

THE WAIRAKEI RING PROJECT CONSULTATION



The Wairakei Ring

We are presently investigating the ability of our transmission network between Whakamaru, Atiamuri, Ohakuri, Wairakei and Poihipi substations – the Wairakei Ring – to connect large amounts of new electricity generation in the future.

The Wairakei Ring is an important part of our core network – it helps to transfer power north and south, while also supplying the Bay of Plenty and Hawke’s Bay regions. A map of the region is provided below.

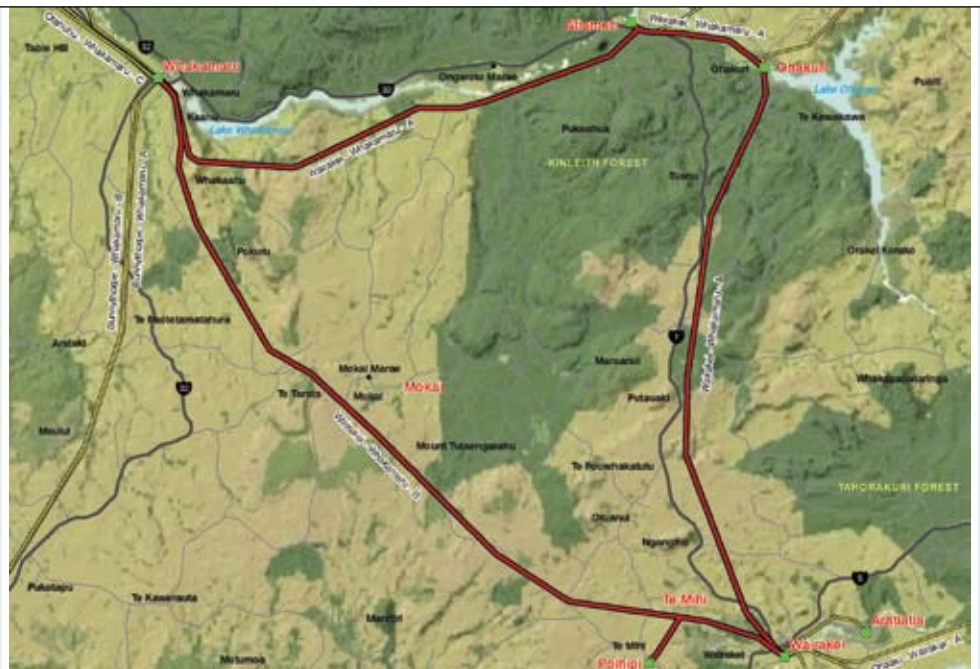
The Wairakei Ring consists of two transmission lines:

- Wairakei–Whakamaru A line (connecting Wairakei, Ohakuri, Atiamuri and Whakamaru).
- Wairakei–Whakamaru B line (connecting between Wairakei and Whakamaru via Poihipi Road).

Both lines are single circuit ‘flat top’ lines operated at 220 kV.

Map of the Wairakei Ring area →

Transmission lines being investigated for upgrade —



LINE	LENGTH (KM)	NUMBER OF TOWERS	CONDUCTOR DIAMETER (MM)
Wairakei-Whakamaru A	56	150	26
Wairakei-Whakamaru B	38	110	29

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.

Accommodating planned new generation on the Wairakei Ring

A number of proposals are underway to build more geothermal generation in the Wairakei Ring region. There are some proposals more likely to go ahead than others, and these are set out in the table below:

LOCATION/NAME	SIZE (MW)	COMPANY	COMMISSIONING DATE
Centennial Drive Binary Plant/Taupo	17	Contact Energy	2009
Nga Awa Purua/Taupo	110	Mighty River Power	2009
Te Mihi	225	Contact Energy	2011
Nga Tamariki	80	Mighty River Power	2012
Tauhara	200	Contact Energy	2012
TOTAL	632 MW		

Some of this new generation is a direct response to the Government's New Zealand Energy Strategy that targets 90% of electricity being produced from renewable sources by 2025.

Further projects are also being considered. Ultimately, well over 1,000 MW of new generation could be developed in this region.

Capacity of the existing transmission network in the Wairakei Ring

While our current transmission network is sufficient to cope with the existing generation, large amounts of new generation could be constrained at peak times (i.e. when demand is high), without some further investment in the National Grid.

To determine what form that investment takes, we have already asked the electricity industry to provide some further information on what non-transmission options might be available, so that any new transmission options could be deferred to a later date. That process has now finished, and unfortunately, no supply or demand side options (i.e. asking large industrial users to reduce their electricity use at peak times in exchange for a financial payment) were considered appropriate, leaving only transmission options like reinforcing existing lines or, if that is not a feasible solution, building new lines, to be considered further.

Four high-level options have been identified as possible solutions to provide greater capacity. Descriptions and illustrations of these options are enclosed in this pack. Transpower is still scoping these options and does not have a preferred option at this stage. We would very much appreciate your feedback on these.



Options for assessment We have been exploring four transmission options for providing greater capacity in the Wairakei Ring area to help connect new generation proposals.

We need to determine which of these options (or a combination of them) would be the most appropriate to propose to the Electricity Commission (who need to approve Transpower's investments). Each of these options has advantages and disadvantages associated with it, and we are inviting your feedback on those comparisons to help us make that decision. In all these options, the line voltage would remain at 220 kV.

Questions and Answers

Does this new project change the need for the planned line between Whakamaru and Auckland?

No. The new 220/400 kV line between Whakamaru and Auckland is to transport power to Auckland and further north to meet increasing demand in those areas. This project is to provide more capacity in the Wairakei Ring lines so that increasing amounts of new generation in the region can be connected to the National Grid. It is particularly important given it is renewable generation that will contribute to meeting the 90% renewable generation target by 2025 outlined in the Government's New Zealand Energy Strategy.

Why don't you wait for the generation to be built before upgrading the transmission lines?

We need to start investigating the project now so that we have enough time to consider the options and obtain approvals to build a solution, whether it's an upgrade of the existing lines or a new line. Generation only takes around three years to build, but if a new transmission line is needed, that could take around seven years to build.

How will you decide which option is built?

All Transpower projects require approval from the Electricity Commission, and that requires the proposed project to meet the Grid Investment Test – a type of national cost/benefit test. We will be using the feedback that you provide to help determine which option to take forward.

When will you have a final option?

We hope to have a final preferred option by the end of 2008.

Can I have a say?

Yes. We are inviting all communities living in or near the Wairakei Ring to look at the four options we have identified, consider the pros and cons of each option, and give us their feedback on their preferences by the end of September using the feedback form provided. The feedback form is also available from www.gridnewzealand.co.nz/wairakei-ring.

How can I keep up to date on this project?

We will make all documents available on the www.gridnewzealand.co.nz website. You can visit this site and subscribe to this project so that you are emailed as soon as we update content, including adding new documents.

When are you planning to have the proposed option built?

This depends on which option is chosen and how generation develops in the Wairakei area. Naturally, a new line would take longer to implement than an upgrade of the existing lines. It might be that any option, or suite of options, chosen can be undertaken in stages too.

Could a new line replace the existing line?

Yes. One of the high-level options being considered is to install a double circuit 220 kV line to replace one of the existing single circuit 220 kV lines. We won't really know more until we've refined our options.

Could more than one option be chosen?

Yes. It is possible that the best solution is one that combines reconductoring, duplexing and new build. We will look at the extent of combining options as we refine them further with the help of your feedback.

What are the key timings/events from here?

Questions and Answers (continued)

The timings for this project are set out in the table below:

DATE	ACTIVITY
September 2008	Transpower invites feedback on its short-listed options – the options enclosed in this pack.
Early October 2008	Transpower assesses feedback and feeds this into the process to determine a preferred solution.
Late October 2008	Transpower releases a consultation paper on how it has applied the Grid Investment Test (GIT) to the short-listed options and which option is preferred from that process.
Late October to mid–November 2008	Transpower reports back to the community on how the feedback was used.
Late November 2008	Transpower assesses feedback from the GIT consultation to determine a preferred option.
Mid–late December 2008	Transpower proposes its preferred option to the Electricity Commission for funding approval. The process and timetable for the Electricity Commission to consider this proposal beyond December has yet to be confirmed.

How will you consult for this project?

We recognise the need to consult openly and transparently with affected parties. The consultation process for this project includes:

- talking to local stakeholders/landowners about technology options before a preferred option has been selected;
- using the input of local stakeholders/landowners to assist in choosing a preferred option;
- more openness on the need and options to solve that need; and
- interaction with the Electricity Commission before the project starts to ensure an agreed approach.

I have land under the existing lines. Will I get compensation?

Transpower will compensate any directly affected landowner who is negatively impacted by our works. Whether there is a negative impact, and its extent, depends on the option chosen. Until the final option is selected, we cannot really provide specific guidance on what form compensation might take.

Transpower will be talking openly and working closely with affected landowners throughout the process to ensure they are kept informed and an appropriate arrangement for both the landowner and Transpower is entered into.

Why not replace one of the existing lines with an underground cable?

The costs of a high voltage underground cable make this option uneconomic in this case. As an example, for the North Island Grid Upgrade Project, our estimated cost for 9.5 km of underground cable works out at about \$10 million per kilometre compared to less than \$1 million per kilometre for the overhead line segment.

The lines in my area have already been upgraded recently. Does this still mean that further work is required?

Yes. The upgrade works undertaken over the last 10 years on the Wairakei-Whakamaru A and B lines were by way of a thermal upgrade – to increase the capacity of the existing conductors by operating at higher temperatures. Such a thermal upgrade would not provide sufficient capacity to meet the rapid increase in geothermal generation projects in this region.

For more information on the Wairakei Ring Project, please visit www.gridnewzealand.co.nz
Alternatively call us on 0800 33 88 66, or email gridupgrade@transpower.co.nz

