How to have your say

Your views will play and important part in planning the upgrade of the Pakuranga substation and the choice of the new cable route(s). Your opinions and local knowledge can also ensure that the possible effects of construction and operation can be fully assessed and managed to minimise community disruption.

There are a number of ways you can take part in the consultation and have your say. Here are some ways you can find out more about the project and give us your feedback

Make a submission:

Let us have your comments. A submission form is available on the project website **www.gridupgrade.co.nz** (click on 'Have your say'), from the Botany Downs and Pakuranga libraries and the Pakuranga Citizens Advice Bureau. Copies will also be available at the informal drop-in sessions or you can call us on 0800 33 88 66 to ask for a form. Please forward your comments to us by 1st December 2006.

Get in touch with us

You can call us free on 0800 33 88 66. We will have extended hours between 8am and 9pm on weekdays and 8am and 6pm on Saturday and Sunday for the first two weeks of Consultation. Our regular weekday call centre hours of 8am to 6pm will then resume.

Your letters and comments are also welcome. You can write to us at:

National Grid Upgrade Project
Transpower NZ Ltd
Freepost 182915
PO Box 1021
Wellington

Excavation in Fanshaw Street

Drop-In Centre

There will be a drop-in centre at the Botany Downs Library from Friday 27th October to Saturday 11th November where you can talk to a Transpower representative to find out more about the proposals and give us your feedback. Staff will be available:

Mondays	12pm to 5:30pm
Tuesdays	12pm to 7pm
Wednesdays	12pm to 7pm
Thursdays	12pm to 8pm
Fridays	12pm to 8pm
Saturdays	12pm to 4pm

How to find out more

A range of materials is available to ensure that all affected and interested parties have adequate information to understand how they might be affected by the proposal. This includes information sheets, facts sheets and reports as well as the website **www.gridupgrade.co.nz**. Information sheets available include:

- The Need (Oct 2006)
- Resource Management Act processes (Oct 2006)
- Electric & magnetic fields (EMFs) and noise (Oct 2006)
- Property Matters and compensation (Oct 2006)
- What will the line look like (Oct 2006)
- Deciding where to put the proposed transmission line (Oct 2006)
- Are there alternatives? (Oct 2006)
- Undergrounding high voltage cables (Oct 2006)

The Amended Proposal and Pakuranga

In October 2004 Transpower announced a proposal to build a new transmission line from Whakamaru to South Auckland. Transpower is now proposing to join the new line into the Auckland grid at Pakuranga after previously choosing Otahuhu as the northern terminal. This would mean upgrading the existing Pakuranga substation from 110 kV to 220 kV. It would also mean a new underground cable route (or routes) from a transition station near Brownhill Road, Whitford to the Pakuranga substation.

What has been happening?

The proposed new transmission line from Whakamaru to South Auckland is part of a significant investment in the national grid by Transpower. This new line is needed to meet growing demand in Auckland and Northland.

When Transpower prepared the original proposal to the Electricity Commission for the new transmission line in May 2005 it intended to terminate the line at Otahuhu. The proposal was suspended in late May 2006. Since then Transpower has worked closely with the Commission to clarify aspects of it's Grid Investment Test. Transpower has also revisited a range of alternatives (as discussed in the "Alternatives" information sheet) after previously examining both transmission and non transmission options.

While this work was underway, other events have helped shape the proposal. A failure at Transpower's Otahuhu substation on 12 June 2006 highlighted the importance of the connections to Auckland and Northland at this substation and the need for greater diversity of supply. This has been emphasised in a draft Policy Statement on Electricity Governance released by the Government which emphasised the importance of security of supply.

With this new focus on grid security/ diversity it is now better to take the new line to Pakuranga to add another major transmission route into the Auckland grid to add to the existing Otahuhu-Whakamaru and Otahuhu-Huntly links. The links from Pakuranga to Otahuhu and Pakuranga to Penrose may also be strengthened to distribute the power.

Upgrading the Pakuranga substation

Improving the security of Auckland's power supplies will involve a complete rebuild of the Pakuranga substation. All the existing high voltage equipment at the site will be removed or replaced. The existing 33 kV switchyard which distributes power to the local area may also be moved to a new position.

The time taken to install the new equipment will depend largely on the choice of switchgear (see the box *"Choosing Substation Equipment"* on page 2). An Air Insulated Switchgear (AIS) station (like the one now) would require a larger area than the existing equipment - about half as much again. The earthworks could take up to four months to form the platform and allow the ground to stabilise. With Gas Insulated Switchgear (GIS), there would be less earthworks. Neither option requires fill to be removed from, or brought onto, the site.

If the new station used AIS it would look similar to today but larger. The gantries or equivalents for a 220 kV AIS substation would be taller than those there now but the platform level will be at a lower level. With GIS, the switchgear is contained in a building.

Changes were planned at the Pakuranga substation even before the proposed upgrade. The growth of electricity use in Pakuranga means that a third transformer was already needed.

A new road would be needed inside the site to allow equipment to be put in place and a new security fence. It could

Continued on page 2

Air Insulated Switchgear at the existing Pakuranga substation

Upgrading the Pakuranga substation *(contd)*

take about six months to install all the equipment. During the construction period there would be daily truck movements on Golfland Drive.

It is proposed to take down the existing monopoles which carry the line overhead from the "tunnel" under Ti Rakau Drive (which runs all the way to Dunvegan Rise) to the switchyard. With the upgrade the new cables will stay underground across the site and terminate directly at the new 220 kV substation.

As the same time as the Pakuranga substation is upgraded, work might be undertaken on a new cable link to Penrose. The voltage of the existing overhead line to Otahuhu might also be increased from 110 kV to 220 kV. Consents to do this were given when the line was built. There will be no new overhead lines into or out of the site.

Choosing the substation equipment

Transpower has two options for the sitchgear when it upgrades the Pakuranga substation to 220 kV. It can either use Gas Insulated Switchgear (GIS) or Air Insulated Switchgear (AIS). There are some important differences between the two:

- AIS switchgear is out in the open (as at the current 110 kV substation at Pakuranga) whereas GIS it is contained within a building
- AIS requires a larger area than GIS
- GIS equipment contains larger quantities of SF6 gas. SF6 is a greenhouse gas. Leaks must be accounted for as part of any greenhouse gas emission target and need to be managed
- GIS takes longer to repair which could pose a threat to security of supply
- GIS could cost about five times more than AIS.

A Gas Insulated Switchgear substation

Have your say

Transpower is interested to hear your views on the the upgrade of the substation and on the cable routes - see the back page for details

Cable Route Options

The Pakuranga substation is now the terminal of a 110 kV line from Arapuni. The overhead line finishes at a tower just west of Point View Drive and the final 2.7 km to the Pakuranga substation is by cable in a small "tunnel" under the roads through Dannemora.

The overhead section of the new line from Whakamaru will end at a transition station in the Ormiston Road area. At this point the lines will go underground (mainly in the public roadway.

Three possible routes from Ormiston Road to Pakuranga have been identified by technical investigations and an assessment of possible environmental, social, economic and cultural effects.

The three routes share a common section along the length of Caldwell Road from Ormiston Road to the junction with Point View Drive, then:

West Route follows Point View Drive heading westwards, into Point View Link, along Smales Road, alongside the eastern boundary of the landfill to Polaris Place and then along Greenmount Drive to Ti Rakau Drive and into the substation

Central route also follows Point View Drive heading westwards, into Point View Link, and along Smales Road as far as Te Irirangi Drive. It then goes north along Te Irirangi Drive to Guys Road where it follows the existing "tunnel" route into the substation

East route turns north along Point View Drive for about 400 m then crosses private land down the slope to the entrance of the "tunnel" near Dunvegan Rise (the existing overhead line here will be removed). The tunnel route runs along Moyrus Crescent, Mulroy Place, Maghera Drive, Armoy Drive, Aclare Place, Te Irirangi Drive, Guys Road, and the open space west of the Te Koha Road shops and into the substation.

Each route could be used for one or two cable circuits (in groups of three cables). When two circuits are buried in one road they are typically installed one at a time, closing one side of the road then the other (sometime later), for perhaps 600-700 metres between joint bays. For more information see the *"Undergrounding high voltage cables"* information sheet.