC link to 1000 MW from 2012 and 1200 MW from 2014.

Pole 2, which was fully commissioned in 1992, continues to operate reliably and has been able to carry additional electricity since the old Pole 1 was stood down in September 2007.

## Why is this project important?

The HVDC link is a critical link for New Zealand as it balances the distribution of energy between islands, helping to carry electricity from where it is generated to where it is needed. As much of our electricity comes from renewable generation, this is more sustainable for the country. It also helps to facilitate development of renewable generation like wind and hydro, which is often located a long way from major load centres.

Most importantly, the HVDC link provides:

- the South Island with access to the North Island's gas and coal generation (important for the South Island during dry winter and summer periods); and
- the North Island with access to the South Island's large hydro generation (important for the North Island during peak winter periods).

**Who is Transpower?** Transpower is the owner and operator of the National Grid – the high voltage transmission network made up of lines and substations connecting areas of generation with towns and cities across New Zealand.

TRANSPOWER

Transpower New Zealand Ltd The National Grid

**What will the replacement works involve?**

The work required to replace the existing Pole 1 would be largely confined to work at or near Benmore substation in the South Island and Haywards substation in the North Island. Specifically, the substation work would involve extension and further seismic strengthening of the existing switchyards and construction of an additional switchyard at Haywards, together with new transformers. The control systems for Pole 2 will be replaced once the new Pole 1 is fully commissioned and operational.

The overhead transmission line forming part of the link will also need some refurbishment works. This would be undertaken at the same time as the Pole 1 replacement.

**Will the works change how the substation sites currently look?**

Yes. The site changes at Benmore substation are relatively minor. The Haywards substation site will be the most affected due to the limited amount of space available to house the new equipment needed to operate the new Pole 1 reliably and safely.

We are currently working on a number of options for the layout of the sites and will make these available as soon as they are finalised.

Existing Benmore →  
substation



Existing Haywards →  
substation



**When will the old Pole 1 be decommissioned?**

Half of Pole 1 has already been decommissioned. The remaining half will be decommissioned, including the removal of any remaining mercury, after the new Pole 1 is commissioned. A separate plan is being developed to ensure the mercury is removed and disposed of safely.

**What is the timing for this work?**

Technical specifications and planning works for both sites are now well underway. This involves scoping the actual design and configuration of the switchyards and equipment, as well as procurement and tendering.

The new Pole 1 is due to be operational by 2012, increasing the capacity of the overall HVDC link to 1000 MW; however, works will continue onsite until 2014 to enable the capacity of the overall HVDC link to be increased to 1200 MW.

A proposed timeline is included below.

ACTIVITY	DATE
New Pole 1 contract awarded	September 2009
Site works start at Haywards and Benmore substations	January 2010
New Pole 1 commissioned	April 2012
1000 MW HVDC link operational	July 2012
1200 MW HVDC link operational	August 2014

**What approvals are needed for these works?**

Transpower received final Electricity Commission approval for the works in September 2008, following an extensive consultation process.

All works will be contained within the existing substation sites, which are owned by Transpower.

However, we recognise that there are some properties near the site boundary at Haywards substation that may experience some visual or noise impact due to the changes at the substation site. We will be talking directly to those landowners about our works and discussing any concerns that they may have throughout the project.

**Are any properties affected by these works?**

There will be times throughout the project where large pieces of equipment i.e. transformers will need to be transported to both Benmore and Haywards substation sites. There may also be increased traffic at certain times during the construction period.

We will keep communities updated on this as we move through the project and ensure that advance notice is given of any possible traffic delays that may be experienced by the public due to our construction movements.

**Will there be any further updates?**

Yes. We will continue to keep people informed throughout the project. Further information like this factsheet will be released on a regular basis to keep you updated. Information will also be updated frequently on our Grid New Zealand website at [www.gridnewzealand.co.nz](http://www.gridnewzealand.co.nz).

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For more information on the HVDC inter-island link Pole 1 replacement project, please call 0800 33 88 66 or visit [www.gridnewzealand.co.nz](http://www.gridnewzealand.co.nz)

