

Central North Island Tactical Upgrade Project

Summary of Major Works

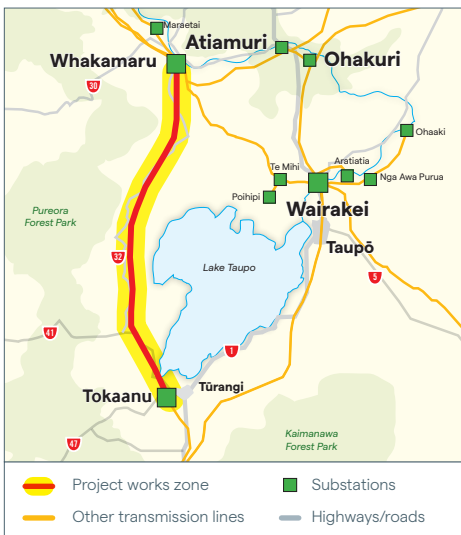
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Project Background

Transpower is undertaking work to increase the ability of its two 220 kV transmission lines between Tokaanu and Whakamaru to carry more power. This work, which essentially brings the lines up to today’s capability, is the first set of works needed to provide an interim capacity increase on these lines – around 220 MW.

Bringing the towers up to today’s standards allows us to run the line hotter – meaning more capacity, but also greater sag in the lines. So we have a number of techniques to increase the height of the conductor (wire) from the ground to maintain adequate earth clearances. In this work overview we discuss the most visible of those works in terms of what each involves, and equipment needed.



Access upgrades

In order to get heavy machinery to site (where heavy machinery is needed to get to site), we often have to upgrade the access. This can involve levelling the existing ground and adding additional aggregate to improve traction. Typically, any site where crane or concrete truck access is needed, will usually require the access to be upgraded.



Transpower is the owner and operator of the National Grid – the network of high voltage transmission lines and substations that transports power from areas of generation to towns and cities around New Zealand.

Access upgrade equipment	Access upgrade numbers
Light 4x4 vehicles and trailers, tracked excavator.	There are approximately 79 sites where access will be upgraded to allow heavier vehicles to site (ie for foundation strengthening etc)





Parallel body extensions

Parallel body extensions (PBEs) are steel extensions that are inserted within transmission towers to raise their height. They come in a number of different sizes depending on the need.

Because PBEs are inserted within an existing tower, we don't have to disturb the ground and foundations of the tower directly. They are also quite an effective means of obtaining significant height increases - up to 5.5 or so metres on the type of towers used between Tokaanu and Whakamaru.

PBE Equipment	Number of Towers where PBEs are needed
<p>While PBEs minimise disturbance of the earth beneath the tower, they do require a large crane to lift the existing structure up to allow the extension to be inserted. This often means the access tracks to those towers will need to be upgraded, and it may also mean some benching at tower sites to allow the crane to function on a level surface. So tracked excavators and heavy trucks may also be required to get to site and prepare access.</p>	<p>For this work we have identified that 42 towers of the 346 will need to have PBEs inserted. All of these will be either 2.7 metre, 3.3 metre or 5.5 metre insertions.</p>



Foundation strengthening

Foundation strengthening is about encasing concrete or more concrete around the tower foundations. It is what we call enabling work – work that then allows changes to the towers loading (for example putting in a PBE, or changing the insulator configuration).

Physically the work typically requires excavation of each tower leg, replacement and cleaning (usually involving dry abrasive blasting) of any rusted steel members and concreting within the installed formwork surrounding each tower leg.

Foundation strengthening equipment	Foundation strengthening tower numbers
<p>A key part of foundation strengthening is getting a concrete mixer to site – other equipment that might be needed are a tracked excavator (digger) and heavy truck along with light 4x4 vehicles.</p>	<p>102 towers will need their foundations strengthened as part of this work.</p>





Intermediate towers

There are places along both line sections where we might need to insert a new tower. Typically, this is where we have long spans, such that the best way of maintaining adequate clearance to ground is by putting in a new structure. This involves new foundations, accessway and structure to be assembled and connected to the existing line.

Intermediate tower equipment	Intermediate tower numbers
For this work we will need to use a large crane, a hiab, tracked excavators (diggers) and heavy trucks.	We have just two places where new towers are required as part of this work, both on the A line: between towers 0470-0471 and 0501-0502.



Mid-span earthworks

Mid-span earthworks effectively modify the ground level between two towers to ensure suitable ground clearances are maintained. If necessary, areas of soil exposed by the earthworks will be stabilised against erosion as soon as practicable. The surplus soil from the site will be removed entirely or placed in a location as agreed with the landowner.

Mid-span earthworks equipment	Mid span earthworks number and volume
For mid-span earthworks we will need to get to site: 4x4 vehicles, trailers, tracked excavator (digger) up to 13 tonne, and a heavy truck.	There are 13 areas where mid-span earthworks are required. The volumes of earth requiring removal are between 3m ³ and 1300m ³ (but most are under 100 m ³).



Underground distribution lines

Transpower engages the local distribution company to remove undercrossing low voltage distribution lines – where they are impacted by our works. This is to remove any safety issues for the public or local consumers.

While we pay for this to occur, the local lines company – in this case The Lines Company – will undertake the necessary design, consenting and property rights to underground the span and remove the hazard.

Underground distribution line equipment	Underground distribution line works numbers
This will be up to The Lines Company, but a small excavator, hiab crane and light 4x4 vehicles might be expected for this type of work.	There are just two places where we will need to underground some existing low voltage lines.





Environmental approvals

Transpower's works on these transmission lines are subject to the Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009.

While most work required is permitted under these regulations, some work will trigger the need for a resource consent. Transpower will carry out assessments of all its works to make sure it has the appropriate approvals in place before commencing work.

Cultural Safety – ngā mihi ki te mana whenua

We are looking to ensure mana whenua in the area of our work are fully informed of the work being planned, with a view to allowing us to undertake the mahi safely. We will be following an Accidental Discovery Protocol in some locations, or obtaining Archaeological Authorities from Heritage New Zealand Pouhere Taonga in locations where this has been recommended by an archaeologist.

We continue to welcome discussion with hapū and/or iwi about the work we are undertaking, the impact, and the context of it.

If you own land under these lines and would like to discuss aspects of the work more call:

0508 526 369 (0508 LANDOWNER)

