

BEFORE THE BOARD OF INQUIRY

IN THE MATTER of the Resource Management
Act 1991

AND

IN THE MATTER of applications for resource
consent and notices of
requirement by Transpower
New Zealand Limited for the
North Island Grid Upgrade
Project

**STATEMENT OF EVIDENCE OF TIMOTHY NICHOLAS CHATTERTON
ON BEHALF OF VECTOR LIMITED**

26 FEBRUARY 2008

INTRODUCTION

Qualifications and Role

1. My name is Timothy Nicholas Chatterton. I am employed as the Divisional Manager, Engineering (Electricity Business Line) for Vector Limited ("**Vector**"). I have been in this role since 2005. Immediately prior to that I was the Asset Investment & Performance Manager, responsible for the planning and development, and asset management, of Vector's then electricity and gas distribution networks.
2. I hold the following qualifications and membership of the following professional organisations:
 - (a) Bachelor of Engineering (Electrical) from the Auckland University;
 - (b) Master of Engineering from the Auckland University; and
 - (c) Membership of the Institution of Professional Engineers New Zealand (MIPENZ).
3. In my current role as Divisional Manager, I hold senior management responsibilities for a range of functions within Vector, including network planning and development and asset management.
4. I have been employed by Vector in a number of senior roles involving asset management going back to 1998. I have been employed in the New Zealand electricity industry for nearly 30 years, and have held technical and management roles in the electricity division of the Ministry of Energy, Electricity Corporation of New Zealand, Design Power New Zealand and Mercury Energy. I have spent most of that time in Auckland, working with the assets in the Auckland Region.
5. I confirm that I have read the Code of Conduct for Expert Witnesses in the Environment Court Consolidated Practice Note (2006). I have approached the preparation of this evidence in the same way that I would for the Environment Court. Accordingly, my evidence in this statement is within my area of expertise.

Scope of Evidence

6. In this brief of evidence, I discuss:
- (a) the background to Vector Limited and the Vector Group;
 - (b) Transpower's Grid Upgrade Project
 - (c) Vector's **current assets** and infrastructure located within Transpower's proposed designated corridor and within the land to which the proposed resource consents will apply (should the designations and resource consents be granted);
 - (d) the **future assets** that Vector expects will be needed to be located within Transpower's proposed designated corridor and within the land to which the proposed resource consents will apply (should the designations and resource consents be granted);
 - (e) the impact on Vector's operations of the proposed designations and resource consents; and
 - (f) the relief sought by Vector.

Vector Limited

7. Vector is an energy infrastructure group with interests in gas, electricity, telecommunications and technology. It delivers energy and energy services to more than one million homes and businesses across New Zealand.
8. The electricity lines business is Vector's largest investment. It has electricity networks in Auckland's Rodney District, Waitakere City, North Shore City, Auckland City, Manukau City, Papakura District, and the greater Wellington Region. Through these networks, Vector provides electricity lines services to over 675,000 residential, commercial and industrial customers. This amounts to thirty-five percent of the country's electricity connections and makes Vector New Zealand's largest electricity distribution business.

9. Vector is responsible for the safe and secure supply of electricity to residential and commercial customers throughout these regions. This includes responsibility for the design, development and maintenance of the distribution lines, cables and substations that deliver power to homes and businesses throughout these regions.
10. Vector Gas Limited (part of the Vector Group) is the owner, operator and manager of approximately 2,500km of high pressure gas and petroleum product transmission pipelines throughout the North Island. The gas transmission pipelines deliver gas from the Kapuni Gas Treatment Plant in Taranaki to various towns and locations throughout the North Island, from where the gas is distributed through network lines to homes and businesses.
11. Vector Communications Limited (part of the Vector Group) owns a fibre optic cable network in the Auckland and Wellington Regions.

Transpower's Grid Upgrade Project

12. The North Island Grid Upgrade Project will enable improved security and certainty of electricity supply to Auckland and Northland in the short, medium and long term (up to 30 years). Currently, the majority of generation of electricity in New Zealand is located south of Auckland and Transpower's grid provides for its necessary transportation to this major centre of demand. While there is limited generation in Auckland and small scale generation north of Auckland, this generation in itself is not capable of meeting electricity demand in Auckland. The North Island Grid Upgrade Project will support security and certainty of supply of electricity to Auckland and Northland.
13. The North Island Grid Upgrade Project will facilitate secure and efficient connections to existing transmission, distribution and generation infrastructure. It will enable the System Operator to meet the level of supply security (the Grid Reliability Standard) mandated in the Electricity Governance Rules as demand continues to grow.
14. The staging of the Project following initial works is necessary to meet the immediate forecast electricity demand requirements by 2011. The

analysis concludes that peak electricity demand in Auckland and North Isthmus (including Northland) regions is forecast to grow to 2265 MW by 2010. Without further investment, this load would exceed the secure capacity of the existing grid currently supplying Auckland and the North Isthmus. We note that a number of Government initiatives may put additional pressure on supply capacity such as the electrification of Auckland rail, and the extension of the Motorway north opening up property for development, and thereby increasing the load north of Auckland.

15. Any partial or total losses of supply to the Auckland or North Isthmus regions would impose significant economic costs on the New Zealand economy as a whole. Without new investment in transmission or an acceptable alternative solution, these costs increase annually as the underlying demand grows in the area. As a consequence, the North Island Grid Upgrade Project encourages business confidence, and promotes social, economic and cultural wellbeing.
16. We have approximately 500,000 customers in the greater Auckland network area that will become affected by an inadequate electricity supply should the Grid Upgrade Project not go ahead. In addition, Top Energy Limited and Northpower Limited (the distribution network companies responsible for the networks north of Wellsford) have a further 80,000 customers that will be affected.

Impact of Transpower Grid Upgrade Project on Vector

17. As part of Transpower's North Island Grid Upgrade Project, underground transmission cables into Auckland are required from:
 - (a) the proposed Brownhill Substation to the existing Pakuranga Grid Exit Point ("GXP"); and
 - (b) the proposed Brownhill Substation to the existing Otahuhu GXP.
18. The proposed underground transmission cable route (Transpower's designated corridor) will be located in legal road for much of its length through Manukau City. Vector is concerned that its existing network utility

services are already located within these roads, and that in the future further crossings, and new infrastructure running parallel to the proposed transmission cables, will be required.

19. Vector has the following infrastructure already in place along and across parts of the proposed transmission cable route, and may require further infrastructure in the future, including:
 - (a) Low voltage electricity cables (400V);
 - (b) Distribution electricity cables (11kV);
 - (c) Sub-transmission electricity cables (up to 33kV);
 - (d) Gas transmission pipelines;
 - (e) Gas distribution pipelines; and
 - (f) Fibre Optic cables.

Designations are already in place for a further high pressure gas transmission pipeline required to service the Auckland Region in the future.

20. Past experience has shown that Transpower's transmission corridors are quite expansive, for example in Fanshawe Street, Auckland. A designation over these routes set out in paragraph 17 could effectively prohibit Vector from accessing its infrastructure and limit its ability to add new infrastructure as and when needed in the future. There will be restrictions placed on Vector in relation to crossing Transpower's cables, and on minimum clearance requirements around the cables. These impositions may restrict Vector's ability to service future customers in the area, and will at the very least add costs to Vector's works. Vector's preference is that reasonable additional works be allowed for now, in the design and construction of the Transpower cables, so as minimise as much as possible the additional costs likely to face Vector (or indeed any other infrastructure provider seeking to cross the Transpower designation in the future).

21. Should Transpower's Notice of Requirement be granted by the Board of Inquiry, then as I understand it, Transpower as the requiring authority over its designation will have to consent to any future infrastructure needed by Vector to:
 - (a) cross the designated corridor; or
 - (b) to run parallel to the transmission cables within the designated corridor (in the road berm),

where those works by Vector might prevent or hinder Transpower's works.

22. Vector is concerned that should Transpower be granted its designation, Vector's current and future activities necessary for the development and operation of its electricity and gas distribution networks will be subject to Transpower's approval. Should Transpower not be amenable to Vector's assets crossing or running parallel to its transmission cables, Vector's infrastructure will be cut off and separated east and west in Auckland, making efficient further development in the area impossible. That is clearly a most undesirable situation.
23. Vector is also concerned that with Transpower placing its transmission assets underground in the road together with Vector's current network in place (in the road berm), there will be mutual heating of each others electricity assets due to their close proximity, with consequent adverse impact on the ratings of those assets. All initial design and construction methodologies for the Transpower cables will need to take mutual heating from existing or planned Vector cables into account, and appropriate steps will need to be taken to preserve the ratings of existing Vector assets in the proposed corridor.

Relief sought

24. The specific wording of the relief sought has been described in the legal submissions presented by Vector's legal counsel. In summary, however, the relief sought by Vector and the reasons for seeking that relief is as follows: