

# **Report and Decision of the Board of Inquiry into the Upper North Island Grid Upgrade Project**

**Final produced under section 149 of the  
Resource Management Act 1991**

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**In the Matter of** the Resource Management Act 1991

And

**In the Matter of** requirements under section 168 of the Act and resource consent applications under section 88 of the Act by TRANSPower NEW ZEALAND LIMITED for the Upper North Island Grid Upgrade

**THE BOARD OF INQUIRY:**

Judge David Sheppard (Chairperson)  
Dr Deborah Read (Member)  
Mr Kevin Prime (Member)  
Mr John Rutherford (Member)

**HEARINGS** at Hamilton, Takanini and Tokoroa on the days listed in Appendix A.

**APPEARANCES** as listed in Appendix B.

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**FINAL REPORT AND DECISION  
OF THE BOARD OF INQUIRY**

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**This final report is made under section 149 of the Resource Management Act 1991 (RMA).**

A The requirements for designations (with certain modifications) are confirmed and the resource consents are granted, on the terms and subject to the conditions set out in Chapter 19 and Appendixes C to U.



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# CHAPTER 1: INTRODUCTION

## National Grid

[1] New Zealand’s high-voltage electricity transmission network is known as the National Grid. It carries electrical energy across the country, connecting generators of electricity with communities and major industries that require it. The grid is intended to maintain reliable and secure supply of electrical energy, in a way that allows competition among suppliers and retailers, and to provide access to markets for new generators, including those producing what is classified as *renewable energy*.<sup>1</sup>

[2] The assets in the National Grid are an extensive, linear and connected system of lines and substations in which activities or changes in one part of the system can affect other parts.

[3] The operation of the National Grid is governed by the Electricity Act 1992 and instruments under it, and is constrained by engineering imperatives arising from constant changes in demand.

## Transpower

[4] The National Grid is owned and operated by Transpower New Zealand Limited (Transpower), which also has responsibility for maintaining and developing the network infrastructure.

[5] Transpower is a state-owned enterprise, and, as such, is required to exhibit a sense of social responsibility by having regard to the interests of the communities in which it operates, and by endeavouring to accommodate and encourage these interests when able to do so.<sup>2</sup>

[6] The Minister for the Environment has, under section 167 of the Resource Management Act 1991 (RMA), approved Transpower as a requiring authority “for its network operation of supply of line function services”<sup>3</sup> – language corresponding with that used in the definition of *network utility operator* in section 166 of the RMA. This definition includes an electricity operator or electricity distributor as defined in section 2 of the Electricity Act 1992 for the purpose of *line function services*, which is in turn defined by the same section as “the provision and maintenance of works for the conveyance of electricity”, and “the operation of such works, including the control of voltage and assumption of responsibility for losses of electricity”.

## Electricity Commission

[7] The Electricity Commission (formerly the Electricity Governance Board) is a Crown entity constituted by the Electricity Act 1992.<sup>4</sup> Its principal objectives are to ensure electricity is produced and delivered to all classes of consumers in an efficient, fair, reliable and environmentally sustainable manner, and to promote and facilitate the efficient use of electricity.<sup>5</sup>

[8] The Commission has responsibility for ensuring the efficiency and reliability of the National Grid. One way in which it discharges that responsibility is by considering whether or not to approve Transpower's investment expenditure on grid upgrade plans.<sup>6</sup>

[9] On 5 July 2007, the Commission made a final decision stating its satisfaction that Transpower's amended proposal for the Upper North Island Grid Upgrade meets and complies with the applicable requirements, and approving the proposal.

## Requirements and applications

[10] Transpower has sought two types of authorisation under the RMA for the grid upgrade proposal:

- a) insertion in district plans of the Manukau City Council and six district councils of designations for overhead transmission lines, underground cables, and substations
- b) grant of resource consents for activities associated with construction of the proposed works.

## Requirements for designations

[11] On 28 May 2007, Transpower gave notice under section 168 of the RMA to each district planning authority of its requirements for designations in the respective district plans that together would authorise all the land-use activities required for the grid upgrade proposal. In summary, the activities include:

- a) replacement, operation and maintenance of the Pakuranga Substation, including construction of a new 220-kilovolt (kV) substation and underground cables and associated works
- b) operation, maintenance and upgrade of the Otahuhu Substation, including construction of a new 220-kV substation and underground cables and associated works
- c) construction, operation and maintenance at Brownhill Road, Manukau City, on a staged basis, of a transition station to connect underground cables and overhead lines (including Tower 5 and additional support structures and parts of underground cables), a 220-kV switching station, and a 400-kV substation, and associated works
- d) construction, operation and maintenance of a double-circuit underground 220-kV cable to convey electricity between Pakuranga Substation and the proposed substation at Brownhill Road and ancillary activities
- e) construction, operation and maintenance of a double-circuit underground 220-kV cable to convey electricity between Otahuhu Substation and the proposed substation at Brownhill Road and ancillary activities



- f) construction, operation and maintenance of a 400 kV-capable overhead transmission line to convey electricity between the proposed substation at Brownhill Road, Manukau City, and the Whakamaru and proposed Whakamaru North Substations in Taupo District (through Manukau City, Franklin, Waikato, Matamata-Piako, Waipa, South Waikato, and Taupo Districts) and ancillary activities
- g) construction, operation and maintenance, on a staged basis, at the Whakamaru North Substation site, Taupo District, of a new 220-kV substation and other components; a new 400-kV substation, including Tower 429 of the overhead line and additional support structures; associated works, and overhead line connections within the designated area; and ancillary activities; and the operation, maintenance and upgrade of the existing 220-kV lines which traverse the site and the existing substation infrastructure at the site.

## Applications for resource consents

[12] In June 2007, Transpower lodged with the Auckland Regional Council applications for resource consents associated with the construction, installation, use, operation and maintenance of the 220-kV underground transmission cable between Pakuranga Substation and Brownhill Road. The works include earthworks to enable the installation and maintenance of the cable; discharge of contaminants from ancillary activities that produce wastewater or wash water; works in the beds of water courses; and diversion of surface water.

[13] In July 2007, Transpower lodged with the Auckland Regional Council applications for resource consents for works within its region for the overhead line. The works include earthworks for construction of tower foundations and access roading and tracking; and discharge of contaminants to land from ancillary activities that produce wastewater or wash water.

[14] In July 2007, Transpower lodged with the Waikato Regional Council applications for resource consents for works within its region for the overhead line. The works include vegetation clearance and earthworks associated with tower site preparation and access tracks in high-risk erosion areas; composting of vegetation; drilling of tower foundations below the water table; and discharge to surface water of site water and drilling fluids.

## Ministerial call-in

[15] On 8 August 2007, the Hon Pete Hodgson, acting for the Minister for the Environment and considering the grid upgrade a proposal of national significance, invoked section 141B of the RMA and called in the notices of requirement and resource consent applications, and directed they be referred for decision to a board of inquiry under sections 146 to 149. In deciding to call in the matter, Minister Hodgson had regard to the following factors:

- a) that it has aroused widespread public concern or interest regarding the actual or likely effect on the environment

- b) that it involves significant use of natural and physical resources
- c) that it affects more than one region and district
- d) that it involves technology, processes or methods which are new to New Zealand and which may affect the environment
- e) that it is likely to result in, or contribute to, significant or irreversible changes to the environment.

[16] On 8 September 2007, Minister Hodgson gave public notice of his direction and called for submissions on Transpower's requirements and resource consent applications to be lodged by 5 October 2007.

[17] On 11 September 2007 under section 146 Minister Hodgson appointed a Board of Inquiry to consider and decide on the requirements and resource consent applications. The members of the Board are named above.

[18] The Minister received 1244 submissions, of which 899 contained an indication that the submitter wanted to be heard by the Board of Inquiry in support of the submission.

[19] On 3 December 2007, the Board of Inquiry (the Board) gave notice that it expected to start the Inquiry hearing on 25 March 2008, and set times for pre-hearing events.

[20] On 3 March 2008, the Board gave its decision declining a request by one of the submitters, Dr R J McQueen, for the Inquiry hearing to be postponed until the outcome is known of certain proceedings in the High Court for review of the Electricity Commission's decision approving the grid upgrade proposal.

[21] On 6 March 2008, the Board gave public notice that the Inquiry hearing would start on 25 March 2008. The Board started the hearing on that day, and completed it on 31 October 2008.

## Endnotes

- <sup>1</sup> The meaning given to *renewable energy* in s 2(1) RMA is relevant to this proceeding.
- <sup>2</sup> State-Owned Enterprises Act 1986, s 4(1)(c).
- <sup>3</sup> Resource Management (Approval of Transpower New Zealand Limited as a Requiring Authority) Notice 1994, cl3.
- <sup>4</sup> Electricity Act 1992, s 172M (as substituted by the Electricity Amendment Act 2004, s 14(1), and amended by Crown Entities Act 2004, s 200).
- <sup>5</sup> Ibid, s172N (1) (as substituted by the Electricity Amendment Act 2004, s 15).
- <sup>6</sup> Electricity Governance Rules 2003, Part F, Section 3.

## CHAPTER 2: THE UPPER NORTH ISLAND GRID

### The National Grid

[22] The National Grid is infrastructure of national importance. It involves over 12,000 route-kilometres of transmission lines, about 25,000 towers, 16,000 poles, and 173 substations. It is supported by its own information technology and telecommunications.

[23] Transpower's responsibility for maintaining and developing the grid involves applying good transmission planning practice, by which use of existing assets is maximised (where practically and economically feasible) before constructing new transmission assets. Use of existing transmission assets can be increased by enhancing capacity, improving power sharing across parallel circuits, and increasing the voltage stability limit. Capacity can be increased by raising the operating temperature of conductors, by adding a conductor (eg, duplexing), or by installing larger conductors. Power sharing can be improved by adding extra reactive equipment to direct power flow through higher rated circuits.

[24] Good industry practice, and the most cost-effective, is to provide new transmission with sufficient capacity for the future. This also reduces the number of low-capacity lines needing to occupy multiple corridors. It calls for long-term planning by Transpower.

### Upper North Island Grid

[25] Electricity for the upper North Island is supplied through the National Grid by 220-kV and 110-kV networks. The primary supply is two separate 220-kV paths, between Whakamaru and Huntly respectively, and the Otahuhu Substation in South Auckland. Each path consists of three 220-kV circuits. So, in total, there are four 220-kV transmission lines supplying Otahuhu Substation from the south: two single-circuit, and one double-circuit, transmission line from Whakamaru; and one double-circuit transmission line from Huntly. The western path continues south from Huntly to Stratford in one double-circuit transmission line.

[26] These paths are supported by two 110-kV circuits: one between Bombay and Otahuhu, and the other between Arapuni and Pakuranga. These 110-kV circuits make only minor contributions to transmission capacity, less than 10 per cent of the total power flow.

[27] The Otahuhu Substation is critical to the security of supply to the Auckland and Northland regions, because of the number of lines leading to and from it, and the capacity of those lines.

[28] Up to 30 per cent of the winter peak load in the upper North Island can be supplied by local generation in the Auckland area. Of that 30 per cent, over half is supplied by a single combined-cycle, gas-fired generator at Otahuhu.

[29] In addition to the grid upgrade that is the subject of the requirements and resource consent applications that have been called in and referred to the Board, Transpower proposes other associated works and projects for improvement of the Upper North Island Grid, that are not before the Board.

[30] Transpower described the grid as a dynamic working system; and explained that routine operational requirements result in constant change in the network as power is switched around the system. This has physical results: conductors sag as they heat relative to power flows, and swing to a greater or lesser extent due to ambient conditions; and towers supporting the conductors may be reconfigured, strengthened or added to for improving security (eg, from lightning) or to cope with increased electrical load.

[31] The grid upgrade referred to the Board, and the associated works and projects, are intended together to provide additional capacity for electricity transmission, and to enhance diversity and security of supply.

## **Associated works**

[32] The associated works are intended to enhance the capacity of the existing grid while the more substantive works of the Grid Upgrade Project itself are completed.

[33] In summary the associated works are:

- a) upgrading the Otahuhu to Whakamaru C line
- b) adding to reactive support in Auckland by installing up to 350-megavolt-amperes reactive (MVar) of capacitors at Otahuhu Substation
- c) constructing a new switching station at Drury.

[34] Transpower contended that those associated works need to be completed by 2010, and will provide sufficient interim capacity to allow the first stage of the Grid Upgrade Project to be completed by 2013.

## **Other projects**

[35] The other projects are the Otahuhu Substation Diversity Project and the North Auckland and Northland Project.

[36] The Otahuhu Substation Diversity Project aims to enhance diversity and security within Auckland. Transpower has the consents needed for this project and work is underway.

[37] The Otahuhu Substation Diversity Project comprises construction of a separate Gas-Insulated Substation within the boundaries of the existing Otahuhu Substation. This will provide increased reliability and security of supply by providing physical diversity at the site. It will also provide for cabling overhead lines to remove line crossings. About half the transmission circuits will be terminated in the new substation, and the remainder will continue to be terminated at the existing substation.

[38] The North Auckland and Northland Project will connect the modified Pakuranga Substation to the existing Penrose Substation, and then through to substations on the North Shore. By winter 2013, the load of the Northland region is forecast to reach 957 megawatts (MW), and the transmission reinforcement provided by this project will then be required to ensure secure capacity is available. Transpower is requesting the Electricity Commission's approval for this project.

## CHAPTER 3: THE PROPOSED GRID UPGRADE

### Need for upgrade

[39] The electricity transmission system connects power stations with load and plays an important role in maintaining reliability and security of the supply of electricity.

[40] Transpower maintained that to ensure the continued security and certainty of supply of electricity to Auckland, Northland and parts of Coromandel and the Waikato, the existing upper North Island Grid needed to be upgraded. Transpower further maintained that security and certainty could be achieved by a new transmission link, with substations and ancillary facilities, and by upgrading existing assets, commissioned in stages over 30 years to meet forecasted increasing electricity needs.

[41] The Grid Reliability Standards (as described in Chapter 4) require the transmission system be operated so that it remains stable and capable of supplying demand in any single outage of the largest relevant item of plant that is in service at any particular time. This is often referred to as an “N-1” security requirement.

[42] Transpower contended that even with all local existing and committed generation in the region operating reliably, under current security standards the existing transmission system would not be able to supply peak demand in the upper North Island in excess of 2190 MW. This is due to insufficient thermal capacity, and the potential for voltage instability at times of high system load, with consequential risk of partial or total losses of supply to Auckland and further north.

[43] Transpower also contended that forecast demand beyond 2013 would exceed 2500 MW, and that, even with all local existing and committed generation in the region operating reliably, and taking account of planned interim improvements and upgrades to the existing grid, this level of demand would not be able to be supplied by the existing transmission system. Transpower maintained that demand is forecast to exceed transmission capacity by 40 MW in 2014, rising to 565 MW by 2020, levels of demand that could not reliably be supplied.

[44] Transpower acknowledged that some people assert there is no supply or capacity problem, but contended that the point of deficit may change by about a year at most; and that the key areas of dispute are the best method of providing for increased supply, such as transmission, new generation, or demand-side management. In addition, Transpower also relied on the ability of the grid upgrade to “unlock” isolated renewable energy generation, which (it asserted) is almost all sourced south of Whakamaru.

[45] The forecasts of demand and generation in the upper North Island that had been used by Transpower in assessing the need to provide for increased supply were also significant issues for submitters.

[46] Transpower submitted that the grid upgrade is needed because the existing transmission system would not be adequate to meet demand in the short or longer term.

[47] The 400-kV capable transmission link (comprising a new 400-kV capable transmission line, initially operated at 220-kV, new 220-kV cables, new and upgraded substations and ancillary facilities) is the option selected by Transpower to address the lack of capacity of the existing power system to reliably supply the upper North Island at times of peak demand.

[48] Transpower urged that the RMA process should not be taken as an opportunity to re-litigate earlier decisions made by separate bodies under their specific statutory mandates. It maintained that the grid upgrade is the option it selected (mandated by the Electricity Commission) to respond to the identified problem of insufficient capacity in the existing system to reliably supply the upper North Island at times of peak demand. Transpower contended other methods for solving the supply problem which might meet the RMA tests are not relevant, as they are not being pursued by Transpower, have not been mandated by the Commission, and are not before the Board.

[49] In summary, the context in which Transpower submitted the Grid Upgrade Project for the Board's consideration by the RMA process is that it is the method, approved by the Commission, for meeting forecasted demand, in a way that would also provide transmission of electrical energy generated by renewable methods south of Whakamaru.

[50] Mighty River Power supported the need for new and improved transmission for the upper North Island, contending that the National Grid must have sufficient capacity to ensure that energy generated by new wind, geothermal and small hydro plants can, at any instant, reliably be transported between where it is generated and where it is consumed.<sup>1</sup>

[51] The Board will address the issues raised by the submitters. Having addressed those issues, the Board will then be able to review the need for the 400-kV capable transmission link and reach its finding on that issue.

## **Submitters' cases**

[52] Submitters, who supported the need for the upgrade project, identified the importance of the continued reliability, diversity, security and certainty of supply, and the role these have in national well-being, investment and economic activity.

[53] Supporting submissions also referred to the upgrade project facilitating new electricity generation, – including generation from renewable resources, to be connected to the grid – and efficient electricity transmission.

[54] Most other submitters contended that the 400-kV capable transmission link proposed by Transpower is unnecessary.

[55] The contentions, in relation to the need for the upgrade, of submitters in opposition can be summarised as:

- a) there is no need for more overhead lines because Auckland needs to save power, not demand more
- b) the demand growth projections of the Electricity Commission (2007 Statement of Opportunity – SOO) do not justify its construction
- c) the scale and capacity of this proposed 400-kV capable line is completely out of alignment with the expected requirements for transmission capacity into Auckland to meet the demand growth in the next 40 years
- d) the potential new generation capacity likely to be constructed in the Auckland region in the next 40 years has been grossly underestimated in an attempt to justify this line as one of national significance and urgency
- e) the need for this line to be built is based on out-of-date and inaccurate high-demand growth forecasts (2005 SOO)
- f) the line will reduce, rather than increase, the security of electricity supply to Auckland.

[56] Dr McQueen was a submitter who included most of these contentions in his submission. Although Dr McQueen's pre-circulated brief of evidence (on which he was cross-examined by Transpower's counsel) focussed on health effects rather than the need for the 400-kV capable transmission link, he made extensive oral submissions to the Board on the need for the upgrade when he presented his pre-circulated brief of evidence.

[57] In addressing the Board in support of his submission, Dr McQueen stated his opposition to the 400-kV capable transmission link. He continued:

The supposed justification of this line by the demand growth of Auckland has not been linked to new base load generation that will be of use in meeting Auckland demand periods that has been proposed and approved that will come on stream south of Whakamaru. So, in effect, I'm saying in that statement that this line is being built on speculation that there will be a large amount of new generation built separate to Whakamaru that will justify the use of this line. To my knowledge, there are no significant generation projects that have been proposed. So, this line is a line to nowhere, it's a white elephant of obsolete, third world technology. This line will reduce rather than increase the security of electricity supply to Auckland. Capacity of the transmission capability, size of the pylons proposed in the 400 kV capability, will not be required in the next 40 years if reasonable assumptions on demand growth, the 2007 SOO, and reasonable estimates of key...of likely new Auckland area generation are used...<sup>2</sup>

[58] He spoke about alternatives to meet the need:

There are better benefit alternatives to the proposed line available that have a much reduced environmental impact,



such as more generation in the Auckland region, duplexing and re-conductoring of the Whakamaru A, B and C lines, use of HVDC transmission technology, which will be less obtrusive and easier to underground, and more extensive use of undergrounding High-voltage, alternating-current (HVAC) lines, and use of new, conventional, small scale 220-kV transmission lines...<sup>3</sup>

[59] Dr McQueen then returned to demand forecasts and need:

I oppose these applications, because Transpower is falsely trying to justify the need for this line by...being built, by using out of date and inaccurate, high-demand growth forecasts, the 2005 SOO or Statement of Opportunity...<sup>4</sup>

I put this document together, probably about three weeks ago, and it was spurred by the Electricity Commission announcing its draft 2008 Statement of Opportunity, which has been released on the Electricity Commission website, and, which I'll refer to in a little while, but the motivation for putting this document together, and for speaking to it today, was to try and give some kind of a high-level view of what the requirements are of transmission capacity into Auckland, and some sense of what the existing transmission capacity is in the upper North Island, and having sat through some of the Transpower witnesses that have talked about future demand, and so on, I was struck by how unclear and clouded those discussions were. What seemed to come across from the...from the expert witnesses of Transpower was that there's an urgent need to get on and build this line and that this is of national significance and, if we don't build this by 2012, you know, the world is going to come tumbling down around our shoulders. Well, if I can direct you to the Table that starts at the start of this document. What I've shown in this Table is the five-year forecast...<sup>5</sup>

The net additional demand, point 2 of the conclusions, the increase in 30 years of demand between 2007 to 2036 in Auckland and the North Isthmus is 1855 MW and that's not considering any new generation, that's just the difference in the demand growth that's now forecast by the 2008 SOO, which has been published by the Electricity Commission. The net additional demand growth increase from 2007 with Rodney and Otahuhu C built is only 1055 MW by year 2036...<sup>6</sup>

[60] He next spoke about security of supply, losses and demand forecasts:

...multiple smaller circuits provide much greater security of supply and, I believe, you're going to hear evidence later on from other people that the security of supply of the proposed Transpower 400-kV line is 18,000 times less than

the security of supply of having other multiple paths of transmission. So, in other words, you're putting all your eggs in one basket too, in one huge transmission capability basket. That, always, is going to lower the security of supply by having the risks of everything in that one basket and the requirement to have backup capable of handling that capacity, if that line should go down...<sup>7</sup>

However, there is new technology that has arisen, and the trade name for that technology is 'HVDC Light', and I won't go into the details of that, that's for other experts to discuss, but the nature of HVDC Light is, it really is designed for much lower cost implementation of high voltage DC conductors, and high voltage DC transmission lines...<sup>8</sup>

...the so-called higher losses of these composite conductors are really losses that are only going to be used a relatively small amount of the time. And again, in listening to the evidence that was presented by the Transpower witnesses, I didn't see any quantitative analysis of these higher losses. I just saw some qualitative...qualitative pronouncements of a small power station, and so on. And, I think, that that's been a bit misleading, in terms of presenting that, without a hard quantitative analysis of what those losses exactly are, and what percentage of the time those losses are likely to occur...<sup>9</sup>

... and part of the information that I've passed on yesterday and today is about the newly accepted and mandated, I guess, by the Electricity Commission, is lower estimates of demand in the Auckland region, of 1.4 to 1.5 per cent growth...demand growth rates, versus the almost 3 per cent demand growth rates that Transpower has used in its original proposal and in the amended proposal...<sup>10</sup>

[61] Ms K Brennan and Mr G Copstick gave evidence on need. Cross examination by Transpower's counsel (Mr Laing) included the following:

Laing: Thank you. Can I ask you to go to Paragraph 3 of your evidence...Page 3 sorry, Page 3, near the top of Page 3; you have a heading, 'the line is unnecessary, because expert opinion says it will never be converted to 400 kV'. Do you see that?

Copstick: I do, yes.

Laing: And, that part of your evidence, I believe, goes over to Page 8, but could you just confirm that for me?

Copstick: Yes.

Laing: The expert opinion that you're referring to there, is that the expert opinion, which is, again, referred to in Paragraphs 16 to 33?

Copstick: Yes, we're largely quoting from Graham Pinnell of the Electricity Commission who was involved in the decision process up to that point.

Laing: Thank you. But, Mr Pinnell is not giving evidence before this Board of Inquiry, is he?

Copstick: No, we couldn't get him to come.<sup>11</sup>

(Ms Brennan and Mr Copstick rely here on a minority opinion of Mr Pinnell – as a member of the Electricity Commission – in the Electricity Commission's (majority) approval of Transpower's 400-kV-capable amended proposal.)

### **Transpower's case**

[62] Transpower contended that the security of supply issue and need for reinforcement of the transmission network into the upper North Island had been identified in 2002 and that Transpower, in its planning, used a five-to-seven-year period as the lead time to establish new transmission infrastructure.

[63] Transpower reported that in October 2004 it had issued a request for further information on non-transmission options, and that the responses had revealed that there was little prospect of deferring the grid upgrade. Peak demand management (such as commissioning a special peak-demand generator) could delay the need for about 12 months, which would be insignificant in the context of the lead time for the project; and in any event Transpower has limited ability to influence that peak-demand management, or to influence willingness to invest in such a plant.

[64] In October 2004, Transpower produced a report titled *Security of Supply into Auckland Assessment of Alternative Solutions*.<sup>12</sup> Section 5 of that document identified non-transmission alternatives that Transpower had considered: new local generation, and new demand-side management solutions. The report summarised the contribution of each to system security; addressed availability, economic benefit, environmental impact, and timeliness; and gave summaries of the conclusions reached in respect of each. Appendix A described the generation scenarios that had been modelled.

[65] In May 2005, Transpower produced a report titled *Assessment of HVDC Transmission Options between Whakamaru and Auckland*.<sup>13</sup> This document identified and examined a range of high-voltage, direct-current (HVDC) options that Transpower had considered, including HVDC Light. The report's key conclusions indicated the HVDC option that provides the highest level of asset availability and security of supply is closest to the 400-kV HVAC solution in terms of asset availability and system security, but noted that all HVDC options are more costly than 400-kV HVAC.

[66] The Electricity Commission approval process included a comparative analysis, according to the Grid Investment Test (GIT) between a number of short-listed alternatives, themselves derived from a longer list of other alternatives. This analysis did not favour any one of the alternatives, all of which were assessed in detail.

[67] Transpower contended that it had considered and analysed numerous potential methods of addressing security of electricity supply to Auckland for the purpose of the Electricity Commission process. Transpower also contended that environmental considerations had been part of the development and assessment of different transmission alternatives, particularly with regard to minimising the number of lines and corridors in the long term which clause 88E of the Government Policy Statement on Electricity Governance (GPS)<sup>14</sup> requires the Commission to take into account.

[68] Transpower submitted that the grid upgrade is needed by 2013 because the existing transmission system would not be adequate enough to meet demand in the short or longer term.

[69] Transpower contended that non-transmission alternatives had been investigated, and that, overall, these alternatives had been found inadequate or uncertain to meet demand in the short or longer term.

[70] With regard to generation development scenarios, Transpower contended that it is neither prudent nor good transmission planning to take into account uncommitted generation, and that Schedule F4 of the Electricity Governance Rules (which set the basis for the GIT) clearly refers to alternative projects that are reasonably likely to proceed. If there is no actual commitment to construct new generation then it cannot be considered as likely to proceed.

[71] Although there is also debate about what is known as the 'need date' and the rate of demand growth, even using differing assumptions and forecasts, Transpower submitted that this may change by about a year at the most.

[72] Transpower's contentions were supported by evidence. Mr J N O Coad, acting Grid Programme Manager for Transpower, testified that at least 11 alternatives (transmission alternatives and non-transmission generation and demand-side) had been considered and analysed in the original 2005 proposal, and a further nine alternatives in the amended proposal. Mr Coad confirmed that Transpower had considered generation as an alternative solution for security of supply into Auckland, and had explored contracts with generation companies. He remarked if the generation companies chose not to invest, there would presumably be good reason why they had not done so already.<sup>15</sup> He confirmed that the basis on which an option was considered was that it must be credible and able to be relied on.<sup>16</sup>

[73] Mr T A George, Transpower's General Manager Grid Investment, explained that, where it is determined that projected demand for electricity is going to exceed existing transmission capacity, a process of identifying solutions begins sufficiently in advance of the need date to allow potential investments to be constructed. The process involves seeking input from industry on the needs analysis, and seeking proposals for non-transmission

alternatives such as generation or demand-management options. He stated that investment in new transmission lines may have lead times of five to seven years.

[74] Mr George also gave evidence that Transpower recognises and takes into account in its planning processes, the contribution that demand management and the use of local distributed generation (including renewable generation) can make to the grid to potentially defer some transmission investment.

[75] Mr George gave his opinion that non-transmission alternatives have to be practicable, technically feasible, have reliability comparable to transmission investment, and be able to defer transmission investment by at least one year.

[76] He stated that in preparing the original proposal, 11 options had been considered that were technically feasible to meet the need, including peaking generation (available during times of peak demand).

[77] Mr George reported that the analysis and review of the Grid Upgrade Project by Transpower and the Electricity Commission had included identification of over 60 technically feasible options, including energy efficiency measures, energy substitution programmes, peaking generation plant, wind generation, tidal generation and coal or gas generation.

[78] The witness also reported that some non-transmission alternatives for improving reliability and security of supply to Auckland had been adopted and are being implemented. These are improvements to substations and new substations and generation connections.

[79] Mr George stated that, because electricity cannot be stored practically in the quantities required, meeting electricity demand means having sufficient capacity in the electricity supply system (generation, transmission and distribution) to meet the highest (peak) demand that may occur approximately one year in ten.

[80] He also reported that Transpower is required to ensure the reliability of the transmission system. (This requirement is set out in the Electricity Governance Rules 2003).<sup>17</sup>

[81] Mr D E Boyle, Transpower's Planning and Development Manager, gave evidence about alternatives to transmission, including energy efficiency initiatives, peak demand management, and peaking generation, of which only the latter had been considered viable. The witness explained why uncommitted generation prospects had not been taken into account; and he also explained why continued growth in demand had been assumed, even if forecasts of the timing of a particular level of demand were uncertain to some extent.

[82] He contended that forecast demand in excess of 2500 MW would not be able to be supplied beyond 2013 by the existing transmission system even with all local existing and committed generation in the region operating reliably, along with interim improvements and upgrades to the existing grid that are planned.

[83] Mr Boyle further stated that, in 2014, the demand is forecast to exceed the transmission capability by 40 MW, growing to 565 MW by 2020, and that this is the level of demand that could not be reliably supplied.

[84] Mr Boyle gave evidence that of three principal transmission alternatives that were assessed against the amended proposal, two involved augmentation of existing 220-kV transmission lines. He described features involved in comparing duplexing the Otahuhu-Whakamaru (OTA-WKM) A and B lines with conventional conductors, and duplexing the OTA-WKM A, B and C lines with high-temperature conductors.

[85] An additional factor taken into account by Transpower was transmission losses that resulted from the resistance of conductors. Mr Boyle gave evidence about the way that these losses would be increased or reduced by changes in the levels of current and voltage, including comparing the losses of the four options considered.

[86] He also gave evidence that Transpower had assessed conventional HVDC and HVDC Light alternative transmission methods as part of the development of the grid upgrade proposal. He described relative environmental effects of HVDC in terms of the heights of line support structures, sizes of conductor bundles, interconnections with alternating current equipment, reliability, and economics, stating that HVDC had been found to be significantly more expensive. He reported that Transpower considered HVDC to be an inappropriate solution due to high costs and risks, lack of reliability and practicability.

[87] Mr George gave evidence that, in its 2005 original proposal to the Electricity Commission, Transpower had reported on 11 options, including underground cables. He gave his opinion that the use of underground cables is typically restricted to urban areas; and stated that intermediate substations are required to control voltage.

[88] Mr Boyle explained that the longer the length of underground cable, the higher the probability of failure; and stated that, currently, underground transmission cables cost in the order of 10 times more on average than equivalent capacity overhead lines.

[89] Mr Coad stated that, in relation to forecasts of demand, Transpower is obliged to use the Statement of Opportunities (SOO) issued by the Electricity Commission, although it has the right to offer an alternate view on that SOO.<sup>18</sup> Similarly, Mr George identified that Transpower uses the generation scenarios that the Commission published in the SOO when assessing possible futures for grid investment,<sup>19</sup> also with the right to offer an alternate view on that SOO.

[90] In cross-examination by Ms Brennan about the apparent overcapacity of the proposed grid upgrade, Mr Boyle identified that the line would not be operated to the maximum thermal design capacity because of the need to meet the 'N-1' security requirement. This requires any electricity being generated or transmitted by equipment that fails to then be taken up by the other circuits supplying that demand without any of these other circuits exceeding 100 per cent of their capability.<sup>20</sup>

[91] The complexity of meeting the N-1 security requirement was added to when Mr Boyle gave evidence about the loading of each circuit being governed by the laws of physics. As a result, Transpower has only a limited ability to modify the power flowing through each circuit. He identified that the natural distribution of the load across the six existing 220-kV circuits, plus the two proposed 400-kV-capable circuits, would not be in proportion to the circuits' ratings, resulting in some circuits being underused.

[92] A number of submitters queried the reliance Transpower placed on the demand forecasts in the 2005 SOO instead of the forecasts in the draft 2007 SOO. Mr Boyle explained that:

At the time of the assessment of the proposal the Electricity Commission did consider whether it would be appropriate to adopt the scenarios in the draft 2007 SOO, but determined that it would not be appropriate, part way through the process, to adopt scenarios that underlie the draft 2007 SOO. At that time, the draft 2007 SOO had yet to be consulted on, and may have changed as a result of consultation. The Commission did, in any event, include the draft 2007 demand forecasts as a sensitivity in applying the GIT to the proposal.

[93] He gave his opinion that, even if the draft 2007 demand forecasts were used the need date would at best be delayed a year.

[94] Mr Boyle also noted that some submitters had suggested demand growth has dropped and is trending down over time. He contended that demand is increasing but the annual rate of increase in the demand forecast is decreasing over time, resulting in a reasonably straight demand curve rather than the exponential demand curve that would be expected if an identical annual growth rate compounded year on year.

[95] He noted, by way of example, that the annual growth rate in the demand forecast for central Auckland starts at 4.06 per cent in 2008 and reduces to 2.05 per cent by 2042.

[96] Mr Boyle then gave evidence in response to submitters' suggestions that the demand will never reach levels that require the change from 220-kV to 400-kV operation. He reported that the development plans are based on the 2005 SOO and noted that the demand curve in the draft 2007 SOO is flatter than the 2005 SOO demand curve (especially in the later stages of the forecast period) and that, if the draft 2007 SOO demand forecast is used, the conversion to 400 kV would be delayed by about five years.

[97] He then identified that this delay may be countered with the adoption of a renewable future with a high percentage of renewables. In his opinion, with a renewable target of 90 per cent by 2025, it was probable that the Huntly coal-fired power plant would no longer be used as baseload generation, and that it was quite likely that the change from 220-kV to 400-kV operation of the line would occur earlier than forecast and in any event, by 2039.

## Consideration of need

[98] The Board has reviewed all the evidence bearing on whether there is a need for this 400-kV-capable transmission link.

[99] The Board also heard submissions on need (including on demand forecasts), that could have been (but were not) lodged as evidence. As explained in Chapter 4, this has resulted in the Board placing less reliance on evidence given without notice as submissions.

[100] In the instance of Ms Brennan and Mr Copstick relying on the opinion of Mr Pinnell, the Board does not place reliance on Mr Pinnell's opinion because he was not called to give evidence, so the Board was not able to hear his opinion directly, nor could it be tested by cross-examination.

[101] The Board accepts the evidence of Mr Boyle about Transpower's and the Commission's use of the 2005 SOO and the draft 2007 SOO demand forecasts and generation scenarios against which the 400-kV capable upgrade and other options were assessed.

[102] The Board also notes the evidence of Mr Boyle that forecasts of the timing of a particular level of demand may be uncertain.

[103] Dr McQueen's submissions on need for the grid upgrade conflict with the submissions of Transpower. The Board has to resolve that conflict. It does so on the basis that Transpower's submissions were supported by evidence of expert witnesses, whose statements had been published prior to the hearing in accordance with the Board's directions, and who attended the hearing to give their evidence, and to be tested on it by cross-examination and by questions from the Board. Dr McQueen's submissions on need for the upgrade were not supported by evidence, whether or not published in advance, nor open to testing by cross-examination. Therefore, the Board finds that the evidence supporting Transpower's submissions is more dependable as a basis for resolving the conflict between those submissions and Dr McQueen's.

[104] The Board understands that, in relation to demand forecasts, Dr McQueen's submissions demonstrate the uncertainty that Transpower also identified.

[105] Some submitters contended that the proposed transmission line would have much greater capacity than would be needed. In that respect, the Board accepts the evidence of Messrs George and Boyle about the complexity of the power system; the requirement that it meets N-1 security; and that a line's capacity cannot be determined simply by calculations that use theoretical ratings of individual components of the grid.

[106] In summary, the Board accepts Mr Boyle's evidence, and finds that the capacity of the proposed 400-kV-capable grid upgrade is required to meet forecast demand.

## Conclusion on need for the upgrade

[107] The Board finds that the 400-kV-capable grid upgrade is needed.



## Original and amended proposals

[108] On 30 September 2005, Transpower submitted to the Electricity Commission a grid upgrade plan for a 400-kV transmission line to Auckland. That plan was for a 400-kV line of 1200 MVA capacity per circuit from Whakamaru to the South Auckland urban boundary; 400-kV underground cables from there to the Otahuhu Substation; and 400/220-kV interconnections at Otahuhu and Whakamaru.

[109] The Commission reviewed that plan in April 2006 and issued a draft decision to decline its approval. Transpower decided to amend that plan and, at its request, the Commission suspended consideration of it.

[110] In October 2006, Transpower submitted an amended proposal to the Electricity Commission which, in January 2007, gave notice of its intention to approve the amended proposal. In July 2007, the Commission made a final decision approving the amended proposal.

[111] The amended proposal is a staged project in which the overhead line section would be constructed to be capable of 400-kV operation, but would initially be operated at 220 kV; the capacity of the line would be 2700 MVA per circuit (at 400 kV); the 220-kV connection point in Auckland would initially be the Pakuranga Substation; and the northern 400-kV/220-kV interconnection would be at a new transition station/substation at Brownhill Road, Whitford, from where 220-kV underground cables would connect to the Pakuranga and (eventually) Otahuhu Substations.

[112] By clause 66 of the Government Policy Statement (GPS),<sup>21</sup> (as described in Chapter 4), the Electricity Commission was also required to take into account the Government's objective to facilitate the potential contribution of renewables to the transmission system; and that the approval criteria should allow grid upgrade plans to facilitate the efficient and timely development of renewable generation resources, taking into account any difference in lead times for transmission and generation investment.

[113] Transpower also maintained that the environmental effects of the grid upgrade had been considered by it and by the Electricity Commission in applying what are now identified as clauses 63, 66 and 94 of the GPS<sup>22</sup> in considering the comparative efficiency, facilitation of renewable generation, and environmental effects of any new lines.

## Outline of upgrade plan

[114] By the amended project, Transpower proposes to upgrade the Upper North Island Grid by constructing a new 400-kV-capable transmission link between Whakamaru and Auckland, which would be operated at 220 kV from 2013 until its capacity is insufficient, and at 400 kV from about 2033.

[115] In more detail, the upgrade would involve the following main elements:

- a) modifications to existing equipment and connections, and installing new equipment, at the Pakuranga Substation,

converting it from 110-kV to 220-kV operation with a new 220-kV air-insulated switchgear (AIS) switchyard, and commissioning the existing Otahuhu to Pakuranga 220-kV line (presently operated at 110 kV) at 220 kV

- b) modifications to existing equipment and connections, and installing new equipment, at the Otahuhu Substation, including moving the termination of the existing Otahuhu to Pakuranga line from the 110-kV bus to the 220-kV bus, and terminating the two 220-kV underground cable circuits from Brownhill into the existing Otahuhu 220-kV Substation, constructing a new 220-kV double-circuit underground cable, about 10.6-kilometres long, between the Pakuranga Substation and the proposed Brownhill Substation
- c) constructing a new 220-kV double-circuit underground cable, about 9.9-kilometres long, between the Otahuhu Substation and the proposed Brownhill Substation
- d) constructing a new substation at Brownhill Road, initially to be a transition station connecting the underground cable with Pakuranga to the start of the 400-kV-capable overhead line (to be commissioned by 2011); later, when the Otahuhu underground cable has been constructed, to be a switching station (to be commissioned by 2023); and later still when the overhead line is enlivened at 400 kV, to be a substation to transform the energy from 400 kV and 220 kV (to be commissioned by 2034). The Brownhill Substation will use gas-insulated switchgear (GIS) located in buildings
- e) constructing a double-circuit 400-kV-capable overhead line, with a capacity of 2700 MVA per circuit and about 185-kilometres long, between Brownhill and Whakamaru, including 429 towers, insulators, triplex all-aluminium-alloy conductors, and earth wires (one of which would contain optical fibres for communication and operational control)
- f) additions to the existing substation at Whakamaru
- g) constructing a new AIS switching station at Whakamaru North, connected to the existing Whakamaru Substation, and later to be converted to a substation
- h) dismantling and removing the existing Arapuni-Pakuranga A double-circuit 110-kV line (ARI-PAK A line)
- i) ancillary activities, including accesses, fencing, safety and directional signage.

[116] Although the Grid Upgrade Project has distinct components at different sites, and would be carried out in stages over a number of years, it has been developed as a single concept (including construction works, and operation and maintenance activities), with each component being integral to the overall project.

[117] The works would span six districts, one city and two regions. Transpower gave notice of requirements for designations in district plans and

applications for regional resource consents. As the existing Otahuhu and Pakuranga Substations are not designated, Transpower's requirements include designation of the existing substation activities there; and as additions are proposed to the existing designated Whakamaru Substation, it requires a replacement designation of that substation.

[118] The overhead line would cross about 315 properties. The designation for the line would be at least 65-metres wide, to allow for operation and maintenance of the line, and the swing of conductors. Transpower intends to acquire easements over those properties (or in some cases, to purchase the properties). The heights of the towers would vary, depending on the slope of the underlying ground and the minimum clearance required. The maximum tower height would be 70 metres, and the average height would be about 60 metres.

[119] The towers would mostly be double-circuit, steel lattice towers. Four single-circuit towers are proposed at two transposition sites along the route; two single-circuit towers are proposed at Brookby Ridge to comply with a height restriction for Ardmore Airport; and monopole towers (instead of lattice construction) are proposed at Brownhill Substation, and at a crossing of Lake Karapiro.

[120] The conductors would be high capacity, arranged in triplex bundles, separated by spacers; and there would be two earthwires of approximately 15 mm diameter, to protect the conductors from lightning strikes. One of the earthwires would contain optical fibres for communications for operation of the proposed line and the National Grid.

[121] The underground cables are to follow separate routes from Brownhill to the Pakuranga and Otahuhu Substations. Each underground cable is to have double-circuit 220-kV cable in duplex formation, with each circuit made up of three 130–160-mm diameter cables, with associated fibre-optic communications and temperature-sensing cables. Each circuit would include buried water pipes of about 110 mm diameter for cable cooling, to be used as required later.

[122] The cable routes are predominantly within roads and streets. Each cable would be buried in a trench about 1.5-metres wide and 2.2-metres deep; except that a short length of one circuit of the Pakuranga cable is to be installed in an existing cable tunnel.

[123] Once the cable has been installed, Transpower intends to reduce the width of the designation to allow sufficient width for protection and maintenance.

## **Expected benefits**

[124] Transpower identified these expected benefits of the proposed upgrade:

- a) the ultimate capacity of the proposed transmission line would be 2700 MVA per circuit, maximising the use of the line corridor
- b) it would facilitate efficient transmission of energy (minimising line losses)

- c) it would promote renewable generation
- d) it would fit in with long-term strategic development of the National Grid
- e) it would promote confidence among business investors
- f) it would reduce adverse environmental effects by avoiding proliferation of transmission corridors.

[125] These results would be consistent with the GPS and the New Zealand Energy Statement.

## Endnotes

- <sup>1</sup> T J Densem, para 5.3.
- <sup>2</sup> Transcript 21/07/08, p 39.
- <sup>3</sup> Ibid.
- <sup>4</sup> Ibid, p 40.
- <sup>5</sup> Ibid, p 44.
- <sup>6</sup> Ibid, p 47.
- <sup>7</sup> Ibid, p 48.
- <sup>8</sup> Transcript 22/07/08, p 2.
- <sup>9</sup> Ibid, p 4.
- <sup>10</sup> Ibid, p 37.
- <sup>11</sup> Transcript 24/07/08, pp 2–3.
- <sup>12</sup> Published by Transpower, October 2004; produced in Common Bundle of Exhibits, Vol 1, Tab 5.
- <sup>13</sup> Published by Transpower, October 2004; produced in Common Bundle of Exhibits, Vol 1I, Tab 7.
- <sup>14</sup> Cl 88E was inserted in the GPS 2004 by the 2006 amendment. The GPS 2008 contained a corresponding provision in cl 104. The corresponding provision of the now current GPS 2009 is cl 94. See Chap 4 para [328].
- <sup>15</sup> Transcript 27/03/08, pp 30-31.
- <sup>16</sup> Ibid, p 29.
- <sup>17</sup> See Chap 4, paras [329-337].
- <sup>18</sup> Transcript 27/03/08, p 36.
- <sup>19</sup> Transcript 1/04/08, p 12.
- <sup>20</sup> Transcript 2/04/08, p 19.
- <sup>21</sup> Formerly cl 80 of the GPS 2004, and cl 49 of the GPS 2008.
- <sup>22</sup> These clause numbers refer to the current May 2009 version of the GPS.

## CHAPTER 4: THE LEGAL CONTEXT

### Introduction

[126] Before addressing the issues raised in submissions on the designation requirements and resource consent applications, the Board summarises its understanding of the legal context in which the requirements and applications are to be decided, and the scope of its Inquiry.

[127] The legal context of the upgrade proposal includes the Public Works Act 1981, the RMA 1991, the Electricity Act 1992, and instruments made under those Acts.

[128] The requirements and applications were made, and called in, under the RMA. The Board was constituted, the inquiry is to be conducted, and the decisions are to be made, under that Act. In this chapter, the Board identifies the main provisions of that Act which are applicable, and also the relevant instruments made under it.

[129] The National Grid, and Transpower's duties and responsibilities in respect of it, are governed by the Electricity Act 1992 and instruments made under that Act. The Board also identifies relevant provisions of this Act and its instruments.

[130] Where a proposed work requires construction or access over private land, Transpower is free to reach agreement with the landowner for rights of entry and grant of an easement. If agreement is not reached, Transpower may apply to the Minister of Lands to take an easement under the Public Works Act,<sup>1</sup> and if that is done, full compensation (if not agreed) would be assessed under that Act.<sup>2</sup> The Board has to consider the extent to which the application of that Act is within the scope of the inquiry.

[131] Reference was made to the NZEECS under the Energy Efficiency and Conservation Act 2000. The Board has to consider whether that Strategy should influence its decision.

[132] Parties also urged consideration of certain other documents that are not themselves sources of law. The Board has to consider whether regard should be had to them in deciding the requirements and resource consent applications.

### The Resource Management Act

[133] The RMA restated and reformed the law relating to the use of land, air and water. Part 2 of the Act contains sections 5 to 8, which state the purpose and principles of the Act, and function as substantial guidance to decision-makers.

## The purpose of the Act

[134] The RMA has a single purpose, stated in section 5(1), of promoting the sustainable management of natural and physical resources. What is meant by sustainable management is explained in section 5(2):

In this Act “sustainable management” means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

- a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

[135] In the context, *natural and physical resources* include land, energy, and structures;<sup>3</sup> *effect* is to be given a broad meaning that includes positive or adverse effects, cumulative effects, and potential effects of low probability which have a high potential impact;<sup>4</sup> and *environment* is given a broad meaning that includes people and communities, amenity values, and social, economic, aesthetic, and cultural conditions which affect them.<sup>5</sup>

[136] Application of section 5 involves a broad judgement as to whether a proposal promotes sustainable management of natural and physical resources.<sup>6</sup>

## Principles in Part 2

[137] Part 2 is described as the engine room of the RMA, and (except when specifically excluded or limited) is intended to infuse the approach to its interpretation and implementation throughout.<sup>7</sup> There is a deliberate openness about the language, its meanings and connotations which is intended to allow the application of policy in a general and broad way.<sup>8</sup>

[138] Section 6 lists matters of national importance that those performing functions under the RMA are to recognise and provide for. They include (among other things) the protection of the natural character of wetlands, lakes, rivers and their margins, and the protection of them from inappropriate development; the protection of outstanding natural features and landscapes from inappropriate development; the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna; and the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga.

[139] The matters of national importance listed in section 6 are to be considered against the stated purpose of the RMA (that of sustainable management) referred to in section 5.<sup>9</sup> They are not to be achieved at all costs. Protection is not an absolute concept, and a reasonable, rather than strict, assessment is called for.<sup>10</sup> The provision for matters listed in section 6,

and the extent to which a proposal would give effect to the objectives and policies of the planning instruments, are to serve the purpose of promoting sustainable management of natural and physical resources described in section 5.<sup>11</sup> The achievement which is to be promoted is sustainable management, and questions of national importance, national value and benefit, and national needs, must all play their part in the overall consideration and decision.<sup>12</sup>

[140] Section 7 lists further matters to which functionaries are to have particular regard. They include kaitiakitanga; the efficient use and development of natural and physical resources; the efficiency of the end use of energy; the maintenance and enhancement of amenity values; the maintenance and enhancement of the quality of the environment; the effects of climate change; and the benefits to be derived from the use and development of renewable energy.

[141] Section 8 directs that all persons exercising functions and powers under the Act in relation to managing the development of natural and physical resources are to take into account the principles of the Treaty of Waitangi. That does not extend to principles that are not consistent with the scheme of the RMA; nor provide for allocating resources to Māori.<sup>13</sup> Neither does it impose a duty on functionaries to take into account past wrongs, or be open to ways to restore imbalance.<sup>14</sup>

## **The conduct of the inquiry**

[142] The scheme of the RMA is that requirements for designations, and resource consent applications, are considered and decided by local authorities. However, when, on requirements and applications on a matter of national significance that are called in, the Minister directs that the matter be referred to a board of inquiry, then section 147 modifies the normal procedures.

[143] The factors to which the Board of Inquiry is to have regard include any relevant factor listed in section 141B(2) (being factors indicative that a matter is, or is part of, a proposal of national significance); and the reasons given by the Minister for calling the matter in.<sup>15</sup>

[144] Relevantly, a board of inquiry considering a matter that is an application for a resource consent has the same powers and duties as a local authority, except that the board may permit cross-examination, must keep a full record of its hearings, and must apply sections 37, 92, and 104 to 112 as if it were a consent authority.<sup>16</sup>

[145] Where a board of inquiry is considering a matter that is a notice of requirement, it has the same powers and duties as a territorial authority, except that the board:

- may permit cross-examination
- must keep a full record of its hearings
- must apply sections 37, 169 to 171, and 175 as if it were a territorial authority

- must apply section 173 as if it were a territorial authority except that its statement of the time within which an appeal may be lodged must say that the appeal is under section 149A
- must consider whether to confirm the requirement, modify it, impose conditions on it; or withdraw it
- for that purpose has the same powers as a requiring authority under section 172.<sup>17</sup>

[146] Certain provisions of the Commissions of Inquiry Act apply to bodies conducting hearings under the RMA, including a board of inquiry appointed under section 146.<sup>18</sup> The provisions of the Commissions of Inquiry Act that apply to such boards of inquiry include power to receive as evidence any statement, document, information or matter that in its opinion may assist it to deal effectively with the subject of the inquiry, whether or not it would be admissible in a Court of law.<sup>19</sup>

[147] A person conducting a hearing under the RMA into a resource consent application or a requirement for a designation, including a board of inquiry appointed under section 146, has the power to request and receive from any person who is heard or who is represented at the hearing any information or advice that is relevant and reasonably necessary to determine the application.<sup>20</sup>

[148] A person conducting a hearing under the RMA into a resource consent application or a requirement for a designation, including a board of inquiry appointed under section 146, also has power, after considering whether the scale and significance of the hearing makes it appropriate, to direct the applicant and submitters to provide briefs of evidence before the hearing within a time limit.<sup>21</sup>

[149] As soon as practicable after a board of inquiry has completed an inquiry, it is to make its draft decision and produce a draft written report which gives its draft decision and gives reasons for that decision, and includes the principal issues and findings of fact. The draft report is sent to the applicant, local authorities, submitters and the Minister, who are to be invited to send their comments on any aspect of it to the board within 20 working days.<sup>22</sup>

[150] The board has then to consider any comments received, make its decision, and produce a written final report. The report has to include the principal issues, the findings of fact, the board's reasons, and its decision. In addition to changes that result from implementation of the decision, the report may contain recommendations of changes to planning instruments under the RMA, or of issue or revocation of a national policy statement or coastal policy statement.<sup>23</sup>

[151] There is a right of appeal to the High Court against a board of inquiry's decision, on a question of law only.<sup>24</sup> There is no right of appeal to the Environment Court against the board's decision.



[152] Federated Farmers submitted that there is no onus on submitters to make their cases, but an onus on the Board to ensure that material raised in submissions is adequately considered.

[153] The Board accepts that submission to the extent that it has considered assertions raised in submissions, and decides them in accordance with the legal framework applying, and on the totality of the evidence presented in accordance with the Board's directions to allow fair testing by cross-examination on notice.

## Requirements for designations

[154] The RMA provides for designations that authorise activities that may not otherwise comply with that Act, or with instruments under it, governing use of land (particularly district plans). A designation constrains activities in relation to designated land that would prevent or hinder the designated activity, except with the consent of the requiring authority.<sup>25</sup>

[155] Section 171 governs a territorial authority's consideration of requirements:

**171. Recommendation by territorial authority—** (1) When considering a requirement and any submissions received, a territorial authority must, subject to Part 2, consider the effects on the environment of allowing the requirements, having particular regard to—

- a) any relevant provisions of—
    - (i) a national policy statement:
    - (ii) a New Zealand coastal policy statement:
    - (iii) a regional policy statement or proposed regional policy statement:
    - (iv) a plan or proposed plan; and
  - b) whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if—
    - (i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or
    - (ii) it is likely that the work will have a significant adverse effect on the environment; and
  - c) whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought; and
  - d) any other matter the territorial authority considers reasonably necessary in order to make a recommendation on the requirement.
- (2) The territorial authority may recommend to the requiring authority that it—
- a) confirm the requirement:

- (b) modify the requirement:
  - (c) impose conditions:
  - (d) withdraw the requirement.
- (3) The territorial authority must give reasons for its recommendation under subsection (2).

[156] A number of questions arose about the interpretation of section 171: the effect to be given to the words “subject to Part 2”; whether the matters listed in paragraphs (a) to (d) of section 171(1) are aspects of environmental effects rather than separate considerations; the extent of the power to modify a requirement; who chooses from alternatives; tests of adequacy of consideration of alternatives; relevance of method of acquiring land; and whether the extent of a designation can be limited.

### **Subjection to Part 2**

[157] The Manukau City Council submitted that the words “subject to Part 2” in section 171 do not imply just a statutory check at the end of the process, but that the Board needs to be satisfied that the requiring authority was informed and guided by Part 2 in preparing the requirements, and at every stage in the process.

[158] Transpower responded that to the extent that preparing and lodging notices of requirement are administrative acts (as distinct from the assessments involved in preparing them) no Part 2 input is required.

[159] That may be so. The context of those words in question is a territorial authority’s consideration of the effects on the environment of allowing a requirement. This is the process that is subjected to Part 2.

[160] By section 171(1), the function of a territorial authority (and of a board of inquiry) is to consider any such effects, having particular regard to the considerations listed. The function is not to review the conformity with Part 2 of the preceding steps of preparing, assessing, and lodging of the notice of requirement.

[161] The duty to have particular regard to the listed matters being expressed as being subject to Part 2, does not apply where having regard to them would conflict with anything in Part 2. However, that does not require the territorial authority to test each alternative against Part 2.<sup>26</sup>

[162] The Manukau City Council warned against making Part 2 “just a statutory ‘check’ at the end of the process”. If by that the council intended that a territorial authority should not make its evaluative judgement of applying Part 2 *at the end* of the decision-making process, the Board does not accept it.

[163] Making such a judgement can require comparison of conflicting considerations and the scale or degree of them, and their relative significance or proportion in the final outcome.<sup>27</sup> Such an evaluative process can logically follow the making of findings and assessments on the various considerations that are to be evaluated.

[164] The Board considers that applying Part 2 after having made findings and assessments on those considerations is an appropriate sequence in coming to its ultimate decisions, and helpful in showing the process by which it does so. The Board holds that making that assessment and judgement at the end of the decision-making process conforms with subjecting it to Part 2. The Board is unaware that doing so *at the end* of the process conflicts with the authorities cited by counsel for the City Council,<sup>28</sup> or with any other authority.

### **Character of the listed considerations**

[165] The Waipa District Council submitted that the relevant version of section 171 (substituted by section 63 of the Resource Management Amendment Act 2003) casts the matters listed in section 171(1)(a) to (d) as particularly relevant examples of the mandatory consideration of effects on the environment.

[166] It contended that this version of the section makes the matters (a) to (d) particularly important aspects of those effects, rather than separate considerations to which regard was to be had in their own right. It argued that this gives the provisions of planning instruments (including rules or other methods to give effect to objectives and policies) and consideration of alternatives (especially those that may be available to address any significant adverse effects on the environment) much greater significance than they had on a stand-alone basis prior to the 2003 amendment.

[167] Counsel argued that the relevant district plan provisions should be accorded a position of primacy in the assessment of effects; and although compliance with them is not a prerequisite to approval of a requirement, they are to be given great weight.

[168] Transpower submitted that the Waipa District Council's interpretation is incorrect, advancing these main reasons:

- a) on the Council's interpretation, the weight attributed to an environmental effect could be increased or decreased, depending on matters in (a) to (d)
- b) the 2003 amendment to the wording of section 171(1) was no more than a drafting refinement
- c) the Council's interpretation is not supported by the explanatory note to the Bill that made the amendment
- d) the decision-maker has to make its own judgement, based on the evidence, about effects on the environment, despite district plan provisions to the contrary.<sup>29</sup>

[169] The Board is not persuaded that the 2003 amendment to the introductory passage of section 171(1) is to be interpreted as having the effect proposed on the Council's behalf, for these reasons:

- a) the language "... consider the effects ... having particular regard to..." expresses a duty to do both together, without necessarily giving one primacy over, or making one subordinate to, the other

- b) the language “having particular regard” expresses a duty for the territorial authority to turn its mind separately to each of the matters listed, to consider and carefully weigh each one. The words do not carry a meaning that the matters listed in (a) to (d) are necessarily more or less important than the effects on the environment of allowing the requirement
- c) the subject matters of the items listed in paragraphs (a) to (d) do not necessarily bear on effects on the environment of allowing the requirement
- d) as Transpower submitted,<sup>30</sup> a decision-maker has to make its own judgement, based on the evidence and in the circumstances of the case, about the effects on the environment, about the items listed in (a) to (d), and about the relative importance of each in all the circumstances
- e) the only material provided to the Board indicating what was intended during the Parliamentary process leading to the 2003 amendment Act reveals nothing to support the Council’s interpretation, or to cast doubt on the meaning expressed by the language used.

[170] So the Board holds that on the correct interpretation, section 171(1) does not give district plan provisions primacy in the assessment of effects on the environment of allowing a requirement, a matter on which a territorial authority has to make its own judgement on the evidence and in all the circumstances.

### **Power to modify requirement**

[171] Transpower submitted that the Board’s power to modify the requirement is limited, in that by combination of sections 147(8) and 172(2) of the RMA, the Board can only modify a requirement if it is not inconsistent with the requirement as notified. Transpower submitted that the test is whether the changes would alter the essential nature of the project, so that it failed to agree in substance with notice of requirement so as to be incompatible with them;<sup>31</sup> and that changes that have lesser adverse effects may qualify.<sup>32</sup>

[172] Drummond Dairy and Scenic Dairies made submissions to similar effect, and commended a test of whether it is plausible that anyone who did not lodge a submission on the notified requirement would have done so if the modified requirement had been notified; and whether the modification alters the nature of the requirement.

[173] No submitter joined issue with Transpower on the limit on the Board’s modification power.

[174] The Board accepts that its power to modify the requirement is limited to modifications that do not render the requirement inconsistent with what was notified; and that applying this limitation calls for comparison between the substance of the notified requirement and the requirement as it would be modified. A judgement of fact and degree in the specific case is

needed to decide whether modifying a requirement to mitigate adverse effects is within the statutory limit.

[175] Judgements on the plausibility of someone lodging a submission if the modified proposal had been notified can only be relevant if they assist in deciding the test set by the Act, whether a modification is not inconsistent with the requirement as notified.

### **Adequacy of consideration of alternatives**

[176] By section 171(1)(b) in certain conditions, particular regard is to be had to whether adequate consideration has been given to alternative sites, routes or methods of undertaking the work. Transpower accepted that it was required to consider alternative sites, routes and methods of undertaking the grid upgrade.

[177] Transpower made these submissions, based on case law, about the imposed by section 171(1)(b):

- a) the focus is on the process, not the outcome: whether the requiring authority has made sufficient investigations of alternatives to satisfy itself of the alternative proposed, rather than acting arbitrarily, or giving only cursory consideration to alternatives. Adequate consideration does not mean exhaustive or meticulous consideration<sup>33</sup>
- b) the question is not whether the best route, site or method has been chosen, nor whether there are more appropriate routes, sites or methods
- c) that there may be routes, sites or methods which may be considered by some (including submitters) to be more suitable is irrelevant
- d) the Act does not entrust to the decision-maker the policy function of deciding the most suitable site; the executive responsibility for selecting the site remains with the requiring authority<sup>34</sup>
- e) the Act does not require every alternative, however speculative, to have been fully considered; the requiring authority is not required to eliminate speculative alternatives or suppositious options.<sup>35</sup>

### **Who chooses from the alternatives?**

[178] Counsel for the Manukau City Council submitted that the Judgment of the Privy Council in *McGuire v Hastings District Council*<sup>36</sup> allows room to argue that the territorial authority is to fully evaluate the merits of the various alternatives against Part 2 of the Act, with a view to determining which alternative ought to be adopted.<sup>37</sup> However, counsel properly conceded that it is very difficult to reconcile such an approach with the later High Court Judgment in *Auckland Volcanic Cones Society v Transit New Zealand*.<sup>38</sup>

[179] The opinion of the Privy Council in *McGuire* is of course binding authority as far as it goes. As the Environment Court held in *Nelson Intermediate School v Transit New Zealand*,<sup>39</sup> the passage in paragraph [23]

of that opinion may allow room for the Council's argument. The Environment Court did not determine that this is the correct interpretation of section 171(1)(b).

[180] The words of a judgment should not be interpreted and applied to another case as if the phrase in issue were part of a statute.<sup>40</sup>

[181] The Privy Council Judgment did not contain a specific and unequivocal declaration to the effect that a territorial authority is to determine which alternative is to be adopted. Their Lordships' reasoning did not address the particular wording "...whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work..."; nor did they address the consistent meaning given to that phrase over many years.<sup>41</sup>

[182] In the *Auckland Volcanic Cones Society* case, the Full Court found that the observations of Lord Cooke in delivering the Privy Council Judgment were *obiter dicta* (not necessary to the reasoning on the question of law in issue). Counsel for the Manukau City Council acknowledged that the traditional view that the role under section 171(1)(b) – which they described as being of oversight rather than evaluative judgment – stands.

[183] Therefore, the Board applies the law as declared by the higher Courts in other cases, and consistently applied and followed; and holds that section 171(1)(b) does not confer authority on a territorial authority to substitute its own choice among alternative sites routes or methods of undertaking the work, for the choice of the requiring authority.

### **Tests of adequacy of consideration**

[184] Counsel for the Waipa District Council, for the Manukau City Council, and for the Hunua and Paparimu Valley Residents' Association (HPVRA), made submissions to the effect that, for consideration of alternative sites, routes or methods to qualify as adequate within the intent of section 171(1) (as amended in 2003), there must have been a testing of aspects that favour the proposal with those that are unfavourable, to be compared with realistic options; and the process must include explicitly identifying and evaluating Part 2 considerations, including the relative environmental effects of the proposal and of at least some of the options.

[185] The main ground for those submissions was that this would help ensure the final choice is optimal over the full range of factors.

[186] The Board has already stated its understanding that coming to a judgement on the adequacy of consideration of alternative sites, routes and methods is to be done "subject to Part 2", but it is not necessary to test each alternative against Part 2.<sup>42</sup>

[187] The submitters did not bring to the Board's attention any indications in the text, or in the light of the purpose, or in the Parliamentary process, that support giving section 171(1) the meaning contended for.<sup>43</sup>

[188] Where, in the RMA, Parliament has wished to stipulate detailed criteria or procedures to be followed, it has done so – see for example, sections 66, 70, 74, 76, 88 to 114; and Schedules 1, 2, and 4. Elsewhere in the Act, and

particularly with respect to Part 2, Parliament has used open language of wide meaning, with the intention that in the full variety of circumstances to which the Act is applicable, Part 2 sets the scene overall for the construction and application of the Act;<sup>44</sup> and to infuse the approach to its interpretation and implementation throughout.<sup>45</sup>

[189] There is a broad potential range of projects or works that might be the subject of requirements under the RMA, to which section 171 may be applicable. To adopt mandatory tests of the adequacy of consideration given to alternative sites, routes and methods – such as propounded by the councils – would restrict the meaning of the broad words used in section 171(1)(b) where Parliament has refrained from doing so over the decades in which that language has been used.

[190] The considerations proposed by the councils may have value in particular cases in judging the adequacy of consideration of alternatives. However, their potential value is not as *tests* that must be applied, but as *criteria* that might be used in some circumstances. So the Board is not persuaded that the section has to be interpreted as imposing mandatory tests by which the outcome has to be decided one way or the other.

### ***Relevance of method of acquiring land***

[191] Federated Farmers submitted that section 171(1)(b)(i) is a direction that territorial authorities are to consider how the requiring authority proposes to acquire an interest in the land that is sufficient to enable it to undertake the work.

[192] The structure of section 171(1) is the opening clause followed by the listed considerations. The opening clause states the case to which the subsection applies (“When considering a requirement and any submissions received”), the class of persons to whom it applies (“a territorial authority”), and the action directed (“...must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to ...”). Paragraphs (a) to (d) then follow, describing the considerations to which particular regard is to be had.

[193] Of the listed considerations, particular regard is not required for the subject matter of paragraph (b) in every case. A territorial authority is to have particular regard to the subject matter of that paragraph only if the case is in one or both of the two conditions described in subparagraphs (i) and (ii). When a territorial authority is considering a requirement in a case to which neither of those conditions applies, it is not obliged to have particular regard to the subject matter of paragraph (b) (ie, whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work).

[194] So subparagraph (i) is not one of the listed considerations to which a territorial authority is to have particular regard. Rather, it is a condition which, when it applies, relieves a territorial authority of the duty it would otherwise have to have particular regard to the consideration stated in paragraph (b).

[195] That is the Board's understanding of the ordinary meaning of the text and construction of the sentence of paragraph (b).

[196] Federated Farmers did not bring to the Board's attention any indication in the text, or in the light of the purpose of the Act, or in the Parliamentary process, that would support treating subparagraph (i) as if it were one of the items in the list (a) to (d) of considerations to which a territorial authority is to have particular regard.<sup>46</sup>

[197] Therefore, the Board does not accept Federated Farmers submission to that effect.

### **Necessity for achieving objectives**

[198] Section 171(1)(c) directs that a territorial authority must, subject to Part 2, have particular regard to whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought.

[199] Transpower made these submissions about the meaning and application of that direction:

- a) The consideration is limited to the requiring authority's objectives for which the designation is sought, rather than an enlarged examination of alternatives (the subject of section 171(1)(b)).
- b) In paragraph (c), the meaning of the word *necessary* falls between expedient or desirable on the one hand, and essential on the other; and the epithet *reasonably* qualifies it to allow some tolerance.<sup>47</sup>
- c) The paragraph does not impose some higher threshold or standard of proof that would require a requiring authority to demonstrate that the project and designation would better achieve its objectives than an alternative project or means of seeking authorisation; nor that they absolutely fulfil its objectives.
- d) The Act neither requires nor allows the merits of the objectives themselves to be judged by the territorial authority.<sup>48</sup>
- e) On whether a designation is the preferable planning method to be used, the relevant factors may include that a designation signals potential for future changes; provides a clear method for those changes to occur (including the outline plan procedure where applicable); provides a uniform approach through various territorial authority districts and that it may not otherwise be possible to 'freeze' the existing plan provisions.<sup>49</sup>
- f) A designation may also be a desirable planning method to establish a clear corridor for mitigation of some effects; to restrict conflicting uses and structures pending completion of detailed design (especially for a long-term project); and a precursor to compulsory acquisition of land under the Public Works Act.



[200] The Manukau City Council submitted that the post-2003 wording of paragraph (c) enables a territorial authority to consider whether the proposal exceeds what is required to meet the requiring authority's objective; and if the territorial authority concludes that it does, it can recommend the scope of the proposal be limited to reduce potential effects on the environment.

[201] New Era Energy, Orini Downs Station, P and D Dombroski, E J Mackay, Drummond Dairy and Scenic Dairies submitted that a territorial authority is to have particular regard to whether the work and designation are reasonably necessary for achieving the objectives without questioning the objectives or the requiring authority's choice of alternatives beyond the extent called for by paragraph (b). Further, they submitted that the territorial authority can consider the extent of the designation, limiting it to the extent reasonably necessary.<sup>50</sup>

[202] The Waipa District Council warned against applying section 171(1) in a way that would treat environmental factors as secondary to economic factors. It also contended that if there are reasonable alternatives which are technically feasible and which would have different environmental effects, that may alter the consideration of what is reasonably necessary for achieving the objective.

[203] The Board accepts Transpower's submissions already summarised, relying on the case law cited.

[204] The Board accepts that section 171(1)(c) authorises a territorial authority to consider the extent to which the work is reasonably necessary for achieving the requiring authority's objectives, and to recommend limiting the extent of a designation accordingly. It holds that there is no general weighting among the prescribed considerations: evaluation of any one among the others must depend on the circumstances, and is to be informed by reference to Part 2, and particularly by applying the statutory purpose stated in section 5.

### **Other necessary matters**

[205] By section 171(1)(d), a territorial authority is to have particular regard to any other matter it considers reasonably necessary in order to make a recommendation on the requirement.

[206] No question of law arose about the interpretation or application of that provision.

### **Outline plans**

[207] A requiring authority, which is to carry out a work that is the subject of a designation in a district plan, is generally required to submit an outline plan of the proposed work to the territorial authority.<sup>51</sup> The outline plan is to show the height, shape and bulk of the work; its location on the site; the likely finished contour of the site; vehicle access; proposed landscaping; and other measures to avoid, remedy, or mitigate any adverse effects on the environment.<sup>52</sup>

[208] The territorial authority can request changes to the plan before construction is begun;<sup>53</sup> and if the requiring authority decides not to make these changes, the territorial authority can appeal to the Environment Court to consider whether the changes requested will give effect to the purpose of the RMA.<sup>54</sup>

[209] There are exceptions to the obligation for a requiring authority to submit an outline plan if the proposed work has been otherwise approved under the RMA; or the details are incorporated in the designation; or the territorial authority waives an outline plan.<sup>55</sup>

[210] The outline plan process is separate from the process for deciding on the designation.

## Resource consent applications

[211] Resource consents under the RMA also authorise activities that are not permitted of right,<sup>56</sup> and would contravene various provisions of the Act.<sup>57</sup> Resource consent is required for activities that are classified as controlled activities, restricted discretionary activities, discretionary activities, or non-conforming activities.<sup>58</sup>

[212] An application for a resource consent is to include an assessment of environmental effects in such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.<sup>59</sup>

[213] When considering a resource consent application, a consent authority (or board of inquiry) has, subject to Part 2, to have regard to—

- any actual or potential effects on the environment of allowing the activity; and
- (b) any relevant provisions of—
  - (i) a national policy statement:
  - (ii) a New Zealand coastal policy statement:
  - (iii) a regional policy statement or proposed regional policy statement:
  - (iv) a plan or proposed plan; and
- (c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.<sup>60</sup>

[214] The duty to have particular regard to the listed matters being expressed as being subject to Part 2 (as in the case of requirements), does not apply where having regard to them would conflict with anything in Part 2. However, that does not require the consent authority (or the board) to test each alternative against Part 2.<sup>61</sup>

[215] A consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity to that effect;<sup>62</sup> and may not have regard to any effect on a person who has given written approval to the application, unless the person has given written notice withdrawing the approval.<sup>63</sup>

## **Local Government (Auckland) Amendment Act 2004**

[216] The Local Government (Auckland) Amendment Act 2004 amended the Local Government Act (2002) and was passed into law by the House of Representatives on 30 June 2004. Most of the Act took effect immediately, but Sections 45 and 46 and Schedules 4 and 6 came into force on 1 January 2005. These parts of the Act included concomitant changes to the Land Transport Management Act (2003) and the Transport Services Licensing Act (1989) and related to the vesting of public transport service assets and liabilities. The Act required all councils in the Auckland region to integrate the land transport and land-use provisions of their planning documents to give effect to the Auckland Regional Growth Strategy and be in keeping with the objectives of the Auckland Regional Policy Statement (ARPS).

[217] The purpose of the Act is to improve the integration of the Auckland regional land transport system, improve management of land transport funding and assets for the Auckland region and integrate decisions on stormwater funding for the region. This was achieved by dissolving Infrastructure Auckland and establishing two new bodies, the Auckland Regional Transport Authority and Auckland Regional Holdings. Auckland Regional Holdings owns assets and is required to manage them prudently and for the long-term benefit of the Auckland region. Auckland Regional Transport Authority plans, funds and develops the land transport system and must exhibit a sense of social and environmental responsibility in exercising its duties.

## **Policy instruments under the RMA**

[218] The RMA provides for the making of three main classes of instruments: regulations, policy statements, and plans. Subject to Part 2, regard is to be had to all such instruments in making decisions about designations and resource consents.

[219] The policy instruments that are applicable to consideration of the designation and resource consents for the proposed grid upgrade are the National Policy Statement on Electricity Transmission (NPS); the regional policy statements for the Auckland and Waikato regions; the Proposed Auckland Regional Plan: Air, Land and Water; the Auckland Regional Plan: Sediment Control; and the Waikato Regional Plan. The relevant provisions of the planning documents have been set out in the Section 42A report and by the applicant and other counsel in evidence and submissions. There does not appear to be any dispute as to which provisions are relevant to the application, however, there was disagreement in how provisions relating to Outstanding Natural Landscapes should be considered and whether the proposal is consistent with the relevant planning provisions.

## **National Policy Statement on Electricity Transmission**

[220] The NPS was gazetted on 13 March 2008 and came into force on 10 April 2008.<sup>64</sup> The Preamble states that electricity transmission has special characteristics that create challenges for its management under the RMA, including expected requirements for ongoing investment in the transmission

network and significant upgrades to meet demand for electricity and the Government's objective for a renewable energy future.

[221] Subject to Part 2, the NPS is to be applied by decision-makers under the Act, but not as a substitute for, or to prevail over, the RMA's statutory purpose or the statutory tests. It is a relevant consideration to be weighed along with other considerations in achieving the sustainable management purpose of the Act. The objectives and policies of the national policy statement are intended to guide decision-makers in considering requirements for designations for transmission activities and in making decisions on resource consents.<sup>65</sup>

[222] The objective of this NPS is:

To recognise the national significance of the electricity transmission network by facilitating the operation, maintenance and upgrade of the existing transmission network and the establishment of new transmission resources to meet the needs of present and future generations, while:

- managing the adverse environmental effects of the network; and
- managing the adverse effects of other activities on the network.<sup>66</sup>

[223] Several of the policies in this NPS are directly applicable to the Board's inquiry in achieving the purpose of the Act.

[224] Policy 1 directs decision-makers to recognise and provide for the national regional and local benefits of sustainable, secure and efficient electricity transmission. (Examples of those benefits are provided.)

[225] Policy 2 directs decision-makers to recognise and provide for the effective operation, maintenance, upgrading and development of the electricity transmission network.

[226] Policy 3 directs that when considering measures to avoid, remedy or mitigate adverse environmental effects of transmission activities, decision-makers are to consider the constraints imposed on achieving those measures by the technical and operational requirements of the network.

[227] Policy 4 directs that when considering the environmental effects of new transmission infrastructure, or major upgrades of existing transmission infrastructure, decision-makers are to have regard to the extent to which any adverse effects have been avoided, remedied or mitigated by the route, site and method selection.

[228] Policy 5 directs that when considering the environmental effects of transmission activities associated with transmission assets, decision-makers are to enable the reasonable operational, maintenance and minor upgrade requirements of established electricity transmission assets.

[229] Policy 6 is that substantial upgrades of transmission infrastructure should be used as an opportunity to reduce existing adverse effects of transmission including such effects on sensitive activities, where appropriate.

[230] Policy 7 is that planning and development of the transmission system should minimise adverse effects on urban amenity and avoid adverse effects on town centres and areas of high recreational value or amenity, and existing sensitive areas.

[231] Policy 8 is that in rural environments, planning and development of the transmission system should seek to avoid adverse effects on outstanding landscapes, areas of high natural character, and areas of high recreation values and amenity, and existing sensitive activities.

[232] Policy 9 directs that provisions dealing with electric and magnetic fields associated with the network are to be based on the International Commission on Non-Ionising Radiation Protection Guidelines (ICNIRP) for limiting exposure to time-varying electric magnetic fields (up to 300 GHz) and recommendations from the World Health Organization (WHO) monograph, *Environmental Health Criteria 238*, or revisions thereof and any applicable New Zealand Standards or national environmental standards.

[233] Policy 10 is that decision-makers are – to the extent reasonably possible – to manage activities to avoid reverse-sensitivity effects on the network and ensure that operation, maintenance, upgrading and development of the network is not compromised.

[234] Policy 13 directs decision-makers to recognise that the designation process can facilitate long-term planning for the development, operation and maintenance of electricity transmission infrastructure.

[235] There was no contest that national policy statements are, in the hierarchy of instruments under the RMA, to be given greater importance than regional policy statements and regional and district plans, which have to be amended to give effect to a national policy statement.<sup>67</sup> Local authorities have also to take any other action that is specified in a national policy statement.<sup>68</sup>

### **Hauraki Gulf Marine Park Act 2000**

[236] By section 104(l) of the RMA, in considering the resource consent applications, regard is to be had to any relevant New Zealand Coastal Policy Statement, regional policy statement, plan or proposed plan. Consequently, sections 7 and 8 of the Hauraki Gulf Marine Park Act 2000 must be addressed.

[237] By section 9(4) of Hauraki Gulf Marine Park Act 2000, a consent authority considering a resource consent application for the Hauraki Gulf catchment is to have regard to sections 7 and 8 of that Act in addition to the matters contained in the RMA. Moreover, by section 10 (1) of the Hauraki Gulf Marine Park Act 2000, sections 7 and 8 of that Act are to be treated as a New Zealand Coastal Policy Statement under the RMA.

[238] Section 7 declares (among other things) that the ability of the interrelationship of the Hauraki Gulf and its catchments to sustain the life-supporting capacity of the environment is a matter of national significance.

Section 8 states objectives for management of the Hauraki Gulf and its catchments, including protection of the life-supporting capacity of the environment.<sup>69</sup>

### **Auckland Regional Policy Statement**

[239] The ARPS became operative in August 1999 and sets in place the broad direction for the management of natural and physical resources of the region. The objectives and policies of the ARPS that are relevant to the application are contained in Chapter 2 (Regional Overview and Strategic Direction), Chapter 3 (Matters of Significance to Iwi), Chapter 5 (Energy), Chapter 6 (Heritage), Chapter 8 (Water Quality), and Chapter 12 (Soil Conservation).

[240] Chapter 2 sets out the strategic direction for the Auckland region with the aim to integrate the management of the various components set out in the policy statement. Proposed Change 6 to the ARPS was notified in March 2005 and makes significant amendments to Chapter 2. Plan Change 6 is intended to give effect to the Regional Growth Strategy and to integrate land use and transport. Decisions on submissions to Plan Change 6 were notified in August 2007 and these are now subject to a number of appeals.

[241] Proposed Change 6 recognises that a reliable power supply is essential to the social and economic well-being of the region and that power generated is limited relative to demand and that the region is dependent upon power supply from other regions. Relevant issues include:

- a) the importance of regionally significant physical resources (including infrastructure such as energy transmission) for the community's economic and social well-being
- b) the need for maintenance, expansion, replacement or upgrading of infrastructure or provision of new infrastructure in order to avoid adverse environmental effects and/or to increase the capacity of infrastructure to accommodate growth
- c) the need to avoid, remedy or mitigate the adverse effects generated by proposed changes to infrastructure and to consider alternative ways of avoiding or remedying them
- d) that for existing infrastructure, alternatives are often limited to the consideration of matters of system efficiency rather than relocation of infrastructure
- e) for new infrastructure, alternatives are sometimes limited by the consideration of location.<sup>70</sup>

[242] Issues relating to Utility Servicing Thresholds in Plan Change 6 include:

- a) options for meeting demands on capacity may be constrained by the location, intensity and nature of both the facility and the proposed urban growth and intensification

- b) electricity networks and services are approaching capacity thresholds due to ongoing and extensive growth and associated demand for electricity supply
- c) without significant investment secure electricity supply into the Auckland and Northland regions becomes increasingly difficult
- d) upgrade programmes of existing infrastructure servicing the Auckland and Northland regions have been initiated and are ongoing to continue to ensure a reliable and secure supply of electricity to meet projected growth demands in those regions
- e) that failure to do so will severely restrict the regions' economic and social growth and development.<sup>71</sup>

[243] Chapter 3 (Matters of Significance to Iwi) includes objectives relating to cultural values and places of significance, the need to recognise and provide for these values and places, and the relationship of tāngata whenua and their culture and traditions.<sup>72</sup>

[244] Chapter 5 (Energy) of the ARPS includes objectives to promote the sustainable and efficient use of Auckland's energy resources;<sup>73</sup> and to avoid, remedy or mitigate any adverse effects of development proposals relating to the production, distribution and use of energy.<sup>74</sup> Associated policies promote more efficient use of available energy resources;<sup>75</sup> and support a shift to renewable forms of energy.<sup>76</sup>

[245] Proposed Change 8 to the ARPS was notified in September 2005 and contains new objectives and policies relating to volcanic features and outstanding natural landscapes. Submissions on Proposed Change 8 were heard in May and June 2007. Following the hearing of submissions, the Auckland Regional Council notified a variation to the landscape component of Proposed Change 8. The Council restricted decisions to submissions on policies in respect to volcanic features in October 2007.

[246] The intended variation on landscape has not yet been notified, nor have decisions been given on the submissions on the landscape policies originally notified.

[247] Chapter 6 (Heritage) seeks to preserve, protect and restore the region's heritage resources. The objectives and policies of particular relevance to the application seek to protect and restore ecosystems and other heritage resources whose heritage value and/or viability is threatened;<sup>77</sup> and control development on regionally significant ridgelines so that there are no significant adverse effects, including cumulative effects on landscape quality and integrity of ridgelines.<sup>78</sup>

[248] Chapter 8 (Water Quality) contains objectives and policies to maintain and enhance the values of Auckland's water resources, including maintenance of water quality.<sup>79</sup>

[249] Chapter 12 (Soil Conservation) contains an objective that promotes the sustainable management of Auckland's soil resource and the protection of the productive potential and long-term health of soils in the region while avoiding, remedying and mitigating effects on soil degradation<sup>80</sup>. Relevant

policies applicable to the application seek to control vegetation clearance on land with moderate to severe erosion potential;<sup>81</sup> and avoid, remedy or mitigate adverse effects on soil degradation.<sup>82</sup>

### **Proposed Auckland Regional Plan – Air, Land and Water**

[250] The Proposed Regional Plan: Air, Land and Water was notified in October 2001. Decisions on submissions and further submissions were notified in October 2004 with some appeals remaining unresolved. The proposed plan provides for the management of air, land and water resources in the Auckland region, including, soil, rivers and streams, lakes, groundwater, wetlands and geothermal water.

[251] Part 1, Chapter 2.1 seeks to sustainably manage the values of the Auckland region, including natural character, ecosystems and habitats, amenity and tāngata whenua values. Objectives and policies of relevance to the proposal include the need to avoid, remedy or mitigate adverse effects on the natural character of wetlands, lakes and rivers, and their margins;<sup>83</sup> use, development, upgrading or maintenance of network utility infrastructure shall be considered appropriate if it is consistent with strategic directions of the RPS and improves environmental outcomes;<sup>84</sup> consents for network utility infrastructure may be granted on a network-wide basis if they promote the integrated management of the infrastructure, and are effective and efficient to grant a network-wide consent;<sup>85</sup> and consideration of the positive social, economic and cultural effects and benefits from any proposal.<sup>86</sup>

### **Auckland Regional Plan – Sediment Control**

[252] The Auckland Regional Plan: Sediment Control became operative in November 2001. The plan addresses the issue of sediment discharges and provides measures to ensure the potential effects associated with land development involving vegetation clearance and/or earthworks are avoided, remedied or mitigated accordingly.

[253] Objectives and policies of particular relevance to the application seek to maintain or enhance water quality;<sup>87</sup> sustain the mauri of water in water bodies...ancestral lands, sites, wāhi tapu and other taonga;<sup>88</sup> avoid, remedy or mitigate adverse effects on water quality through land disturbance;<sup>89</sup> reduce the surface erosion and sediment generation;<sup>90</sup> (and reduce the duration of vegetation removal).<sup>91</sup>

### **Waikato Regional Policy Statement**

[254] The Waikato Regional Policy Statement (WRPS) became operative in October 2000 and sets out the significant resource management issues for the region and the methods that will be used to manage natural and physical resources. The relevant objectives and policies of the WRPS to the application include Part 3.3 (Land and Soil), Part 3.11 (Plants and Animals), Part 3.12 (Energy), Part 3.13 (Structures), Part 3.14 (Minerals) and Part 3.15 (Heritage).

[255] Part 3.3 (Land and Soil) includes objectives to achieve the sustainable management of the region's land and soil resource, including net



reduction in the effects of accelerated erosion and those effects avoided where practicable;<sup>92</sup> and to maintain versatility and productive capacity of the region's soil resource.<sup>93</sup>

[256] Part 3.11 (Plants and Animals) seeks to maintain the region's biodiversity, including important ecological areas, and includes an objective to maintain or enhance biodiversity within the region.<sup>94</sup>

[257] Part 3.12 (Energy) and Part 3.13 (Structures) seek to promote efficient energy use and maintain and enhance infrastructure in the region. Policies promote efficiency and conservation in the transmission of energy;<sup>95</sup> and avoidance of significant adverse effects on the same and efficient operation of regionally significant infrastructure.<sup>96</sup>

[258] Part 3.14 (Minerals) includes an objective and associated policies that recognise the ability to extract minerals can be compromised through land uses in close proximity to mineral deposits and the need for sensitive activities to not unnecessarily restrict mineral extraction.<sup>97</sup>

[259] Part 3.15 (Heritage) concerns the protection of regionally significant heritage resources (ensuring no net loss to the region);<sup>98</sup> and protection of heritage resources of significance to Māori.<sup>99</sup>

## **Waikato Regional Plan**

[260] The Waikato Regional Plan was made operative in September 2007 and provides direction regarding the use, development and protection of natural and physical resources in the Waikato region. Relevant objectives and policies of the plan include Chapter 1 (Approaches to Resource Management), Chapter 2 (Matters of Significance to Māori), Chapter 3 (Water) and Chapter 5 (Land and Soil).

[261] Chapter 1 (Approaches to Resource Management) sets out the purpose and scope of the plan, and the objectives and policies to achieve this. Objective 1.2.3 (approaches to resource management) sets out the controls exercised by the Plan to manage adverse effects on the environment.

[262] Chapter 2 (Matters of Significance to Māori) identifies the resource management issues of concern to Māori in the Waikato region. Of particular relevance to Transpower's application is Objective 2.3 (tāngata whenua relationship with natural and physical resources).

[263] The objectives and policies in Chapter 3 (Water) seek to safeguard, maintain and enhance the values of Waikato's water resources. The objectives and policies of particular relevance to this application seek to: allocate and promote the use of Waikato's water resource in a sustainable manner;<sup>100</sup> and protect the natural character of lakes and rivers and their margins from inappropriate use and development.<sup>101</sup>

[264] Chapter 5 (Land and Soil) contains objectives and policies that seek to promote the sustainable management of Waikato's soil resource. Objective 5.1.2 seeks to reduce accelerated erosion across the region. The relevant policies applicable to the application seek to manage activities that have the

potential to cause accelerated erosion and to encourage appropriate land management practices;<sup>102</sup> and promote regulatory and non-regulatory approaches to manage soil disturbance and vegetation clearance activities in high-risk erosion areas.<sup>103</sup>

### **District plans**

[265] The district planning documents that are relevant to the resource consent applications for the proposed grid upgrade are Manukau City District Plan, Franklin District Plan, Matamata-Piako District Plan, Waipa District Plan, Waikato District Plan, South Waikato District Plan and Taupo District Plan.

[266] The Section 42A report, and various counsel and witnesses identified and evaluated the relevant objectives and policies from the district plans. We were not made aware of any dispute over the identified relevant sections which are outlined below.

### **The Manukau City District Plan**

[267] The Manukau City District Plan was made operative in October 2002 and updated in October 2008 although appeals remain outstanding in respect to Plan Change 8 (Whitford Rural). Chapters relevant to the application include Chapter 3 (Tāngata Whenua), Chapter 6 (Heritage), Chapter 7 (Network Utility Services), Chapter 9 (Land Modification and Subdivision) and Chapter 12 (Rural Areas).

[268] Objectives in respect to tāngata whenua include regard to be given to tāngata whenua's right to exercise rangatiratanga and kaitiakitanga over ancestral lands, waters, sites, wāhi tapu and other taonga;<sup>104</sup> and that adverse effects of development on tāngata whenua and taonga should be avoided, remedied or mitigated.<sup>105</sup>

[269] Heritage values' objectives include preservation or protection of natural, physical, and cultural resources;<sup>106</sup> and that tāngata whenua and taonga should be actively protected from being damaged, destroyed or desecrated.<sup>107</sup>

[270] Issue 7.2.4 recognises that network utility services are essential resources necessary to enable people and communities to provide for their economic, social and cultural well-being. At the same time there are objectives to protect the city's environment (including heritage, visual, aural and other amenity values)<sup>108</sup> and the health and safety of people;<sup>109</sup> network utilities need to be managed in a sustainable manner and the operational efficiency and safety of network utility services in the city should be protected;<sup>110</sup> and land-use and infrastructure planning should be coordinated to achieve the efficient and effective provision, operation and maintenance of network utilities in the city.<sup>111</sup>

[271] Land modification, development and subdivision should proceed in a manner that will maintain or enhance environmental qualities and amenity values;<sup>112</sup> and network utility services need to be sustainably managed by coordinating their progression to support subdivision and development.<sup>113</sup>

[272] Rural land and soil resources need to be maintained to retain the productive potential and minimise soil erosion;<sup>114</sup> to protect and preserve significant areas of indigenous vegetation and fauna,<sup>115</sup> and to protect landscapes of outstanding value<sup>116</sup> and maintain the rural character and diversity.<sup>117</sup> Associated policies state that significant areas of vegetation should be retained, and buildings, structures and activities should not create adverse visual effects on particular “sensitive ridgeline and coastal margins”;<sup>118</sup> nor should they detract from the open space of the area or dominate the site.<sup>119</sup>

[273] Plan Change 8 (12A Whitford Rural) was notified in July 2005 with decisions on submissions notified in December 2006. Seventeen appeals on these decisions remain outstanding. Plan Change 8 provides for the establishment of countryside living development in the Whitford Rural Area in such a way as to maintain the landscape character, rural amenity values and environmental quality of the area. Further, land-use activities should not conflict, and physical infrastructure such as roading, power and communications networks should be provided in association with land subdivision, use and development in order to manage environmental effects.

### **The Franklin District Plan**

[274] The Franklin District Plan became operative in February 2000. Chapters relevant to the application are Chapter 4 (Partnership with Tāngata Whenua), Chapter 5 (Conservation of Natural Features), Chapter 11 (Recreation and Reserves), Chapter 15 (Activities Throughout the District) and Chapter 17 (Objectives, Policies and Methods: Rural). The Franklin District Plan is subject to Proposed Plan Change 14 (Rural Plan Change).

[275] Chapter 4 (Partnership with Tāngata Whenua) contains provisions to protect<sup>120</sup> and avoid, remedy or mitigate adverse effects<sup>121</sup> on the relationship of Māori and their culture and traditions with their ancestral lands, water, sites wāhi tapu, and other taonga; effects on tāngata whenua should be assessed in a way that respects Māori customary values and practices;<sup>122</sup> and tāngata whenua should be consulted where activities have the potential to adversely affect ancestral lands, water, sites, wāhi tapu and other taonga.<sup>123</sup>

[276] Objectives in Chapter 5 (Conservation of Natural Features) relevant to the application are to avoid, remedy or mitigate adverse effects of activities on the life-supporting capacity of indigenous ecosystems;<sup>124</sup> and the natural heritage resources of the district should be sustainably managed by protecting outstanding natural features and landscapes, areas of significant vegetation and significant areas of indigenous fauna from inappropriate subdivision, use, and development, and by ensuring that representative samples of natural features, areas of indigenous vegetation, and habitats of indigenous fauna, of value at a regional and district level, are protected.<sup>125</sup>

[277] Chapter 8 (Cultural Heritage) includes objectives to protect heritage features (places, areas, trees and objects that have known heritage significance) from inappropriate subdivision, use, and development;<sup>126</sup> and an associated policy that all persons shall avoid the modification, damage, or destruction of archaeological sites, heritage items, historic places, trees or objects, and all activities for which a resource consent is required be assessed

in terms of any effects on known or significant heritage places, trees or objects in the district.<sup>127</sup>

[278] Chapter 11 (Recreation and Reserves) contains the following relevant objectives: sufficient recreation and open space land needs to be provided to meet the needs of present and future generations;<sup>128</sup> and public access to the margins of the coastal area, rivers and lakes needs to be maintained and improved.<sup>129</sup>

[279] Chapter 15 (Activities throughout the District – Network and other Utilities and Essential Services) recognises the importance of network and other utilities and other essential services to the economic and social well-being of the district and that their development, operation and maintenance should be provided for;<sup>130</sup> these services should be provided in a manner that does not adversely affect the health and safety of the people of the district; that allows any adverse effects on the natural and physical resources to be avoided, remedied or mitigated; and should be sensitive to the amenity values of the district and relevant cultural or spiritual values.<sup>131</sup>

[280] Associated policies state network and other utilities and essential services will be controlled according to the potential effects of the activity;<sup>132</sup> and the continuing operation of significant infrastructure shall be protected from adverse effects from other inappropriate activity.<sup>133</sup> Where technically practicable and financially realistic, utilities shall be placed underground unless there are cultural, landscape or conservation objectives and policies that would be compromised.<sup>134</sup>

[281] Relevant objectives in Chapter 17 (Rural Zone) state land and soil resources should be maintained and managed in such a way that their accessibility, versatility and life-supporting capacity are sustained for present and future generations;<sup>135</sup> the life-supporting capacity of soils is safeguarded;<sup>136</sup> and the inappropriate removal of soil from versatile land is avoided.<sup>137</sup>

[282] Proposed Plan Change 14 (Rural Plan Change) replaces existing sections relating to rural and coastal areas in the Franklin District Plan. Proposed Plan Change 14 provides for limited countryside living in the rural and coastal areas, and directs growth to particular villages and away from areas where valued environmental features could be jeopardised. Hearings on submissions on the Proposed Plan Change 14 were held between October 2004 and March 2006 and decisions on submissions were notified in July 2006. A number of appeals on decisions remain outstanding.

[283] Section 17.2.3 of Proposed Plan Change 14 outlines issues, objectives and policies of the Hunua Rural Management Area, including to protect and enhance the connectedness of indigenous vegetation within the Hunua Forestlands and ecological biodiversity in the area;<sup>138</sup> and maintain and enhance landscape, cultural, archaeological, heritage and amenity values.<sup>139</sup>

### **The Matamata-Piako District Plan**

[284] The Matamata-Piako District Plan was notified in 1996 and became operative in July 2005. Chapters relevant to the application are Chapter 3.1

(Natural Environment and Heritage), Chapter 3.5 (Amenity) and Chapter 3.7 (Works and Network Utilities).

[285] Chapter 3.1 (Natural Environment and Heritage) contains objectives that the varied landscape qualities of the district should be retained and enhanced;<sup>140</sup> and the natural and heritage resources within the district need to be recognised, protected and enhanced.<sup>141</sup> Associated policies include buildings, structures and activities in outstanding landscapes should preserve the natural character, and not detract from the amenity values of the landscape;<sup>142</sup> outstanding natural features and areas of indigenous vegetation or fauna are to be permanently protected from subdivision, use and development;<sup>143</sup> activities in the vicinity of significant heritage resources should be sensitive to their original forms and features;<sup>144</sup> and should not adversely affect significant, recorded archaeological sites and wāhi tapu.<sup>145</sup>

[286] Chapter 3.5 (Amenity) contains an objective to minimise adverse effects created by building scale, or dominance, shading, building location and site layout.<sup>146</sup>

[287] Chapter 3.7 (Works and Network Utilities) includes objectives to enable the effective provision of works and utilities so as to minimise the adverse environmental effects while enabling people and communities to provide for their social economic and cultural well-being and for their health and safety;<sup>147</sup> to ensure works and network utilities have particular regard to the avoidance, remediation or mitigation of anticipated environmental effects and comprehensive analysis of existing and future services/facilities;<sup>148</sup> and for a precautionary approach to be taken in the siting of facilities relative to dwellings where there is significant doubt or debate over the impact of their effects.<sup>149</sup> Associated policies encourage the co-siting of facilities where practical;<sup>150</sup> and protect existing and proposed works and infrastructure from incompatible use or subdivision of adjacent lands.<sup>151</sup>

### **The South Waikato District Plan**

[288] The South Waikato District Plan (which became operative in June 1998) has objectives of the maintenance and enhancement of the landscape and amenity values of the district;<sup>152</sup> of sustainable management of the natural and physical resources of the district in a manner that will enable people and communities to provide for their social, economic and cultural well-being and their health and safety;<sup>153</sup> to avoid, remedy or mitigate adverse effects on the environment;<sup>154</sup> and sustainable management of the natural and physical resources of the district to meet the reasonably foreseeable needs of future generations.<sup>155</sup>

[289] Chapter 27 (Hydro-Electric Power Generation Zone) includes policies to allow for the generation and transmission of electricity within the zone;<sup>156</sup> and to provide for the maintenance, upgrading and limited expansion of existing electricity generating facilities.<sup>157</sup>

[290] Chapter 10 (Public Works and Network Utilities) contains objectives about network utilities, in that the provision of appropriate infrastructure in a way that does not have significant adverse effects on the environment;<sup>158</sup> to require the avoidance, remediation, or mitigation of significant adverse

effects on the environment associated with the development of a network utility;<sup>159</sup> to encourage the co-siting or sharing of public works and network utility facilities where this is technically feasible and practical and where the operations of co-sited facilities are compatible;<sup>160</sup> and to encourage network utility operators to place network utilities underground where appropriate and practical to avoid adverse effects on amenity values.<sup>161</sup>

[291] Chapter 12 (Landscape and Amenity Values) contains objectives for maintenance and enhancement of amenity values and protection of special landscapes;<sup>162</sup> the protection and enhancement of the natural character of rural areas of the district;<sup>163</sup> and to ensure that the adverse effects of activities on the amenity values of the district are avoided, remedied or mitigated.<sup>164</sup>

[292] Chapter 19 (Rural Zone) has an objective to protect and conserve the potential of soils in the district for productive rural uses by present and future generations;<sup>165</sup> to minimise potential incompatibilities between activities in rural areas;<sup>166</sup> to protect and enhance those attributes of the district's rural environment that promote the 'clean green' image and make it an attractive place to live;<sup>167</sup> and to encourage land-use practices that will enhance environmental quality and the 'clean green' image of the district.<sup>168</sup>

### **Operative and Proposed Waikato District Plan**

[293] The Operative Waikato District Plan became operative in September 2002. The proposed Waikato District Plan was notified in September 2004. Decisions on submissions were notified in October 2007, with some appeals on decisions resolved in 2007 while others remain outstanding. Relevant provisions in the Operative Waikato District Plan for these applications are contained in Chapter 6 (Tāngata Whenua and region), Chapter 9 (Rural Zone), Chapter 14 (Extractive Industries), Chapter 20 (Landscape Policy Area), Chapter 51 (Public Works and Utilities), Chapter 53 (Conservation and Natural Resources) and Chapter 54 (Items of Cultural Heritage).

[294] Relevant objectives and associated policies in respect to tāngata whenua take into account Māori perspectives of natural and physical resource management;<sup>169</sup> recognise the special relationship of tāngata whenua with the Waikato River;<sup>170</sup> and recognise and respect the spiritual and cultural significance of particular landforms to tāngata whenua.<sup>171</sup>

[295] Chapter 9 (Rural) includes objectives to maintain the availability of, and the potential for versatility of, the natural resources of land and soil (excluding minerals) in terms of their capacity for the production of food, fuel and fibre;<sup>172</sup> and to ensure the rural visual character and amenity values are maintained or enhanced.<sup>173</sup> Policies in Chapter 14 (Extractive Industries) include recognition of the importance of the district's mineral resources;<sup>174</sup> and ensure land-use activities do not unduly constrain potential access to, and the development of, identified significant coal and aggregate resources.<sup>175</sup>

[296] Further objectives in the Operative Plan include (Chapter 20) to encourage development in such a way as to integrate physical development with the natural landscape;<sup>176</sup> and to avoid, remedy or mitigate any dominance of structures through their being sited as a visual focal point.<sup>177</sup> Chapter 51 (Public Works and Utilities) aims to protect public works and

utilities and their networks as physical resources of the district so that continuity of service is ensured now and in the future to enable the health, safety and well-being of the community;<sup>178</sup> and to ensure that public works and utilities are provided in a manner which is sensitive to the district's amenity values and avoids and/or mitigates any adverse effects on the natural and physical environment.<sup>179</sup>

[297] Chapter 53 (Conservation and Natural Resources) contains an objective to conserve and enhance those qualities which contribute to the natural character and amenity values of the rural, urban and coastal areas of the district;<sup>180</sup> while an objective of Chapter 54 (Items of Cultural Heritage Value) is to ensure that developments associated with heritage resources do not adversely affect their historical or cultural integrity.<sup>181</sup>

[298] The Proposed Waikato District Plan was notified in September 2004. Decisions on submissions and designations were notified in November 2006 and October 2007 respectively. Some provisions are still subject to appeal. Relevant provisions in the Proposed District Plan are contained in Chapter 3 (Natural Features and Landscapes), Chapter 4 (Natural Resources) and Chapter 6 (Built Environment).

[299] Chapter 3 (Natural Features and Landscapes) includes objectives that landscapes and visual amenity values, as viewed from public places, be retained and enhanced;<sup>182</sup> and associated policy concerning avoiding or mitigating adverse effects on natural features such as indigenous vegetation, lakes, rivers and mountains.<sup>183</sup>

[300] Chapter 4 (Natural Resources) of the proposed plan includes an objective of retaining physical, chemical and biological properties necessary for maintaining the life-supporting capacity of the soil, especially high-quality soil.<sup>184</sup> The policies for attaining that objective include not compromising the productive potential of soil, especially high-quality soil, by activities that do not use or rehabilitate the productive capability of the soil, or that adversely affect the physical, chemical and biological properties of the soil;<sup>185</sup> that soil, especially high-quality soil, should be available in its natural state and original location for future generations;<sup>186</sup> and that activities that do not use or rehabilitate the life-supporting capacity and productive capability of high-quality soils should not be located on land containing high-quality soils.<sup>187</sup>

[301] A further relevant objective in Chapter 4 is that minerals are to be available for extraction.<sup>188</sup> An associated policy is locating and designing activities that are sensitive to the effects of mining so as to avoid remedy or mitigate adverse effects on the use of actively exploited mineral resources, so resource use is not constrained.<sup>189</sup>

[302] Chapter 6 (Built Environment) includes policies about utilities. There is a policy that utilities should be designed and located to avoid, remedy or mitigate adverse effects from their structures on the environment, community health and amenity.<sup>190</sup> There is a policy that utilities should be placed underground unless the adverse effects on the environment are greater than placing the utility above ground, or a natural or physical feature or structure renders underground placement impracticable or undesirable; or the utility must be placed above ground for practical, operational or technical

reasons.<sup>191</sup> There is another policy that new use or development should not compromise the potential for, or use and operation of, utilities.<sup>192</sup>

### **The Waipa District Plan**

[303] The Waipa District Plan became operative in December 1997. Part 2 (Rural Activities), Part 9 (Public Works and Works of Utility Service Operators) and Part 12 (Heritage Protection) are relevant to the application.

[304] Part 2 (Rural Activities) identifies Special Landscape Character Areas (SLCAs) that are landscapes of high quality that warrant extra care and protection in the district.<sup>193</sup> Areas along the proposed overhead alignment identified as SLCAs include Lake Karapiro, Lake Arapuni, the Waikato River south of Horahora Bridge, and Maungatautari. Associated policies in respect to SLCAs seek to protect the existing landscape of volcanic cones<sup>194</sup> and the present character of the upper slopes;<sup>195</sup> protect the landscape character of the Waikato River Valley and Lakes<sup>196</sup>, Lake Karapiro as seen from State Highway 1<sup>197</sup> and the Waikato River south of the Horahora Bridge;<sup>198</sup> and protect the landscape quality of Lake Karapiro<sup>199</sup> and Lake Arapuni.<sup>200</sup>

[305] The district plan contains a policy of applying criteria for assessing the location of additional rural-residential areas, including the avoidance of SLCAs which would be adversely affected by residential development.

[306] Matters over which the Council has reserved control for protecting landscape, visual amenity and natural character values within the SLCAs include:

- a) location of structures relative to skyline ... and exposed hillsides or existing vegetation
- b) locations of structures, artificial screening, and shelter belts with respect to obstructing views from State Highway 1
- c) external design, construction, and finish of structures including reflectivity of finish, and how closely the finish blends with background colours and nearby buildings
- d) the extent, scale and location of roads and other vehicle tracks
- e) the extent and location of exotic forest relative to established native trees and natural landscape features
- f) the extent to which such activities will be obtrusively visible including consideration of distance
- g) the extent to which measures are taken to avoid, mitigate or remedy effects such as considering alternative options, and locations having regard to the costs and benefits involved.

[307] The district rules address public utilities within SLCAs. In particular, Rule 12.3.1.4 classifies power pylons (utility structures) as permitted activities if not more than 25 metres in height, 110 kilovolts (kV) in



voltage, and 110-MVA capacity per circuit. Rule 12.3.3 prescribes assessment criteria for utility structures that do not comply with standards for permitted activities or are sited in SLCAs (which are classified as discretionary activities). Those criteria include:

... (b) whether the size or location of the structure will affect significant views of the urban or rural landscape particularly from State Highway 1 or State Highway 3, together with the extent of any measures taken to avoid, remedy or mitigate such effects

... (d) whether alternative locations or other options are physically, technically, or operationally possible in order to protect the environment, having regard to the costs and benefits involved.

[308] Further objectives in Part 2 include to protect assets of cultural significance to Māori;<sup>201</sup> and to consult with iwi on issues of cultural significance including kaitiakitanga and wāhi tapu.<sup>202</sup>

[309] Part 9 (Public Works and Utility Service Operators) contains objectives to make provision in the district plan for public works and utility services;<sup>203</sup> and to ensure that any likely adverse effects on the environment of public works and utility services are avoided, remedied or mitigated as far as practicable.<sup>204</sup>

[310] Part 12 (Heritage Protection) includes an objective to protect heritage objects and areas from adverse effects of incompatible uses and activities.<sup>205</sup>

### **Taupo District Plan**

[311] The Taupo District Plan became operative in October 2007. Chapters relevant to the application include Chapter 3b (Rural Environment), Chapter 3g (Tāngata Whenua Cultural Values), Chapter 3h (Landscape Values) and Chapter 3n (Network Utilities).

[312] Chapter 3b (Rural Environment) contains objectives for the protection of the rural environment to maintain and enhance the rural amenity and character;<sup>206</sup> and the efficient and effective functioning of the rural environment by enabling the use and development of natural and physical resources, while ensuring appropriate environmental outcomes are achieved.<sup>207</sup> Associated policies protect the district's lakes and river margins from buildings that are visually obtrusive and/or result in a decline of the amenity of the foreshore area;<sup>208</sup> avoid, remedy or mitigate adverse effects of subdivision, use and development of land on areas or features of cultural, historical, landscape or ecological value;<sup>209</sup> and recognise the important role of resource use and development in the rural environment by providing for the continued operation and associated development of existing electricity generation facilities and network utilities by allowing their use, maintenance and minor upgrading where all significant adverse effects are avoided, remedied or mitigated.<sup>210</sup>

[313] Chapter 3g (Tāngata Whenua Cultural Values) has an objective to recognise and provide for the cultural and spiritual values of tāngata whenua when managing the effects of activities on the natural and physical resources within the district.<sup>211</sup> Associated policies include taking into account the principles of the Treaty of Waitangi;<sup>212</sup> and ensuring activities have regard for the cultural values of tāngata whenua as kaitiaki of their culture, traditions, ancestral lands, water and other taonga.<sup>213</sup>

[314] Relevant objectives in Chapter 3h (Landscape Values) include to protect outstanding landscape areas from subdivision, use, and development which may adversely affect the landscape attributes;<sup>214</sup> and maintain the landscape attributes of amenity landscape areas.<sup>215</sup> Policies include to avoid the erection of built structures that will have significant adverse visual effects on the landscape attributes of outstanding landscape areas, or will result in cumulative adverse effects from increased built density.<sup>216</sup>

[315] Chapter 3n (Network Utilities) has objectives for the continued efficient and effective operation, maintenance and minor upgrading of existing network utilities and the provision of network utilities;<sup>217</sup> and that network utilities are designed and located to avoid, remedy or mitigate adverse effects on the environment and protect the health and safety of the community.<sup>218</sup> Associated policies include having regard for the technical and operational requirements of network utilities and the contribution they make to the functioning and well-being of the community;<sup>219</sup> and avoid, remedy or mitigate the potential adverse effects of the location and siting of new network utilities on significant landscape features and the amenity and character of the district.<sup>220</sup>

## Electricity legislation

[316] The National Grid, and Transpower's duties and responsibilities in respect of it, are governed by the Electricity Act 1992, and by instruments made, and actions taken, under that Act.

[317] The Electricity Act provides for the establishment of the Electricity Commission, which has the function of overseeing New Zealand's electricity industry and markets.

[318] The Electricity Commission is required to consider projects for upgrading the National Grid, and grant or withhold approval of them by applying the most appropriate grid investment test (GIT) having regard to objectives that include ensuring a reliable transmission system but having regard to the cost, and enabling selection of transmission upgrade options that maximise the total net benefits, taking into account transmission alternatives.<sup>221</sup>

[319] Transpower's grid upgrade plans for reliability investments are to reflect good electricity industry practice in meeting prescribed grid reliability standards (GRS) and a prescribed GIT, and any options considered in identifying proposed reliability investments.<sup>222</sup>

[320] The Electricity Commission's approval is not, in law, a condition of a Grid Upgrade Project proceeding, although its approval is a condition of Transpower being able to recover the cost from electricity consumers.

[321] On 25 September 2008, the Electricity Act was amended by the 48<sup>th</sup> Parliament to create a preference for renewable electricity generation by restricting new baseload, fossil-fuelled, thermal electricity-generation capacity (except where exempted by the Minister of Energy).<sup>223</sup> On 16 December 2008, the 49<sup>th</sup> Parliament amended the Electricity Act by repealing Part 6A.<sup>224</sup> That amendment came into force on the Royal Assent, which was accorded on 22 December 2008. The effect was to remove the restriction on new thermal capacity.

### **Instruments under the Electricity Act**

[322] Transpower referred the Board to several instruments made under the Electricity Act, and submitted that they are relevant and significant as representing a consensual national aspiration in relation to matters such as climate change and a preference for renewable generation and efficient transmission, and indicating the likely course of future infrastructure investment.

### **Government Policy Statement on Electricity Governance**

[323] The Government Policy Statement on Electricity Governance (the GPS) was made under section 172ZK of the Electricity Act.<sup>225</sup> Compliance with the GPS is mandatory for the Electricity Commission and for Transpower.

[324] The GPS states the objectives and outcomes that the Government wants the Electricity Commission to achieve in relation to the governance of the electricity industry.<sup>226</sup>

[325] Clause 63 of the GPS is that electricity should be conveyed efficiently on the National Grid. Clause 65 recognises that investment coordination can be particularly problematic for renewable generation because such generation is often remote from existing load centres and major transmission lines. Clause 66 states the Government's objectives in relation to renewable electrical energy. One of them is that the national transmission grid should be planned and made available so as to facilitate the potential contribution of renewables to the transmission system; and another is that the specification of the grid planning processes and approval criteria should allow grid upgrade plans to facilitate the efficient and timely development of renewable generation resources, taking into account any difference in lead times for transmission and generation investment.

[326] Clause 11 states key requirements for security of supply, and confidence in security of supply. Clause 14 directs the Electricity Commission to use reasonable endeavours to ensure that the transmission system is capable of maintaining a mean winter energy margin of 17 per cent for New Zealand overall.

[327] Clause 71 states the Government's objectives for the provision of transmission services. They include that:

- a) the services are provided in a manner consistent with the Government's policy objectives for electricity, and in particular, that grid reliability should be maintained at a level required by residential, commercial and industrial users and by the Government's economic development objectives
- b) the transmission grid should be adequately resilient against the effects of low probability but high-impact events having regard to the load which could be disrupted and the duration of any disruption
- c) where practicable, the transmission grid should provide adequate supply diversity to larger load centres, having regard to the load which could otherwise be disrupted and the duration of any disruption
- d) efficient competition in generation and retail is facilitated and transmission constraints are minimised
- e) the national transmission grid should be planned and made available so as to facilitate the potential contribution of cost-effective renewables to the electricity system, and in a manner that is consistent with the Government's climate change and renewables policies
- f) the efficiency of transmission services should be continuously reviewed and improved so as to produce the services that grid users and consumers want at least cost.

[328] Clause 94 directs that to the extent that the Electricity Commission considers the environmental effects of new lines proposed by Transpower in a grid upgrade plan, it should also take into account any longer-term benefits that large capacity lines may provide by avoiding multiple smaller lines. Clause 95 directs that as part of its consideration of transmission investments, where the total cost of a project is more than \$20 million, the Electricity Commission should ensure that transmission alternatives are considered to the extent practicable subject to these conditions:

- a) only alternatives which have a high probability of proceeding, and where reliability can be maintained by contingency measures if the alternative is delayed or does not proceed, should be considered
- b) alternatives which are only likely to proceed if they are assisted financially by the Government or relevant body should not be considered unless the Government or relevant body has agreed to provide such assistance.

## **Electricity Governance Rules 2003**

[329] The Electricity Governance Rules were made by the Minister of Energy under sections 172H, 172I and 172E(2) of the Electricity Act.

[330] Section III of Part F of the Rules relates to grid upgrades and investments. The purposes of the Rules in that section include facilitating Transpower's ability to develop and implement long-term plans (including timely securing of land access and resource consents) for investment in the grid.

[331] Rule 4.2 states the purpose of the GRS, which includes providing a basis for Transpower to prepare grid upgrade plans.

[332] Rule 4.3 prescribes that GRS should take into account the GIT; that transmission investments are long-lived assets and require a long-term planning perspective; should reflect the public interest in reasonable stability in planning, having regard to the long-term nature of investment in transmission assets; and be consistent with good electricity industry practice.

[333] Rule 4.4 stipulates contents of GRS and procedures for making and reviewing them.

[334] Rule 6.3 prescribes objectives of the GIT. They include (among others) as far as practicable reflecting interests of end-use customers in ensuring a reliable transmission system, having regard to the cost to end-use customers; reflecting a reasonable economic assessment of the balance between different levels of reliability and the expected value of energy at risk; and enabling selection of transmission upgrade options after taking into account transmission alternatives.

[335] Rules 6.1, 6.4, 6.5, 6.6 and 7 prescribe procedures for determining the GIT.

[336] Rule 6.2 stipulates that the GIT is to be applied (among other things) by Transpower to determine proposed economic investments for inclusion in the proposed grid upgrade plan.

[337] Rule 10 relates to grid planning assumptions, which are to include committed projects for additional generation, transmission, and demand side management; a reasonable range of credible demand forecasts by region or grid exit point; and a reasonable range of credible future, high-level generation scenarios.

## **Grid Reliability Standards**

[338] The GRS have been made under Part F of the Electricity Governance Rules 2003, and are set out in Schedule F3 to them. The GRS are binding on Transpower, and represent statutory constraints within which it has to operate.

[339] The basic requirement of the GRS is to provide a core transmission grid that can withstand the loss of any one component and still meet peak load demand (sometimes referred to as the N-1 security criterion).

## **Grid Investment Test**

[340] A GIT has also been made under Part F of the Electricity Governance Rules, and is set out in Schedule F4 of them. The GIT governs consideration by the Electricity Commission of grant or withholding of approval of investments for upgrading the National Grid.

[341] In his evidence, Mr C J Freke (Group Manager, Transportation, Manukau City Council) asserted that the GIT is not a statutory document. However, the witness did acknowledge that it was set under rules made under the Electricity Act.

[342] The GIT is incorporated in the Electricity Governance Rules, themselves made under the Electricity Act. By that (subordinate) legislation, the Electricity Commission is obliged by law to apply the GIT in considering whether to give or withhold its approval of proposals by Transpower for upgrading the grid. So the Board holds that the GIT is a statutory document.

[343] Although the GIT is not directly applicable to decision-making under the RMA, in practice Transpower can only advance grid investment proposals that are capable of passing the GIT.

[344] Mr Freke also gave his opinion that the Board should not be influenced by the GIT, suggesting that if (being influenced by the need to pass the GIT) Transpower has failed to properly assess the full costs of its proposal (including environmental costs), it will not have adequately considered alternatives.

[345] The Board does not accept that opinion. Consideration of speculative alternatives or suppositious options is not required.<sup>227</sup> The purpose of a territorial authority's duty to have regard to the adequacy of a requiring authority's consideration of alternatives would be negated unless it is confined to alternatives that are legally and practically available to the requiring authority.

## **Electricity Commission approval of proposed grid upgrade**

[346] Transpower had submitted to the Electricity Commission for its approval an initial plan for upgrade of the upper North Island grid, and the Electricity Commission made a draft decision to decline that proposal. Transpower decided to amend the proposal and asked that the Electricity Commission suspend its consideration of it.

[347] Transpower submitted an amended proposal to the Electricity Commission in October 2006 seeking approval for what amounts to the first stage of the Grid Upgrade Project, including planning the works to allow for future upgrade to 400-kV operation.

[348] On 5 July 2007, the Electricity Commission made a final decision stating its satisfaction that Transpower's amended proposal for the upper North Island Grid Upgrade meets and complies with the applicable requirements, and approving the proposal.<sup>228</sup> The approval decision was a majority decision of the Electricity Commission (one member – Mr G Pinnell – dissenting).

[349] The effect of the Electricity Commission's approval was that Transpower is able to recover approved costs of the proposed investment from designated transmission customers. In these proceedings, Transpower submitted that by section 171(1)(d) of the RMA, the Board can, and should, have regard to the Electricity Commission's decision (particularly in considering the need for the upgrade) as the Electricity Commission had rigorously assessed the grid upgrade by the tests of good industry practice: the GRS and GIT.

[350] Transpower also relied on the Electricity Commission's decision as showing that as a matter of fact the extent of Transpower's consideration of alternative methods, sites and routes, had been considered and analysed by the Commission. Transpower expressly stated it did not contend that the Commission's process is a substitute or proxy for the RMA decision-making process, nor as determinative of the question.

[351] The Waipa District Council observed that the Electricity Commission stated it had no environmental or RMA considerations in mind in reaching its approval decision. The Council contended that:

- a) Transpower had, in effect, left RMA considerations (particularly assessment of environmental effects) until after it had the Electricity Commission's approval of the project
- b) by section 172N of the Electricity Act, the Electricity Commission should have addressed environmental sustainability and assessment of the full costs of the proposal
- c) the Commission's decision had limited Transpower's assessment of the proposal under the RMA, by effectively foreclosing any adequate investigation of alternative methods and routes
- d) without full examination of alternatives to the amended upgrade proposal beyond those that had been evaluated (including alternative methods and routes) against all relevant grounds of assessment, the Electricity Commission could not, and did not, reach a decision in accordance with its principle objectives and the specific outcomes it has to achieve
- e) the Commission's decision does not provide a proper basis to limit the consideration of the requirements to the 400-kV option for the purpose of this Inquiry.

[352] Transpower responded that the Board is entitled to draw comfort from the fact that the Electricity Commission completed an independent statutory inquiry which considered the need for the upgrade.

[353] Even so, the Board understands that its duty under the RMA is to make its own findings on the evidence before it, a charge from which it is not relieved by the Electricity Commission's performance of its functions under the Electricity Act. The Board also understands that it is not its function to consider allegations that the Electricity Commission's process under the Electricity Act was deficient or inadequate; and nothing in this report implies any opinion on any such question.

## Electricity Industry Reform Act

[354] The Electricity Industry Reform Act 1998 restricts involvement of an electricity lines business with an electricity supply business, and vice versa.<sup>229</sup> However, the Act also specifically stipulates the limits within which Transpower may engage in electricity generation. Transpower can contract with an electricity supply business for that business to generate electricity for deferring the need for investment by Transpower in the National Grid.<sup>230</sup>

[355] Federated Farmers brought to the Board's attention that the specific exception for Transpower had been inserted in 2004 with retrospective effect from 20 May 2003.<sup>231</sup> Federated Farmers submitted that the 2004 Amendment Act had been passed at about the time that Transpower had been starting to engage in the route selection process for the Grid Upgrade, and had been well into the development of it.

[356] Asked what significance the Board should place on the sequence of events, Federated Farmers contended that the fact that the amendment had been backdated suggests that there had been a disjoint between electricity lines and supply; that Transpower must have been aware of what was to happen; and that Transpower had a duty to consider generation alternatives.

[357] The Board notes that the provision of the 2004 Amendment Act authorising Transpower to contract generation to defer investment in the National Grid was not the only provision of that Act given retrospective effect. The Amendment Act has 14 sections, and the whole Act was deemed to have come into force on 20 May 2003.

[358] So the Board is not persuaded that it should place significance on the retrospective commencement of the exception for Transpower.

[359] Further, as mentioned in Chapter 1 of this report, Transpower's approval as a requiring authority under the RMA is limited to its network operation of supply of line function services as defined in the Electricity Act. So although to the extent stated by the 2004 Amendment, Transpower is exempt from the general requirement separating electricity-lines businesses from electricity-supply businesses, at law Transpower's authority to contract generation for deferring investment in the grid is outside the scope of its power as a requiring authority under the RMA.

## Public Works Act

[360] Some submitters raised questions about entry by Transpower on private land for construction and maintenance of the proposed transmission line, acquisition by Transpower of easements over private land for operation of the line, and compensation for resulting loss and injurious affection to private land.

[361] Transpower is free to negotiate agreements with people having appropriate interests in land affected. Landowners are free to agree to or refuse entry, and to grant or refuse easements. Transpower and landowners are free to stipulate terms and conditions for entry and easements, including amounts



of payments or other consideration. If agreement is reached and an easement is granted, it has the character of a private transaction of property rights.

[362] If it is unable to reach agreement with a landowner, Transpower can apply to the Minister of Lands to have an easement taken compulsorily under the Public Works Act.<sup>232</sup> The landowner would be entitled to object to the Environment Court, which would then conduct an inquiry and report to the Minister of Lands. Such an inquiry would provide an opportunity for independent resolution of disputed terms or conditions of the proposed easement.

[363] If an easement is taken, the landowner may be entitled to compensation for loss or damage, including injurious affection, disturbance, and business loss.<sup>233</sup> In certain circumstances, this may be reduced by an amount equivalent to an increase in the value of the remaining land, sometimes referred to as betterment.<sup>234</sup>

[364] In the absence of agreement, the landowner is entitled to claim compensation from Transpower to be assessed by the Land Valuation Tribunal in accordance with Part 5 of the Public Works Act. Those provisions are part of the legal context of the proposed designation, and the Board has to consider the extent to which they are within the scope of its Inquiry.

## **Energy Efficiency and Conservation Strategy**

[365] The New Zealand Energy Efficiency and Conservation Strategy (NZECS) was made under sections 8 and 9 of the Energy Efficiency and Conservation Act 2000, and was published in October 2007. The Strategy had been the subject of public consultation.

[366] In respect of the electricity system, the Strategy seeks to promote an efficient system, and to promote the uptake of renewable electricity.

[367] The Strategy identifies optimising the operation and management of transmission systems to minimise losses; increasing the uptake of distributed generation; reducing peak demand; and relieving congestion on transmission networks as ways of promoting an efficient electricity system.<sup>235</sup>

[368] The Strategy also identifies the scale of transmission and distribution losses, and records that high-level incentives are already in place to better manage transmission losses.<sup>236</sup>

## **Other documents**

[369] Having identified the relevant instruments under the RMA and electricity legislation, the Board lists other general documents to which it was referred.

## **Rio Declaration on Environment and Development**

[370] A submitter, Mr B N Davidson, placed reliance on the Rio Declaration on Environment and Development, produced by the United

Nations Conference on Environment and Development held in Rio de Janeiro, Brazil, in 1992. Mr Davidson submitted that the Declaration describes states' obligations for promoting the principle of sustainable development; and identifies guiding principles, including these:

- intergenerational equity – that there should be equity between the rights and needs of the current generation and generations to come
- precautionary approach – that lack of full scientific certainty of the causes and effects of environmental damage should not be a reason for delaying action to prevent such damage.

[371] Mr Davidson urged that, notwithstanding Policy 9 of the NPS, it is competent and appropriate for the Board to adopt the precautionary approach and principle in the consideration of possible health hazards arising from electricity transmission and consequent electromagnetic fields.

## **SAGE Report**

[372] Some submitters<sup>237</sup> placed reliance on the SAGE Report issued on 27 April 2007. This is a report by a Stakeholder Advisory Group on Extra Low Frequency Electric and Magnetic Fields on Precautionary Approaches to ELF EMFs, of a First Interim Assessment on Power Lines and Property, Wiring in Homes, and Electrical Equipment in Homes. The stakeholders include academics, representatives of the electricity industry, local and national campaign groups, individuals, national government departments, other industry, professional bodies, property, regulators and statutory advisory bodies.

[373] The document states that the remit of the SAGE process is to provide advice to [the United Kingdom] Government; that its contents are “not a single definitive set of universally agreed conclusions and recommendations”; that the “Assessment reflects some degree of agreement but not total agreement”; and that particular issues need further consideration (including existing homes near existing lines). The interim assessment includes a best-available option for significant exposure reduction by restricting new homes and schools within 60 metres of the centreline of 400-kV transmission lines.

[374] The Board is not aware that the Government of the United Kingdom has announced any view about the SAGE process First Interim Assessment, or any of its contents.

## **New Zealand Energy Strategy**

[375] The New Zealand Energy Strategy (NZES), published in October 2007, is not itself a statutory instrument. As Transpower stated, the existence of the NZES is recognised by the NZEECS. The NZEECS contains several references to the NZES, but that does not give the NZES status as a source of law.

[376] Transpower submitted that the relevance of non-statutory policy instruments is largely dependent on the factual content and subject matter of the proceedings. It also contended that the NZES was the progenitor of Part 1

of the Climate Change (Emissions Trading and Renewables Preference) Bill,<sup>238</sup> and of the proposed National Policy Statement on Renewable Electricity Generation under the RMA.

[377] The NZES sets out the Government's vision for a reliable, resilient, sustainable and low-emissions energy future, and outlines the actions that are to be taken to make that vision a reality; and it states a target that 90 per cent of electricity is to be generated from renewable sources by 2025.

### **Proposed national policy statement on renewable electricity generation**

[378] A proposed national policy statement for renewable electricity generation was publicly notified on 6 September 2008. The preamble explains that adopting a nationally consistent approach to balancing the competing values associated with the development of renewable energy resources will provide greater certainty to decision-makers, applicants, and the wider community. The objective is to recognise the national significance of those activities such that 90 per cent of New Zealand's electricity will be generated from renewable sources by 2025 (based on delivered electricity in an average hydrological year).

[379] A board of inquiry has been appointed to hear submissions on the proposed national policy statement. As that board has not yet completed its functions under the RMA, it is inappropriate for this Board to presume any particular outcome of its process.

### **Scope of this Inquiry**

[380] Having reviewed the legal context, the Board understands the effect of section 147 of the RMA is that the scope of the function of a board of inquiry appointed under section 146 is to consider and decide the requirements for designations, and the resource consent applications, in general, as the relevant territorial authorities would have had to do if the requirements and applications had not been called in.

[381] Section 147 creates exceptions to that general statement. Some are procedural (for instance, the power of a board of inquiry to permit cross-examination, the duty for it to keep a full record, and the duty to produce a draft report and consider comments received on it). Those procedural provisions cannot affect the *scope* of a board's inquiry.

[382] Other exceptions to the general statement are substantive, and could potentially affect the scope of a board's inquiry considering a requirement for a designation. They expand a board's jurisdiction to include that of the requiring authority to consider and decide whether to confirm the requirement, modify it, impose conditions on it, or withdraw (that is, cancel) it.

[383] The general correspondence of the substantive scope of the functions of a board of inquiry appointed under section 146 of the RMA with those of territorial authorities is only expanded to that extent. In particular:

- a) there is no provision conferring on a board of inquiry any other power or duty of a requiring authority
- b) a board is not given any function under the Electricity Act of the Electricity Commission or of the Environment Court
- c) a board does not have any other function under the RMA, the Local Government Act or the Building Act of territorial authorities in respect of outline plans, building consents, controlling roads, or otherwise
- d) a board does not possess any function or power under the Public Works Act of the Environment Court, or of the Land Valuation Tribunal
- e) a board has no function of the Department of Labour Health and Safety in Employment Act 1992.

### **Inconsistent statutes**

[384] The different pieces of legislation applicable to the grid upgrade need to be read so they can apply together, to give effect to the presumed intention of Parliament that, in general, grid upgrades and new transmission lines are able to be constructed in accordance with the purpose and principles of the RMA. In general, inconsistency between a decision under the Electricity Act and one under the RMA causing an impasse over a grid upgrade or new transmission line cannot have been intended. The Board understands that the statutes should, if reasonably practicable, be applied to avoid that kind of outcome.<sup>239</sup>

[385] In practice, any possibility of conflicting decisions by the Electricity Commission and the Board can be avoided by the Board interpreting the scope of its functions under the RMA so that they do not overlap with the scope of the Electricity Commission's functions under the Electricity Act. So to the extent that the Electricity Commission's findings may appear to bear on sustainable management of natural and physical resources, and on effects on the environment, the Board respects them only as an element in the Electricity Commission's process of coming to its decision under the Electricity Act. The Commission's findings do not relieve the Board of its own duties under the RMA, so it does not adopt or follow the Electricity Commission's findings under the Electricity Act. Rather, the Board has to consider the abundant evidence given to it, make its findings on that evidence, and then form its own judgement (independent of that by the Electricity Commission) on whether the proposal would serve the purpose of the RMA of promoting sustainable management of natural and physical resources.

### **Evidence to support findings**

[386] On 3 December 2007, the Board published notice of the hearing procedures it would follow, including its expectations about the lodging of evidence statements prior to the start of the hearing. In that respect, the Board directed Transpower to lodge with the Board statements of its evidence in chief by 1 February 2008; any submitter who wished to give or call

evidence to lodge statements of evidence with the Board by 26 February 2008; and that Transpower was to lodge statements in rebuttal by 13 March 2008.

[387] On 3 March 2008, the Board extended the time for submitters to lodge evidence statements to 14 March; and directed that Transpower was to lodge rebuttal statements at least five working days prior to the giving of that rebuttal evidence.

[388] Transpower, and some submitters, lodged evidence statements in accordance with those expectations, and those statements were duly published on the Board's web pages. Publication of Transpower's evidence statements enabled submitters to decide whether or not they wished to call evidence to contradict testimony in Transpower's evidence statements; and whether or not they wished to cross-examine any witnesses to be called by Transpower. Correspondingly, publication of submitters' evidence statements enabled Transpower to decide whether or not to call rebuttal evidence, and whether or not to cross-examine submitters' witnesses.

[389] The result was, in accordance with the stated objective of the Board's hearing procedures, to provide opportunity for the Board to receive and test the reliability of the information presented.

[390] In the event, some submitters who had not lodged evidence statements with the Board prior to the hearing, took the opportunity of speaking to their submissions to present statements on matters of fact and opinion that were in the nature of evidence, and which could have been the subject of evidence statements lodged with the Board prior to the hearing.

[391] Dr J B Forret, counsel for several submitters, asserted that some submitters had understood that although expert evidence needed to be pre-circulated, where they wanted to speak in support of their written submission, that did not need to have been pre-circulated. Counsel argued that it was hard to imagine, in the absence of legal submissions, what more submitters would be saying in support of their submissions which would not really fall into that evidence category. Her clients had anticipated that where they strayed into the realm of evidence, Transpower counsel would have opportunity to question them on that.

[392] Transpower responded that leave should have been sought by any submitter seeking to adduce evidence after 14 March 2008, showing good reason for not having lodged evidence prior to Transpower having to lodge its rebuttal evidence.

[393] The Board accepts Transpower's submission. In the event, there were submitters (even some who were represented by counsel at the hearing) who presented information or opinions in the nature of evidence in the course of speaking to their submissions, but statements of that information or opinion had not been lodged with the Board prior to the hearing.

[394] The number of submitters who were heard, and the range of the subject matter of their submissions, made it impracticable to expect Transpower to cross-examine on what was in the nature of evidence that was presented for the first time at the hearing. Any cross-examination would have

been impromptu, and without having the opportunity to investigate the evidence presented and for considered decisions to be made on what of it was to be tested. Further, the relevant Transpower witness would by then have given evidence, had not been cross-examined by the submitters in question, and been excused.

[395] The result was that, at least where the material in question lacked particulars, or was in conflict with evidence of Transpower witnesses, the potential for the Board to confidently rely on it as a basis for making findings was considerably weakened.

[396] Submitters had the opportunity to present evidence in a way that could assist the Board to resolve conflicts among witnesses and make reliable findings, by lodging evidence statements in accordance with the Board's timetable. Those who did not take that opportunity could not reasonably expect that the Board would be able to place the same reliance on their evidence.

[397] Consequently, the Board places less reliance on evidence given without notice as submissions, and especially where particulars were lacking or where evidence was in conflict with evidence given in an orderly way.

## Endnotes

- <sup>1</sup> RMA, s186(1).
- <sup>2</sup> RMA s186(5); Public Works Act, s60(1).
- <sup>3</sup> See definition in RMA s2(1) of *natural and physical resources*.
- <sup>4</sup> RMA, s3.
- <sup>5</sup> See definitions in RMA s2(1) of *environment* and of *amenity values*.
- <sup>6</sup> *North Shore City Council v Auckland Regional Council* [1997] NZRMA 59, 94.
- <sup>7</sup> *Auckland City Council v John Woolley Trust* (2008) 14 ELRNZ 106 (Randerson J) para [47]; *Falkner v Gisborne District Council* [1995] 3 NZLR 622, 632.
- <sup>8</sup> *NZ Rail v Marlborough District Council* [1994] NZRMA 70, 86.
- <sup>9</sup> *Auckland Volcanic Cones Society v Transit NZ* [2003] NZRMA 316 paras [19] & [24].
- <sup>10</sup> *Environmental Defence Society v Mangonui County Council* [1989] 3 NZLR 257 (CA), 260.
- <sup>11</sup> *Tairua Marine v Waikato Regional Council* Environment Court Decision A108/2005 para [522].
- <sup>12</sup> *NZ Rail*, cited above, p 86.
- <sup>13</sup> *Minhinnick v Minister of Corrections* Environment Court Decision A043/2004.
- <sup>14</sup> *Waikanae Christian Holiday Camp v Kapiti Coast District Council* (HC Wellington 27/10/2004 Mackenzie J).
- <sup>15</sup> RMA, s147(4)(b).
- <sup>16</sup> RMA, s147(5).
- <sup>17</sup> *Ibid*, s147(8).
- <sup>18</sup> *Ibid*, s41(1).
- <sup>19</sup> Commissions of Inquiry Act 1908, s4B(1).
- <sup>20</sup> RMA s41(4).
- <sup>21</sup> *Ibid*, ss41A-41C.
- <sup>22</sup> *Ibid*, s148.
- <sup>23</sup> *Ibid*, s149.

- 24 Ibid, s149A.
- 25 Ibid, s176(1).
- 26 *McGuire v Hastings District Council* [2002] 2 NZLR 577; [2001] NZRMA 557; 8 ELRNZ 14 (PC); *Auckland Volcanic Cones Society v Transit NZ* [2003] NZRMA 316, 334 (FC) para [61].
- 27 *North Shore City Council v Auckland Regional Council* [1997] NZRMA 59; *Contact Energy v Waikato Regional Council* Environment Court Decision A004/2000 para [308].
- 28 *McGuire v Hastings District Council* (already cited); *Auckland Volcanic Cones Society v Transit New Zealand* [2003] NZRMA 316.
- 29 *Unison Networks v Hastings District Council* (HC Napier CIV 2007-485-896 11/12/07, Potter J).
- 30 Citing *Unison Networks v Hastings District Council*, above.
- 31 Citing *Norwest Community Action Group v Transpower* Environment Court Decision A113/01, paras 40-44.
- 32 Citing *Porirua City Council v Transit NZ* Environment Court Decision W052/01, paras 92-97.
- 33 Citing *Te Runanga o Ati Awa Ki Whakarongatai v Kapiti Coast District Council* Environment Court Decision 023/02, para [153]; and *Bungalo Holdings v North Shore City Council* Environment Court Decision A052/01, para [111].
- 34 *Waimairi District Council v Christchurch City Council* Planning Tribunal Decision C030/82, pp 24-25; *Beadle v Minister of Corrections* Environment Court Decision A074/02, paras [860], [864]-[865].
- 35 *Environmental Defence Society v Mangonui County Council* (HC Wellington M101/81 23/10/81 Speight J); *STOP Action Group v Auckland Regional Authority* (HC Wellington M514/85 31/07/87 Chilwell J) p 47; *Bungalo Holdings v North Shore City Council* (already cited).
- 36 Already cited, para [23].
- 37 Citing *Nelson Intermediate School v Transit New Zealand* Environment Court Decision C35/2004, para [55].
- 38 [2003] NZRMA 316, 334 (FC) para [61].
- 39 Already cited.
- 40 *STOP Action Group v Auckland Regional Authority* (already cited).
- 41 See *STOP Action Group* (already cited) and the earlier cases cited at pp 77ff of that Judgment.
- 42 See for example, *Auckland Volcanic Cones Society v Transit NZ* [2003] NZRMA 316, 334 (FC) paras [60] and [61].
- 43 See Interpretation Act 1989, s 5.
- 44 *New Zealand Rail v Marlborough District Council* [already cited].
- 45 *Auckland City Council v John Woolley Trust* (already cited) para [47].
- 46 See Interpretation Act 1989, s 5.
- 47 Citing *Bungalo Holdings v North Shore City Council* Environment Court Decision A052/01.
- 48 Citing *Babington v Invercargill District Council* (1993) 2 NZRMA 480, 486; and *Olsen v Minister of Social Welfare* [1995] NZRMA 385, 395.
- 49 Citing *Rangi Ruru Girls School Board of Governors v Christchurch City Council* Environment Court Decision C130/2003.
- 50 Relying on *Bungalo Holdings* (already cited) paras [66] and [67].
- 51 RMA, s176A(1).
- 52 Ibid, s176A(3).
- 53 Ibid, s176A(4).
- 54 Ibid, s176A(5), (6).

- 55 Ibid, s176A(2).
- 56 Nolan DA (ed), (2008), para 3.17.
- 57 RMA, s87.
- 58 Ibid, s 77B.
- 59 Ibid, s88(2)(b).
- 60 Ibid, s104(1).
- 61 *McGuire v Hastings District Council* (already cited); *Auckland Volcanic Cones Society v Transit NZ* (already cited) para [61].
- 62 Ibid.104(2).
- 63 Ibid, s104(3)(b) and (4).
- 64 NZ Gazette, 13/03/08 p 1631; Corrigendum: NZ Gazette, 15/05/08 p 2277 col 2.
- 65 Preamble to NPS on Electricity Transmission.
- 66 NPS on Electricity Transmission, cl 5.
- 67 RMA, s55(2).
- 68 RMA s55(3).
- 69 *Transit New Zealand v Auckland Regional Council* (Environment Court Decision A100/2000 18/01/2001).
- 70 Issue 2.4.5(1).
- 71 Issue 2.4.5(2).
- 72 Objective 3.3.2.
- 73 Objective 5.3.1.
- 74 Objective 5.3.2.
- 75 Policy 5.4.1.1.
- 76 Policy 5.4.1.2.
- 77 Objective 6.3.
- 78 Policy 6.4.19(3).
- 79 Objective 8.3.
- 80 Objective 12.3.
- 81 Policy 12.4.4(1).
- 82 Policy 12.4.4(3).
- 83 Objective 2.1.3 and Policy 2.1.4.1.
- 84 Policy 2.2.4.2.
- 85 Policy 2.2.4.3.
- 86 Policy 2.2.4.6.
- 87 Objective 5.1.1.
- 88 Objective 5.1.2.
- 89 Policy 5.2.1.
- 90 Objective 7.1.
- 91 Policy 7.2.1.
- 92 Objective 3.3.7.
- 93 Objective 3.3.9.
- 94 Objective 3.11.4.
- 95 Policy 3.12.2(1).
- 96 Policy 3.13.2(1).



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- 97 Objective 3.14.2.
  - 98 Objective 3.15.2.
  - 99 Objective 3.15.3.
  - 100 Objective 3.1.2.
  - 101 Policy 3.1.2.3.
  - 102 Policy 5.1.3.1.
  - 103 Policy 5.1.3.2.
  - 104 Objective 3.A.3.1.
  - 105 Objective 3.A.4.2.
  - 106 Objective 6.3.1.
  - 107 Objective 6.3.2.
  - 108 Objective 7.3.1.
  - 109 Objective 7.3.2.
  - 110 Objective 7.3.3.
  - 111 Objective 7.3.4.
  - 112 Objective 9.3.1.
  - 113 Policy 9.4.4.
  - 114 Objective 12.3.1.
  - 115 Objective 12.3.2.
  - 116 Objective 12.3.3.
  - 117 Objective 12.3.4.
  - 118 Policy 12.4.3.
  - 119 Policy 12.4.5.
  - 120 Objective 4.1.1.
  - 121 Policy 4.1.1(1).
  - 122 Policy 4.1.1(2).
  - 123 Policy 4.1.1(3).
  - 124 Objective 5.2.1.
  - 125 Objective 5.2.3.
  - 126 Objective 8.1.1.
  - 127 Policy 8.1.1(1).
  - 128 Objective 11.2.1.
  - 129 Objective 11.4.1.
  - 130 Objective 15.1.1.1.
  - 131 Objective 15.1.1.2.
  - 132 Policy 15.1.1.1(1).
  - 133 Policy 15.1.1.1(2).
  - 134 Policy 15.1.1.1(3).
  - 135 Objective 17.1.1.
  - 136 Objective 17.1.2.
  - 137 Objective 17.1.3.
  - 138 Objective 17.2.3.3.
  - 139 Policy 17.2.3.4(3).
  - 140 Objective 3.1.1.1.

- 141 Objective 3.1.2.1.
- 142 Policy 3.1.1(1).
- 143 Policy 3.1.2(3).
- 144 Policy 3.3.1(1).
- 145 Policy 3.3.1(4).
- 146 Objective 3.5.1(2).
- 147 Objective 3.7.1(1).
- 148 Objective 3.7.1.3.
- 149 Objective 3.7.1.5.
- 150 Policy 3.7.1.1(1).
- 151 Policy 3.7.1.1(2).
- 152 Objective 3.2(i).
- 153 Objective 3.2(iv).
- 154 Objective 3.2(v).
- 155 Objective 3.2(vi).
- 156 Policy 27.3.1.
- 157 Policy 27.3.2.
- 158 Objective 10.2.1.
- 159 Objective 10.3.3.
- 160 Objective 10.3.4.
- 161 Objective 10.3.5.
- 162 Objective 12.2.1.
- 163 Objective 12.2.2.
- 164 Objective 12.3.7.
- 165 Objective 19.2.2.
- 166 Objective 19.2.5.
- 167 Objective 19.2.6.
- 168 Objective 19.3.2.
- 169 Objective 6.1.1.
- 170 Policy 6.2.5.
- 171 Policy 6.2.14.
- 172 Objective 9.1.1.
- 173 Objective 9.1.6.
- 174 Objective 14.1.1.
- 175 Objective 14.1.5.
- 176 Objective 20.1.
- 177 Policy 20.2.3.
- 178 Objective 51.1.1.
- 179 Objective 51.1.2.
- 180 Objective 53.1.1.
- 181 Objective 54.1.3.
- 182 Objective 3.4.1.
- 183 Policy 3.4.2.
- 184 Objective 4.2.1.

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- 185 Policy 4.2.2.
- 186 Policy 4.2.3.
- 187 Policy 4.2.4.
- 188 Objective 4.5A.1.
- 189 Policy 4.5A.4.
- 190 Policy 6.4.2.
- 191 Policy 6.4.4.
- 192 Policy 6.4.7.
- 193 Policy 2.3.1 (RU1) and Figure 2.
- 194 Policy RU2.
- 195 Policy RU4.
- 196 Policy RU8.
- 197 Policy RU9.
- 198 Policy RU14.
- 199 Policy RU11.
- 200 Policy RU17.
- 201 Policy RU42.
- 202 Policy RU43.
- 203 Objective PW1.
- 204 Objective PW2.
- 205 Objective HG4.
- 206 Objective 3b.2.1.
- 207 Objective 3b.2.4.
- 208 Policy 3b.2.1(v).
- 209 Policy 3b.2.1(vi).
- 210 Policy 3b.2.4(v).
- 211 Objective 3g.2.1(vi).
- 212 Policy 3g.2.1(i).
- 213 Policy 3g.2.1(iii).
- 214 Objective 3h.2.1.
- 215 Objective 3h.2.2.
- 216 Policy 3h.2.1(iii).
- 217 Objective 3n.2.1.
- 218 Objective 3n.2.2.
- 219 Policy 3n.2.1(iii).
- 220 Policy 3n.2.2(ii).
- 221 Electricity Governance Rules Part F, section III, R6.
- 222 Ibid, r12.3.
- 223 Electricity (Renewable Preference) Amendment Act 2008, s4.
- 224 Electricity (Renewable Preference) Repeal Act 2009, s4.
- 225 Since the start of the Board's Inquiry, the GPS was replaced with a May 2008 version, last updated 15 July 2008, and subsequently with a May 2009 version.
- 226 GPS Foreword.

- <sup>227</sup> *Environmental Defence Society v Mangonui County Council* (HC Auckland M101/81 23/10/81 Speight J).
- <sup>228</sup> Produced as Exhibit A, 3 April 2008.
- <sup>229</sup> Electricity Industry Reform Act, s17.
- <sup>230</sup> *Ibid*, s5(3A).
- <sup>231</sup> Electricity Industry Reform Amendment Act 2004, s5(2).
- <sup>232</sup> RMA, s186(1). One of the submitters, the Hon W R Storey, questioned whether Transpower would be entitled to invoke this provision. As that does not bear on whether the designation should be upheld or cancelled, the question is outside the scope of the Board's Inquiry.
- <sup>233</sup> Public Works Act 1981, ss 61ff.
- <sup>234</sup> *Ibid*, s62(1)(e). The Hon W R Storey also questioned whether Transpower would be entitled to invoke this provision, but it is not for the Board to decide that question either.
- <sup>235</sup> New Zealand Energy Efficiency and Conservation Strategy, 2007, para 5.1.
- <sup>236</sup> *Ibid*, para 5.1.4.
- <sup>237</sup> Including Mr B N Davidson (Submission 874), Dr L Bennet, Mr A Kinsler, and Ms H Polley.
- <sup>238</sup> That was the Bill from which the Electricity (Renewable Preference) Amendment Act 2008 (repealed) derived, by which the amendment referred to in para [321] was made to the Electricity Act.
- <sup>239</sup> Burrows and Carter, 2009, pp 174; 449.

## CHAPTER 5: EXISTING AND FUTURE ENVIRONMENT

[398] Consideration of both the designation requirements and the resource consent applications involves having regard to any actual and potential effects of the designation and exercise of the resource consents “on the environment”.<sup>1</sup>

### Extent of future environment to be considered

[399] There was a difference over the basis for establishing the extent of the future environment on which environmental effects are to be considered. This difference arose from different interpretations of the Judgment of the Court of Appeal in *Queenstown-Lakes District Council v Hawthorn Estate*.<sup>2</sup>

[400] Transpower submitted that the future state of the environment on which effects might be considered includes the environment as it might be modified by the use of rights to carry out non-fanciful permitted activities. This included by exercising resource consents that had been granted at the time a proposal was being considered, where it appeared likely that those resource consents would be implemented. Transpower submitted that the effect of application of the Court of Appeal’s Judgment is that the environment potentially affected does not extend to modifications by implementation of future resource consents, as being too speculative.<sup>3</sup>

[401] Counsel for Transpower acknowledged that, given the long-term staged nature of the Grid Upgrade Project, restricting the understanding of the environment in that way could be unsatisfying. However, they argued that in considering future changes to the environment, people would be on notice of the transmission line from the designations. This would give them a degree of certainty about what the future environment would be like, and this knowledge would allow them to order their affairs accordingly.

[402] The Manukau City Council contested Transpower’s submission, arguing that on closer analysis, the Court of Appeal’s Judgment did not restrict having regard to longer-term modifications to the environment. The Council submitted that the approach contended for by Transpower would not engage adequately with the concern in Part 2 for the future state of the environment, particularly considering the significant scale of the project, its dominance and permanence in the landscape, and the prolonged period over which it is to be implemented.

[403] Counsel for the City Council argued that as elements of the proposal might not be implemented for many more than five years, and as the capability for transmission at 400 kV (the justification for larger tower structures) might never be needed, the Board should have regard to effects of the grid upgrade on future rural-residential or urban development of parts of its district as these effects would be likely in the longer term, even though that development is not permitted now by either the district plan or by current resource consents.

[404] Counsel sought support for that from a decision of the Environment Court in *Lorraine Bax Property Investments v Rodney District Council*;<sup>4</sup> and submitted that the Board should have regard to effects on future rural-residential development in Whitford that would be provided for by proposed Change No 8 to its District Plan, relying on decisions of the Environment Court<sup>5</sup> about the weight to be placed on proposed planning instruments.

[405] In *Hawthorn*, the questions of law for decision by the Court of Appeal included whether the receiving environment included not only the existing environment but also the reasonably foreseeable environment. The Court was unanimous, and its Judgment was delivered by Justice Cooper, known for his broad experience of planning and environment law at the Bar.

[406] The Court considered in detail relevant contents of Part 2 of the RMA; observed that consent authorities have to have regard to the future environment; and said:<sup>6</sup>

Future potential effects cannot be considered unless there is a genuine attempt, at the same time, to envisage the environment in which such future effects, or effects arising over time, will be operating. The environment inevitably changes, and in many cases future effects will not be effects on the environment as it exists on the day that the Council or the Environment Court on appeal makes its decision on the resource consent application.

[407] Later, the Court said:<sup>7</sup>

In summary, all of the provisions of the Act to which we have referred lead to the conclusion that when considering the actual and potential effects on the environment of allowing an activity, it is permissible, and will often be desirable or even necessary, for the consent authority to consider the future state of the environment, on which such effects will occur.

[408] After a full consideration of case authorities and argument, the Court held:<sup>8</sup>

... the word “environment” embraces the future state of the environment as it might be modified by the utilisation of rights to carry out permitted activity under a district plan. It also includes the environment as it might be modified by the implementation of resource consents which have been granted at the time a particular application is considered, where it appears likely that those resource consents will be implemented. We think [the High Court Judge] erred when he suggested that the effects of resource consent that might in future be made should be brought into account in considering the likely future state of the environment. We think the legitimate considerations should be limited to those that we have just expressed.

[409] So the Court of Appeal rejected the argument that the future environment extends to modifications to the existing environment that are reasonably foreseeable but have not yet been authorised.

[410] It appears that the Court of Appeal has not had any reservations about the correctness of its interpretation about the receiving environment, because in its more recent Judgment in *Auckland Regional Council v Living Earth*<sup>9</sup> it referred to *Hawthorn* on the concept of the receiving environment.

[411] Like anyone else, the Manukau City Council is entitled to regret that the Court of Appeal interpreted the Act in the way that it did, and to wish that it had identified a less restricted scope of the future environment. However, in identifying the environment that would or could be affected by activities authorised by the designations and resource consents, the Board has to apply the law as declared by the higher Courts, in this respect the Court of Appeal's Judgment in *Hawthorn*. It is not the Board's function to attempt its own interpretation of the Act on a question already settled by the Court of Appeal, nor is it the Board's function to consider possible advantages of changing the law as settled by that Court. The Board's role is to apply the interpretation in *Hawthorn* to the circumstances of the proposed designation and resource consents.

[412] The Board has now to address the Manukau City Council's submission that the Board may consider the future development potential of land that would be affected by Change No 8 to the Manukau City District Plan in accordance with the approach taken by the Environment Court in its decision in *Lorraine Bax Property Investments v Rodney District Council*<sup>10</sup> of doing so as "other relevant matters". The passage in that decision relied on by counsel for the City Council is this:<sup>11</sup>

We are not talking about granted resource consents here, nor about operative district plan provisions permitting residential activity on the Cabra Developments land, so the weight to be given to the possibility must be less. But it is illogical and artificial to ignore the high likelihood that in the foreseeable future residential development will expand westwards to be very close to the site. The rural character of the immediate area, and its amenity values, will thus be profoundly altered. The two houses of the proposal, even though quite closely grouped, could not be said to be nearly as incongruous as they are now claimed to be.

[413] It appears the Court considered that the power to have regard to other relevant and necessary matters extends to allowing it to give to the future environment that would be affected a meaning, that was considered but not accepted by the Court of Appeal.

[414] The Board is not persuaded that the provisions for having regard to other matters that the decision-maker considers relevant and reasonably necessary, should be interpreted so as to allow it to give a meaning to the future environment that the Court of Appeal has rejected. Reasons for restricting and extending the scope of the future environment were considered by that Court which, applying to the RMA the principles of

interpreting legislation, declared the extent to which potential future modifications to the environment should be considered.

[415] That Court has described the extent, and the Board's understanding of its functions is to treat the Court's Judgment as decisive authority on the point. The Board does not accept that it should ignore or defy that authority and have regard to future potential modifications of the environment beyond the extent established by law on any concept that applying the law is artificial or illogical.

[416] Accordingly, the Board accepts Transpower's submissions, and does not accept the Manukau City Council's submissions; and holds that in considering effects of the proposed grid upgrade on the future environment it should not consider modifications that would not be permitted either by the district plan, as it now stands, or by implementation of resource consents that have already been granted.

## **The existing environment**

[417] The Board heard considerable evidence about the character and characteristics of the general environment between South Auckland and Whakamaru and the sites to which the designation and resource consent applications relate. The following is a general description of the existing environment along the proposed overhead alignment, underground cable routes and at the substation sites as provided in evidence during the hearing, noting specific features and landscapes. Specific environmental effects are addressed later.

### **Overhead alignment**

#### **General overview of the existing environment**

[418] The approximately 185-kilometre proposed overhead line begins at the Brownhill Road Substation in Manukau City and traverses land through the Franklin, Waikato, Matamata-Piako, Waipa and South Waikato Districts, terminating at Whakamaru Substation in the Taupo District. The line would cross over 50 local authority roads (mostly low to moderate traffic volume), State highways five times, the East Coast Main Trunk Railway Line, several streams and rivers (including the Waikato River three times), small areas of land owned by the Crown, and approximately 315 private properties.

[419] The ARI-PAK A line is currently located along a significant proportion of the proposed route and, as detailed by Mr Coad for Transpower, this line will be decommissioned, dismantled and removed as part of the upgrade project.

[420] The overhead line would traverse a range of land uses including beef, sheep and dairy farms, and lifestyle blocks in the northern Waikato/South Auckland areas and predominantly rural pasture land dominated by dairy farming in central and south Waikato. Other rural land uses along or near the route include a goat farm, equine breeding stud, deer farms, a poultry farm and four organically certified farms. Remnants of indigenous vegetation



of varying composition and quality (primary and secondary forest, scrub and shrubland) are scattered along the route and a commercial forestry block is located at the southern end of the proposed line.

[421] In his evidence, Mr B D Druskovich, a consultant archaeologist, stated there are a number of historic places and areas (both pre-European Māori occupation sites and sites from the last 200 years of European occupation) located near, or within, the proposed route alignment.

### **Specific sections of the overhead line**

#### ***Whitford, Brookby, Ardmore-Clevedon and Hunua areas***

[422] The proposed overhead line would initially traverse Whitford Valley and the Brookby area of Manukau City. Whitford Valley is a broad basin surrounded by hills and characterised by lifestyle blocks and mixed land uses including pasture, pine plantations, orchards, a vineyard, horse stud and other peri-urban activities such as a golf course. Similarly, in the Brookby area, the proposed line would follow a small valley system enclosed by the Clevedon-Maraetai Hills and the Whitford catchment ridgeline. Brookby is characterised by a mix of land uses such as pasture farmland, lifestyle blocks, horse studs and plantations.

[423] The proposed line would continue through the Ardmore-Clevedon Valley which is a 4.5-kilometre wide alluvial plain with mixed intensive land-use patterns of productive rural activities (eg, horse training facilities, plant nurseries, glasshouses and vineyards), lifestyle properties and patches of indigenous vegetation. The proposed line would pass 5 kilometres to the north-east of Ardmore Airport. In his evidence, Mr A R McCreadie for Ardmore Airfield Tenants and Users' Committee, informed the Board that Ardmore Airport was developed in 1943 as a base hospital airfield and today is predominantly a civil training base used by general aviation aircraft with over 200,000 aircraft movements per annum. Mr R E Sullivan stated that a wide mix of aircraft types with a range of performance characteristics use the facility. Mr Sullivan also highlighted that Ardmore has operated as an "uncontrolled" aerodrome since 1998 and is, therefore, governed by rules of flight established by the Civil Aviation Authority.

[424] The next 6.4 kilometres of the proposed overhead line crosses the Hunua Basin, an area of rolling terrain and mixed land uses (dairy farms, horse studs and lifestyle subdivisions). The back-drop to the basin is the western escarpment of the Hunua Ranges, an extensive area of steep hill country covered in indigenous forest that encompasses a number of water catchments and a regional park. The proposed line will be located approximately 1.3 kilometres west of the Falls Road entrance to Hunua Regional Park, crossing the west of the Wairoa River Valley. Wairoa River Valley is characterised by plantation forest in the north, rural-residential properties and pastoral farming in the centre, and dairy farming in the south.

#### ***South of Lyons Road to Tauhei Road***

[425] The proposed line would continue across Maramarua Valley, an area characterised by high, steep hills on the northern side and low, rolling hills to

the south. Pastoral farming (especially dairy and cropping) is the dominant land use along the proposed alignment and there are a number of small lifestyle properties. Occasional bush remnants are present. The Maxwell Block is under and near towers 88 and 89 of the proposed overhead line.

[426] The existing environment from Kopuku to Te Hoe comprises a north-to-south orientated valley approximately 30-kilometres long. The valley is characterised by alluvial flats and rolling foothills, enclosed by parallel ranges of steeper hills. The predominant land use in the valley is dairy farming, with occasional pine plantations on the hills and at the northern end of the valley.

[427] Between Flaxmill Road and Tauhei, the Hangawera Hills rise to approximately 150 metres above the surrounding plains, with dairy farming dominating the lower slopes. Beyond Tauhei Road, the landscape is low-lying flat or gently undulating land to rolling hill country. Production activities dominate land use, including dairying and horse facilities, along with a number of lifestyle properties. The proposed line passes approximately 300 metres from the western outskirts of Morrinsville township (population 6000) in the rural zone. Mr Druskovich identified a large hilltop pa located at Tauroa approximately 100 metres from the proposed overhead line.

### ***South of Wairama Road to north of State Highway 1***

[428] The next approximately 21 kilometres of proposed line would cross the middle of a basin enclosed by the Pakaroa Range to the west and the Maungakawa Range to the north and east. The rolling hill country located to the south of the range is a mixture of dairy farming, dry-stock grazing and small plantations. Two small villages, Te Miro and Whitehall, are located within the central basin area.

### ***Lake Karapiro***

[429] The proposed overhead alignment crosses the Waikato River through the north and south banks of Lake Karapiro, a flooded river valley located between Karapiro Village and the Horahora Bridge in the Waipa District. Lake Karapiro is identified as a Significant Landscape Character Area (“Lake Karapiro landscape as seen from State Highway 1”) in the Waipa District Plan. The partly vegetated banks slope steeply down to the lake in a series of terraces, with occasional rock outcrops. The lake can be seen from parts of State Highway 1, with river terraces and the grassed hills rising to Maungatautari beyond. Lake Karapiro is an international rowing venue with the Lake Karapiro Rowing Centre located at the northern end of the lake. The lake is surrounded by a mixture of pastoral farms and rural-residential development. Karapiro Hydro Station is located at the northern end of the lake. The town of Cambridge is located on the Waikato River about 17 kilometres north-west of the lake.

### ***Maungatautari***

[430] The next 11 kilometres of the proposed line will pass along the eastern side of Maungatautari and approximately 1 kilometre to the west of the Waikato River. Maungatautari is a volcanic landform located in the south-eastern part of the Waipa District to the south of Lake Karapiro. The

landform consists of three main peaks: Maungatautari (797 metres), Pukeatua (752 metres) and Te Akatarere (727 metres). Maungatautari is the most prominent of several volcanic peaks in that part of the Waikato Basin, visually dominating the flat lands to the west, and Lake Karapiro, the Waikato River, Arapuni, and parts of State Highway 1 to the east.

[431] The upper slopes of the mountain are clad in native vegetation and are protected as the Maungatautari Scenic Reserve (an “Ecological Island” established by the Maungatautari Ecological Island Trust) which is surrounded by a 47-kilometres predator-proof fence. The lower slopes of Maungatautari are characterised by pastoral farming. Maungatautari is identified as a SLCA in the Waipa District Plan.

### ***Arapuni***

[432] From the Maungatautari area, the proposed line then crosses the Waikato River about 800 metres north of Arapuni township. The left bank of the Waikato River at this point is classified as a SLCA in the Waipa District Plan. The proposed line continues through rolling farmland dominated by rural production activities. Four settlements occur amongst the farming landscape: Arapuni, Waotu, Pikitū Marae and Puketūrua.

### ***Kinleith Forest***

[433] In the next section, the proposed line crosses the Waikato River for a third time at Maraetai Lake just north of the Whakamaru Substation.

[434] The southern 30 kilometres of the proposed line passes through plantation forest which is predominantly radiata pine. In her evidence, Ms S Strang, a civil engineer and environmental management professional, stated that the forest is presently owned by Taumata Plantations Ltd and Carter Holt Harvey, and managed by Hancock Forest Management (NZ) Ltd. The forest was established in the 1920s and currently consists of a mixture of trees between six and 34 years old. Mr M G Colley, a forestry consultant, advised the Board that significant areas of the northern end of this forest are currently being converted to pasture for dairy farming.

## **Underground transmission cable routes**

[435] In his evidence Mr H R Wildash, a senior development engineer with Transpower, detailed that the proposed underground transmission cable routes would be placed primarily under legal roads from the proposed Brownhill Substation to both the Pakuranga Substation and the Otahuhu Substation. The environment along the proposed routes is predominantly developed urban areas or planned urban areas. There are existing cables running parallel to, and across, parts of the proposed underground cable route.

## **Substation sites**

[436] Mr R J Deller for Transpower gave an overview of the location and surrounding environment of the existing and proposed substation sites that are part of the application. A summary is provided below.

### **Existing Otahuhu Substation**

[437] The Otahuhu Substation is characterised by an urban landscape dominated by existing infrastructure. Currently, the site has a main switchyard (300 metres x 120 metres) with associated gantries, lines, transformers and transformer oil containment facilities, as well as storage yards, warehouses, workshops and offices. The site is dominated by transmission towers of various heights and designs and a lattice communication tower. The Otahuhu power station, the decommissioned old Otahuhu power station and the Southern Motorway are all close to the site.

### **Existing Pakuranga Substation**

[438] The existing Pakuranga Substation is located on a 12.5-hectare site on the eastern edge of the suburb of Pakuranga in Manukau City. The site is bordered by Pakuranga Creek (a tidal creek), Ti Rakau Drive and residential properties. The site comprises a combined 110-kV and 33-kV outdoor switchyard and associated switchgear, power transformers, as well as transformer oil-containment facilities, 33-kV ripple-control plant and associated building and 33-kV underground cables. Three overhead transmission lines (Arapuni-Pakuranga, Otahuhu-Pakuranga and Pakuranga-Penrose) terminate at the site. In his evidence, Mr Druskovich detailed three archaeological sites (two middens and a hawthorn hedge) at, or immediately, adjacent to the site.

### **Proposed Brownhill Road Substation site**

[439] The proposed Brownhill Road Substation site is located on a 60-hectare block at the head of a narrow tributary valley in Whitford that is currently leased for grazing. The site is close to the urban boundary, with land adjoining the property to the west undergoing subdivision and development.

### **Existing Whakamaru Substation**

[440] The existing Whakamaru Substation consists of a 220-kV switchyard located on an open terrace of the west bank of the Waikato River, downstream from the Whakamaru Dam. The surrounding area is predominantly pastoral farmland and exotic forest.

### **Proposed Whakamaru North Substation site**

[441] The proposed Whakamaru North Substation site is located approximately 1 kilometre north of the existing Whakamaru Substation on flat, pasture-covered farmland. State Highway 30 passes the site for approximately 1 kilometre and Whakamaru settlement and Whakamaru Dam Village are located 700 metres and 1.5 kilometres to the south-east of the site respectively.

## The future environment

[442] As detailed earlier, the extent of the future environment in *Queenstown-Lakes District Council v Hawthorn Estate* includes the implementation of resource consents that have been granted at the time that the requirements are considered, and those activities that would be permitted by the operative regional and district plan provisions.

[443] The only extent to which the future environment was referred to at the hearing was in evidence by Mr C J Freke for Manukau City Council, and Mr M Rademeyer, a consultant planner for Matamata-Piako District Council (supported in evidence by Mr D Phillips), in respect of planning provisions, Transpower in respect of resource consents that have been granted but not implemented, and Mr B W Coleman, a property management expert. Although not canvassed in evidence at the hearing, various permitted activities are provided for in the rural zone of each of the district plans.

[444] Mr Freke considered the Brookby area “*to be a prime candidate for future urbanisation*” but continued “*In saying this, I acknowledge that there is at present no Council initiative to address or change the zoning for this area*”. In his closing submission for Transpower, its leading counsel Mr J S Kós also stated that, in respect to Brookby, there was no document publicly available and adopted under the RMA or otherwise which recognises or provides for Brookby as a future urban development.

[445] In his evidence for Matamata-Piako District Council, Mr Rademeyer commented on future growth in that district stating “*residential and rural-residential expansion is most likely to occur towards the west, in that vicinity of the proposed line*” before acknowledging “*the district plan does not indicate future growth areas towards the west of Morrinsville*”. Mr Rademeyer concurred with Ms Allan’s assertion that the district plan contains no provisions or policy that would suggest the area to the west of Morrinsville town is a future urban growth area.

[446] Transpower has been granted resource consents to undertake upgrade works at the existing Otahuhu Substation and the Board was informed that these works are now underway. Contact Energy also holds resource consent to develop the Otahuhu C gas-fired power station, located adjacent to this site.

[447] Development has commenced on the Card Road lifestyle subdivision (a rural-residential subdivision comprising 12 lots of between 8 hectares and 0.78 hectares) located partly on an elevated ridge-line crossed by the alignment in Matamata-Piako District.

[448] Regis Park Stage 2 Ltd was granted resource consent in May 2007 for 20 subdivision lots on 50 hectares of land at 227 Brownhill Road. This site adjoins the northern boundary of the proposed Brownhill Substation site.

[449] Orini Downs Station Ltd has resource consent to extract 50,000 metres cubed of blue/brown rock per annum from its commercial aggregate quarry located on Orini Road, 23 kilometres north of Hamilton and approximately 230 metres from the proposed overhead line.

[450] Mr Coleman, in his evidence for Glencol Energy Ltd and the Stirling family (title holders of an area of land known as the 'Maxwell Block' near towers 88 and 89), identified that the Maxwell Block is situated above a coal resource and he outlined the potential for future open-cast mining of coal deposits at this site. Under Rule 14.5 in the Waikato District Plan, prospecting or exploration of this resource would be a permitted activity, while any extraction of the coal resource is a discretionary activity requiring consent.

[451] In considering the effects of the designation and resource consents on the environment, the Board imputes to its understanding of the environment potential activities that are permitted by the respective zonings and by the current resource consents.

## Endnotes

<sup>1</sup> RMA, ss 171(1) & 104(1)(a).

<sup>2</sup> [2006] NZRMA 424.

<sup>3</sup> Transpower opening submissions, para 526.

<sup>4</sup> Environment Court Decision A149/06.

<sup>5</sup> Citing *Keystone Watch Group v Auckland City Council*, Environment Court Decision A7/01, followed in *Mapara Valley Preservation Society v Taupo District Council*, Environment Court Decision A083/07.

<sup>6</sup> Para [53].

<sup>7</sup> Para [57].

<sup>8</sup> Para [84].

<sup>9</sup> [2008] NZRMA 22 at [51].

<sup>10</sup> Environment Court Decision A149/06.

<sup>11</sup> Para [28].

## CHAPTER 6: POSITIVE ENVIRONMENTAL EFFECTS

[452] The Board has, subject to Part 2, to consider the effects on the environment of the designation,<sup>1</sup> and of the resource consents. By the RMA, the meaning given to the term *effect* includes any positive effect.<sup>2</sup>

[453] In the RMA, the meaning of *environment* includes—

- a) Ecosystems and their constituent parts, including people and communities; and
- b) All natural and physical resources; and
- c) Amenity values; and
- d) The social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) of this definition or which are affected by those matters.<sup>3</sup>

[454] This chapter addresses Transpower's submission that the Grid Upgrade Project would have positive effects on the environment.

### Transpower's contentions

[455] Transpower contended that the upgrade project would have positive environmental effects in these respects:

- a) it represents long-term planning, reflecting that electricity transmission assets typically have lives exceeding 50 years
- b) the route largely uses an existing transmission corridor, rather than establishing a new greenfields corridor, or multiple lines
- c) the upgrade would replace older assets of smaller capacity with new assets of higher capacity and greater reliability
- d) the upgrade would promote renewable generation by facilitating transmission of electrical energy from renewable sources to the major market
- e) the upgrade would make up a predicted deficiency of reliable supply of electrical energy to the upper North Island (and particularly the Auckland area) at times of peak demand.

### Submitters' contentions

[456] A number of submitters in support of the Grid Upgrade Project identified the positive environmental effects.

[457] Genesis Energy submitted the Environment Court has identified that:

Electricity is a vital resource for New Zealand. There can be no sustainable management of natural and physical resources without energy, of which electricity is a major component.<sup>4</sup>

[458] Genesis Energy also submitted that the upgrade project is consistent with maintaining and enhancing the regional infrastructure and physical resources in the interests of supporting the regions' economies and social and community well-being as set out in the Auckland and WRPSs.

[459] Vector submitted that:

The North Island Upgrade Project will facilitate secure and efficient connections to existing transmission, distribution and generation infrastructure. It will maintain the required minimum level of supply security as demand continues to grow, and, in so doing, satisfy current grid reliability standards which provide flexibility to address future changes in supply.

[460] Vector's submission continued:

Any partial or total losses of supply to the Auckland or North Isthmus regions would impose significant economic costs to the New Zealand economy as a whole.... As a consequence, the North Island Upgrade Project encourages business confidence, and promotes social, economic and cultural well-being.

[461] Enterprise Northland's submission referred to the proposed grid upgrade as a strategic investment that underpins New Zealand's economic growth and that provides long-term confidence to business investors that the necessary infrastructure is in place to provide a reliable electricity supply.

[462] The New Zealand Council for Infrastructure Development submitted that providing certainty on the grid upgrade path is critical to delivering the Government's draft energy strategy which relies on a robust transmission grid to distribute renewable hydro, geothermal and wind-generation capacity to market. Final determination of the upgrade path will encourage generation investment decisions, and will boost business and investment confidence generally. In addition, the capability of upgrading the grid over time to a 400-kV voltage, provides an opportunity to replace lower capacity lines, but 220-kV development does not.

[463] The New Zealand Wind Energy Association submitted that the upgrade project will free up capacity of the existing 110- and 220-kV circuits in the Waikato and South Auckland regions, enabling the connection of new generation projects including renewable wind generation. The Association asserted that this would increase both the diversity and security of energy supply for the region and, in doing so, promote the region's social, economic and cultural well-being.



[464] Submitters in opposition did not necessarily specifically submit on positive environmental effects but focussed on issues that were associated with adverse environmental effects.

[465] In her submission, Dr L Bennet recognised there is a need for a grid upgrade, while raising issues with the proposed grid upgrade. She acknowledged a need to improve New Zealand's transmission infrastructure and, in particular, that upgrades to this section of the National Grid are reasonably necessary for its efficient operation.

[466] Dr Bennet's submission then raised a number of issues in relation to the proposed grid upgrade. She stated that the reason for the submission is that the proposal:

Will not promote the sustainable management of natural and physical resources and will otherwise be contrary to the purpose and principles of the Act.

Will not promote or enable the social, economic and cultural well-being of those communities in the Auckland and Waikato regions that will be directly and adversely affected by the proposed works.

## Evidence

[467] In his evidence, Mr George explained that investment in the transmission grid would facilitate a number of benefits including the continuation and improvement of electricity supply, facilitating the connection of new generation, economic growth and business confidence.

[468] Mr Boyle gave evidence that two sections of the GPS <sup>5</sup> in particular had a significant influence on the selection of the proposed grid upgrade. One of these two sections is:

88E: To the extent the (*Electricity*) Commission considers the environmental effects of new lines proposed by Transpower in a grid upgrade plan, it should also take into account any longer-term benefits that larger capacity lines may provide by avoiding multiple smaller lines.

[469] He later stated that:

one of the objectives is to maximise the use of the existing and new transmission assets and transmission corridors to help defer the construction of additional new transmission lines, and ultimately minimise the number of transmission lines into the Auckland area.

... the 400-kV solution that will maximise the use of the transmission corridors, will require less new transmission lines than the alternatives; and ultimately will be the option that will result in the lowest overall number of transmission lines. The smaller number of new lines and smaller number of overall lines is the key environmental advantage of the 400-kV line.

[470] Mr Boyle asserted that the grid upgrade would achieve levels of grid security and reliability in the upper North Island that would maintain business and investor confidence in the region. He gave his opinion that the latent capacity of the upgrade to meet projected demand for many years to come should engender business confidence.

[471] Ms Allan, in her evidence, quoted from section 2 of the ARPS that:

A reliable power supply is essential to the social and economic well-being of the region. Currently, there is limited power generated in the Auckland region, relative to demand. The region is, therefore, dependent upon power supply from other regions.

[472] She contended that the overall operational effects of the overhead line, as part of a major project designed to ensure security and reliability of supply to an area where demand is growing, are strongly beneficial.

[473] Ms Allan further contended that the removal of the ARI-PAK A line is the main beneficial effect of the construction phase of the upgrade project and that there are other benefits such as job creation and economic impacts for local businesses, along with skill development.

[474] Cross-examination of Ms Allan by Mr H M Seales included the following:

Seales: Beneficial effects, you state that it is needed 'to meet needs of people in the northern part of the North Island over the next few decades'. Is it a fact that the line isn't expected to be up and running at 400 until 2034, and that it's expected to meet the needs for Aucklanders over the next few decades? At the end of two or three decades that implies that it may not be necessary, do you think there could be another source of power in the next 30 years?

Allan: I can't speculate on that. That...my comment is based on the...Transpower's projection of needs, and at the moment I don't think Transpower has indicated how long the 400kV operation is likely to meet needs before some other solution is needed. It's in...it's...I think I could say it's beyond the reasonable...the reasonably foreseeable planning horizon. So, we're probably talking about 50 years plus.<sup>6</sup>

[475] Mr T J Densem, a professional engineer employed by Mighty River Power, deposed that renewable sources tend to be located away from main load centres; and if renewable generation is to make up a larger proportion of total generation, then there is likely to be a shift in generation sources. He gave examples of geothermal generation in the Bay of Plenty and Taupo regions, and of wind and small hydro projects south of Taupo.

[476] Mr R G Wilson (Manager of the Electricity Group, Ministry of Economic Development) contended that the benefits of the upgrade project

would be national in their effect by enhancing security of supply and enabling the increased use of renewable energy. He stated that the upgrade will primarily serve Auckland and North Auckland, which comprise a very significant proportion of total economic activity in New Zealand and that the grid upgrade proposal is nationally important because any increase in the risk, actual or perceived, of interruptions in electricity supply to this region would have an impact on the whole New Zealand economy.

[477] Mr Wilson also stated that much of the existing transmission system was developed around 40 years ago. He said that demand has continued to increase since then, particularly in the Auckland region, but relatively little investment has occurred in upgrading the capacity of the network and that we are now in a period where a major upgrade is necessary, to position the country for the coming decades.

[478] His evidence on renewable energy included:

...renewable energy sources are generally located far away from the main centres of demand, particularly Auckland. The transmission proposal would facilitate greater use of generation from renewables required to satisfy demand while, at the same time, reducing New Zealand's dependence on non-renewable energy sources, by ensuring that energy can be delivered to where it is needed.

[479] And later, Mr Wilson contended:

The grid upgrade will encourage the greater use of renewables, which will break down a barrier that might prevent low-emissions technologies from being more widely used...

Greater use of renewable energy resources that have low emissions of greenhouse gases is a key government priority for reducing the climate change impacts of energy use.

[480] He also gave his opinion that new transmission lines are likely to be a low-cost option, which would ensure that electricity prices remain as low as possible and that the upgrade project has been determined to be the most economically efficient option to ensure electricity supply to the upper North Island.

## **Consideration of positive environmental benefits**

[481] The Board has reviewed all the evidence and submissions on positive environmental effects.

[482] The Board recognises that a number of submissions in opposition to the Grid Upgrade Project have raised issues related to adverse environmental effects, but did not dispute that the project would have positive environmental effects.

[483] The Board notes that a positive environmental effect of selecting a route, then defining the land to be subject to a notice of requirement, is of benefit to those communities, landowners and occupiers within the corridor who, given the choice of route, will no longer be adversely affected.

[484] The Board accepts the evidence of Ms Allan and Messrs Boyle, Densem, George and Wilson in relation to the positive environmental effects of the proposed 400-kV-capable grid upgrade, and accepts the submissions about its positive environmental benefits.

## Endnotes

<sup>1</sup> RMA, ss171(1); &104(1)(a).

<sup>2</sup> RMA, s3(a).

<sup>3</sup> RMA s2(1).

<sup>4</sup> *Genesis Power Limited v Franklin District Council* [2005] NZRMA 541 at [64].

<sup>5</sup> 2006 version.

<sup>6</sup> Transcript 25/06/08, p 6.

## CHAPTER 7: CONSIDERATION OF ALTERNATIVES

### Introduction

[485] By section 171(1)(b) of the RMA, a territorial authority considering a requirement is, subject to Part 2, to have particular regard to:

Whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if –

- (i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or
- (ii) it is likely that the work will have a significant adverse effect on the environment.

[486] Transpower does not have an interest in all the land sufficient for undertaking the work of the grid upgrade; and there was no dispute that it is likely that the work would have a significant adverse effect on the environment. So, in considering Transpower's requirements for the grid upgrade, the Board has to have particular regard to whether adequate consideration has been given to alternative sites, routes and methods of undertaking the work. That does not extend to the Board substituting its own choice for Transpower's choice among alternative sites, routes or methods of undertaking the work.<sup>1</sup>

[487] Transpower referred to the process of developing and propounding the original project, the ACRE (Area, Corridor, Route, Easement) route selection process, the exhaustive scrutiny of technical alternatives by the Electricity Commission, the developing and propounding of the amended project, and the scrutiny of that by the Electricity Commission process. Transpower contended that through this sequence of processes, the consideration given to alternative sites, routes and methods of undertaking the work had been adequate in the sense of *sufficient* and *satisfactory*, and, indeed, that it had been *meticulous* and *exhaustive*.

[488] Those contentions were directly disputed by a number of submitters who, in different ways, contended that alternatives had not been adequately considered. Particulars of submitters' contentions are summarised:

- a) the choice of a 400-kV overhead transmission line had been predetermined, and there had been no genuine, serious or complete consideration of methods other than transmission
- b) there had been no 'holistic' consideration of all the transmission alternatives, including evaluating together the technical, economic, environmental and planning aspects of all of them
- c) the Electricity Commission processes had been for other purposes, and have limited relevance to the Board's Inquiry

- e) the ACRE process of route selection had deficiencies, especially of limited information and understanding of potential impacts, being too inflexible, and not properly balanced.

[489] Those are summaries, to illustrate the general scope of the submitters' contentions. The Board addresses the issues raised about methods other than transmission; then those about transmission alternatives (including the relevance of the Electricity Commission processes); and then those about the claimed deficiencies in the ACRE process. Having addressed those subtopics, the Board will then be able to review the adequacy of consideration of alternative sites, routes and methods as a whole, and reach its finding on that issue.

## **Alternative methods other than transmission**

### **Submitters' cases**

[490] The Manukau City Council contended that Transpower had not undertaken the consideration of alternatives process with an open mind, or a willingness to put itself through a rigorous consideration of alternatives, but that the process had been predetermined from the outset, with a rigidity of view that had never wavered. The Hunua and Paparimu Valley Residents Association (HPVRA) asserted that Transpower had determined, before obtaining any independent assessment of visual impact, that a 400-kV line was the form of work that it would implement, precluding consideration of relative adverse visual impacts of alternative methods of implementing its objectives, such as a 220-kV-capable line. Dr McQueen also asserted that the 400-kV solution and route had been predetermined.

[491] In his evidence, Mr Freke gave his understanding that the Board had to be satisfied that the consideration of alternatives undertaken had been a genuine one, approached with an open mind, and with all relevant considerations appropriately taken into account.

[492] This witness gave evidence that from when the project had first been the subject of consultation, it had always been based on a 400-kV transmission solution, and that had never been negotiable. Transpower's initial operational policy decisions had been the best route and design for a 400-kV solution, rather than seriously exploring transmission alternatives that might result in lesser environmental impacts.

[493] Based on his reading of the evidence and his experience of discussions with Transpower, Mr Freke gave his opinion that the consideration of alternatives undertaken by Transpower had not been genuine; and that, at all points, Transpower had allowed the GIT, and the narrow economic imperatives enshrined in it, to dominate its approach to the exclusion of all other considerations. He based that on his opinion that Transpower's focus had always been on internal costs, rather than full costs (that is, internal and external), and his not having seen any proper analysis of those full costs.

[494] Asked in cross-examination about whether, when it first began consultation in 2004, Transpower had told him that it was a 400-kV project or whether it was a bit more general than that, Mr Freke agreed that it had been even more general than that. The witness confirmed that later on, there was a 400-kV project proposed, and Transpower had then been proceeding to look at routes and corridors through the ACRE model. He asserted that Transpower had formed a very early conclusion, based on a few considerations.

[495] Asked if he knew anything about the process Transpower had gone through up to the time it went public with the 400-kV proposal, Mr Freke acknowledged that he could not comment on their internal workings, and did not think they had involved the Manukau City Council in them. Asked the basis for his evidence that Transpower's assessment of alternatives had not been genuine, the witness answered that it had been based on the fact that the first wave of material had not addressed a lot of considerations and had been very coarse; and that it had only been after the project had been identified, that further, more specific material had been released.<sup>2</sup>

[496] More directly, this exchange followed:

Laing: So if we look at the situation up to the time when Transpower went public on a 400-kV proposal, just looking at it at that time, you're not seriously suggesting that Transpower's early consideration of transmission alternatives was done in bad faith or a sham and not genuine? You're not suggesting that, are you?

Freke: No, what I'm suggesting, that was being done at a very coarse level, and the implications, certainly the environmental implications of its conclusions and its recommended options hadn't been fully worked through.

Laing: See Mr Freke, when you use the word 'not genuine', that, to me, is quite a serious allegation and we need to be very clear as to what you are saying, because that very point was never put to any Transpower witness that I can find, so if we can just move on. But, at least, until that stage, you are saying that your criticism is that it was coarse-grained or words to that effect, but you're not, in any way, suggesting that Mr Taylor or any other Transpower officer didn't genuinely carry out their task, are you?

Freke: No, I don't have any issues with the professionalism of Mr Taylor and his staff, but I do think they were working under high-level predetermined parameters, which were largely operational against supply and demand.

Laing: So are you saying that Mr Taylor and others, who put together this report here, were writing the report to a fixed agenda. Is that your evidence?

Freke: No, it's my evidence that I don't believe those early discussions and documents, necessarily, fully looked at the environmental implications of what it was they were recommending, and if there was more weight to those then you might have a different outcome.

Laing: Yes, well, that's your criticism you make and what your counsel also makes. But I'm asking you, you have said, basically, that Transpower's consideration of alternatives was not genuine. Now, I'm wanting you to either tell me categorically that's not the case or provide the evidence.

Freke: No, I acknowledge that the word 'genuine' implies an ill motive and on that basis 'inadequate' would have been a better terminology, so to the extent that besmirch the Transpower officials, I withdraw that.

Laing: And thank you for that. I think that I've, therefore, covered your paragraph 33 where you use the word 'genuine', but just so there is no misunderstanding, if there's anywhere else in your evidence where you have implied improper or wrong motives to Transpower staff members, do I take it that no such inference should be intended from your evidence?

Freke: That's correct. If I can replace 'genuine' with 'inadequate' that addresses the concern.<sup>3</sup>

[497] Mr D A Parker gave evidence on behalf of the HPVRA. He gave his understanding that early attempts to engage directly with Transpower had seemed fruitless, and there were no route alternatives, and no technical or design alternatives discussed by Transpower or its consultants at that time, and the then 400-kV design was effectively presented as a 'fait accompli'.

[498] In addressing the Board in support of his submission, Dr McQueen discussed an alternative method of increasing the capacity of the OTA-WKM A, B and C lines, and gave his opinion that from environmental impact, that is one of the primary considerations that Transpower should have put forward when it was discussing alternatives to its proposal. He continued:

Now, in my opinion, the reason it hasn't done that, is that this approach would blow the proposed 400-kV capable line out of the water, in terms of capability, in terms of net present value...<sup>4</sup>

...I believe the 400-kV solution and the route, was pre-decided. I believe the east/west route, consultation and choice of the western route was really a sham process, and that route, both the route and the use of 400 kV were never seriously compared against the alternatives, like the one I just discussed a few minutes ago...



The so-called consultation processes used by Transpower were a sham, in my view, and was never intended to enter into a true bilateral dialogue in environmental alternatives ...<sup>5</sup>

But never was any dialogue entered into, to sit down at a table and run through some numbers, saying ‘well, here’s the Whakamaru Upgrade cost, and the pros and cons, and we’d like to deal with those ... discuss those with you.’ That never happened. <sup>6</sup>

It is my belief that some of the original managers that constructed and decided to push this monstrous unneeded 400-kV proposal, were doing it more to build reputation and ... reputation and personal CVs than they were doing it for the good of the country.<sup>7</sup>

[499] Dr McQueen’s beliefs about Transpower having pre-determined the choice of the 400-kV transmission line are clear from those passages. However, he did not articulate the grounds on which he came to those beliefs, other than by saying that Transpower had not entered into dialogue with other people.

### **Transpower’s case**

[500] Transpower contended that non-transmission alternatives had been investigated, and, overall, had been found inadequate or uncertain to meet demand in the short or longer term.

[501] Transpower contended that at an early stage in developing the grid upgrade, it had considered non-transmission alternatives; and, again, as part of the Electricity Commission process, that it had considered non-transmission alternatives (including new local generation, reticulated natural gas, and solar heating, and their likely timing, scale and effectiveness) as part of the GIT.

[502] Transpower reported that in October 2004, it had issued a request for further information on non-transmission options, and that the responses had revealed there was little prospect of deferring the grid upgrade. Peak demand management (such as commissioning a special peak-demand generator) could delay the need for about 12 months, which would be insignificant in the context of the lead time for the project; and, in any event, Transpower has limited ability to influence that peak-demand management, or to influence willingness to invest in such a plant.

[503] Transpower submitted that the regard to be had to the adequacy of consideration of alternative methods of undertaking the work has to be confined to alternatives that are legally available to it under the RMA – in practice, transmission alternatives – as it is not authorised to pursue alternatives such as generation at a sufficient scale to address the security of electricity supply in Auckland. The legal basis of that limitation was not disputed by any submitter.

[504] Transpower contended that of the non-transmission options for security of electricity supply in Auckland, it is already trialling demand-side management; and that other options (such as new local thermal generation, and energy efficiency measures) are beyond the scope of its approval as a network utility operator and requiring authority under the RMA, or are otherwise beyond its legal ability to influence to any significant degree.

[505] In October 2004, Transpower produced a report titled *Security of Supply into Auckland Assessment of Alternative Solutions*.<sup>8</sup> Section 5 of that document identified non-transmission alternatives that Transpower had considered: new local generation, and new demand-side management solutions. The report summarised the contribution of each to system security; addressed availability, economic benefit, environmental impact, and timeliness; and gave summaries of the conclusions reached in respect of each. Appendix A described the generation scenarios that had been modelled.

[506] The Electricity Commission approval process included a comparative analysis according to the GIT between a number of short-listed alternatives, themselves derived from a longer list of other alternatives, with no presumption in favour of any of the alternatives, all of which were assessed in detail.

[507] Transpower contended that numerous potential methods of addressing security of electricity supply to Auckland had been considered and analysed for the purpose of the Electricity Commission process. Transpower also contended that environmental considerations had been part of the development and assessment of different transmission alternatives, particularly with regard to minimising the number of lines and corridors in the long term which, by clause 88E of the GPS,<sup>9</sup> the Commission is required to take into account.

[508] Transpower's contentions were supported by evidence. Transpower's acting Grid Programme Manager Mr Coad gave evidence confirming that at least 11 alternatives (transmission alternatives and non-transmission generation and demand-side management) had been considered and analysed in the original 2005 proposal, and a further nine alternatives in the amended proposal. The witness confirmed that Transpower had considered generation as an alternative solution for security of supply into Auckland, and was exploring contracts with generation companies; and he remarked that, if the latter chose not to invest, there would presumably be good reason why they had not done so already.<sup>10</sup> He confirmed that the basis on which an option was considered was that it must be credible and able to be relied on.<sup>11</sup>

[509] In cross-examination on behalf of Federated Farmers, Mr Coad was asked about supplementary generation in Auckland to cope with failure in the generation plant at Otahuhu. The witness explained that any generation would have to be substantial, of the order of hundreds of megawatts, and would have to be extremely reliable and probably independent: a single 200-MW generator would not be sufficient.<sup>12</sup>

[510] Transpower's General Manager, Grid Investment. Mr George gave evidence that Transpower recognises, and takes into account in its planning processes, the contributions that demand management and the use of local

distributed generation (including renewable generation) can make to the grid to potentially defer some transmission investment.

[511] This witness gave his opinion that non-transmission alternatives have to be practicable, technically feasible, have reliability comparable to transmission investment, and be able to defer transmission investment by at least one year.

[512] Mr George stated that in preparing the original proposal, 11 options had been considered that were technically feasible to meet the need, including peaking generation (available during times of peak demand).

[513] He reported that in considering the original proposal, the Electricity Commission had made a thorough investigation of alternatives, including alternative generation and demand-side options. The Commission had published a consultation paper on alternatives to the proposed grid upgrade, and commissioned expert reports on demand-side and renewable generation options. The Electricity Commission had produced a further consultation paper on alternatives to Transpower's original proposal, and had ultimately narrowed its consideration to a set of three options against which the original proposal was compared.

[514] Mr George stated, in summary, that the analysis and review of the upgrade project by Transpower and the Electricity Commission had included identification of over 60 technically feasible options, including energy efficiency measures, energy substitution programmes, peaking generation plant, wind generation, tidal generation, and coal or gas generation. He gave his opinion that the process followed and analyses undertaken by Transpower, the Electricity Commission, and the industry as a whole, had been robust and complete.

[515] The witness also reported that some non-transmission alternatives for improving reliability and security of supply to Auckland had been adopted and are being implemented: improvements to existing substations, and new substations and generation connections.

[516] In his rebuttal evidence, Mr George confirmed the Electricity Commission had developed an exhaustive list of alternatives that had included non-transmission alternatives.

[517] In cross-examination on behalf of the HPVRA, Mr George denied that, in considering alternatives, Transpower had had a preferred proposal and had tried to benefit it, as opposed to anything else.<sup>13</sup>

[518] Mr Boyle gave evidence that the options to solve the issue of security of supply to the upper North Island had included non-transmission alternatives such as local generation and demand-side management that would provide equivalent availability and reliability to that provided by new transmission lines.

[519] In his evidence, Mr Boyle described the results of Transpower's investigations about methods alternative to transmission, including energy efficiency initiatives, peak-demand management, and peaking generation, of which only the latter had been considered viable. The witness explained why

uncommitted generation prospects had not been taken into account; and he also explained why continued growth in demand had been assumed, even if forecasts of the timing of a particular level of demand might be uncertain to some extent.

[520] Mr S Taylor, employed by Transpower as an environment projects manager, gave evidence that the potential environmental effects of various options had been identified and considered during Transpower's system vision investigations commencing in 2002, and that this had continued during preparation of materials for the grid upgrade plan. He explained that the identification of environmental constraints had been based on a review of environmental effects within the context of the RMA, and identification of environmental considerations determined by environmental sustainability.

## **Consideration**

[521] The Board has reviewed all the evidence bearing on whether adequate consideration was given to alternative methods other than transmission methods, including whether Transpower's consideration of those alternatives had not been genuine, but predetermined.

[522] The Board is not aware that Transpower had any obligation to enter into dialogue with the community about its consideration of alternative non-transmission methods, or about its decision to prefer transmission methods. The Board does not accept that predetermination or a sham process can be inferred from any absence of community dialogue at that stage.

[523] Having reviewed all the evidence on the point, the Board finds no basis at all for accepting the assertions to the effect that Transpower had pretended to consider non-transmission methods when it had already determined that it would proceed with a transmission method. The Board rejects as unsubstantiated the assertions to that effect.

[524] The Board also finds that consideration was given by both Transpower and the Electricity Commission to methods other than transmission methods. Although consideration was mainly when the original transmission proposal was among the alternatives, rather than the later amended proposal, that did not make the consideration inadequate. The Commission's part, even though for the purposes of the Electricity legislation, adds to the totality of the consideration given.

[525] The Board is not persuaded that the limits on Transpower's approval as a requiring authority prevented it from exercising its authority to contract for generation for deferring investment in the grid. Even so, the evidence establishes that Transpower did, by its request for information in September 2004, investigate the practicability of doing so.

[526] The summaries of the environmental impacts of alternative methods, as set out in Chapter 5 of the Transpower report on its assessment of alternative solutions, were brief to the point of being unmeaningful. Further, the ways in which they were taken into account in the decision rejecting non-transmission alternative methods were not articulated in the report. Evaluation of the relative environmental effects of the respective alternative

methods, and explanation of their part in the choice of the short-listed alternatives, would have remedied that meagreness of the alternative solutions assessment.

[527] Even so, the Board accepts that this was appropriately early in the process, when decisions were being made at a high level, rather than in detail. The consideration processes – as described in the report on assessment of alternative solutions, and in the evidence of Messrs Coad, George and Boyle – show that substantial consideration was given to several methods other than transmission, and outline acceptable reasons why alternative solutions were not pursued. The Board accepts that evidence, and despite the weakness in the alternative solutions assessment report, sees no reason for classifying that consideration as inadequate, either on account of the grounds on which those alternatives were found ineligible or infeasible, or on which transmission alternatives were preferred.

[528] In summary, the Board finds that adequate consideration was given to alternative methods other than transmission methods.

## **Alternative methods of transmission**

[529] Next, the Board addresses the adequacy of consideration given to alternative transmission methods of undertaking the work. The main alternatives that submitters contended had not been adequately considered were upgrading existing lines; high-voltage, direct current; extending the part of the line to be placed underground; and constructing a new 220-kV line instead of a 400-kV-capable line. Each of these is addressed separately, before addressing the question more generally.

### **Upgrading existing lines**

[530] Some submitters contended that inadequate consideration had been given to a particular alternative transmission method of upgrading existing 220-kV transmission lines which, they asserted, would have very low environmental effects compared with the proposed 400-kV-capable transmission line.

[531] Dr McQueen had investigated how upgrading the existing OTA-WKM A, B and C lines could be done. As it is not for the Board to decide which alternative should be adopted, it suffices to describe reconductoring both circuits on the C line with duplex ACCR conductors; and either using similar conductors simplex on the A and B lines, or replacing the towers on those lines so they could support double circuits with ACCR duplex conductors.

[532] Mr Copstick asserted that in considering this alternative, Transpower had shown bias towards the 400-kV-capable proposal by maximising the costs of the upgrade alternative.

[533] Transpower agreed that it would be good practice to maximise use of existing assets first, where that is practically and economically feasible, before constructing new transmission assets. However, it had identified upgrading and reconductoring the existing OTA-WKM A, B and C lines as

among the three principal transmission alternatives for analysis against the amended upgrade project, had explained the main points of comparison, and had reported the reasons why upgrading and reconductoring existing lines had been rejected.

[534] Mr George gave evidence that the Electricity Commission's shortlist of three options had included 220-kV duplexing of existing lines; that the Commission had challenged Transpower on costs and its analysis of duplexing existing lines; and had concluded on its own GIT analyses that the amended grid upgrade proposal is superior.<sup>14</sup>

[535] Mr Boyle gave evidence that of three principal transmission alternatives that were assessed against the amended proposal, two involved augmentation of existing 220-kV transmission lines. He described features involved in comparing duplexing the OTA-WKM A and B lines with conventional conductors, and duplexing the OTA-WKM A, B and C lines with high-temperature conductors.

[536] Cross-examination of those Transpower witnesses did not reveal manipulation of putative costs of upgrading existing lines, or other facts from which the bias alleged by Mr Copstick could be inferred. Therefore, the Board finds no basis for Mr Copstick's assertions to the effect that consideration of alternatives had been biased in favour of the 400-kV-capable transmission line.

[537] The Board finds that alternative methods involving upgrading existing lines were given substantial consideration by both Transpower and the Electricity Commission. The reasons given for rejecting the alternative of upgrading existing lines appear persuasive. It is not the Board's function to revisit the choice among alternatives, or to decide that another of those alternatives should have been selected.

[538] The Board has no reason to doubt that alternative methods of upgrading existing lines were adequately considered, and finds that they were.

## **High-voltage direct current**

[539] Several submitters, and notably Dr McQueen, contended that Transpower had not adequately considered the alternative method of constructing a high-voltage, direct-current (HVDC) line, which they asserted would have less environmental effects than an equivalent high-voltage alternating-current (HVAC) line.

[540] Mr Boyle gave evidence that Transpower had assessed conventional HVDC and 'HVDC Light' alternative transmission methods as part of the development of the grid upgrade proposal. He described relative environmental effects of HVDC in terms of the heights of line-support structures, sizes of conductor bundles, interconnections with alternating current equipment, reliability, and economics, stating that HVDC had been found to be significantly more expensive. He reported that HVDC was considered to be an inappropriate solution due to high costs and risks, lack of reliability and practicability.

[541] Relying on Mr Boyle's evidence, the Board finds that HVDC was considered as an alternative method, that it was not preferred for reasons that appear rational, and that this consideration was adequate.

## **Extent of undergrounding**

### **Submissions**

[542] A number of submitters contended that inadequate consideration had been given to an alternative method of transmission by using underground cables. (A number of submitters also asked that the Board require stretches of the line of interest to them to be laid underground. That is considered in Chapter 13. It is only the first question that is the subject of this chapter of the report.)

[543] The Manukau City Council submitted that this alternative should have been considered in the context of a wider analysis of environmental effects of the 400-kV line proposal, accounting for the avoiding of visual effects of the overhead line by extended undergrounding. Similarly, Underground in Manukau contended that the extent of the greater cost of undergrounding had not been compared with the environmental benefits; and that the premise that the additional cost, distributed amongst consumers, would be very small, had not been rebutted. Dr McQueen contended that Transpower had overestimated the cost of undergrounding.

[544] New Era Energy and the South Waikato District Council contended that inadequate consideration had been given to undergrounding through South Waikato district, or populated areas of it.

[545] Transpower denied the assertions of inadequate consideration of undergrounding, and asserted that, at earlier stages of the project, it had given ample consideration to a range of transmission alternatives, including undergrounding more of the route and having different transition points; and that in doing so, environmental considerations had not been overlooked or undervalued, but had been a key input.

[546] Transpower contended that widespread undergrounding would not be technically or economically feasible if it is to effectively resolve the identified security of supply problem in a reliable, economic and environmentally sustainable way. It asserted that long sections of underground transmission cable affect system reliability, and are difficult and costly to repair. Even small sections being laid underground would lead to high cost, and reduced availability of the circuit

### **Evidence**

[547] Mr George gave evidence that in its 2005 original proposal to the Electricity Commission, Transpower had reported on 11 options, including underground cables. He gave his opinion that the use of underground cables is typically restricted to urban areas; and stated that intermediate substations are required to control voltage.

[548] Mr Boyle explained that the longer the length of underground cable, the higher the probability of failure; and stated that currently, underground transmission cables cost in the order of ten times more on average than equivalent capacity overhead lines.

[549] In his rebuttal evidence Mr H R K Wildash corrected an error and stated that underground double circuit 400-kV 2700-MVA cable costs are \$25.6 million per kilometre; but qualified that by stating that simple ratios do not accurately cover the various issues. The witness stated that terminating the 400-kV overhead line at Tower 14 had been investigated as an option (citing the relevant consultant's report), and that it had been one of the least favoured alternatives, mainly due to cost and engineering difficulties, and increased operational risks from longer time for repairing cable faults.

### Consideration

[550] The issue on the consideration of the extent of underground transmission cables is not whether or not more extensive undergrounding was considered. Transpower's evidence that it was considered was not seriously disputed or contradicted. The issue is whether the consideration given to that alternative method was adequate.

[551] The issue arises because undergrounding could largely avoid adverse landscape and visual effects of support towers and conductors of an overhead line, effects which could not readily be mitigated or remedied. Even so, the test of what is adequate calls for a judgement of degree about a standard that is *sufficient* and *satisfactory*, rather than *perfect* or *ideal*.

[552] A process of considering alternatives may start by identifying numerous possible alternatives, then discarding many that on an informed and genuine but relatively superficial screening are unappealing, and make a short list of more prospective candidates for more profound evaluation and comparison. The evaluation and comparison of the relative advantages and disadvantages of alternatives that survive to that stage would explicitly include relevant factors indicated by Part 2, such as environmental effects.

[553] Submitters interested in the benefits of a particular alternative may challenge its having been discarded at early screening, and may contend that it should have been included in the short list of alternatives accorded more profound evaluation and comparison. Counsel for the Waipa District Council warned of a risk that such a screening process could be self-serving by reason of the choice that Transpower can make, being precisely what section 171 is intended to prevent. But the standard set by that provision is *adequate*, not *perfect*. The territorial authority can assess the screening out of a particular alternative by that standard.

[554] The Board accepts the evidence of Transpower witnesses about the rough order of magnitude of the greater cost of undergrounding transmission cables, and of the technical issues associated with longer lengths of them, including voltage control, reliability, and delays for repairs. The relative environmental benefits of underground cables instead of overhead lines are obvious, even though difficult to evaluate in money's worth.



[555] The Board also accepts that screening out the alternative method of more extensive underground cables, and discarding that alternative prior to more complete evaluation and comparison, was reasonable in the process of selecting, from among alternatives, a method to be pursued. That did not render the consideration inadequate, even if it may not have been perfect or ideal.

[556] In short, the Board finds that the consideration given to more extensive underground transmission cabling was adequate.

## **New 220-kV line instead of 400-kV-capable line**

### **Submissions**

[557] Federated Farmers submitted that no assessment had been made of the option of building no more than a 220-kV line along the proposed route. The Manukau City Council submitted that Transpower had not adequately assessed the alternative of a 220-kV overhead line in that it had failed to consider Part 2 of the RMA in reaching the preferred options; that it had not adequately informed itself as to environmental effects of preferred options before reaching its decision; and that making a decision now to avoid a possible need for a future line in 34 years is an exercise in guesswork. Hunua and Paparimu Valley Residents Association submitted that Transpower had failed to carry out the analysis required of it by precluding consideration of relative adverse visual impacts of alternative methods such as a 220-kV line.

[558] Those and other submitters contended that a new 220-kV line would be a more appropriate alternative; and some asked the Board to require that the designation be limited to 220-kV overhead line maximum design capacity for stretches of the designation in which they were interested.

[559] Some submitters also presented their criticisms of the processes leading to the Electricity Commission's decision approving the amended 400-kV-capable proposal.

[560] Transpower disputed the submitters' assertions, and contended that it had given thorough consideration to the alternative method of a new 220-kV line, including its relative environmental effects. It acknowledged that a high-capacity double-circuit 220-kV line is a truly viable alternative to the 400-kV option; that there is an environmental cost from localised effects of the 400-kV alternative; and contended that the latter would maximise the use of transmission corridors and minimise the number of additional new lines. It maintained that its long-term approach to grid planning is sound, and appropriately reflects the sustainable management purpose of the RMA.

### **Evidence**

[561] Mr Freke gave his opinion that Transpower had not adequately explored an option around less intrusive 220-kV lines over the overhead parts of the route. He doubted whether the current legislative regime on electricity generation and transmission will be sustainable in the long term over the 35-year period before the 400-kV solution is considered by Transpower to be

needed. He considered that there are genuine uncertainties whether a second 220-kV line would ever be needed, depending on locations of new generation needed by 2033, and the relative costs then of undergrounding and of lower impact overhead lines.

[562] Mr Freke asserted that Transpower had not seriously attempted to develop a minimum-impact 220-kV alternative; and that if Transpower were directed to use 220-kV technology, designed to reduce effects on communities, it could easily do so.

[563] In his evidence Mr D A Parker gave his opinion that a 220-kV line would be sufficient and preferable, having shorter towers and reduced environmental effects. He criticised assumptions made by witnesses called by Transpower (Messrs Khot, Noble and Lister) in their consideration of a 220-kV alternative.

[564] Mr Copstick gave his opinion that in evaluating a 220-kV line as an alternative to the proposal, Transpower had shown bias in that it had minimised the cost of the proposal and maximised the cost of alternatives; and had used exchange-rate factors that unfairly favoured the proposal. Mr Copstick was also critical of the Electricity Commission's comparison of the 220-kV option with the 220/400-kV option, leading to its approval of the proposal. He too criticised assumptions made by Mr Lister in respect of comparative landscape and visual effects of 220-kV and 400-kV lines.

[565] Mr George's evidence described Transpower's consideration of 11 technically feasible options, including 220-kV overhead line, which became one of two shortlist alternatives. He reported that the Electricity Commission identified and considered in excess of 40 separate alternatives, reduced to a shortlist and then to three options, one of which was a 220-kV overhead line (which was preferred in the Commission's April 2006 draft determination).

[566] The witness also stated that in development of the amended proposal, a 220-kV overhead line remained one of nine alternatives that were analysed and reviewed, and one of three in the final short-list that were peer reviewed by a range of independent organisations. Mr George described further analysis of options carried out at the request of the Electricity Commission, leading to its decision to approve the 400-kV-capable amended proposal compared with the 220-kV alternative.

[567] Mr Boyle confirmed in his evidence that a high-capacity double circuit 220-kV line had been one of three principal transmission alternatives that had been assessed in detail against the amended proposal. He described the main points of comparison between them, including ultimate need for an additional 220-kV line to provide corresponding capacity, and relative heights of its towers (on average 10 metres shorter), compared with the proposed 400-kV-capable line.

[568] This witness also described 17 sensitivity analysis calculations that had been used in the comparisons, stating that 14 of them had been found to favour the proposal; and he also described other points of comparison that had been considered, including flexibility in higher-than-predicted demand; optimising power flow; relative transmission losses; and environmental

advantages of maximising use of transmission corridors and minimising the number of transmission lines.

[569] As already mentioned, Mr Taylor's evidence showed that potential environment effects of various transmission options had been identified and considered commencing in 2002; this had continued during preparation of the grid upgrade plan materials; and the identification of environmental constraints had been based on review of environmental effects within the context of the RMA, and identification of environmental considerations determined by environmental sustainability

[570] In his rebuttal evidence, Mr Taylor stated his disagreement with Mr Freke's criticism that environmental impacts had not been adequately considered. The witness referred to the October 2004 report on assessment of alternative solutions, and also to a September 2003 report on environmental assessment of upgrading options.

[571] Mr Taylor gave evidence that in considering transmission alternatives, Mr Boyle's team and he had had regard to the principle in the 2003 report that more significant environmental impacts are likely from the number of lines in a corridor than from the height and size of towers along any particular transmission line.

[572] Mr Taylor also referred to the direction in the GPS that to the extent the Electricity Commission considers environmental effects, it is to take into account any longer-term benefits that larger-capacity lines may provide by avoiding multiple smaller lines.

### **Consideration**

[573] The Board's function does not extend to deciding that another alternative method is more appropriate, let alone that it is to be adopted; nor does it extend to deciding on criticisms of the Electricity Commission's processes. This chapter of the report is confined to issues arising from section 171(1)(b): whether adequate consideration was given to alternative methods of undertaking the work.

[574] The Board accepts the evidence of Messrs George, Boyle, and Taylor summarised in the previous section. The assertion by Federated Farmers that no assessment had been made of an alternative of a 220-kV line is not substantiated, and is contradicted by that evidence.

[575] The only issue is whether the consideration given to that alternative method was adequate in terms of including the contents of Part 2, in particular relative environmental effects. In that respect, the Board applies the law as declared by the High Court in *Auckland Volcanic Cones Society*<sup>15</sup> that each alternative does not have to be tested against Part 2.

[576] Further, the evidence of Messrs Boyle and Taylor shows that relative environmental effects were included in the consideration of alternatives. It is clear that some submitters consider that greater weight should have been placed on environmental effects so that the 220-kV line alternative should have been selected. However, it is beyond the scope of the Board's functions

for it to repeat the comparison of alternative methods itself, and decide whether it would place greater weight on one factor or another.

[577] Transpower had the advice in the September 2003 report on environmental assessment of upgrading options. The evidence shows that it included environmental impacts (in particular landscape and visual effects) in its consideration of alternative transmission methods.

[578] Even though the October 2004 report does not explain how those factors were taken into account, on the evidence of Messrs Boyle and Taylor the Board finds that they were included, and continued to be included right up to the final selection of the amended proposal for the 400-kV-capable line.

[579] On that evidence the Board finds that the consideration of an alternative method of a 220-kV overhead transmission line was substantial and extended, and the Board judges it to have been fully adequate.

## **Alternative routes for overhead 400-kV-capable line**

### **Submissions**

#### **Submitters**

[580] Several submitters contended that adequate consideration had not been given to alternative routes for the proposed 400-kV-capable overhead transmission line. Some contended that no consideration, or no genuine consideration, had been given. Others contended that the consideration given had been inadequate, on various grounds.

[581] In particular the Waipa District Council, and Underground in Manukau contended that Transpower had failed to give any regard to alternative routes for undertaking the work. Dr McQueen asserted that the route had been pre-decided, that the selection of the western route had really been a sham process, and that the route had never been seriously compared against the alternatives.

[582] Contentions that the consideration of alternative routes had been inadequate were put forward on several grounds, now summarised:

- a) the ACRE process had not been applied to any other *method* of undertaking the work
- b) there may be alternative routes that were not evaluated
- c) the advantages and disadvantages of each of the alternatives had not been evaluated and compared
- d) the consideration of alternatives had omitted certain factors, namely: non-market costs including public good and environmental costs, in particular adverse effects on special landscape character areas in the Waipa district; relative effects on landscape values and visual effects; alternative routes across areas of outstanding natural landscape; effects on pastoral landscapes; international practice about types of landscape in

which transmission lines are best accommodated; effects on farming along alternative routes; potential for reverse sensitivity effects along alternative routes; and detailed assessment against relevant district plans

- e) expert witnesses called by Transpower Ms Allan, Mr Lister and Mr Hall had not made assessments of alternative routes
- f) the route in section 14 through the South Waikato district had in reality been determined to meet with the preferred route selected through the adjacent Waipa District to the north
- g) more weight should have been given to using the existing transmission line corridor to the west of the Waikato River; and to a further alternative transmission corridor to the east of the proposed route, particularly as the ACRE model resulted in preference for the eastern route rather than the western route
- h) the policy imperatives in the GPS are not achieved by the route selected through the South Waikato district.

### **Transpower**

[583] Transpower submitted that the proposed route had, amply by any standard, been 'adequately considered' against alternatives in terms of section 171(1)(b).

[584] In particular, Transpower submitted that it had developed a methodology for identifying alternative and final route options (the ACRE model) that is flexible enough to allow a wide range of variables to be taken into account, and which had been systematically applied regardless of the scale or type of area under consideration. Transpower contended that this process ensured that the consideration of alternative line routes had been robust.

[585] Transpower disputed the contentions that the route through the South Waikato district is not supported by the ACRE process, and that this part of the route had been determined by factors relevant to other districts. It accepted that the route through section 14 was linked with the adjoining sections 11 to 13 for which the process had showed a clear preference for western options. The route through the South Waikato District had been chosen by applying the ACRE process, recognising the limits placed on a linear route with fixed end-points.

### **Evidence**

[586] In his evidence Mr S Taylor described the development of the ACRE model for identifying an appropriate transmission line route, including thorough assessment of environmental effects, flexibility to allow for changes as a result of consultation or engineering requirement; and facilitation of consultation to inform the assessment of environmental effects and alternative routes. The process was designed to be applied by a multi-disciplinary team, involving engineering, environmental, property and technical disciplines.

[587] Mr D J Campbell, Transpower's senior environmental planner, described in more detail the way the ACRE model had been used to guide identification of alternative routes in successive stages focused on identifying a study area (and its constraints and opportunities); identifying a corridor and alternatives; ranking the alternatives and selecting a preferred corridor; selecting and evaluating alternative routes within a preferred corridor for consultation; and confirmation of a preferred route and centreline.

[588] This witness also described an iterative process by which participants with different disciplines interacted at each stage. He also explained how the notices of requirement allowed flexibility to move tower sites up to 40 metres along the alignment; up to 5 metres laterally; and consequentially to increase tower heights up to 5 metres consequential on lateral movement, or 3 metres otherwise.

[589] Ms S J Allan gave evidence that she had largely coordinated and led the environmental inputs into the route selection project, with specialist sub-consultants. She explained the overall investigations and planning approach to identifying routes; the implementation of the ACRE model (including multi-criteria analysis and inter-disciplinary decision-making); and sensitivity analyses; to identify a preferred route and alignment of the overhead transmission line.

[590] Ms Allan described responding to likely physical impacts of the line in the environment, and avoiding constraints such as archaeological and ecological sites, areas of Crown land and Maori-owned land; settlements and individual dwellings. Effort was made to avoid effects on such specific areas, and to minimise likely visual effects.

[591] For example, Ms Allan explained that a range of possible routes had been identified in the vicinity of Morrinsville, to bypass the town; and reported that none of them was considered particularly acceptable.

[592] The witness also reported that on most of the route the transmission line would have visual impacts, and that engineering constraints had also to be considered to achieve an efficient and effective alignment, access for construction and maintenance, construction impacts and severance effects. She stated that district plan provisions had been carefully considered, as had avoidance of areas of highest landscape and natural character values; social and cumulative effects, the presence of the existing Arapuni-Pakuranga A transmission line in visual and recreational assessments and, where relevant, the evaluation of airstrips.

[593] Ms Allan explained that only in three route sections had the analysis resulted in complete consensus of outcome; and that the differences between the alternatives had often been found to be quite subtle and complex. She reported that the results had indicated that a western route should be preferred, with the exception of the southern end where the route could follow an eastern alternative. The analysis had favoured the eastern alternative for route sections 14 and 15, but that section 14 is inextricably linked to sections 11 to 13, where a clear preference for the western sections was found. When considered together, the evaluation had indicated that the western route should be followed. The possibility of linking from the western to eastern route

alternatives in sections 13 and 14 had been investigated, but it had been found not possible to make a satisfactory cross-route connection until south of section 14, though this allowed section 15 to largely follow the eastern alternative.

[594] In her rebuttal evidence, Ms Allan added that at the route interim decision stage, the relevant aspects had been grouped and evaluated on the 'quadruple bottom line', which features in decision-making under the Local Government Act 2002; and that a range of other analyses had also been made, as described in the reports on the interim route decision and the final route decision. Those reports included the range of weightings applied to the scores to test the robustness of the analyses.

[595] Ms Allan confirmed her confidence that the process adopted had involved appropriate systematic analyses, using logical processes of refinement from broader analysis of area to corridor and route stages; and had determined the most appropriate route alternative.

## **Consideration**

[596] The Board considers the contentions and related evidence according to subtopics.

### **No real consideration**

[597] The Board starts with the contentions that serious comparison had not been made of alternative routes for undertaking the work; that the route had been pre-decided; and that the selection of the western route had really been a sham process.

[598] The evidence of Messrs Taylor and Campbell, and Ms Allan, just summarised, shows that alternative routes for the overhead line were compared and considered in the course of methodically following a systematic process developed for the purpose. As is to be expected with numerous possible alternative routes, some were considered less fully than others. Even so, the Board accepts that the process was followed as described in the evidence; and does not accept the contentions that no consideration, or no genuine consideration, had been given to alternative routes; nor that Transpower had failed to give any regard to them.

[599] The evidence does not support Dr McQueen's contentions that the route had been pre-decided, that the selection of the western route had really been a sham process, and that the route had never been seriously compared against the alternatives. The Board rejects those contentions too.

### **ACRE process not applied to alternative methods**

[600] The ACRE process was designed to guide the process for selecting from alternatives a route for the overhead transmission line method of undertaking the work. It was not applied to choosing from possible *methods* of undertaking the work, nor was it designed for that earlier stage of the planning. The Board does not accept that this indicates inadequacy in the consideration of alternative routes.

**Possible alternative routes not evaluated**

[601] On the submission that there may be other routes that were not evaluated, the Board accepts that this may be so. However, it cannot sensibly be suggested that all possible alternatives should be considered.<sup>16</sup>

[602] The Board finds unpersuasive a general contention to the effect that one or more possible (but unidentified) routes were not evaluated; only if an alternative route that was not considered is identified might it then be possible to address whether the consideration of alternative routes was thereby inadequate.

[603] Given the multiplicity of possible alternative routes, it would be realistic to screen out, at an early stage, those routes obviously less likely to be chosen, and confine the fuller evaluation and comparison process to the remainder.

[604] The existence of alternative routes that were not evaluated, and others that were not evaluated as fully as those in the final shortlist, does not indicate that the consideration of alternative routes was inadequate.

**Advantages and disadvantages of alternative routes not compared**

[605] Another ground for the contention that the consideration of alternative routes had been inadequate was that the advantages and disadvantages of each of the alternatives had not been evaluated and compared.

[606] The process described by Ms Allan in her evidence is more fully detailed in the reports of the several stages referred to by her, which were common exhibits in the Board's Inquiry. The reports describe a systematic multi-criteria analysis using consultation and decision-conferencing of a range of experts, and scoring and weighting of various aspects and factors. Although the terminology used was not that of evaluating and comparing advantages and disadvantages of alternative routes, that process was included in the more sophisticated ACRE model that was followed.

[607] The statutory direction for adequate consideration of alternative sites routes and methods does not require that consideration to be carried out by any particular method. The Board is satisfied that the ACRE process is rational and systematic, and was more appropriate in the circumstances than a simple comparison of advantages and disadvantages of alternative routes. Transpower's use of the ACRE process is not a ground for concluding that the consideration of alternative routes was inadequate.

**Factors omitted**

[608] The next ground for contentions that consideration of alternative routes had been inadequate identified several factors that were said to have been omitted from that consideration.



### ***Environmental effects***

[609] First, the omission of consideration of non-market costs, including public good and environmental costs. A particular instance is adverse effects on special landscape character areas in the Waipa District.

[610] In October 2004, Ms Allan had identified that the southern end of Section 11-W from Wairama Road to State Highway 1 (partly in Waipa District) just extends into an area of significant landscape values along the Waikato River and its banks; that Section 12-W from State Highway 1 to south of the Waikato River is very sensitive, and is entirely within an area of landscape and natural feature significance; and that Section 13-W from the Waikato River to north of Arapuni impinges on significant landscape areas.<sup>17</sup>

[611] The features in Section 11-W were described as factors reducing the ability of the landscape to absorb the line; the river crossing in Section 12-W was described as relatively unobtrusive; and the visibility of the line in Section 13-W against a backdrop of Maungatautari and the picturesque qualities of the landscape were also identified.<sup>18</sup>

[612] Failing to give as much weight as a particular submitter would to adverse effects of a particular alternative route on the environment, such as on special landscape character areas, is not itself a ground for concluding that consideration of alternative routes was inadequate. On the evidence, the Board finds that the existence of special landscape character areas in the Waipa District that might be adversely affected by one of alternative routes of the overhead transmission line was included in the consideration of alternative routes.

[613] The only example given of the alleged omission of consideration of non-market costs, including public good and environmental costs, is not substantiated on the evidence. The Board does not accept that non-market, public good, environmental costs were omitted from consideration of alternative routes.

### ***Relative landscape and visual effects***

[614] The more general omission of relative effects on landscape values and visual effects can also be tested by Ms Allan's October 2004 report. That document contains many instances of consideration of the landscape and visual effects of a transmission line on various alternative routes. Again, the Board understands that a submitter may have put higher value than Transpower's independent consultants did on the effects on a line on a particular alternative route. Even so, the evidence shows that Transpower did not omit to consider relative effects on landscape values and visual effects; and the Board does not accept this ground as indicating that its consideration of alternative routes was inadequate.

### ***Routes over outstanding natural landscapes***

[615] The omission of alternative routes across areas of outstanding natural landscape was questioned on the basis that the national importance of the proposed transmission line would justify alternative routes even

across areas of outstanding natural landscape otherwise protected by section 6(b) of the Act.

[616] In theory that might be so. But if an alternative route, not significantly affecting an area of outstanding natural landscape, is reasonably acceptable, it would accord with the RMA to prefer that route.<sup>19</sup> The Board does not accept that Transpower's consideration of alternative routes was inadequate for having discarded any alternative routes that might cross areas of outstanding natural landscape.

### ***Effects on pastoral landscapes***

[617] The omission of consideration of effects on pastoral landscapes was also raised.

[618] Ms Allan's October 2004 report shows that in three successive sections chosen at random pastoral landscapes were identified, and effects of a transmission line on them considered.<sup>20</sup>

[619] Some people may have put higher value than Transpower's independent consultants did on the effects on a line on a particular alternative route crossing pastoral landscape. However, the evidence establishes that the consideration of alternative routes did not omit effects on pastoral landscapes.

### ***International practice on accommodating transmission lines***

[620] Another omission raised by a submitter is international practice about types of landscape in which transmission lines are best accommodated. However, no evidence was given about any generally accepted international practice of that nature. There is no basis on which the Board could find that the consideration of alternative routes was deficient for such an omission.

### ***Effects on farming***

[621] The next alleged omission is effects on farming along alternative routes.

[622] The Board accepts that an adequate consideration of alternative routes might reasonably include consideration effects on farming, at least at a broad level. Plainly Transpower and its independent consultants shared that view. Ms Allan's October 2004 report contains this passage:

Effects on dwellings are one of the most important aspects of route selection, along with individual farming operation considerations, so this remained an important evaluation consideration at Route stage.<sup>21</sup>

[623] Neither cross-examination, nor contradictory evidence, called in question that this correctly records what was done in the consideration of alternative routes. The Board does not accept that the process was deficient in that respect.

**Reverse-sensitivity effects**

[624] The alleged omission of the potential for reverse-sensitivity effects along alternative routes was raised as deficiency. However, the avoidance of potential adverse effects on the proposed transmission line was among considerations of alternative routes. It is implicit in the consideration of land use, settlement, lifeline, tourism and recreation, district plan, property and engineering factors addressed at each section of an alternative route. For example, the recommendation against Option 5d was based on existing development strongly influencing the line and tower location, which would be less efficient as a result.<sup>22</sup>

[625] The Board does not accept that the consideration of alternative routes omitted potential for reverse-sensitivity effects.

**Detailed assessment against district plans**

[626] Another alleged omission was detailed assessment against relevant district plans. Plainly the emphasis must be on the qualifier *detailed*, as the applicable district plan was an item for consideration in respect of each of the alternative route sections the subject of Ms Allan's report.

[627] For instance, in considering the Whitford Valley, Ms Allan's route study report identified a proposed outstanding landscape notation (subject to appeal) and advice that it would not limit a well-sited line or termination pole, bush protection requirements, a proposed structure plan and draft plan change that would (if adopted) allow more intensive subdivision and identify ridgelines as having amenity significance. In respect of the Brookby area, the report identified that the zoning is Rural, and that the area is outside the draft Whitford plan change, and concluded that there appear to be no current district plan issues associated with that route section.

[628] The Board is not aware of any respect in which the summaries of district plan provisions in Ms Allan's reports would be inadequate for considering alternative routes for the proposed transmission line.

**Conclusion on omissions**

[629] Submitters raised several alleged omissions from the consideration of alternative routes. On considering them separately, the Board has found no basis for finding that there is an international practice about the types of landscape in which transmission lines are best accommodated that should have been included in the consideration of alternative routes; and that none of the other factors raised was omitted from the consideration process.

**Experts had not assessed alternative routes**

[630] The Board now addresses the contentions that expert witnesses called by Transpower, Ms Allan, Mr Lister and Mr Hall, had not made assessments of alternative routes.

[631] In respect of Ms Allan and Mr Lister, this assertion is plainly contradicted by the October 2004 report, in which Ms Allan presented her assessments, with inputs from identified colleagues of other professions

(including Mr Lister), of a number of alternative routes. In respect of each section, possible alternative routes are described, with assessments on the topics visual and landscape, ecological, tāngata whenua, archaeological and heritage, land use, settlement, lifelines, tourism and recreation, district plan, property, and engineering. Appendix 2 is a 28-page discussion of landscape and visual factors in respect of route options in the 15 catchments; and Appendix 3 is a discussion of 20 route options that Ms Allan and her colleagues recommended should be discarded from further consideration.

[632] Mr Hall is an agricultural consultant who was engaged by Ms Allan's firm in March 2005 to assess physical effects of the construction and operation of the proposed transmission line on farm management activities. His participation succeeded selection of the proposed route, and did not include assessment of effects on farm management along the alternative routes.

[633] However, the Board has already found that effects on farming along alternative routes had not been omitted in the consideration of alternative routes, so the more limited scope of Mr Hall's assessment is not an indication that the consideration of effects on farming on alternative routes was inadequate.

### **Route in Section 14 pre-determined**

[634] Another allegation about the consideration of alternative routes was that the route in Section 14 through the South Waikato District had in reality been determined to meet with the preferred route selected through the adjacent Waipa District to the north.

[635] In cross-examination, Mr Lister agreed that the South Waikato route was really determined on the basis of a requirement to fit with the routes further north.

[636] That may be, but other factors were also influential. The report on the route selection refers to the sensitivity of landscapes and development further to the west; that the indicative route alignment crosses the prominent escarpment in a saddle to reduce its impact; and north of the State highway the route follows the Mangawhero Valley, with features that assist to reduce visual impact.<sup>23</sup>

[637] It is the essential nature of line utilities, such as transmission lines, that to enable them to function the line has to be continuous. To the extent that the consideration of alternatives for a route for the transmission line through the South Waikato District was influenced by fitting with a route through adjoining districts to north and south, the Board does not regard that as indicative of inadequate consideration of alternative routes.

### **More weight should have been given to certain factors**

[638] Some submitters contended that greater weight should have been given to various elements in the route consideration process: namely, using the existing transmission corridor to the west of the Waikato River; or using an alternative corridor to the east of the proposed route (preferred by the ACRE model).

[639] The existing corridor to the west of the Waikato River was identified at the corridor stage of the ACRE process as the Central Corridor, and the relative advantages and disadvantages of the Eastern, Central and Western Corridors were described. The evaluation and comparison between them, (including sub-corridor options) according to the ACRE process, was summarised in another report, as was the outcome leading to the consideration of alternative routes.<sup>24</sup>

[640] On the eastern route, Mr J B Olliver gave his opinion that it would not cross any areas which the relevant district plan showed as outstanding landscapes.<sup>25</sup> However, that was not a persuasive factor, because the district plan applicable to the eastern route (the South Waikato district plan) contains no landscape identifications at all.

[641] In the final decision report it is recorded that if both western and eastern alternative routes had been 'green fields' sites, the eastern route would have been favoured; but the existence of the existing ARI-PAK A line, and the opportunities to improve the alignment at this location, balance the choice between them.<sup>26</sup>

[642] The Board accepts that the scoring and weighting given to individual choices among alternatives are matters of judgement rather than calculation. There could be differences among well-informed and disinterested experts about the scoring and weighting to be ascribed to any element in the process. That is partly why the ACRE process was designed for systematic multi-disciplinary decision-making.

[643] The fact that a submitter, or its professional adviser, would have placed more weight on some factors, and less on others, than the team following the discipline of the ACRE process did, does not itself render the consideration of alternatives by that process inadequate.

[644] The Board is not persuaded that Transpower's consideration of alternative routes was deficient in the respects alleged.

### **GPS policy not achieved**

[645] The next alleged deficiency in Transpower's route consideration was that the policy imperatives in the GPS are not achieved by the route selected through the South Waikato District. The reference is to the policy of maximising the use of transmission corridors and avoiding multiple new lines and creation of new transmission corridors. In the South Waikato District the existing transmission corridor will not be maximised in that the proposed route is a greenfields route determined in spite of more significant environmental effects associated with that route.

[646] As stated in Chapter 4 of this report, the GPS was made under the Electricity Act, and for the purposes of that Act compliance with it is mandatory for Transpower and the Electricity Commission. The GPS is not an instrument under the RMA, nor is it an instrument to which a territorial authority is directed by section 171 to have regard.

[647] Therefore, the Board does not consider that any failure to give effect to policies under the GPS is indicative of inadequacy in the consideration of alternative routes for the purpose of section 171(1)(b) of the RMA.

## **Alternative widths of designation**

[648] For the overhead section of the proposed transmission line, Transpower proposed a designation having a minimum width of 65 metres, expanding in places to a maximum width of 125 metres. The minimum width was ultimately determined to allow for the swing of conductors. The wider designation in parts was determined to allow for transposition stations, increased risk of fire in forestry areas, and for construction purposes.

[649] Some submitters asked for a narrower designation, on a perception that farming practices would be less affected. Others sought a wider designation in forestry areas, or on a perception of risk of health effects, of risk of tower collapse, or of risk of trees falling on the line.

[650] The Board has considered whether it should address the disputes about the width of the designation in the context of assessing the adequacy of consideration of alternative routes for the work, or should address those disputes in the context of considering whether the extent of the designation is reasonably necessary for achieving Transpower's objectives.

[651] As assessment of the consideration of the extent of designation would give submitters broader opportunity to challenge Transpower's proposal than would assessment of the adequacy of consideration of alternative routes, the Board will address the width of the designation in Chapter 8 on whether the work and designation are reasonably necessary for achieving Transpower's objectives.

## **Conclusion on adequacy of consideration of alternatives**

[652] The Board has had particular regard to submitters' contentions that adequate consideration had not been given to alternative methods and routes of undertaking the work in respect of alternative methods other than transmission; alternative methods of transmission; and alternative routes for the proposed 400-kV-capable transmission line. In doing so, the Board has focused on the evidence given at its hearing of the submissions, and stated its findings on that basis.

[653] In having that particular regard to the adequacy of consideration of those alternatives, the Board has not identified any respect in which the consideration that had been given to alternative sites, routes or methods of undertaking the work was inadequate.

[654] The Board has also reviewed the process of planning for the proposal in an overall way. The duty to have particular regard to whether adequate consideration has been given to alternatives is expressed to be subject to Part 2. That is a conventional expression with the effect that, if the exercise of the duty conflicts with Part 2, that Part is to prevail.

[655] The Board is not aware of any respect in which its having particular regard to the adequacy of consideration to alternatives is in conflict with Part 2, or with any content of that part. Rather, the Board finds that it conforms with applicable provisions of Part 2, and especially with the contents of section 5(2)(c) about avoiding, remedying or mitigating adverse effects on the environment; the contents of section 6 about providing for the protection of outstanding natural landscapes, and of areas of significant indigenous vegetation; and of section 7 about having particular regard to the efficient use of natural and physical resources; the maintenance and enhancement of amenity values and the quality of the environment; and the benefits to be derived from the use and development of renewable energy.

[656] Considered over all, it is the Board's judgement that adequate consideration had been given to alternative sites, routes and methods of undertaking the work.

## Endnotes

- <sup>1</sup> See Chapter 4, para [183].
- <sup>2</sup> Transcript 11/09/08, p16.
- <sup>3</sup> Transcript 11/09/08, p 17.
- <sup>4</sup> Transcript 22/07/08, p 6.
- <sup>5</sup> Transcript 22/07/08, p 7.
- <sup>6</sup> Transcript 22/07/08, p 8.
- <sup>7</sup> Transcript 22/07/08, p 10.
- <sup>8</sup> Published by Transpower, October 2004; produced in Common Bundle of Exhibits, Vol 1, Tab 5.
- <sup>9</sup> Cl 88 E was inserted in the GPS 2004 by the 2006 amendment. The GPS 2008 contained a corresponding provision in cl 104. The corresponding provision of the now current GPS 2009 is cl 94. See Chap 4 para [328].
- <sup>10</sup> Transcript, 27/03/08, pp 30-31.
- <sup>11</sup> Ibid, p 29.
- <sup>12</sup> Ibid, p28.
- <sup>13</sup> Transcript 1/04/08, p 49.
- <sup>14</sup> Transcript 1/04/08, p 19.
- <sup>15</sup> *Auckland Volcanic Cones Society v Transit NZ* [2003] NZRMA 316, 334 (FC).
- <sup>16</sup> *Major Electricity Users Group v Electricity Commission and Transpower* [2008] NZCA 536 para [85].
- <sup>17</sup> Allan, 2004a, pp 60, 62, 64.
- <sup>18</sup> Allan, 2004a, Appdx 2, pp 22, 24, 26
- <sup>19</sup> Cf *McGuire v Hastings District Council* [2002] 2 NZLR 577; [2001] NZRMA 557; 8 ELRNZ 14 (PC) para [21].
- <sup>20</sup> Allan, 2004 b, Appdx 2, pp 20-25.
- <sup>21</sup> Allan 2004 b, p 10.
- <sup>22</sup> Allan, 2004 b, Appdx 3.
- <sup>23</sup> Allan, 2004 b, p 46.
- <sup>24</sup> Allan, 2004 a.
- <sup>25</sup> Transcript 9/07/08, p 25.
- <sup>26</sup> Allan, 2005, p 32.

## CHAPTER 8: NECESSITY FOR ACHIEVING OBJECTIVES

### Introduction

[657] By section 171(1)(c) of the RMA, a territorial authority considering a requirement is, subject to Part 2, to have particular regard to:

Whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought.

[658] Transpower's objectives for which the designations are sought are these:

#### **Overall Project Objective**

To ensure the continued security and certainty of electricity supply to Auckland, Northland, and parts of Coromandel and Waikato, by constructing and operating a new transmission link (including substations and ancillary facilities) and to upgrade existing assets, in a manner that is safe, efficient and consistent with maintaining current grid reliability standards and which provides flexibility to address future changes in supply.

#### **Overhead Line Objective**

To facilitate the construction, operation and maintenance of new electricity transmission infrastructure through predominantly rural areas between south Auckland and the central North Island, and to enable the removal and/or replacement of existing transmission infrastructure.

#### **Underground Cable Objective**

To provide for an efficient and secure electricity transmission connection to overhead transmission circuits, and its ongoing operation and maintenance, between the existing urban boundary of Auckland and substation facilities.

[659] There was no substantial dispute on whether designation, as a planning method, is reasonably necessary. The main issue is whether the work (that is, the proposed grid upgrade itself) is reasonably necessary for achieving the objectives. That was disputed by some submitters. The Board addresses that question first.

### **Is the work reasonably necessary?**

[660] Transpower submitted that the Grid Upgrade Project is reasonably necessary to achieve its objectives in that, by providing a new transmission link (including substations and ancillary facilities) and upgrading existing assets, it would resolve current and foreseeable electricity transmission



problems of the upper North Island and ensure continued security and certainty of electricity supply; and provide for removal of the existing ARI-PAK line; both in a manner that is safe, efficient, and consistent with maintaining current grid reliability standards; and providing flexibility to respond to future changes.

[661] Some submitters disputed Transpower's submission that the work is reasonably necessary for achieving its objectives. The general theme of their contentions was that the extra capacity of the proposed 400-kV-capable line over a 220-kV line is premature and not reasonably necessary because it is unlikely to be needed for at least a quarter of a century, and with probable changes in technology, in the economic climate, and in the location of new generation in the meantime, it would not be needed even then.

## Evidence

### Transpower

[662] Mr George gave evidence that Transpower is required by the Electricity Governance Rules to ensure the reliability of the transmission system. The basic requirement is to provide a core transmission grid that can withstand the loss of any one component (eg, a circuit) and still meet peak load demand. This is often referred to as a "N-1" security criterion.

[663] Mr George asserted that demand growth and the development of new generation sources are the main reasons for grid development taking place. He also advised that other variables, such as investment in non-transmission alternatives, can influence the development of the grid, but do not replace the need for the grid.

[664] In cross-examination by Dr McQueen, Mr Coad stated that in relation to forecasts of demand that Transpower is obliged to use the SOO issued by the Electricity Commission, although it has the right to offer an alternate view on that SOO.<sup>1</sup> Similarly, Mr George identified that when assessing possible futures for grid investment, Transpower uses the generation scenarios that the Electricity Commission has published in the SOO.<sup>2</sup>

[665] Mr Boyle gave evidence that due to increasing demand for electricity, in the future there will be insufficient capacity in the existing power system at times of peak demand to reliably supply electricity to the Auckland area, including the area north of Auckland. He identified the critical issues as insufficient thermal capacity resulting in an inability to supply the demand, and the possibility of voltage instability at times of peak load which could result in partial or total loss of supply to the upper North Island.

[666] Mr Boyle gave his opinion that, at a policy level, there are three key factors that influence the design of a transmission line. These are: providing a reliable and diverse supply; maximising the use of the transmission corridor; and minimising the cost of the line. He stated that system security and diversity are key considerations which are given considerable weighting in any analysis of alternate options.

[667] In cross-examination by Ms Brennan about the apparent overcapacity of the proposed grid upgrade, Mr Boyle explained that the line would not be operated to the maximum thermal design capacity because of the need to meet the N-1 security criterion which requires any electricity being generated or transmitted by the equipment that fails to then be taken up by the other circuits supplying that demand without any of these other circuits exceeding 100 per cent of their capability.<sup>3</sup>

[668] The complexity of meeting the N-1 security criterion was added to when Mr Boyle gave evidence about the loading of each circuit being governed by the laws of physics. As a result, Transpower has only a limited ability to modify the power flowing through each circuit. He explained that the natural distribution of the load across the six existing 220-kV circuits, plus the two proposed 400-kV capable circuits, would not be in proportion to the circuits' ratings, resulting in some circuits being underutilised.

[669] A number of submitters questioned the reliance Transpower placed on the demand forecasts in the 2005 SOO, instead of the forecasts in the draft 2007 SOO. Mr Boyle explained that:

At the time of the assessment of the proposal, the Electricity Commission did consider whether it would be appropriate to adopt the scenarios in the draft 2007 SOO, but determined that it would not be appropriate, part way through the process, to adopt scenarios that underlie the draft 2007 SOO. At that time, the draft 2007 SOO had yet to be consulted on, and may have changed as a result of consultation. The Commission did, in any event, include the draft 2007 demand forecasts as a sensitivity in applying the GIT to the proposal.

[670] He gave his opinion that, even if the draft 2007 demand forecasts had been used, the "need date" for the line to be commissioned at 220-kV would at best be delayed a year.

[671] Mr Boyle also noted that some submitters had suggested that demand has dropped and is trending down over time. He responded that demand is increasing, but the annual rate of increase in the demand forecast is decreasing over time, resulting in a reasonably straight demand curve rather than the exponential demand curve that would be expected if an identical annual growth rate compounded year on year.

[672] He noted, by way of example, that the annual growth rate in the demand forecast for central Auckland starts at 4.06 per cent in 2008 and reduces to 2.05 per cent by 2042.

[673] Mr Boyle then gave evidence in response to submitters' suggestions that the demand will never reach levels that would require the change from 220-kV to 400-kV operation. He reported that the development plans are based on the 2005 SOO; noted that the demand curve in the draft 2007 SOO is flatter than the 2005 SOO demand curve, especially in the later stages of the forecast period; and noted that, if the draft 2007 SOO demand forecast is used, the conversion to 400 kV would be delayed by about five years.

[674] Mr Boyle explained that this delay may be countered with the adoption of a renewable future with a high percentage of renewables. In his opinion, with a renewable target of 90 per cent by 2025, it was probable that the Huntly coal-fired power plant would no longer be used for baseload generation, and that it was quite likely that the change from 220-kV to 400-kV operation of the line would occur earlier than forecast, and in any event by 2039.

[675] Mr Boyle stated that the GPS requires that, to the extent the Electricity Commission considers the environmental effects of new lines, it should also take into account any longer-term benefits that larger capacity lines may provide by avoiding multiple smaller lines.

[676] In his evidence, Mr Boyle described a feature of the 400-kV-capable proposal being the ability to release the additional capacity relatively quickly by changing the operating voltage to 400 kV. His estimate for the time to implement this change was a period of two to three years.

[677] The witness identified three principal transmission alternatives that had been assessed in detail against the proposed grid upgrade as: 220 kV into Pakuranga and Otahuhu; augmentation of the existing 220-kV assets by duplexing the OTA-WHK A and B lines, followed by a high-capacity double-circuit line from Whakamaru to South Auckland and 220-kV cables from South Auckland and Otahuhu; and augmentation of the existing 220-kV assets by replacing the conventional conductors on the OTA-WHK A, B and C lines with high-temperature conductors followed by a high-capacity line from Whakamaru to South Auckland, and 220-kV cables from South Auckland and Otahuhu.

[678] Mr Boyle gave evidence that duplexing increases the mechanical loading on the towers, so strengthening of both the towers and the foundations will often be needed.

[679] An additional factor taken into account by Transpower is transmission losses resulting from the resistance of conductors. Mr Boyle gave evidence about the way these losses would be increased or reduced by changes in the levels of current and voltage, including comparing the losses of the four options considered.

[680] Mr Boyle gave his opinion that demand would exceed the supply capacity after the winter of 2013, and that doing nothing is not an option. His evidence was that, although all four options would enable the transmission of the large renewable potential south of Whakamaru to the upper North Island, the 400-kV-capable line had been designed to optimise the trade-off between costs, benefits and environmental impacts, including optimising the number of transmission corridors required for the grid in the future. It was his evidence that it is the option with the lowest overall economic cost, the lowest transmission losses, and one that would ensure the lowest number of transmission corridors required for the grid.

## Submitters

[681] Submissions in support identified the need for the 400-kV-capable upgrade to provide security and certainty of supply, as well as facilitating the increased use of renewable energy.

[682] Submissions in opposition included the following themes:

[683] There is no need for more overhead lines because Auckland needs to save power, not demand more.

[684] The need for this line to be built is based on out-of-date and inaccurately high demand-growth forecasts (2005 SOO).

[685] The demand-growth projections of the Electricity Commission (2007 SOO) do not justify its construction.

[686] The scale and capacity of this proposed 400-kV-capable line is completely out of alignment with the expected requirements for transmission capacity into Auckland to meet the demand growth in the next 40 years.

[687] Better equal-benefit alternatives to this proposed line are available that have a much reduced environmental impact.

[688] The potential new-generation capacity likely to be constructed in the Auckland region in the next 40 years has been grossly underestimated in an attempt to justify this line as one of national significance and urgency.

[689] Mr Freke argued to the general effect that it is not reasonably necessary to achieve Transpower's objectives to construct a work (ie 400-kV-capable) that will not be fully required for 25 years, if at all.

## Consideration

[690] In considering this issue, the Board understands that it is distinct from comparison of transmission alternatives, on which its role is to assess the adequacy of the consideration of alternatives, not itself decide which is preferable.

[691] The Board finds that Transpower is required to ensure the reliability of the transmission system, and that this resulted in it considering options (transmission and non-transmission) for ensuring the continued security and certainty of electricity supply to Auckland, Northland, and parts of Coromandel and Waikato.

[692] The Board accepts the evidence of Messrs Coad, George and Boyle about reliance on the 2005 SOO and the draft 2007 SOO by Transpower and the Electricity Commission in its use of demand forecasts and generation scenarios against which the 400-kV-capable upgrade and other options were assessed.

[693] The Board also accepts the evidence of Mr Boyle that the use of the draft 2007 SOO demand data may delay the need date by a year, and that the date of accessing additional capacity by changing the operating voltage to

400 kV may also change. The Board considers that, as with most medium- to long-term planning, there is uncertainty about when forecast events may take place, and accepts this does not automatically mean there is less need for the upgrade.

[694] The capacity of the line was in issue, with some submitters asserting the line would have much more capacity than is needed.

[695] The Board accepts the evidence of Messrs George and Boyle about the complexity of the power system and the requirement that it is operated to meet the N-1 security standard, and that capacity of a transmission line cannot be determined by simple calculations using the theoretical ratings of the individual components of the grid.

[696] In his evidence Mr Freke stated he had considerable doubts as to whether it is reasonably necessary for Transpower to adopt an option (400 kV) that will not be fully required for 25 years, if at all. He was cross-examined by Transpower's counsel on this point.

[697] The Board accepts the evidence of Mr Boyle that transmission investments are long-lived assets and require a long-term planning perspective.

[698] In the absence of expert contradictory evidence, the Board accepts Mr Boyle's evidence in relation to the need to adopt a long-term planning perspective.

[699] The Board also accepts his evidence with regard to longer-term benefits that larger capacity lines may provide, by avoiding multiple smaller lines, and being able to release additional capacity quickly by changing the operating voltage to 400 kV.

[700] The Board was given evidence about the 400-kV-capable upgrade being subject to the Electricity Commission's GIT and that this had involved a comparison with other options. The Board accepts that the Electricity Commission's approval of the 400-kV-capable upgrade indicates that the capacity of the line is not unreasonably greater than it needs to be to meet the objectives of the work.

[701] The Board is not persuaded by those submitters who consider the capacity of the new 400-kV-capable transmission link is greater than necessary.

### **Conclusion on whether the work is reasonably necessary**

[702] The Board accepts Transpower's submissions and the evidence of Messrs Coad, George and Boyle on the necessity for the work; and finds that it is reasonably necessary for achieving Transpower's objectives.

## Is the designation *method* reasonably necessary?

[703] The Board has also to consider whether the proposed designation, as a planning method, is reasonably necessary for achieving Transpower's objectives.

[704] Transpower submitted that designation is the preferable planning method in that it signals the potential for future changes on the designation alignment; provides an established method for those changes to occur; provides a uniform approach through the various territorial authority districts; and in that it is not otherwise possible to freeze the existing position in respect of plan provisions. In particular, Transpower argued that a designation enables restriction on conflicting activities of the corridor over the period in which other resource consents are obtained, detailed design work done, and the work constructed, as the project is long term in nature and some of the works are not intended to be completed for a considerable time.

[705] There was no substantial challenge by any submitter to Transpower's submissions on this topic.

## Evidence

[706] In this respect, Ms Allan gave her opinion in evidence that designation is the most appropriate mechanism for Transpower to use in terms of the RMA, and that it would enable consistency of environmental standards and conditions across the length of the line.

[707] In rebuttal evidence, this witness stated that a designation is a specific instrument provided for by the RMA to address projects proposed by network utility operators who are requiring authorities, and follows a specific process, with specific matters to be taken into account in decisions.

## Consideration

[708] The Board accepts Transpower's submissions and Ms Allan's evidence on this topic; and finds that as a planning method, the proposed designations are reasonably necessary for achieving Transpower's objectives.

## The width of the designations

[709] As mentioned in Chapter 7, some submitters asked for a narrower designation, on a perception that farming practices would be less affected. Others sought a wider designation in forestry areas, or on a perception of risk of health effects, of risk of tower collapse, or of risk of trees falling on the line.

[710] At least the requests for narrower designations raise the question whether the designations at the widths required by Transpower are reasonably necessary for achieving Transpower's objectives. Rather than addressing separately the contentions that the designations should be wider than proposed, the Board considers together all challenges to the proposed widths of the designations.

## Evidence

### Transpower

[711] Mr D J Campbell gave evidence that in planning the original proposal, Transpower had considered a range of factors that influenced the minimum width of the easement: electrical and magnetic fields, radio-frequency interference, audible noise from the line, and conductor swing (blow-out due to wind). The witness reported the determining factor at that stage had been a width that would control the audible noise from the line in conditions of potential corona discharge (during fog or rain) to a limit of 45 dBA at the edge of the easement. To achieve that, a design easement width of 65 metres (m) had been set to allow 32.5 metres on either side of the centreline.

[712] The amended proposal would have a different configuration of conductors than the original proposal, and Mr Campbell explained that this would result in reduced noise levels at the edge of the easement. Instead, conductor swing became the critical factor determining the easement width.

[713] In cross-examination Mr Campbell explained that the distance between towers (the span) would dictate the extent to which the conductors would swing, which would, in turn, dictate the width of the easement, as within that width the effects of electrical and magnetic fields, audible noise, and radio-frequency interference would be contained.<sup>4</sup> He also explained that if a span increases due to moving a tower site, the designation width would increase marginally.<sup>5</sup>

[714] In his evidence, Mr R G Lake described the detailed design basis for calculating the extent of conductor swing, depending (among many others) on the shape of the underlying terrain; the designs and configurations of the towers; the mechanical tension of the conductors; the range of operating temperatures; and the likely range of wind loadings. This witness described Transpower's practice of defining an easement that is wide enough to fully contain the conductors under all loading and weather conditions, as well as accommodating operational and maintenance activities.

[715] In his second rebuttal evidence Mr Lake described how clearance of the conductors in relation to all ground (including sloping ground) and above-ground points, such as trees, within the designated corridor had been checked, and would be re-checked as detailed design is undertaken. He told the Board the proposed designation width includes a five-metre construction tolerance on either side.<sup>6</sup>

[716] So to allow for conductor swing, Transpower is seeking designations of a minimum width of 65 metres, but where line swing dictates, greater width than that; and, in plantation forest, approximately 100 metres or even 130 metres, depending on tree heights. Within the designation width, structures would be excluded, and there would be a limit on the height of vegetation.

## Submitters

[717] A number of submitters questioned the need for a designation width of as much as 65 metres. For instance, Mr N Fuller understood that the width would be 60 metres, and contended that a designation across their property of 120 metres would represent a significant amount of mature pine trees that would need to be removed.

[718] Other submitters sought wider designations on two grounds: that 65 metres would not be wide enough to avoid the risk of trees outside the designation falling and striking the conductors, of toppling towers, of pre-existing activities generating smoke or dust impairing the functioning of the line; and that 65 metres would not be enough to protect people (especially children) living near the line from increased risk of developing certain disorders.

[719] Those in the first group included the Mayor of the Franklin District (Mr M Ball), Mr D A Parker, Mr J Sexton, and Mr J E Scott (who also considered that the easement widths would be inadequate for dealing with materials, design and construction mishaps). Mr Sexton nominated a preferred width of at least 100 metres.

[720] Those relying on increased risk of health effects included Drs Bennet, McQueen, and R Smart, urologist and member of NEE Health Committee, and Mr Davidson. The theme of their submissions was that the designations should be at least 600-metres wide, or 120-metres wide in the case of Mr Davidson, based on some epidemiological studies.

[721] Mr Freke gave his opinion that the extent of the proposed easement should be increased to more properly reflect the actual zone of direct effects in terms of future limitations on land use. Asked in cross-examination whether the Board has jurisdiction to tell Transpower not to impose easement restrictions beyond the corridor, Mr Freke replied that if Transpower intends to do so, that should be very clearly articulated so the Board can take them into account, and potentially impose a condition that it does not seek to impose restrictions beyond the designation.<sup>7</sup>

[722] On behalf of Carter Holt Harvey Limited (CHHL) and Hancock Forest Management (NZ) Ltd (HFML) respectively, Mr M Parrish<sup>8</sup> and Ms Strang<sup>9</sup> expressed themselves satisfied with Transpower's offer to increase the width of the designation to 130 metres through the lands they are interested in, although with reservations about potential liability. As any liability question is a private property question for resolution in negotiations over easements, not a public law question for resolution in deciding on Transpower's requirement for a designation, the Board is content with those indications that those submitters raised no relevant opposition to the widening of the relevant stretch of the designation.

## Consideration

[723] The effect of a designation is to exempt a requiring authority's work from the land-use control created by section 9(1) of the RMA, and to prohibit (without the requiring authority's consent) certain activities on the designated



land that would prevent or hinder that work.<sup>10</sup> It does not, itself, entitle the requiring authority to infringe private property rights of others in land.

[724] The width of the designation might be used by landowners and Transpower as a starting point in negotiations over the extent of an easement that might be granted for the line. However, the parties would be free to reach agreement on an easement of a greater extent than that of the designation. The effect of the designation, and a territorial authority's consideration of a requirement for it, relates only to the extent of the designation.

[725] The Board accepts the validity of Transpower's practice of seeking designations wide enough to contain the lines and towers, including the extent to which the conductors would swing under wind forces under all loading and weather conditions, as well as accommodating operational and maintenance activities, and a five-metre construction tolerance on either side.<sup>11</sup> There was no substantial challenge to Transpower's contention that this requires a total designation width of at least 65 metres. The extent to which there might be noise, radio, television and electronic interference perceived beyond the edges of a designation of at least 65-metres wide is addressed in Chapter 11 of this report.

[726] To the extent that Transpower might wish to limit activities on land beyond the extent of a designation (other than any restrictions that might otherwise be imposed by law), it would need to acquire from the owner of the land in question property rights, perhaps by easement,<sup>12</sup> or by covenant, to that effect. That is a private matter, and is beyond the scope of a territorial authority's jurisdiction in considering a requirement for a designation.

[727] However, persuasive Mr Freke's concerns in the public interest, the Board holds that it is beyond the power of a territorial authority considering a requirement to impose conditions on a designation to limit the freedom of requiring authorities and landowners to reach their own agreements about the terms on which easements or covenants concerning activities on land outside a designation might be granted or undertaken.

[728] In Chapter 9 of this report, the Board addresses the concern of some submitters about the risk of certain disorders arising from dwelling near high-voltage transmission lines. The Board concludes that there is no basis for finding that people living more than 32.5 metres from the proposed centre line would be exposed to such a risk from the electric and magnetic fields around the conductors. Therefore, that concern, shared by a number of submitters, does not justify the Board determining that it is reasonably necessary for achieving Transpower's objectives that the designations should be wider than proposed, let alone 600-metres wide.

[729] That leaves the risk of a transmission tower toppling and falling onto land beyond the extent of the designation. In his evidence, Mr Lake explained that the designation width is not designed to accommodate the extreme scenario of matching the overall height of a tower in a tower failure situation.

[730] On Mr Lake's evidence about the design and testing of tower structures and foundations in accordance with internationally accepted practice, the Board finds that the probability of a tower toppling is so remote

that it would be disproportionate to make provision for the contingency. Further, such an event is not included in the intended activity for which the designation is required. The Board does not accept that it is reasonably necessary for achieving Transpower's objectives to widen the designations on that account.

[731] There was no contest over the width of the designation for underground cables.

### **Conclusion on widths of designations**

[732] Having considered the questions raised about the widths of the designations, the Board finds that widths no less than 65 metres are reasonably necessary for achieving Transpower's objectives; that widths up to 130 metres are reasonably necessary for sections of designations that pass through plantation forests; and, apart from that, there is no relevant basis for designations to be wider than required to accommodate conductor swing, necessary operational and maintenance activities, and construction tolerances.

### **Conclusion on necessity for achieving objectives**

[733] In conclusion, the Board finds that the proposed works and designations are reasonably necessary for achieving Transpower's objectives, for which the designations are sought.

### **Endnotes**

- 1 Transcript 27/03/08, p 36.
- 2 Transcript 1/04/08, p 12.
- 3 Transcript 2/04/08, p 19.
- 4 Transcript 3/04/08, pp 45f.
- 5 Transcript 3/04/08, p 47.
- 6 Transcript 10/04/08, p 37.
- 7 Transcript 11/09/08, p 8.
- 8 Transcript 7/10/08, p 41.
- 9 Transcript 7/10/08, p 50.
- 10 RMA, s176(2).
- 11 Transcript 10/04/08, p 37.
- 12 See Gale, 2002, paras 1-37–1-45.

## CHAPTER 9: HEALTH EFFECTS OF ELECTRIC AND MAGNETIC FIELDS

### Introduction

[734] The possible health effects of exposure to extremely low-frequency electric and magnetic fields (ELF EMF) associated with electric power were raised in approximately 960 of some 1244 submissions made in response to public notification of Transpower's designation requirements and resource consent applications.

[735] At the hearing, some expert witnesses and submitters referred to many scientific studies and reviews addressing a range of health outcomes, in particular cancer.

[736] In this chapter, the Board discusses potential effects on human health in exposure to ELF EMF from the proposed transmission line, and the application of a precautionary or prudent avoidance approach.

### Exposure guidelines

[737] Professor A W Wood, biophysicist and member of the World Health Organization (WHO) Task Group for *Environmental Health Criteria* (EHC) 238; Dr D R Black, occupational medicine physician; and Dr E van Rongen, radiobiologist, Health Council of the Netherlands and member of the WHO Task Group for EHC 238, gave evidence outlining the two international exposure limit guidelines in place to protect against adverse effects of ELF EMF exposure. These are the ICNIRP guidelines (1998) and the Institute of Electrical and Electronic Engineers (IEEE) standard (2002). Dr van Rongen also gave evidence about the Health Council of the Netherlands guidelines (2000).

[738] The guidelines base their limits on short-term immediate (ie, acute) health effects. They do not base their limits on epidemiological data of long-term or chronic effects of exposure because of insufficient evidence that there is a causal relationship with the observed effects, notably childhood leukaemia.

### ICNIRP guidelines

[739] The ICNIRP guidelines are more restrictive than the IEEE and Health Council guidelines, and are currently being revised.

[740] In New Zealand, the Ministry of Health recommends use of the ICNIRP guidelines to protect against adverse effects of ELF EMF exposure.

[741] The ICNIRP guidelines' reference levels to protect the general public are 100 microtesla ( $\mu\text{T}$ ) for magnetic fields and 5 kilovolts per metre (kV/m) for electric fields. These levels are based on established acute effects of exposure (retinal flashing, neurostimulation, perceptible microshocks) with the incorporation of a safety margin, and assume exposure of unlimited duration.

The guidelines allow for higher levels of exposure for electrical workers due to their training and ability to take precautions to minimise exposure.

[742] Transpower reported that it proposed to use the ICNIRP guidelines as if they were a standard, and would comply with the limits for general public protection.

### **Adequacy of the ICNIRP guidelines**

[743] Some submitters raised concerns about the adequacy of the ICNIRP guidelines to protect public health, claiming they are outdated, and that the limit values were too high.

[744] In her evidence, Dr Bennet gave the opinion that recent exposure modelling studies suggest the exposure levels might be particularly inadequate for the fetus. In his rebuttal evidence, Dr van Rongen concluded that the findings were inconsistent and for electric fields only, and that a safety margin had been incorporated in the derivation of the ICNIRP limit.

[745] Dr Bennet also endorsed the BioInitiative Report's (2007) arguments and conclusion about the inadequacy of current exposure guideline limits. In his rebuttal evidence, Dr van Rongen, and in his evidence, Professor J M Elwood, cancer epidemiologist and public health physician, questioned the objectivity and authority of this report. In his rebuttal evidence, Professor Wood was critical of the BioInitiative Report's failure to clearly differentiate between ELF and radiofrequency forms of EMF.

[746] Dr R J McQueen, Professor of Electronic Commerce Technologies and Vice Chairman of New Era Energy Incorporated (NEE), included in his evidence an alternative guideline (McQueen et al, 2005) authored by himself and fellow submitters, Dr Smart and Dr Bennet. This proposed a limit of 0.1  $\mu\text{T}$  for sensitive areas such as residences, schools, hospitals, childcare centres, work places with women of childbearing age, and playgrounds. According to these submitters, this would represent a designation width of 600 metres for a 400-kV transmission line.

[747] In his oral submission, Dr McQueen asserted:

... we should be relying and looking at a health standard of somewhere around 0.4 microtesla as the level at which known health effects are caused<sup>1</sup>

[748] He also asserted that some epidemiological studies show an effect at 0.1  $\mu\text{T}$ .

[749] Dr McQueen contended that the Board should determine whether 0.4  $\mu\text{T}$  and not 100  $\mu\text{T}$  should apply at designation boundaries. He also contended that no evidence had been reported by Transpower that showed a cut point of 100  $\mu\text{T}$  below which there was no effect, and above which there was an effect.<sup>2</sup>

[750] Dr McQueen acknowledged that the proposed alternative standard had not been peer reviewed.<sup>3</sup>

[751] In addressing the Board in support of his submission, Dr Smart also contended that the ICNIRP guidelines were not satisfactory and that the exposure limit should be 0.1  $\mu\text{T}$ .

[752] In response to questions from the Board, Dr Smart acknowledged that the derivation of 600 metres had incorporated a safety margin.<sup>4</sup>

[753] Dr Bennet supported a limit of 0.4  $\mu\text{T}$ , but in her oral submission to the Board, she contended that the designation width should be 600 metres and may have to be wider.

[754] In his evidence, Professor Wood stated that the cut points used in the epidemiological studies, such as 0.4  $\mu\text{T}$ , are arbitrary and do not represent a threshold of effect. In contrast, 100  $\mu\text{T}$  is based on a threshold of effect.

## Conclusion

[755] Policy 9 in the NPS is directly applicable to the Board's Inquiry in achieving the purpose of the Act. It directs that provisions dealing with electric and magnetic fields associated with the network are to be based on the ICNIRP *Guidelines for limiting exposure to time varying electric magnetic fields (up to 300 GHz)* and recommendations from the WHO monograph EHC 238 (June 2007) or revisions thereof and any applicable New Zealand standards or national environmental standards.

[756] The Board, therefore, has a duty to have particular regard to the ICNIRP guidelines.

[757] The epidemiological evidence is discussed later in this chapter but the Board holds that, in the absence of a scientific consensus of a cause-and-effect relationship between chronic exposure to ELF EMF and a health outcome, there are no results that can be used as a basis for derivation of quantitative long-term exposure limits.

[758] The Board also notes that although the WHO recommends a precautionary approach in EHC 238, it does not recommend that exposure limits are reduced to an arbitrary level to achieve precaution, and endorses the use of the ICNIRP and IEEE guidelines.

## Strength of fields

[759] The main issues of relevance to human health are the levels of the magnetic and electric fields caused by the proposed 400-kV-capable transmission line which would occur in its vicinity, including within dwellings, and at various distances from the line.

[760] The strength of electric and magnetic fields reduces rapidly with increasing distance from their source; and unlike magnetic fields, electric fields are readily shielded by conducting objects such as vegetation and buildings.

[761] Field exposures can be expressed in terms of instantaneous or time-averaged values. This section discusses the instantaneous values.

[762] Mr M V Khot, Transpower's Senior Development Engineer (Lines), and Mr A C Mitton, consultant electrical engineer, gave evidence that the ICNIRP reference levels for electric and magnetic fields would be met within the designation.

## **Electric fields**

### **The overhead line**

[763] Mr Khot explained that for the overhead line the ICNIRP requirement of 5 kV/m for electric fields would be met by a minimum ground clearance for the conductors of about 12.7 metres. In addition, where the line crosses roads, the conductors would be at least 14 metres above, to minimise the possibility of a person experiencing a microshock from a vehicle parked directly under the line.

[764] Mr Khot stated that the electric field strength is more or less constant, and only varies to the extent the line sags closer to or away from the ground. Maximum sag occurs in conditions of minimum wind and highest ambient temperature.

[765] Since cross-examination did not cast doubt on the reliability of Mr Khot's evidence, and no contradictory expert evidence was provided, the Board accepts his evidence of electric field strengths in relation to the overhead line.

### **The underground cable route and substations**

[766] In his evidence, Mr Mitton stated that there would be no electric field around the underground cables since they would be effectively screened by the conductor and insulation shields and cable sheath.

[767] He gave evidence that the electric field strengths around the Whakamaru, Pakuranga and Otahuhu Substations at the security fence boundary, including where conductors enter the substations, would be below the 5 kV/m limit. As Brownhill would be a GIS substation, there would be an electric field only directly below where the conductors enter the substation; and this would be below 5 kV/m.

[768] None of the submitters cross-examined Mr Mitton, nor called contradictory expert evidence. The Board accepts his evidence in relation to electric fields around underground cables and substations.

## **Magnetic fields**

### **The overhead line**

[769] Mr Khot gave evidence that the magnetic field reduces as the cube of the distance laterally away from the line (ie, doubling of the distance from the line reduces the field strength eight times). The magnetic field is directly proportional to the current (and, therefore, to demand) on the line during various times of the day and year.

[770] Magnetic field calculations were reported for normal operating conditions for summer and winter for the various levels of progressively increasing currents from 2012 to 2042 and beyond. The magnetic field level is predicted to increase in about 2030 because the current is expected to increase. When the line converts to 400-kV operation in about 2035, the current level would reduce, with a consequent reduction in magnetic field which would rise to about 2030 levels again from 2042.

[771] Magnetic field strengths at the edge of the designation (32.5 metres from the centreline, approximately 1 metre above ground), in winter, were estimated to increase from 1.1  $\mu\text{T}$  in 2012 to about 5.4  $\mu\text{T}$  beyond 2042, and, in summer, from 1.0  $\mu\text{T}$  in 2012 to about 4.6  $\mu\text{T}$  in 2042 and beyond.

[772] The magnetic field strengths were higher under the conductors with the highest, about a quarter of the 100  $\mu\text{T}$  limit, beyond 2042.

[773] These levels were calculated for normal operation under worst-case ambient and demand conditions, ie, with both circuits in service when the period of maximum load demand occurs on a hot still day.

[774] In cross-examination by Dr McQueen, Mr Khot stated that validation studies had been done comparing calculated with measured magnetic fields under existing New Zealand transmission lines, and these studies had shown that calculated levels were very similar.<sup>5</sup>

[775] In his oral submission, Dr McQueen questioned Transpower's magnetic field calculations because they had been based on field strengths reducing in proportion to the cube of the distance from the proposed line. The basis for his assertion was two epidemiological studies which had suggested the impact of distance on magnetic fields was much lower.<sup>6,7</sup> As no expert evidence was called, the validity of this assertion was unable to be tested. The Board, therefore, does not accept it.

[776] Since cross-examination did not cast doubt on the reliability of Mr Khot's evidence, and no contradictory expert evidence was provided, the Board accepts his evidence of magnetic field strengths in relation to the overhead line.

### **The underground cable route and substations**

[777] Mr Mitton gave evidence that magnetic field calculations near to the Brownhill-Pakuranga underground cable route (at ground level at the closest occupied dwellings and their boundaries, and directly above the cable tunnel) and around the substations (approximately 1 metre above ground at the closest occupied dwelling and security fence boundary including where conductors and cables enter the substation) would also be below the 100  $\mu\text{T}$  limit. Levels at the closest dwelling to the substations were less than 0.1  $\mu\text{T}$ .

[778] Although well below the ICNIRP limit, magnetic field levels above underground cables would be higher in some locations than the highest calculated level under the conductors.

[779] None of the submitters cross-examined Mr Mitton, nor called contradictory expert evidence. The Board, therefore, accepts his evidence in relation to magnetic fields around underground cables and substations.

### **Ministry of Health's view**

[780] In his evidence, Mr M D Gledhill, on behalf of the National Radiation Laboratory, Ministry of Health, considered that Transpower's calculations were appropriate and that exposures would comply with the ICNIRP guidelines. He was not cross-examined on this matter.

### **Effect of line compacting**

[781] In evidence for the Hunua and Paparimu Residents' Association Incorporated, Mr D A Parker supported use of compact towers for reasons that included reducing EMF strength. Although the Board accepts that line compacting reduces ELF EMF, the Board accepts that it is not practical for the proposed line because it would restrict live-line maintenance, and for voltage stability reasons. This is discussed fully in Chapter 13.

### **Exposure**

[782] Potential risk to human health can only occur if there is exposure to a hazard. The likelihood of an adverse health effect resulting from that exposure, combined with the magnitude of the adverse effect, determines the level of risk.

[783] In relation to health, the key issue is whether there would be any adverse health effects from the levels of exposure caused by the proposed 400-kV-capable line.

[784] Submitters were concerned about exposure to those, particularly children, living close to the proposed line, and the intermittent exposure of those working or playing under the conductors (or above underground cables located in reserves) and in the close vicinity.

### **Proximity of schools**

[785] Some concern was expressed among submitters about the location of schools (such as Waerenga, Hunua, Horahora, Te Miro and Whitehall) in the vicinity of the proposed line.

[786] In cross-examination, Mr Campbell stated that, as part of the ACRE process, selection of the final route had avoided proximity to schools.<sup>8</sup> Ms Allan gave evidence that one of the factors in the selection of the western route in the Hunua area had been the proximity to Paparimu School of the alternative eastern route.<sup>9</sup>

[787] The Board notes that the closest school to the proposed line, Hunua School, would be 380 metres from it. At that distance the magnetic field level would be the normal background level experienced in dwellings.



## Sensitive population groups

[788] In her evidence, Dr Bennet highlighted the potential vulnerability to ELF EMF of the fetus, children and the elderly. Dr Black gave evidence that the ICNIRP limits include a safety factor with the intention of protecting sensitive groups of the population.

[789] In cross-examination by Dr McQueen, Dr Black stated that there was no evidence for the existence of sensitive population groups in the case of ELF EMF.<sup>10</sup>

[790] The Board finds that no sensitive population groups to ELF EMF exposure have been identified; and that, in any event, the ICNIRP guidelines include a safety factor to protect such people.

## Long-term versus short-term exposure

[791] In his evidence, Professor Elwood stated that long-term average exposure levels to magnetic fields are the most relevant in terms of health effects.

[792] This was explained further in cross-examination as follows:

McQueen: So, just to indicate again, Paragraph 22 in that line you say, 'it is the long-term average exposure levels to magnetic fields, which are most relevant'. Other evidence you have given indicates that we don't yet have a causal mechanism, but you state the mechanism here is long-term exposure. Can you just explain those conflicting views?

Elwood: There's no conflict. I said the average exposure levels are most relevant. They are most relevant, because almost all the scientific information we have relates to average magnetic field exposure levels. That does not imply that...I'm not talking here about the...the, you know the biological mechanism, I do discuss that several other places...and I did emphasise in other places the few studies...or very few studies, which have looked at other parameters reflecting magnetic field exposure.

McQueen: I guess I was trying to understand more clearly the long-term average exposures, which we have...I think are the basis of most of the studies you've referred to, versus other mechanisms, which could be possible, such as, instantaneous exposures or other kinds of exposure processes?

Elwood: Well, other mechanisms are possible, but the amount of scientific information available on them is extremely little. So, the point of this paragraph is that if one is considering magnetic fields in the context of a power line, or any other submission, and you want to relate those fields to the existing scientific evidence of health effects,

almost all of the material you'll be dealing with relates to average magnetic field exposures.

McQueen: As opposed to the instantaneous?

Elwood: Yes.

McQueen: Thank you. Still in that same paragraph, the fourth line, you say that, 'the field exposures from the new transmission lines will be very low at the edge of the easement and quite low even directly under the line'. What are the numbers that you're using for those 'very low' and 'quite low' phrases?

Elwood: Well, this has been discussed in great detail by other witnesses, and I'll defer to them in terms of the actual numbers. My understanding is, at the edge of the designation, the average field...or the...Most of the information we have from Transpower is on instantaneous or maximum exposures, which I think are less than about 30 microtesla, both at the edge and directly under the line, and obviously the long-term average exposure is going to be substantially less than those peak exposures. Because, to me, what is important is the average exposure of a person, and I don't imagine that people are going to spend extensive time directly under the line.

McQueen: So, those terms 'very low' and 'quite low' would refer to 30 microtesla?

Elwood: No...no, they would refer to something considerably lower than that, because that 30 figure...and I defer to other witnesses to correct me on that, is a peak...is an instantaneous maximum exposure. So, if...I mean, if you say...well, someone lives near the line, you would ask how much time do they spend directly under it, which might be in the order of, you know, a tiny fraction of their annual exposure, and it's only that component, which would contribute to their average magnetic exposure.<sup>11</sup>

[793] Professor Elwood concluded from the evidence of Mr Khot about magnetic field strengths:

It seems unlikely that the levels of exposure to magnetic fields to which people will be exposed for a considerable time, for example inside homes, will be increased by the new transmission line.

## Conclusion

[794] The Board accepts the evidence of Mr Khot (discussed earlier in paragraphs 769-776) that the level of exposure from the proposed line would be low. It finds that time-averaged exposure (which is relevant to health effects) would be even lower.

## Possible health effects

### Positive effects of power

[795] There was no dispute that an adequate reliable supply of electricity to the upper North Island is essential to maintain infrastructure and the economy, and therefore to protect public health.

### Adverse effects

[796] A large volume of research, incorporating laboratory studies of cell cultures and animals and epidemiological studies of human populations, has been carried out to investigate whether exposure to ELF EMF causes adverse health effects. Several hundred of these studies were referred to, some in considerable detail, during the hearing.

[797] There are recognised acute effects of exposure to fields of sufficient strength that arise from induced electric fields and currents. These are the basis of the reference levels in the ICNIRP guidelines.

[798] In contrast, there is much international scientific debate about the long-term effects of exposure to fields which are below those at which acute effects are seen. This was the predominant area of health concern raised by submitters, and is discussed below.

### Epidemiological studies

[799] Among submitters, opinions differed about the nature of possible health effects from chronic ELF EMF exposure; but many highlighted the epidemiological association between magnetic fields and childhood leukaemia. Other effects mentioned were miscarriage, amyotrophic lateral sclerosis, adult brain cancer, adult leukaemia, suicide, depression, Alzheimer's disease, childhood brain cancer, breast cancer, lung cancer, melanoma, osteosarcoma, and asthma. Many considered these relationships were causal.

[800] Many submitters had gone to considerable effort in the preparation of their oral submissions. However, few submitters presented evidence to the Board, so the reliability of their information was unable to be tested through cross-examination.

[801] Some submitters sought proof that no health effects would occur from the proposed line. Professor Elwood gave his opinion that it is impossible to prove the absence of a health effect such as childhood leukaemia. He outlined a weight-of-evidence approach to the assessment of high quality scientific studies to reach a conclusion that no effect was likely.

[802] This was further addressed in cross-examination of Professor Wood:

McQueen: Paragraph 89, you're addressing again issues raised by submitters, and you're saying that, 'EMF has not been proved to cause any disease'. That's your evidence?

Wood: Yes.

McQueen: Has it been disproved?

Wood: I think as in the answer that Dr Black gave yesterday, or maybe it was earlier today, it's very difficult to prove a negative. I would say that there has been sufficient research done; now we're talking in tens of thousands of research studies to form a view as to what the health risks are, and as I mentioned previously, the EHC was careful not to imply that EMF had shown to be causal, but nevertheless, as I said before, it had done its health risk assessment on the assumption that it was. So, really...it doesn't really make any difference, because what they're suggesting we do will be the same whether it's proved or not proved. Because the magnitude of the effect is really quite small, the only question then is, if we do things that cost a lot of money, and then later it is disproved or there's no convincing proof...of whether that money was spent in vain.<sup>12</sup>

[803] In addressing the Board in support of his submission, Dr Smart contended that evidence is strongest for childhood leukaemia, miscarriage, amyotrophic lateral sclerosis (Lou Gehrig's disease), adult brain cancer, adult leukaemia, suicide, and depression. In his evidence, Professor Elwood considered Dr Smart's submission reported studies showing increased health risks, excluded those with different results, and selectively reported results from some studies.

[804] Dr A Kilfoyle, senior medical registrar in haematology, gave evidence which focused on two pooled analyses and three case-control studies (one of which was included in the pooled analyses) showing increased risks of haematological cancer. She acknowledged there were negative studies that were not in her evidence, although some had been included in the pooled analysis. She also acknowledged that these studies did not support a change in the International Agency for Research on Cancer (IARC) classification above that of possible carcinogen for ELF magnetic fields.<sup>13</sup>

[805] In her oral submission, Dr Kilfoyle acknowledged there is a lack of animal data, and that the mechanism by which EMF could cause cancer was uncertain. With regard to cancer, she stated:

Furthermore, it's unclear if, in fact, it is electromagnetic fields, themselves, which exert the effect that is seen in the epidemiological studies.<sup>14</sup>

[806] Dr McQueen's evidence cited 12 papers, most of which he subsequently spoke to at the hearing. In his rebuttal evidence, Dr van Rongen stated that the list of papers did not contain any comprehensive weight-of-evidence reviews, and included several non-peer-reviewed papers.

[807] In his rebuttal evidence, Professor Elwood identified a lack of balance in the review of studies in the evidence of Dr McQueen, Dr Kilfoyle and Dr Bennet. In the case of one study (Draper et al, 2005), referred to by all of these submitters, the submitters did not mention the study authors' conclusion that their findings of increased childhood leukaemia risk at

considerable distances from power lines did not fit the hypothesis of causation by magnetic fields.

[808] Transpower submitted that there are no actual or potential public health issues associated with the proposed transmission line.<sup>15</sup>

[809] In his evidence Professor Elwood reviewed the epidemiological evidence related to possible health effects, in particular cancer, from long-term (or chronic) exposure. This included reports by independent expert review groups which gave a summative assessment of the overall weight of evidence based on individual studies, two pooled analyses which combined original data from nine and 13 childhood leukaemia, and magnetic fields studies respectively, and many individual studies.

[810] When asked in cross-examination whether his choice of evidence from the original studies and reviews had been selective, Professor Elwood responded:

I've tried very hard not to be, I've as we said...we discussed earlier, I've put most emphasis on the studies, which I regard as having the strongest methodologies, irrespective of what the results say. So, I've tended to put emphasis on studies, which are large, and have excellent methods, and appropriate analysis. And, where possible, I've quoted directly from the authors' own summaries or final conclusions, where that seems appropriate.<sup>16</sup>

### ***Childhood leukaemia and residential magnetic fields***

[811] The relationship of most concern from the epidemiological studies is that between childhood leukaemia and residential magnetic fields.

[812] A number of epidemiological studies show an association between increased childhood leukaemia, in the order of a doubling of the risk, and estimated 24-hour or longer average exposure levels above 0.3–0.4  $\mu\text{T}$  in the child's home. Professor Elwood explained that to establish causation, alternative explanations for the association such as bias, chance and the effect of other factors (or confounding) need to be excluded; and specific criteria such as consistency within, and among, studies and biological plausibility which are expected if a cause-and-effect relationship exists, identified.

[813] Professor Elwood agreed with the conclusions of reports from the UK National Radiological Protection Board (2001, 2004), IARC (2002), ICNIRP (2003), US National Institute of Environmental Health Sciences (1999) and WHO (2007) that the interpretation of this association remains unclear and that current scientific evidence is insufficient to show that it reflects causation. His reasons were:

- a) the results for the highest exposure category are based on small numbers of subjects, and those who participated in the studies and had the highest exposure levels may be unrepresentative because of factors affecting participation in the studies

- b) it is possible that children with exposure to higher levels of electric and magnetic fields also have other exposures or characteristics which may give them an increased risk of cancer
- c) the third reason to treat these results with caution is that there is no consistent evidence from cell, animal, or other human studies that magnetic fields at these exposure levels are involved in the development of leukaemia or other cancers.

[814] Professor Elwood disagreed with the conclusions of the California EMF Program, Department of Health Services report (2002) and two relevant chapters of the BioInitiative Report (2007), stating that they gave less weight to relevant animal and experimental evidence, and differed in some interpretations of epidemiological data. He contended that neither report was equivalent in authority to the reports cited in the paragraph above.

[815] In his rebuttal evidence, Professor Elwood provided additional review of the BioInitiative Report. He concluded that the report is of much lower scientific quality than other available relevant reports. In his opinion, its epidemiological conclusions are likely to be biased since it had excluded many important studies, and, in some instances, had presented a misinterpretation of the results of studies.

[816] He acknowledged that although magnetic fields might cause childhood leukaemia, this possibility required more research.

[817] In his opinion, the most likely explanation for the association seen between childhood leukaemia and magnetic field exposures was:

...there may be an association between higher magnetic field exposures and other factors which themselves are relevant biological factors increasing the risk of childhood leukaemia.

### ***Other health outcomes***

[818] Professor Elwood reported that evidence in regard to cancers in children, other than leukaemia, and cancer in adults (in particular brain and leukaemia), is inconsistent. The argument for any association with breast cancer had also recently been considerably weakened by some high-quality epidemiological studies.

[819] The professor stated that he had not reviewed the information on neurological diseases, suicide or reproductive outcomes in detail in his evidence, but reported the WHO's EHC conclusion that the evidence is inconsistent and inconclusive, and, therefore, considered inadequate.

[820] Although he noted that weak evidence for associations between occupational magnetic field exposures and adult chronic lymphocytic leukaemia and amyotrophic lateral sclerosis were reported by one and three of the review groups respectively, Professor Elwood further stated:

All these groups have concluded that the scientific evidence does not establish that exposure to electric or magnetic fields is the cause of cancer or any other human disease.

## **Biophysical mechanisms, *in vitro* and animal studies**

### ***Biophysical mechanisms***

[821] In his evidence, Professor Wood stated that identification of a biophysical mechanism is of major importance, because of the weak evidence linking ELF magnetic fields and childhood leukaemia.

[822] This witness gave evidence on some proposed direct mechanisms of ELF magnetic fields interaction with biological materials, and concluded that there is no generally accepted and plausible biophysical mechanism to account for the epidemiological finding of increased childhood leukaemia.

[823] This was also the conclusion of the WHO's EHC 238.

[824] High-voltage power lines may produce electrically charged ions that are blown downwind as a result of corona discharge. These ions charge pollutant particles that pass through them, which could increase their deposition in the lungs and on skin, possibly affecting health. Some submitters (such as Dr McQueen, Dr Kilfoyle, and those using the standard submission form) stated that these "ionised particles" or corona ions could be responsible for the epidemiological findings of childhood leukaemia.

[825] Professor Wood gave evidence that this indirect mechanism is speculative, and that the increased production of air ions through corona discharge has not been shown to lead to any disease. Lung and skin cancer have not been associated with ELF EMF in the major epidemiological studies.

[826] In his evidence, Dr van Rongen (and Professor Wood in his rebuttal evidence) reported that the National Institute for Public Health and the Environment of the Netherlands (and the UK National Radiological Protection Board) had concluded that it was unlikely that corona ions would have more than a small effect, if any, on long-term health risks. This conclusion has also been reached by the WHO.

[827] Mr Khot gave evidence that because a triplex sulphur conductor bundle has been proposed for the line, the surface voltage gradient would be low compared to many 220-kV lines. He stated that corona discharge, which is a function of the surface voltage gradient, is less likely to occur from the proposed line than from a line with a simplex conductor configuration such as the existing 110-kV ARI-PAK A line.

### ***In vitro* or laboratory studies**

[828] Professor Wood reported that, although there have been many studies on the effects of ELF EMF on biological tissue samples, most have been done at much higher magnetic field strengths than the epidemiological studies' cut point of 0.3  $\mu$ T. He added that the findings of those that are relevant to cancer initiation or progression are inconsistent.

### ***Animal studies***

[829] Professor Wood also reported that data from animal studies on adverse health effects of ELF EMF are similarly inconsistent.

### ***Conclusion on mechanisms, in vitro and animal studies***

[830] Professor Wood gave his opinion that lack of a credible biophysical mechanism and inconsistent animal and laboratory data make it unlikely that magnetic or electric fields are a direct cause of adverse health effects.

[831] Cross-examination of Professor Wood did not leave question in the Board's mind about the acceptability of his evidence; and there was no contradictory expert evidence. The Board, therefore, accepts his opinions.

### **Conclusion on possible health effects**

[832] In summary, the Board considers that cross-examination of Dr Black, Professor Elwood, Professor Wood and Dr van Rongen did not establish that their evidence on possible health effects, in particular their conclusions, was unreliable.

[833] In the absence of expert epidemiological or biophysical evidence to the contrary, the Board accepts that although childhood leukaemia is associated with chronic exposure to magnetic fields above 0.3–0.4  $\mu\text{T}$ , there is insufficient evidence that this relationship is causal. The Board considers that the strength of current scientific evidence for other potential health effects is considerably less.

### **Likely public health impact**

[834] In response to questions from the Board, Professor Elwood stated that even if the relationship between ELF EMF exposure and childhood leukaemia was eventually found to be causal, given the rarity of the disease, it would be unlikely that an additional case of leukaemia would be attributable to exposure from the transmission line.

I have made an estimation, which is, if there were... and I think this is a very high figure... if there were one thousand children exposed to very high magnetic fields from any source, this doubling of risk would mean that we would have one extra case of leukaemia in twenty years. I think, that thousand number is actually likely to be very high. If there were only a hundred exposed, we're talking about one case of leukaemia in two hundred years.<sup>17</sup>

[835] Dr Black also gave evidence that, if the relationship is assumed to be causal, the likelihood of a case of childhood leukaemia occurring is extremely low, given the field strengths and size of the population exposed.

[836] The Board considers that the impact of childhood leukaemia on the individual child and the family/whānau or community would be severe. However, it notes that it is a rare disease. In the absence of contradictory expert evidence, it accepts that, even if the relationship is causal and a child's



long-term average exposure is sufficiently high (ie, above 0.3–0.4  $\mu\text{T}$ ), a child is very unlikely to develop leukaemia as a direct consequence of living close to the proposed line.

## **Cumulative effect of magnetic fields**

[837] Some submitters (such as Hon M W R Storey, Ms D Allen, Mrs F Aldridge and Mrs D Levesque) raised concerns about the cumulative effect on health arising from the existing and proposed transmission lines in some locations (Hunua area, Waiterimu Valley), but presented no evidence on this matter.

[838] The Board notes that the relevant issue with respect to a potential cumulative effect from multiple overhead lines is the total current (not total voltage) which results in a net magnetic field.

[839] In response to written submissions, Professor Wood gave evidence that multiple power lines can lead to enhancement or reduction of magnetic fields depending on their configuration. He commented that an advantage of having three phases in three sets of conductors, as is proposed, is that the net current would be zero, and the magnetic fields would be considerably reduced. In a two-circuit system, reverse phasing of the second circuit leads to further reduction.

[840] Mr Khot, also in response to written submissions, stated that electric and magnetic fields from lines do not necessarily add up, since they may not be in phase. Only the fields produced from those lines that are exactly in phase would result in a field strength that is a sum of the constituent fields. Fields that are not in phase lead to some cancellation of the fields.

[841] There was no cross-examination of either of these witnesses relating to this subject.

[842] No information was presented to the Board as to what the total worst-case magnetic field level may be in areas where the proposed line is in close proximity to existing lines. However, based on the evidence of Mr Khot on the maximum magnetic field levels from the proposed line, the Board judges that if the lines are in phase, the increase to existing magnetic field levels would be small.

## **Indirect health effects**

### **Perceptible electric shocks**

[843] Dr Black gave evidence that a discharge current may lead to a perceptible electric shock when touching unearthed metallic objects in the transmission line corridor that have been charged by the electric field from the overhead conductors. He stated that these objects are generally readily identified and, if necessary, remedied.

## Noise

[844] Some submitters raised concerns about audible noise from the line, from substations and during construction. Sources of potential noise from the proposed line were identified in the evidence of Mr Khot as corona discharge, the 100-Hz hum and wind. These, along with substation and construction noise, are discussed more fully in Chapter 11.

[845] In terms of adverse effects on health, noise may result in annoyance, sleep disturbance and impact on general well-being.

[846] Mr G W F Warren, an independent acoustical consultant, gave evidence that, at the edge of the designation, predicted corona discharge noise from the conductors in wet conditions when the line is operating at 400 kV, would be well below the level at which adverse effects – including sleep disturbance – are caused.<sup>18</sup> The predicted noise level would also comply with daytime and night-time noise limits in all relevant district plans.

[847] Accepting that, the Board finds that the design of the proposed line and the proposed conditions would adequately avoid, remedy or mitigate actual and potential health effects of noise.

## Health consequences of the grid upgrade proposal

[848] A number of submitters (including Dr Bennet, Ms S Jones, Mr J Melis, Mrs F Aldridge, Mr T Shergold, Mrs G McCulloch, Mr G and Mrs D Smith, Ms L Bilby, Ms J Colliar, and Mr B and Mrs J Burwell) raised stress to individual landowners, and in some instances, communities, from the grid upgrade proposal.

[849] During the hearing, it was also evident to the Board that a number of submitters were experiencing varying degrees of stress as a direct consequence of the proposal. For some, this related to their outright opposition to the proposal; while for others, to significant uncertainty surrounding the potential impact on current land-use activities, particularly during the construction phase, and easement agreements; to changes made over time to aspects such as tower location and height, tree removal and building relocation; the perception of health risks from exposure to ELF EMF; the possibility of stigma effects resulting from the line; and communication difficulties with Transpower.

[850] It is a regrettable consequence of a project of such magnitude that it would inevitably cause some stress to affected landowners and occupiers. The Board acknowledges that the period since the announcement of the grid upgrade proposal in 2004 has been one of distress and uncertainty for a number of landowners, occupiers and communities. For some, this stress may continue, particularly during the construction period as their familiar environment changes.

[851] The Board notes the proposed consent condition which offers free counselling to those directly affected by the designation crossing their properties.

[852] The Board considers in the case of the overhead line that, as an exercise of social responsibility, the offer of free counselling should also be extended to those who occupy adjacent property, as, in some instances, the impact may be as great as (or greater than) on the occupier of the land which the designation crosses, due to their proximity to a tower(s).

## **Precautionary approach/prudent avoidance**

[853] A number of submitters stated that the Board should take into account a precautionary approach, or the precautionary principle with respect to the effects of ELF EMF on health.

[854] Given that ELF magnetic fields are a possible carcinogen, for some submitters a precautionary approach meant the proposed line should not proceed.

## **Width of the designation**

[855] If the Board is to approve the proposed line, some submitters supported an increase in the designation width to reduce future health risks. The majority of these submitters stated that the width should be 600 metres.<sup>19</sup>

[856] In their oral submissions, Dr Smart and Dr McQueen asserted that 600 metres is necessary to avoid exposures above 0.1  $\mu\text{T}$  (and, therefore, possible health effects, in particular childhood leukaemia).

[857] In her evidence, Dr Bennet contended that a 600-metre and possibly wider designation is necessary, and that protection against 0.4  $\mu\text{T}$  and possibly lower, is needed.

[858] Mr Davidson gave evidence supporting the SAGE report's (2007) recommendation for a width of 120 metres or 0.4  $\mu\text{T}$ . This was also supported by Ms H Polley in her oral submission to the Board. Mr J Scott suggested prohibiting dwellings within 400 metres.

## **The Stakeholder Advisory Group on ELF EMFs (SAGE) Report**

[859] The aim of the SAGE process was to make practical recommendations for precautionary measures in relation to ELF EMFs to the United Kingdom (UK) Government.

[860] The Group considered the best available option to significantly reduce exposure would be to increase the separation of dwellings and schools from overhead lines. Based on a magnetic field level of 0.4  $\mu\text{T}$ , this would represent a distance of 60 metres from the centre line for a new 400-kV line.

[861] The Group did not recommend implementation of that option (which also included the same restriction on construction of new dwellings and schools), as they could not agree on whether it was supported by cost-benefit analysis, due to differing views among its members on the possible health effects which formed the basis for considering precautionary measures. As a result, the SAGE report's conclusion was to urge the UK government to make a clear decision on whether to implement it or not.

[862] Mr Gledhill and Professor Wood, in their evidence, both noted the UK Health Protection Agency's response on the SAGE report to the UK Minister for Public Health that the decision to implement this option should be weighed against other health benefits obtainable from the same resources, as it was not supported by cost-benefit analysis, even assuming a causal link between magnetic field exposure and childhood leukaemia.

[863] As already noted at Chapter 4 paragraph 268, the Board is not aware that the UK Government has made a decision on this matter.

## **Undergrounding**

[864] Other submitters supported undergrounding the entire line as a precautionary measure. In his evidence, Professor Wood stated that for people concerned about levels above 0.4  $\mu\text{T}$ , those concerns would still apply with undergrounding, as there would be a strip about 43-metres wide above an underground cable where the peak field would exceed 0.4  $\mu\text{T}$ .<sup>20</sup>

## **Precautionary approach**

[865] In cross-examination, Dr Black stated:

... to meet the precautionary principle, you've got to have a real effect; something that could actually...if it happened, it would be significant. And, therefore, if you apply precaution generically, it will ultimately result in improvement.<sup>21</sup>

[866] This witness proceeded to explain application of the precautionary principle as follows:

...WHO and also the European Union have done some really good work on this, and one of the things that everybody pretty much comes up with, is that any action is got to be.. I think the word is proportional. ...So, if something was, you know, a very significant hazard, then you could actually spend quite a lot of money on it. If something is less of a hazard or less likely, that would... you would have a graded approach to it. That's my understanding of the way in which the precautionary principle is applied.<sup>22</sup>

[867] Under cross-examination, Dr Black gave his opinion that increasing the designation width, ie, application of the precautionary principle, is not required:

McQueen: Just to clarify that in my mind, if we were looking at the precautionary principle in the context of the proposed 400-kV line ... .. Would that perhaps overall...say, doubling of the easement width, which might come in at, let's say, something like five percent or four percent of the overall project cost...would that all go to that category of precautionary principle?

Black: Well, no, because...I don't honestly think it would, because I ... I can't see how it would, even hypothetically, provide any benefit to anybody, in terms of health effects.<sup>23</sup>

[868] In rebuttal evidence, Professor Elwood responded to the proposed 600-metres designation width as follows:

Given the current uncertainty in the human health evidence, one likely scenario is that no benefits to human health would accrue from making this change.

[869] In his evidence, Dr van Rongen described the precautionary approach taken in the Netherlands, where the Government has recommended to local authorities that the annual time-weighted average exposure of children in dwellings, schools, creches, and daycare centres is limited to below 0.4  $\mu\text{T}$  for new lines or changes to existing lines.

[870] Transpower submitted that a precautionary approach is inherent in the RMA, and relevant case law demonstrates its application.

[871] The Board accepts Transpower's submission, relying on the case law cited.<sup>24</sup>

[872] The WHO's EHC 238 recognises the place for a precautionary approach to magnetic field exposure. Policy 9 of the NPS directs the Board that provisions dealing with electric and magnetic fields associated with the network are to be based on recommendations from this monograph.

[873] Recommendations in EHC 238 include that, provided that the health, social and economic benefits of electric power are not compromised, implementing very low-cost precautionary procedures to reduce exposure are reasonable and warranted.

## **Prudent avoidance**

[874] A prudent avoidance approach supports taking reasonable low- or no-cost measures to avoid or minimise ELF EMF exposure, given the uncertainty as to possible health effects.

[875] The Ministry of Health recommends adoption of a prudent avoidance approach.

[876] Transpower submitted that as part of its adoption of a conservative stance to ensure that the ICNIRP limits would be met, it had also adopted a prudent avoidance approach by use of measures to minimise EMF exposure. These measures included the 65-metre width of the designation, location of the line in an area of low population density, reverse phasing of the conductors, burial of the cables at 1.5 metres, and the use of a trefoil cable configuration.<sup>25</sup>

[877] In his evidence, Professor Wood concluded that some level of precaution is warranted in view of the epidemiological association of magnetic fields with childhood leukaemia; and that it would be appropriate to incorporate this precaution in the design and routing of the transmission line.

[878] Dr Black gave his opinion that a precautionary approach hardly, if at all, applies in the context of the proposed line. However, he considered that design aspects of the line are consistent with a precautionary approach, and no further mitigation is necessary.

## **Conclusion on precautionary approach and prudent avoidance**

[879] The Board has considered the recommendations of the WHO's EHC 238 (p13) in relation to a precautionary approach that are relevant to the scope of its Inquiry.

[880] The Board notes the measures that have been incorporated in the design of the transmission line, and that under the proposed easement agreement, no dwelling or other building would be located in the designation. The Board considers that to prevent the possibility that dwellings may be located in the designation at some future time, a condition to that effect should be imposed on the designations for the overhead line.

[881] The Board finds that additional precautionary measures would be of uncertain public health benefit, and are not necessary to further minimise ELF EMF exposure from the transmission line.

[882] The Board is influenced in its conclusion by Transpower's evidence that the magnetic field strength for normal operation under worst-case conditions would not exceed 30  $\mu\text{T}$  directly under the overhead line, and would be less than 6  $\mu\text{T}$  at the edge of the designation (32.5 metres from the centre line). The magnetic field at the edge of the designation is likely to be experienced long term, and hence is of relevance to human health, if dwellings are on the designation boundary. The Board expressly recognises that extent of adverse effects for the purposes of section 319(2) of the RMA.

## **Conclusions on health effects**

[883] The Board has assessed the evidence before it, considered the extent to which the evidence is reliable, and what weight should be given to it. It has taken into account whether the evidence falls into the category of high-quality epidemiological studies and/or animal or *in vitro* evidence, and whether there is expert consensus. While the differing views of submitters, and the high level of concern among some about health effects are acknowledged, some effects attributed to ELF EMF exposure were hypotheses: no evidence was presented to support them and they were not able to be tested in cross-examination.

[884] The Board accepts that the time-averaged exposure which is of relevance to health effects would be considerably lower than the maximum of about 6  $\mu\text{T}$  which has been calculated at the edge of the overhead line designation in worst-case conditions.

[885] The Board finds that there is weak epidemiological evidence of a potential adverse health effect of low probability which has a high potential impact, namely childhood leukaemia from long-term ELF EMF exposure

above 0.3–0.4  $\mu\text{T}$ . This epidemiological evidence is accepted by the main expert review groups such as the WHO. However, there is no evidence that this relationship between ELF EMF and childhood leukaemia is causal. The evidence for other potential adverse health effects is weaker.

[886] The Board does not consider that this weak epidemiological evidence of association is a reason for declining the designations, or refusing the resource consents.

[887] The Board has come to its conclusion on the basis of the evidence before it about ELF EMF exposure and health effects, and not on the basis of the possibility that research might (or might not) in the future produce findings that have not been observed by research to date.

[888] In summary, the Board finds that there would not be significant risk to human health from operation of the grid upgrade in compliance with the proposed conditions.

## Endnotes

- 1 Transcript 22/07/08, p 30–31.
- 2 Transcript 22/07/08, p 30.
- 3 Transcript 22/07/08, p 33.
- 4 Transcript 11/09/08, p 31.
- 5 Transcript 10/04/08, p12–13.
- 6 Draper et al, 2005; Lowenthal et al, 2007
- 7 Transcript 22/07/08, p 16–19.
- 8 Transcript 3/04/08, p 40.
- 9 The existing ARI-PAK A line which is very close to Paparimu School will be dismantled as part of the grid upgrade proposal.
- 10 Transcript 5/05/08, p49.
- 11 Transcript 9/05/08, p 7–8.
- 12 Transcript 6/05/08, p 49.
- 13 Transcript 23/09/08, p 57.
- 14 Transcript 23/09/08, p 52.
- 15 Transpower opening submissions, para 592.
- 16 Transcript 9/05/08, p 33.
- 17 Transcript 9/05/08, p 35.
- 18 Predicted corona discharge noise is 35 dBA at the designation edge and 20–25 dBA inside a bedroom with an open window at the designation edge.
- 19 A standard submission form which included the reference to 600 metres was used by over 300 submitters.
- 20 Transcript 6/05/08, p 19.
- 21 Transcript 5/05/08, p 36.
- 22 Transcript 5/05/08, p 37.
- 23 Transcript 5/05/08, p38.
- 24 Transpower opening submissions, para 572–588.
- 25 The width of the designation was primarily determined by conductor swing.

## CHAPTER 10: LANDSCAPE AND VISUAL EFFECTS

### Introduction

[889] Landscape and visual amenity effects were a major reason for submitters' opposition to the Transpower proposal. Localised effects of the proposal on visual amenity were a greater issue to submitters than the wider landscape effects of the proposal.

[890] Transpower conceded there would be adverse landscape and visual effects, and that amenity values (in some instances) would not be maintained. The landscape effects of the proposal were addressed through the ACRE route selection process that included assessing landscapes in relation to their attributes of 'natural character', 'landscape quality' and 'landscape absorption capability'.

[891] Transpower asserted that the ACRE route selection process had been the primary method of avoiding, remedying or mitigating adverse visual and landscape effects. This process included avoiding the highest-quality natural landscapes, the re-use of the existing ARI-PAK A line alignment for much of the route, the use of an underground cable through the urban Auckland section, and the selection of substation sites to reduce visual amenity effects.

[892] Transpower conceded that the visual effects of the proposed overhead line were the most pervasive of the numerous effects of the line. Transpower's landscape evidence was that:

- a) there was universal antipathy towards transmission lines
- b) there would be unavoidable visual amenity effects from a line of the nature proposed
- c) effects would be experienced by directly affected landowners and by the wider community.

[893] This chapter addresses the two broad topics of landscape effects and visual effects. Although Transpower attempted to differentiate between landscape effects and visual effects, most submitters did not. Submitters used a range of expressions in an interchangeable manner, to explain their concerns about landscape and visual effects. This chapter is structured to accommodate this and to ensure consideration of the range of landscape and visual effects that were raised.

[894] This chapter begins with the consideration of some general landscape and visual aspects. The rest of the chapter is structured into sub-sections that break the consideration of landscape and visual effects into geographical sections following the proposed route from north to south.



## Landscape effects

[895] The nature of landscapes and how they can be assessed was not in contention. This section provides a summary of what was agreed about this topic.

[896] Landscape effects can be defined as the effect of the proposal on the landscape as a whole.

[897] In the first Queenstown-Lakes landscape decision<sup>1</sup> the Environment Court said “[a] precise definition of ‘landscape’ cannot be given...”

[898] The Court considered ‘landscape’:

- as a large subset of the ‘environment’
- as involving both natural and physical resources themselves and also various factors relating to the viewer and their perception of the resources
- as a link between individual (natural and physical) resources and the environment as a whole.

[899] That decision included the following list of aspects or criteria referred to as the “corrected Pigeon Bay criteria” to be considered when assessing landscapes:

- a) the natural science factors – the geological, topographical, ecological and dynamic components of the landscape
- b) its aesthetic values including memorability and naturalness
- c) its expressiveness (legibility): how obviously the landscape demonstrates the formative processes leading to it
- d) transient values: occasional presence of wildlife; or its values at certain times of the day or of the year
- e) whether the values are shared and recognised
- f) its value to tāngata whenua
- g) its historical associations.

[900] The Court considered that this list is not ‘frozen’ and may be added to as understanding grows.

[901] Those criteria were generally accepted by all landscape experts giving evidence to the Board.<sup>2</sup> The criteria continue to be widely used by councils and the courts as a basis for assessing landscapes.

[902] The *Wakatipu* case also made the distinction between outstanding natural landscapes (section 6(b) RMA) and visual amenity landscapes as follows:

...not outstanding natural landscapes but which are visual amenity landscapes either because they are important in respect of visual amenities, or outstanding but insufficiently natural.

[903] A third category “landscapes in respect of which there is no significant resource management issue” was also defined. However, the Court said that “all landscapes form a continuum physically and ecologically...” and “we cannot over-emphasise the crudeness of our three-way division.”

[904] Evidence provided to the Board by landscape experts generally supported the use of this categorisation of the landscapes along the proposed route of the line and where the substations are proposed to be located. Expert opinion differed on the category that applied to specific landscapes, and these differences are set out in the sections of this chapter that follow.

## **Landscape assessment of proposed substations and overhead route**

[905] Some submitters raised concerns about the adequacy of the landscape assessment undertaken by Transpower.

[906] In Chapter 4,<sup>3</sup> the Board has set out its understanding of the legal context in relation to the adequacy of consideration of alternatives. In Chapter 7,<sup>4</sup> the Board specially considers whether adequate consideration has been given to alternative routes for the proposed 400-kV-capable overhead transmission line. The Board considers a number of matters in relation to the adequacy of the landscape assessment including in relation to “the ACRE process”, “relative landscape and visual effects”, “routes over outstanding natural landscapes”, “effects on pastoral landscapes”, and “international practice on accommodating transmission lines”.

[907] The Board’s findings on these matters are set out in Chapter 7.<sup>5</sup>

[908] No other landscape expert undertook a landscape assessment of the whole route or to the detail that was presented for Transpower by Mr G Lister, consultant landscape architect. Other landscape experts criticised the adequacy of the landscape assessment by Mr Lister, rather than providing a comprehensive alternative assessment.

[909] The Board understands its role is to consider the evidence before it in relation to the assessment of landscape effects and come to a finding about what the effects are likely to be. The sub-sections that follow break the landscape assessment into geographical sections following the proposed route from north to south.

## **Visual effects**

[910] Most of the submissions raised localised effects on visual amenity. Mr Lister differentiated these effects from landscape effects as, “the effect on visual amenity for specific audiences, including visual amenity effects from roads, settlements and houses”.

[911] The effects described by submitters aligned with Mr Lister’s definition of visual effects, and included effects on the outlooks from their properties, including from their residences, effects from within their community, and effects when travelling or viewing places from roads.

[912] Ms M Buckland, consultant landscape architect, defined visual effects as the visual changes in the landscape resulting from a proposed development. She explained that the nature and extent of the visual effects would be influenced by:

- the degree of visibility
- whether the proposal is the focal point or part of a wider view
- whether the view is transient or stationary
- the degree of contrast with the surrounding environment.

### **Visual effects assessment of proposed substations and overhead route**

[913] Mr Lister's visual effects scale was peer-reviewed by Dr M L Steven, consultant landscape architect, with minor change suggested to category names. The validity of the methodology was challenged by Ms B M Gilbert, Ms S Peake, and Mr D J Scott, who are all consultant landscape architects. Ms Buckland did not agree with the assessment made by Mr Lister in the application of the methodology.

[914] Alternative visual assessment methods were proposed and used by Mr D Mansergh, a consultant landscape architect and recreation planner, being a Geographical Information System-based "zone of theoretical visibility" analysis; and by Mr D J Scott, being a K2Vi terrain model and a set of photo points.

[915] The Raukawa Trust Board stated that they would be particularly affected by the visual amenity aspects of the proposal as iwi, hapū, whānau and as landowners, explaining that Ngā uri o Raukawa have resided within their takiwā and have identified themselves with their landscapes and whenua for over 500 years. The Trust Board believed that the visual assessment was subjective, and asked that the Board commission an independent visual assessment on which individual landowners and iwi may reply.

[916] Federated Farmers raised a number of landscape and visual issues pertaining to the proposed route as a whole. Federated Farmers raised concerns that the assessment of landscape and visual effects tended to undervalue rural landscapes. It contended that 'wild nature' had been favoured over 'cultured nature' in the route selection and visual assessment. Mr D J Scott also challenged Mr Lister's assumptions about transmission lines being less obtrusive in rural working landscapes.

[917] The Manukau City Council, Matamata-Piako District Council and other submitters contended that the photomontages used by Transpower to show the landscape and visual effects under-represented what would actually be seen, and that there were significant gaps in their coverage.

[918] Mr Lister responded in cross-examination that it was not possible to produce photomontages of every single view along the proposed route.<sup>6</sup> He stated that the viewpoints selected were representative of the line, and were used to show what the alignment would look like from a particular location, including the existing ARI-PAK A line where it existed.

[919] Mr Lister asserted that his assumption about the ability of a landscape to accommodate infrastructure is a valid factor to take into account. Dr Steven gave his opinion that the assumption that rural working landscapes could better accommodate transmission lines did not imply that rural landscapes have a “low value”.

[920] Each of the suggested alternative approaches to the visual assessment and the criticisms of how it was applied, was only raised or applied to specific sections of the proposed route, not the whole alignment. Mr Lister conceded that any scale of this type is necessarily arbitrary, and he expected that different practitioners would have different categories. He stated that his assessment was along the whole of the proposed route, as his methodology would capture the vast majority of dwellings where effects were likely to be moderate or greater.

[921] Dr Steven reviewed Mr Lister’s scale and concluded that it was a useful ‘rule-of-thumb’. Dr Steven was of the opinion that any changes to the scale should be on the basis of a rigorous, scientifically-based investigation, which none of the other landscape expert witnesses had undertaken.

[922] The Board accepts Mr Lister’s visual effects assessment as helpful and acceptable in respect of the substations and the 185 kilometres of overhead line.

## **Substations within Manukau City**

[923] The details of the proposed Grid Upgrade to the existing Pakuranga and Otahuhu Substations and the proposed new substation at Brownhill are in Chapter 3.<sup>7</sup>

[924] Mr Lister described the changes to the Pakuranga Substation as resulting in structures covering a broader area within the existing site and some new somewhat higher superstructure. He described the changes to the Otahuhu Substation as relatively minor and resulting in the removal of some visual elements from the site in Stage 1, and the construction of new structures up to approximately 20 metres high within a compound of approximately 25 by 20 metres, in Stage 2.

[925] The proposed Brownhill Substation would be progressively established, starting with a transition station connecting overhead lines to underground cables feeding the Pakuranga Substation. Mr Lister explained that a gas-insulated switching installation is proposed when the underground cable with the Otahuhu Substation is laid. Later, further equipment, including outdoor termination gantries and transformers, would be installed, with more GIS equipment within a building.

## **Existing landscapes and landscape effects**

[926] Effects on the landscape were not raised by submitters in relation to the proposed changes at the Pakuranga and Otahuhu Substations and the proposed new Brownhill Substation.

[927] Mr Lister described the existing landscape around the site of the Pakuranga Substation as mixed urban, consisting of residential areas, a band of reserve land and open space along Pakuranga Creek, and commercial activities along Ti Rakau Drive. Mr Lister assessed the site as having a good capability to accommodate the proposed Grid Upgrade Project because it would be similar in essential character to the existing substation, and screen planting proposed for the site would improve the existing amenity.

[928] The existing landscape character of the Otahuhu Substation was described by Mr Lister as industrial dominated by existing infrastructure and hard surfaces. This infrastructure includes the central substation for the Auckland urban area, the Otahuhu B combined-cycle, gas-fired power station, the decommissioned old Otahuhu power station, the southern motorway and the new Waiouru Peninsula expressway. The proposed works on the Otahuhu Substation site were assessed as having no landscape significance at all by Mr Lister, because they are insignificant compared with the rest of the site.

[929] The proposed site of the Brownhill Substation is located in the Turanga catchment at the 'back' of the Whitford Basin. Mr Lister described it as a modified rural landscape that is quite picturesque, not pristine but also typical of many of the peri-urban landscapes in this locality.<sup>8</sup> Mr Lister assessed the landscape as having a moderately-high, natural character given the natural landforms, the stream, and some sizable remnant stands of bush. But he also observed that this natural character is being modified by the increasing presence of rural-residential development in the locality.

[930] The landscape effects of the staged developments proposed on the Brownhill site were assessed by Mr Lister as ranging from 'relatively minor' in relation to the transition station, 'relatively benign' for the GIS switching station, and 'unremarkable' for the GIS substation. Mr Lister's assessment was based on his belief that, although the buildings for the switching station and the substation would be large, they could be readily accommodated by the scale of the enclosing hills. He also asserted that introducing a human element, such as the buildings, into a landscape is "not fatal to its natural character...it has an influence and is part of the continuum of what is natural or naturalness".<sup>9</sup> Mr Lister considered that mitigation measures including commissioning an architect to improve the aesthetics of the buildings, painting the buildings a recessive colour, and screen planting and landscape restoration, would all be appropriate to address any landscape effects.

## Visual effects

[931] Visual effects in relation to the proposed Pakuranga and Brownhill Substations were the main issues raised by submitters.

[932] The Manukau City Council had originally sought a gas-insulated switching substation at Pakuranga. Mr D J Scott assessed the proposed air-insulated switching substation structure as having high adverse visual effects on adjacent residential and recreational areas due to the larger area, higher superstructure, increased scale and intrinsic unnaturalness of the open air arrangement of the cluster of exposed structural and electrical elements of an AIS substation compared to a GIS substation. The GIS substation was preferred because it would house the substation components in a building.

During the course of the hearing, witnesses for the Council gave their opinion that a GIS substation at Pakuranga is no longer considered necessary.

[933] Several submitters, including, the Manukau City Council, Mr M Thompson and Ms A Bosse, Mr M and Mrs L Dodd, Regis Park Stage 2 Ltd, Underground in Manukau, Mr R and Mrs M McKenzie, Mr M A and Mrs R D Spring, Mr H Halford and Mr S and Mrs M Forbes-Brown, expressed concerns about the visual effects on neighbouring residential properties of the proposed Brownhill Substation, and the proposed overhead lines and gantry feeding into the substation. An alternative location (on the Dodd property) for the substation was suggested by many of these submitters. Regis Park Stage 2 Ltd and Underground in Manukau also sought landscape enhancement as part of the rehabilitation of Brownhill Road after underground installation.

[934] Transpower acknowledged that the proposal would have significant adverse visual effects on surrounding residential properties at the end of Brownhill Road and those that directly overlook the site. Visual amenity effects on the properties directly overlooking the site were assessed by Mr Lister as being within the 'high' category.

[935] Mr Lister explained the mitigation for the site included the use of GIS technology for the substation, so that most of the equipment at the substation would be contained within the building that would be of a scale that is not unknown in rural landscapes. Planting around the site would also mitigate visual effects. Transpower stated that through the consultation process with the local community about the potential visual effects, a monopole for Tower 5 and a reduced gantry structure between the monopole and the substation site had also been agreed. Mr Lister agreed that specific rehabilitation of Brownhill Road should be undertaken following installation of the underground cable.

[936] The alternative site on the Dodd property proposed for the substation by submitters was not supported by Transpower. Ms Allan stated that the report produced by MWH in 2007 set out the investigation of the Dodd property option, and the reasons why it was not considered an appropriate option, including engineering requirements, additional costs, and the loss of natural character on the proposed site.

## **Conclusions on substations within Manukau City**

[937] The Board finds that the proposed changes to existing substations at Pakuranga and Otahuhu and the new works and substation at Brownhill would not result in any significant landscape effects.

[938] The Board finds that the visual effects in relation to the existing substations at Pakuranga and Otahuhu would be minor. The proposed planting at the Pakuranga Substation is appropriate.

[939] The Board finds that the Brownhill Substation would have significant adverse visual effects. Mitigation measures for the Brownhill Substation, including using GIS technology, a monopole for Tower 5, the reduced gantry structures, and the rehabilitation and planting on the

substation site and along the underground cable route, would be appropriate, and are included in proposed conditions for the designation.

## **Overhead line route within Manukau City**

### **The issues**

[940] The Auckland Regional Council submitted that the overhead line route within Manukau City would result in adverse landscape impacts, particularly because the route did not avoid, where possible, outstanding or regionally significant landscapes and areas of rural character.

[941] Other submitters, including Underground in Manukau, Clevedon Cares Incorporated, Mr J and Mrs M Makin, Ms C Crosthwaite, Mr T Rishworth, Mr B Davidson, Mr P and Mrs D Harrington, Dr L Bennet, Mr R Everson, and Mr J and Ms B Addison, expressed similar concerns about adverse visual effects on the rural countryside that has attractions for city dwellers, and impacts on the unique rural character of Whitford, Brookby and the Ardmore-Clevedon areas.

[942] The Manukau City Council submitted that the proposed overhead line through Brookby would have immediate environmental impact, particularly in visual and landscape terms.

[943] Transpower accepted that the proposed line would detract from the visual amenity of the existing environment of the Whitford Basin, Brookby valley and the Ardmore-Clevedon valley.

### **Existing landscapes**

#### **Whitford**

[944] Whitford is a broad, enclosed basin with hills defining the parameter. The basin has contrasting land cover including open pasture, remnant forest, exotic forestry and indigenous re-vegetation. Land use is mixed, with a lifestyle character typical of rural-residential landscapes around Auckland's urban fringes.

[945] Mr Lister assessed the landscape as having a moderate degree of natural character, with the hills and streams being the main elements. The number of houses, and the patchwork of different land uses, has modified that landscape's natural appearance.

[946] The ARI-PAK A line follows an alignment across the centre of the basin.

#### **Brookby**

[947] Brookby is a narrow valley enclosed by the Clevedon-Maraetai hills and the Whitford ridgeline. The landscape is predominantly pasture, with fragments of native and exotic bush and shelterbelts, and domestic specimen

trees. It has an attractive and picturesque character with a somewhat manicured appearance.

[948] The land uses include a mixture of peri-urban activities: pastoral farming, horse studs, vineyards, plant nurseries, rural-residential and lifestyle blocks, and ancillary activities such as farm-stay accommodation. There is a primary school, and a recently developed equestrian centre.

[949] The ARI-PAK A line passes through Brookby, and further west the OTA-WKM A, B and C lines pass over the Brookby Ridge.

### **Ardmore-Clevedon**

[950] The Ardmore-Clevedon valley is a broad-scaled plain and river valley landscape bounded by the Clevedon-Maraetai Hills and the Hunua Ranges. The valley is semi-rural in landscape character, with a mixture of land uses including productive rural activities, lifestyle properties and peri-urban facilities. There is a geometric form to the land-use pattern, accentuated by the pattern of shelter belts and shelter trees.

[951] The hills rise to around 140 metres at Brookby ridge on the north side of the valley and to around 230 metres on the south side. The land cover on the hills comprises of a mosaic of pasture, regenerating bush and pine plantation.

[952] The proposed route generally follows the existing ARI-PAK A line with minor deviations. The OTA-WKM A, B and C lines cross the valley some 2 kilometres to the west of the proposed line.

## **Landscape and visual effects**

### **Whitford**

[953] Mr D J Scott gave his opinion that the proposed transmission line within the small, discrete, enclosed Whitford valley system would completely dominate the integrity of this landscape. He stated that the visual effects would be exacerbated by the elevated position of the viewing audience that virtually encircle the proposed route. He claimed that Transpower had underestimated this viewing audience.

[954] Ms Peake did not agree with Mr Lister's assessment that the Whitford valley is typical of the rural-residential landscapes around Auckland's rural fringes. Ms Peake contended that the valley has unique landscape characteristics that make it particularly vulnerable to change. She stated that the need to control development within this valley to avoid adverse effects on the landscape is recognised in Plan Change 8 of the Manukau District Plan.

[955] Mr Lister stated that the proposed line would detract from the aesthetic qualities of the landscape, and conflict with the rural-residential character.



[956] Visual effects on properties along the proposed route were assessed by Mr Lister as ranging from very high to moderate depending on the proximity of the house to the route and other factors. Mr Lister emphasised that, in his opinion, the effects on the Whitford area would be reduced by the proposed alignment of the overhead line being around the perimeter of the Whitford Basin rather than across the middle of the area as the ARI-PAK A line does at present. The ARI-PAK A line would be removed when the new line is commissioned.

[957] As stated above, Mr Lister proposed that a monopole be used for Tower 5 as part of the mitigation for the proposed Brownhill Substation. The Board agrees with this proposal.

[958] On the evidence, the Board finds that the proposed line would detract from the visual amenity and landscape value of the existing environment of the Whitford valley, an effect that would be mitigated by removal of the existing ARI-PAK A line.

### **Brookby**

[959] Mr D J Scott stated his opinion that the scenic Twilight Road would be affected by the transmission line.

[960] Ms C Tuck (Underground in Manukau) emphasised the narrow valleys of the Brookby area, and the low, relative height of the hills, which she considered would increase the prominence of the line.

[961] Mr Lister gave his opinion that the prominence of the proposed line would be accentuated by the small scale of the Brookby valley.

[962] Ms Allan acknowledged that the proposed line would detract from the visual amenity of the Brookby valley, but gave her opinion that the landscape would continue to be a dominant feature.

[963] On that evidence, the Board finds that the proposed line would detract from the visual amenity and landscape value of the existing environment of the Brookby locality, an effect that would be mitigated by removal of the existing ARI-PAK A line.

### **Ardmore-Clevedon**

[964] Ms Peake agreed with Mr Lister's assessments that the scale of the Ardmore valley would moderate landscape effects, and that the valley has a moderate capability to accommodate the proposed new line. Ms Peake was particularly concerned about the cumulative effects of the new and existing lines, and the different scale of the new lines in relationship to the scale of the landscape. Mr D J Scott also expressed concern about the significant change in the scale of effect of the proposed lines compared with the existing lines.

[965] Visual effects were assessed by Ms Peake to be significant because this section of the proposed route (along with Brookby) has the highest concentration of houses likely to be affected.

[966] Mr D J Scott gave his opinion that the flat topographical nature of the valley landscape would result in the visual effects being felt from both the elevated areas overlooking the Clevedon valley, and within the valley floor itself.

[967] Mr Lister gave his opinion that the close pattern of settlement in the valley would increase the direct visual effects of the proposed line on individual properties, and visibility from roads. On the other hand, Mr Lister contended that this settled and modified nature of the landscape and the presence of the existing lines, would moderate the effect of the new line on the appearance of the landscape.

[968] Mr Lister stated that the line would be visually prominent from a number of roads within the valley and roads that cross the hills on either side of the valley. Mr Lister explained that deviations from the existing ARI-PAK A line to reduce visual effects included following a valley to the west of Clevedon township and crossing the Brookby ridge at a saddle 150 metres east of, and at a slightly lower elevation than, the existing line.

[969] On the evidence, the Board finds that the proposed line would detract from the visual amenity and landscape value of the existing environment of the Ardmore-Clevedon valley, an effect that would be mitigated by removal of the existing ARI-PAK A line.

## **Overhead line route within Franklin District**

[970] From the boundary with Manukau City, the proposed overhead line would enter Franklin District across rising hills into the Hunua-Paparimu valley system. The route passes east of the Hunua village and south of the township, crossing west of Hunua Road. The line would then traverse country to the west of Paparimu School and village, and follow a southerly route, crossing into the Hunua foothills to leave the district at a point west of Mangatangi and State Highway 2.

[971] In the section south of Hunua village, the route deviates from the existing ARI-PAK A line, and follows parallel with the OTA-WKM A and B lines as far as Happy Valley. It would follow the middle of the landscape, maintaining as much separation as practicable from Hunua village and the landscape along the Wairoa River.

## **The issues**

[972] The Auckland Regional Council and Franklin District Council submitted that the overhead line through Franklin District would adversely affect the Hunua landscape and visitors to the Hunua Ranges Regional Park. The councils both also expressed concerns about the impact of the proposed lines on the rural landscape character of the Franklin District.

[973] The Auckland Regional Council submitted that there would be adverse effect on proposed Outstanding Natural Landscape 62 (ONL 62) being an area north of Gelling Road, on the hills north of the Mangawhau Stream.

[974] Mr B N Davidson submitted that the proposed transmission line would be invasive and destructive of natural and physical features of the environment, and of such visual dominance, as would lead to significant permanent reduction in the quality of the lived-in environment; that it would permanently and significantly despoil and damage the visual and aesthetic environment of important recreational and environmental areas, particularly adjacent to the Hunua Ranges and park and other areas, and would cause significant and permanent visual degradation of the environment; and that the skyline dominance of the towers throughout the Hunua Valley and elsewhere would create a significant intrusion and degradation of the landscape and aesthetic environment on the approaches to Auckland. Mr Davidson also submitted that Transpower had failed to recognise the need to maintain and enhance the built and visual environment, and to mitigate, remedy and avoid undesirable and unnecessary environmental effects.

[975] Other submitters, including Ms T Curtin-Keane, Hunua School, Mr E and Mrs C Stoeven, and Mr N and Ms S Fuller, made similar contentions.

[976] Transpower replied that use of monopoles in this locality is not warranted; that compact towers would be inappropriate; and that selection of the route through the Hunua and Paparimu Valley had avoided, remedied and mitigated adverse effects on the environment. It acknowledged that the proposed line would have significant adverse visual amenity effects, and submitted that these effects should be balanced against long-term environment benefits of deferral of the need for an additional line, as compared with those of an alternative high-capacity, 220-kV line.

## **Effects on Hunua and Paparimu Valley**

### **The environment**

[977] Hunua is a foothill environment associated with the Hunua Ranges. To the east, which includes the Hunua Falls, and Camp Adair at the edge of the park, there are large areas of open pasture, exotic pine woodlots and indigenous vegetation, and the land uses include a mixture of farming and lifestyle properties. Hunua township is the service centre in a basin with low, rolling terrain, the Hunua Ranges to the east and the Highridge Road hills to the north. The land generally slopes towards the Hunua escarpment, which rises abruptly from the eastern side of the basin.

[978] The escarpment has a high degree of natural character; the Highridge Road hills a moderate degree of natural character; and the basin floor a moderate to low degree of natural character, mainly from shelter belts, shelter trees and woodlots.

[979] To the south of Hunua township, the western escarpment forms an extensive backdrop of hill country largely covered with indigenous forest. The Wairoa River follows the base of the escarpment. There are scattered kahikatea remnants, and a strip of riparian bush along the Mangawheau Stream.

[980] The proposed transmission-line route crosses an area of rolling hills to the west of the Wairoa River valley. At the northern end, there is plantation forest; at the southern end, dairy farming on the alluvial flats of Happy Valley; in the middle, the closer settlement pattern of rural-residential properties, pastoral farms and small plantation and shelter belts.

[981] The valley is crossed by four existing transmission lines generally in a north-south orientation, one of which (ARI-PAK A) is to be removed as part of the Grid Upgrade Project.

[982] The natural appearance of the valley is affected by the relatively close pattern of subdivision and houses, the geometry of shelter belts, and the existing transmission lines, which detract from its aesthetic qualities.

### **Effects on the environment**

[983] There was no dispute that the proposed overhead line would have adverse visual and landscape effects on the environment in the Hunua and Paparimu Valley. The Mayor of the Franklin District, Mr M Ball, stated that the proposed towers would be significant structures that would be readily seen from a wide area of the valley and by large numbers of residents, and would add to the impacts of existing structures in the area.

[984] The HPVRA contended that the areas in the valley are relatively heavily populated and would be affected to a greater extent than areas that are relatively less populated; and particularly locations where four transmission lines are already visible, or where the proposed line would be separated from existing lines by less than 100 metres.

[985] Transpower contended that the range of possible routes in the Hunua area is constrained; that the adverse effects are to be balanced against long-term environmental effects of deferring building an additional transmission line; and that removal of the ARI-PAK A line would have more than minimal benefit to the environment.

[986] Mr Lister accepted that the line would have some effect on ecological aspects of natural character, including clearance of areas of regenerating shrubland on the Highridge Road hills. He also accepted that the proposed line would be prominent from White Road and a section of Falls Road, but would not be visible from the entrance to the Hunua Ranges Regional Park or the Falls, and would be largely screened from public places in Hunua village. Views from Hunua village would be mainly restricted to properties on the periphery, including from Hunua School grounds, from which the line would be on lower ground some 380 metres to the east. Mr Lister stated that the line would be prominent from Hunua Road as it descends to the south-eastern outskirts of the village.

[987] Mr Lister gave his opinion that the capability of the landscape to the south of Hunua to accommodate the line would be increased by the modified nature and largely working rural character, low visibility to the wider community, and the presence of the OTA-WKM lines. He remarked that the area has a reasonably close pattern of subdivision and houses which would result in significant visual effects on a number of individual properties.

[988] Mr Lister considered that the most sensitive area to broad landscape effects would be the crossing of the hills to the southern side of Happy Valley where the line would cross a small saddle. He acknowledged that it would be visible from local rural roads, including Gelling Road and Ararimu Road.

[989] This witness explained that the existing lines had been taken into account when selecting the route using the ARI-PAK A alignment. Ms Allan also stated that cumulative effects had been an integral part of the whole assessment process, in that the height and number of towers, tower design and possible use of monopoles were considered in accordance with best practice overseas.

[990] Mr D J Scott stated that although the ARI-PAK A line is to be removed, other existing lines are to remain, and the proposal would have a potential cumulative effect.

[991] Ms Peake also stated that removal of a kahikatea stand close to Downs Road would have adverse landscape effect. She did not agree that the modified nature and largely working rural character of the area necessarily increases the capability of the landscape to accommodate the line; and considered that the proposal would have a cumulative effect. Even so, Ms Peake anticipated that the transmission line would not dominate the landscape, and considered that the line would quickly become an integrated feature, although individual towers will be prominent features.

### **Avoiding and mitigating adverse visual and landscape effects**

[992] In considering avoiding and mitigating adverse visual and landscape effects of the proposed line, the Board addresses separately the respects in which the effects have been avoided or mitigated by route selection and line design; and the respects in which further avoidance or mitigation were in issue.

### ***Avoidance and mitigation by route selection and line design***

[993] The HPVRA accepted that the proposal avoids the adverse effects of a route through areas of greatest natural character, being in native forest.

[994] Transpower contended that by its choice of route, it had avoided greater adverse visual and landscape effects, and, in that way, had mitigated them; and that the proposed removal of the ARI-PAK A line would, to a degree, remedy the adverse effects of the Grid Upgrade Project.

[995] Ms Peake gave her opinion that the choice of the proposed route sought to minimise effects on the landscape, and that the effects on the landscape would be partially mitigated by removal of the existing ARI-PAK A line, which is closer to the ranges. She agreed that one 400-kV line is preferable to two 220-kV lines; and, acknowledging the use of monopoles may be appropriate in urban situations, stated that lattice towers blend into the landscape more effectively where there are long views.

[996] Mr Lister gave evidence that the proposed route had been aligned to follow a middle course between the Hunua settlement and the area along the Wairoa River, to avoid the latter; that a route skirting to the eastern side of

the ranges, that would have crossed connections between the ranges and the coast, had been rejected; and that south of Hunua village the line avoids the more picturesque and more widely used Wairoa Valley and the local settlement at Paparimu.

[997] The witness gave his opinion that the use of the route selected would have less effects than other possible alignments through the area, and that the views of the proposed line from Hunua Road and Paparimu Road would be over an area where removal of the ARI-PAK A line would improve the amenity from those roads. He also remarked that locating the line adjacent to existing transmission lines would avoid potential effects of sandwiching houses between lines.

[998] Mr Lister accepted that putting transmission routes together through Hunua could create a “wire-scape”<sup>10</sup> and visual clutter<sup>11</sup> with existing lines. He stated that route selection was a question of considering the cumulative effects and co-location versus a ‘greenfields route’.<sup>12</sup> In Mr Lister’s opinion, little benefit would be gained by using monopoles in the Hunua area because it already had a character of a transmission corridor. Any benefits from using monopoles would be muted by the existing lines.<sup>13</sup>

[999] He added that removing the ARI-PAK A line would also have positive effects on visual amenity for a number of properties in the Wairoa Valley.

[1000] Mr Lister also stated that the visual effects of the line crossing Happy Valley would be reduced by the fact that it would cross adjacent to, and parallel with, existing transmission lines, and in the vicinity where the road passes between two kahikatea stands which restrict views within the road corridor.

[1001] Ms Allan stated that, as the line has potential to be visually intrusive, considerable effort had gone into trying to limit its intrusiveness by identifying contexts where the line would be less obvious, and proposing additional mitigation measures. She gave details of respects in which the route deliberately avoids rivers and their margins where possible, including where the Wairoa River runs along the base of the Hunua escarpment; where it veers to the west to avoid locating the line along the centre of the valley to the south; and also where it avoids the growth area for Hunua township and areas of conservation zoning.

### ***Further avoidance and mitigation in issue***

[1002] The HPVRA contended that as the 400-kV capability of the line would have significantly greater adverse visual and landscape effects than a 220-kV line (particularly due to the greater volume contained within the towers), and as the route has to be close to existing transmission lines, the cumulative effects should be avoided, remedied or mitigated in rural areas such as Hunua, having relatively high densities of dwellings close to the line. The HPVRA argued that planting and other localised mitigation would not be effective mitigation through the valley as a whole, that the environmental benefit of removing the existing ARI-PAK A line would be minimal, and urged that monopoles instead of lattice towers, or at least compact towers, would be appropriate mitigation.

[1003] The HPVRA also accepted that the extent to which using monopoles instead of lattice towers would mitigate adverse visual effects on the environment is a matter of aesthetic preference, and argued that residents the extent to which the residents' preference is adopted would, in practice, reduce the level of adverse visual effects, the effectiveness reflecting the subjective personal responses of affected people. The HPVRA also contended that the marginal additional cost of using monopoles instead of lattice towers over a relatively small part of the route would not be significant in the context of the Grid Upgrade Project as a whole, and would be warranted given the particular characteristics of the Hunua and Paparimu Valley part of the route.

[1004] Mr M Ball stated his understanding that options for less significant structures – pole forms, smaller lightweight conductors and cross members, less intrusive compact tower designs, monopoles, and underground cables – had not been fully considered. Mr D A Parker expressed similar opinions; and on the removal of the ARI-PAK A line, he stated that the “enormity of the new line makes this comparison odious”. He also urged that adoption of compact design would reduce field strength of electric and magnetic fields, but, in cross-examination, accepted that he had no expertise in electrical engineering, in power system planning, or in structural design of transmission lines.<sup>14</sup>

[1005] Ms Peake acknowledged that use of monopoles may be appropriate in urban situations, but stated that lattice towers blend into the landscape more effectively where there are long views.

### **Conclusion on Hunua and Paparimu Valley**

[1006] On the evidence, the Board finds that the towers and conductors of the proposed line would have significant adverse visual and landscape effects on the environment in the Hunua and Paparimu Valley; and that in places, those effects would be cumulative on similar effects of existing transmission lines nearby.

[1007] The Board also finds that there are several ways in which the proposal would avoid, remedy, or mitigate those adverse effects. They include the choice of route, design of the line, in the removal of the existing ARI-PAK A line (albeit much smaller than the proposed line), and in being a single higher capability line, rather than (eventually) two lines of lower capability.

[1008] The Board does not accept the suggestion that different pole forms, smaller conductors and cross members, compact tower designs, monopoles, and greater use of underground cables, had not been fully considered.

[1009] Even so, the extent that the proposal would avoid, remedy or mitigate the adverse environmental effects of the line does not necessarily preclude more avoiding, remedying or mitigating of them, although a balanced judgement of costs and benefits is called for.

[1010] In Chapter 13, the Board addresses adoption of greater lengths of underground cables, and use of compact tower designs. For reasons given there, the Board does not accept contentions that those measures should be required so as to avoid, remedy or mitigate the adverse effects in the Hunua and Paparimu Valley.

[1011] Use of monopoles instead of lattice towers cannot be rejected on functional grounds. Transpower itself proposes use of monopoles instead of lattice towers at Whitford and at Lake Karapiro.

[1012] Even so, the extent to which use of monopoles instead of lattice towers would mitigate the adverse visual and landscape effects of the proposed line is not straightforward. In summary, there are landscape experts who favour monopoles for short views, and in urban areas; and lattice towers for longer views. Of course, some people may have a shorter view, and others a longer view, of the same structure.

[1013] The HPVRA plainly prefers monopoles in the Hunua and Paparimu Valley. It fairly acknowledged that this is a matter of individual preference, and argued that the satisfying of its preference would mitigate adverse effects on those who share that preference.

[1014] However, that is a problematic basis for a decision under the RMA. Such decisions are not to be based on numbers.<sup>15</sup> Nor is there evidence showing a clear preference for monopoles among residents of the Hunua and Paparimu Valley.

[1015] In the Board's judgement, to compel Transpower to use considerably more expensive structures to support the proposed line through a particular section of the route to satisfy the preferences of taste (however sincerely held) of the HPVRA would not accord with the rule of reason approach to RMA decision-making.<sup>16</sup> Substituting monopoles for lattice towers might mitigate the adverse visual effects of the line for some observers, but, correspondingly, it might exacerbate the adverse effects for other observers.

[1016] On balance, the Board concludes that imposing such a requirement on Transpower would not be justified.

## **Effect on proposed Outstanding Natural Landscape (ONL 62)**

[1017] The Auckland Regional Council stated that in September 2005 proposed Change 8 (Landscape and volcanic features) to the operative Auckland Regional Policy Statement (ARPS) was publicly notified. The proposed Change 8 included new objectives and policies relating to Outstanding Natural Landscapes (ONL), and new ONL maps. ONL 62 was identified on the new maps.

[1018] After submissions on proposed Change 8 were heard by the Council in May and June 2007, the Council decided to undertake and notify a variation to the landscape component of the proposed change. Decisions were not made on the landscape provisions, and the notification of the variation is still pending.

[1019] The Council accepted that the weight the Board can give to the landscape provisions in the proposed change and the identification of ONL 62 must reflect that the plan change is still at a relatively early stage of the process, with decisions on submissions yet to be made.



[1020] Ms Peake stated that part of ONL 62 (Hunua Ranges) is a strip of land on the hills north of the Mangawhau Stream that is directly connected to the Hunua Ranges Regional Park. Ms Peake identified the key elements, features and patterns of ONL 62 as “interplay of intact mature indigenous forest and forest remnants with pasture, reinforcing topography”. Ms Peake contended that, regardless of whether this Mangawhau Stream part of the ONL 62 is deemed to be an outstanding natural landscape or not, the location of the proposed overhead line through this area would not comply with the landscape policies in proposed Change 8. In particular, Ms Peake identified Policies 6.4.22–5 and 6 that seek to control inappropriate subdivision, use and development in adjacent areas connected to ONLs.

[1021] Mr Lister gave his opinion that this part of ONL 62 does not meet the criteria for classification as an outstanding natural landscape. In his opinion, that area is not part of the Hunua Ranges, it does not have a high degree of naturalness, it would only score modestly in terms of the factors listed in the corrected Pigeon Bay Criteria, and it would not meet the test of ‘outstandingness’.

[1022] On the evidence, the Board finds that little weight can be given to the landscape provisions of proposed Change 8 in relation to the area identified as part of ONL 62. The Board accepts Mr Lister’s assessment that this area does not meet the criteria for classification as an outstanding natural landscape in terms of section 6(b) of the RMA.

## **Overhead line route within Waikato District**

### **The issues**

[1023] Several submitters, including Glenhaven Farms Ltd, Mr J and Mrs L Darlow, Mr J Thurlow, Mr A and Mrs D Allen, and Ms L Bilby and Mr R Stewart, raised concerns about landscape and visual effects including that the proposal would be an ugly blot on the landscape and that the pylons would be ugly monstrosities that would dominate the landscape and valleys of the district. These submitters sought that the proposal be declined or that alternatives be considered to address the landscape and visual effects.

[1024] The Hon Mr W R Storey submitted that the proposal would create unacceptable adverse amenity and visual impacts, particularly in the Waiterimu district where the size of the proposed pylons would make them extremely intrusive, and there would be no way to mitigate this effect. He expressed concern that Transpower’s landscaping and tree-planting mitigation programme is inadequate, and ignores the fact that any trees would take at least 10 to 15 years before providing any effect, and that the plantings would require the use of even more productive land above that required for the actual line. Mr Storey sought that the proposal be declined, or that the proposed pylons be replaced with shorter pylons, less visually intrusive monopoles or compact structures with a maximum capacity of 220 kV.

[1025] Mr B and Mrs F Aldridge expressed their concerns about landscape and visual effects on the quiet beauty of the Waiterimu, Matahuru, Taniwha valleys. They disputed Transpower’s assessment that the valleys are

relatively remote and little used. They stated that the visual amenities and landscapes of these valleys are highly valued by the local residents and the visitors and tourists that use these areas because of their scenic serenity. Mr and Mrs Aldridge also questioned why the route does not follow the OTA-WKM A, B and C lines on the western side of the valleys.

[1026] Mr and Mrs Aldridge, as well as other submitters such as Mr A and Mrs D Sutton, explained the adverse visual effects from their house and stated that planting could not disguise or hide their view of the proposed line.

[1027] Transpower replied that it would be impossible to hide the proposed line but that it is possible to mitigate or reduce the visual effects by planting. Transpower acknowledged the cumulative effects in conjunction with the existing lines within the Kopuku-Taniwha-Waiterimu valleys but stated there would be a reasonable separation of just over 1 kilometre between the lines in the valleys.

## Existing landscapes

[1028] The proposed route for the overhead line enters the Waikato District in the Maramarua valley, with the Hunua Ranges forming a distant backdrop to the north and the lower Rataroa hills to the east. The land uses along this part of the proposed alignment are mainly dairy farming with a land cover of pasture with large shelter trees, small pine plantations and the occasional bush remnant. The degree of natural character was assessed by Mr Lister as being moderate-low because of a prevalence of houses, farm buildings, State Highway 2, the existing transmission lines (being the existing OTA-WKM A, B and C lines) and the linear settlement of Maramarua.

[1029] After Maramarua the route follows a north-south orientated valley from Kopuku to a ridge north of Te Hoe. Settlements along this valley include Waerenga, Matahuru, Waiterimu and Taniwha Marae. The valley has areas of alluvial flats and rolling foothills, and the land use is predominantly dairy farming with areas of pine plantations, dry-stock grazing, and open-cast coal mining at the northern end of the valley. The landscape has a working character, and was assessed by Mr Lister as having a moderately-low degree of natural character. Mr Lister described the landscape as a pleasant and quiet rural character area that is off the beaten track.

[1030] From Te Hoe, the proposed alignment is through low-lying land to the Hangawera Hills. The land use is mostly dairy farming, with the land being drained by a network of drains and canals. The Hapuakohe Range which is a prominent backdrop to the north-east of the valley, includes the distinctive bush clad peak 'Ngaraparapa' at its southern end. The settlement of Te Hoe's backdrop is a hill face that has been identified in the Waikato District Plan as a landscape management area. There are pā earthworks on a spur within this area, and the route passes through the edge of that area at the toe of the hill. Mr Lister assessed the natural character of this section of the proposed alignment as moderately low, with the landscape having a working rural character that is relatively open, with a rectilinear pattern of drains, races and shelter belts.

[1031] The final section of the proposed alignment in the Waikato District skirts the base of the Hangawera Hills to near the settlement of Tauhei. This section traverses rural landscapes similar to those further north, primarily used for dairy farming. Mr Lister assessed the proposed alignment as traversing a landscape of a moderately low degree of natural character with the land having been almost completely cleared and modified.

## **Landscape and visual effects**

[1032] No landscape or visual evidence was presented by expert witnesses called by the Waikato District Council or other submitters. Mr Lister provided a comprehensive assessment of the landscape and visual effects along the proposed route through the Waikato District.

[1033] Mr Lister acknowledged that the proposed line would be a prominent feature down the length of the Kopuku-Taniwha-Waiterimu valley, and would be experienced as such by the local community. Mr Lister stated that there would have been landscape and visual benefits if the proposed line had been routed along with the existing OTA-WKM A, B and C lines, and not on the ARI-PAK A route through the valley; but other factors considered in the ACRE process had ruled that route out.

[1034] Mr Lister considered that there would be cumulative effects in conjunction with the existing lines along the proposed route sections 6 and 7 within the Waikato district. This would be particularly in the vicinity of Maramarua, and along the Kopuku-Taniwha-Waiterimu valley, where there would be prominent lines down either side of the valley.

[1035] Mr Lister gave his opinion that the section of the proposed line between Te Hoe and the Hangawera Hills had a reasonably high capability to accommodate the proposed overhead line because of the backdrop hills, large-scale shelter trees, the existing transmission lines, the modified nature of the rural landscape character, and its working character.

[1036] Dr Steven stated that in his opinion the Te Hoe Landscape Policy Area is not 'outstanding', even though the Waikato District Plan equates landscape policy areas with outstanding natural features and landscapes. Dr Steven considered that the biophysical and archaeological values attributed of the site at Te Hoe were the likely reason for its classification as a landscape policy area, and not its visual quality or aesthetics. He gave his opinion that the proposed alignment that would pass through the edge of the landscape management area, would not compromise these values.

[1037] The visual effects of the proposed line through the northern part of Waikato District were assessed by Mr Lister as being mostly moderate because of the working character of the landscape, its proximity to the existing OTA-WKM lines, and the orientation of houses away from the proposed route.

[1038] Further south, the proposed line would generally parallel the through roads along the eastern side of the valley, and Mr Lister stated that it would be a prominent feature. Mr Lister gave his opinion that in some sections along the valley there would be good separation and screening by vegetation and intervening low hills. In others, such as adjacent to Taniwha

Road and Kopuku Road, it would be prominent. Mr Lister stated that around 86 houses would be within 1 kilometre of the 30-kilometre proposed route section 7, and 16 houses for the 8-kilometre proposed route section 8.

## **Conclusions on overhead line route within Waikato District**

[1039] The Board accepts the evidence of Mr Lister and Dr Steven in relation to effects on the landscapes and visual effects within the Waikato District. The Board finds that there would be significant adverse landscape and visual effects including, in some places, cumulative effects on the existing transmission lines along the proposed route sections 6 and 7 within Waikato District.

[1040] The Board accepts Dr Steven's evidence that the proposed line would not compromise the biophysical and archaeological values attributed to the Te Hoe Landscape Policy Area.

## **Overhead line route within Matamata-Piako District**

### **The issues**

[1041] The Matamata-Piako District Council submitted that the proposed 70-metre high power lines of a utilitarian design would be visually intrusive, and incompatible with the rural landscape, with the landscape and visual effects incapable of being avoided, remedied or mitigated. The Council further submitted that the assessment of visual effects was inadequate and visual effects near the western edge of Morrinsville had not been adequately addressed. The Council sought that the requirement be withdrawn unless the visual and landscape effects could be adequately mitigated, by (for example) underground installation of the line or by the use of monopoles at the entrance to Morrinsville.

[1042] Other submitters, including Mr M and Mrs K Gilroy, Morrinsville Community Board, Ms M Gardner, Mr R Mead and T Boubee, and Mr A McCulloch, raised issues about the proposal being incompatible with rural landscape and effects on rural properties around Morrinsville. Submitters expressed their view of the proposed overhead line and pylons as an ugly intrusion on their landscape.

[1043] Transpower replied that the ACRE process was one of the primary means by which landscape effects and visual effects could be addressed and mitigated. The assessment of visual effects and the landscape mitigation conditions that flow from that assessment, had been based on an 'in the field' assessment along the entire length of the proposed route carried out appropriately by Mr Lister as a landscape expert.

### **Existing landscapes**

[1044] From the boundary with Waikato District in the vicinity of the settlement of Tauhei, the route skirts the base of the Hangawera Hills. From here through to Morrinsville the proposed route primarily traverses moderate

to shallow, rolling grazing and cropping land. South of Morrinsville the countryside is more rolling hill country, with elevations up to around 150 metres. Like the northern-most section in the Matamata-Piako District, the proposed route again traverses a landscape dominated by steep, bare-faced hillsides in the vicinity of the Mt Misery hills and the southernmost portion adjacent to the Waipa District boundary.

[1045] The proposed route generally follows the existing ARI-PAK A line alignment, with minor deviations.

[1046] The land use along this proposed route is predominately dairy farming, with some dry-stock grazing and horse facilities. There are a number of life-style properties with a concentration of rural-residential activities on the outskirts of Morrinsville.

[1047] Both Mr Lister and Ms Gilbert considered the landscape to have a rural working character, with shelterbelts, hedgerows and scattered trees adding to the visual complexity.

[1048] Mr Lister's assessment was that the landscape generally had a moderately low degree of natural character because of the extensive clearance and modification for productive purposes.

[1049] Ms Gilbert based her landscape assessment on the landscape assessment criteria in the Matamata-Piako District Plan.<sup>17</sup> Her assessment was similar to Mr Lister's.

[1050] Ms Gilbert and Mr Lister agreed that the landscape has a reasonably high capability to accommodate new structures. Indeed the 1992 landscape assessment report relied upon by Ms Gilbert identified that "its landform, vegetation and mixed use in places affords good screening for new developments". The witnesses differed in their opinion about whether this capability to accommodate new structures extends to the proposed new pylons.

[1051] The proposed line would cross State Highway 26 on the western outskirts of Morrinsville at the same location as the existing ARI-PAK A line. Morrinsville is the largest settlement passed by the proposed line. In the vicinity of the state highway crossing, the area comprises a relatively uncoordinated mix of land uses including light industrial, business, commercial, rural-residential and residential.

[1052] The landscape and visual effects of the proposed line at Morrinsville was an issue in contention between Mr Lister, Dr Steven and Ms Gilbert.

## **Landscape and visual effects**

[1053] Ms Gilbert gave her opinion that the scale and visual character of the proposed structures would be blatantly out of keeping with the character of the existing rural landscape and Morrinsville township.

[1054] Ms Gilbert stated that during her field survey, she could identify nothing a similar scale with the exception of the TV3 mast on ranges in the Waipa District. She was of the opinion that the proposed towers, by sheer

virtue of their size and scale, would appear to dwarf the landscape setting. In her opinion, the scale of the towers would be exceptionally incongruous with the surrounding landscape.

[1055] Mr Lister acknowledged that there is a substantial difference in scale between the existing ARI-PAK A line and the proposed line. He stated that the ACRE process was a primary means by which landscape and visual effects were addressed and mitigated. Transpower submitted that Ms Gilbert's opinion reflected her brief to assess the landscape and visual effects of the proposed line just within Matamata-Piako District, rather than in the context of the route as a whole.

[1056] The Matamata-Piako District Council submitted that Transpower had ignored the importance of an entry to a town in forming impressions of that town. Ms Gilbert contended that the proposed transmission towers would be of an incongruous scale with the adjacent shelterbelt tree planting, and that this would tend to draw the eye, increasing their visual prominence.

[1057] Ms Gilbert suggested a range of mitigation measures, including roadside planting of an avenue of trees on the State Highway 26 western approaches to Morrinsville, and riparian planting on Mt Misery locations. Both Mr Lister and Dr Steven supported those proposals, which would need to be carried out in cooperation with the local authority, the New Zealand Transport Agency and landowners.

[1058] Ms Gilbert also suggested underground installation of the line as a possible mitigation option, but conceded that the cost of this option did not make it realistic. The use of monopoles for this section of the route was also explored by Ms Gilbert. Her final opinions about this as an option were inconclusive, as she acknowledged that monopoles were still large-scale utilitarian elements of an incongruous scale. Neither Mr Lister nor Dr Steven supported the use of monopoles there, both concluding that the landscape is not of such significance, nor the effects of such a magnitude, as to warrant the greater cost of the monopoles.

[1059] Ms Gilbert challenged the visual assessment scale used by Mr Lister to determine which individual properties would qualify for consideration under the proposed visual mitigation conditions. She gave her opinion that in the Matamata-Piako District, the scale used by Mr Lister does not adequately identify the properties that would be exposed to adverse visual effects. Ms Gilbert provided a recalibration of the assessment scale based on her assessment of the visibility of the proposed line within the district's landscapes.

[1060] Mr Lister conceded that any scale of this type is necessarily arbitrary, and he expected that different practitioners would have different categories. He stated that through his assessment along the whole of the proposed route, he was of the opinion that the 1-kilometre limit is a practical and commonsense limit that would capture the vast majority of dwellings where effects were likely to be moderate or greater.

[1061] As stated at the beginning of this chapter, Dr Steven reviewed Mr Lister's scale and concluded that it was a useful 'rule-of thumb'. Dr Steven was

of the opinion that any changes to the scale should be on the basis of a rigorous, scientifically based investigation, which Ms Gilbert had not undertaken.

[1062] Mr Lister, Dr Steven and Ms Gilbert agreed that the most sensitive part of the route through this district is some 4.5 kilometres along the crest of a range of hills south of Morrinsville. The witnesses all agreed that the elevation of these hills, relative to the surrounding plains, means that the proposed line will be visible from the wider landscape including State Highway 26. Mr Lister gave his opinion that the advantages of avoiding the ridgeline would be outweighed by greater visual amenity effects in other areas.

[1063] Mr Lister described the visual effects from roads and from individual properties. The proposed line would be visible on the skyline from roads within the Thames Valley to the east. It would also be visible from along the Morrinsville-Walton Road, and would be particularly prominent from Starky Road. Eighty-two houses were assessed by Mr Lister as falling within the 1-kilometre mitigation threshold. No further evidence was given to the Board on these matters. The Board accepts Mr Lister's evidence on visual effects.

## **Conclusions on overhead line route within Matamata-Piako District**

[1064] On the evidence, the Board finds that there would be adverse effects on the landscape and visual amenity within Matamata-Piako District, particularly from the proposed route along the crest of hills south of Morrinsville.

[1065] The Board also finds that any adverse visual and amenity effects where the line crosses State Highway 26 at the western approaches to Morrinsville would be minor, because of the lack of existing amenity values and the very low visual quality of the adjacent light industrial area; the fleeting nature of the views of the proposed line from travellers along State Highway 26; the fact that the existing ARI-PAK A line would be removed; and given the necessity for the line to pass near the town, the proposed location of the line being where it would be viewed directly by few residents.

[1066] The Board does not support the use of monopoles at Morrinsville because they would have little, if any, benefit in terms of the existing landscape that the proposed line would traverse.

[1067] As stated in paragraph [922] of this chapter, the Board accepts Mr Lister's visual effects assessment as helpful and acceptable in respect of the 185 kilometres of overhead line.

## **Overhead line route within Waipa District**

### **The issues**

[1068] The Waipa District Council submitted that as Lake Karapiro and Maungatautari and the western bank of the Waikato at Arapuni are identified in its district plan as special landscape character areas (SLCAs); these areas qualify as outstanding natural features and landscapes under

section 6 RMA. The Council contended that giving effect to the duties to recognise and provide for the preservation of the natural character of the Waikato River and its margins, the protection of outstanding natural landscapes, the protection of such from inappropriate development, and to have particular regard to those provisions of the district plan (which should be accorded primacy in the assessment of environmental effects and great weight) would justify rejecting the requirement, or re-routing the line away from those SLCAs, or installing cable underground in them.

[1069] Other submitters, including: Mr G Lorigan, Mr J and Mrs M Darby, Ms V Barrow, Maungatautari Ecological Island Trust, Ms P Wren, Mrs P Wilkinson and Mr T Johnston, submitted that the proposal would ruin one of the most beautiful parts of the country, and that there would be adverse effects on people's outlook onto the stunning surrounding landscape.

[1070] A group of residents from Te Miro, including Mr G Copstick and Ms K Brennan, the Bodle family, Mr T Shergood and Ms R Sellers, Mr V P Jones and Mrs S Jones, Messrs N and M Sweetman, submitted that visual and amenity effects on this location would be significant. They stated their beliefs that these effects had been underestimated for rural properties because rural living did not take place mainly indoors. These submitters gave their opinions that lifestyle farmers purchase land to be able to spend time out-of-doors enjoying the amenity values of the surrounding countryside. They also stated that the landscape and visual effects of the ARI-PAK A line and the proposed line would not be comparable, and it is wrong to use the existence of the ARI-PAK A line as an argument in support of replacing it with much larger new structures. These submitters also contended that the proposed planting mitigation measures are unworkable and impracticable because the plantings would often have to be on productive land on neighbouring properties. They asked that the proposal be declined in its entirety.

[1071] Transpower contended that in identifying Lake Karapiro, Maungatautari and the western bank of the Waikato River at Arapuni as SLCAs, the district plan lacks integrity and does not justify rejecting the selected route; it disputed that Lake Karapiro, Maungatautari and the western bank of the Waikato River at Arapuni qualify as outstanding natural features or landscapes in terms of section 6; it contended that the proposed use of monopoles at the Karapiro crossing would be appropriate mitigation of the effects on that landscape; and submitted that re-routing or underground cable installation is not properly before the Board or affected landowners (especially those on an eastern route option).

[1072] Transpower acknowledged that the proposed line would have landscape and visual effects within the Waipa District. The variety of landscape character, land uses and settlement patterns within the district would mean that effects would be more significant in some parts of the district than others.

[1073] The main issues for consideration are whether Lake Karapiro, Maungatautari and the western bank of the Waikato River at Arapuni qualify as outstanding natural features or landscapes in terms of section 6; if so, whether the proposed transmission line would be inappropriate development from which they should be protected; the extent of the effect on



their attributes as SLCAs in terms of the district plan; whether re-routing or underground cable installation is properly before the Board; and if so, whether that is justified.

### **Existing landscapes**

[1074] The proposed line would enter the Waipa District across the Maungakawa range just west of Ruru, and then travel south through hill country just east of Cambridge, near Whitehall. The route then crosses State Highway 1 and Lake Karapiro, 3 kilometres west of the Horahora Bridge. The proposed alignment would then cross the lower slopes of Maungatautari and turn south-east to again cross Lake Karapiro about 800 metres north of the Arapuni Township, and enter the South Waikato District.

[1075] The Pakaroa Ranges to the west, and the Maungakawa Range (that consists of an arc of three andesite volcanic cones) to the north and east, enclose a central basin of rolling hill-country which the route traverses north of the Waikato River. The proposed line would cross the Maungakawa Range at a saddle west of the Ruru cone, and essentially follow the alignment of the existing ARI-PAK A line.

[1076] The land use consists of clusters of residences on smaller lifestyle properties, dairy farming, dry-stock grazing, small plantations and orchards, and remnant stands of bush within the farmland. There are small rural settlements at Te Miro and at Whitehall.

[1077] Mr Lister was the only landscape expert who assessed the existing landscape in the northern part of Waipa District and gave evidence to the Board. He assessed the landscape as having a moderate natural character because it has mostly been cleared and is managed as a productive landscape. He gave his opinion that aesthetically the landscape is attractive and picturesque, with a sense of seclusion and enclosure, because it is reached through 'passes' across hills from each direction.

### **Description of Karapiro and Maungatautari**

[1078] Maungatautari is an andesite volcanic cone that rises to 797 metres and has three main peaks. This mountain stands out in the south-eastern part of the Waipa District. It dominates flat lands to the west, and Lake Karapiro, the Waikato River, Lake Arapuni and State Highway 1 to the east. The higher part of the cone is in native forest, and is a scenic reserve bordered by a pest-proof fence to create an 'ecological island'. The lower slopes are in pasture, and very little development is visible.

[1079] Three existing overhead transmission lines pass over the eastern flanks of the cone.<sup>18</sup> The main access to the ecological island, and the site for an intended visitor centre, are on the southern side of the mountain; and there is also a northern access. Three further overhead 220-kV transmission lines pass high over the western and south-western flanks.

[1080] Lake Karapiro is a flooded river behind a hydro dam that was constructed in the 1940s. The lake stretches back 23 kilometres to Arapuni.

The lake edge east of Karapiro village slopes steeply to the surface with ignimbrite rock outcrops and indigenous vegetation giving the banks a natural character. The natural appearance is modified by houses along the banks overlooking the lake, and by the presence of existing infrastructure: State Highway 1, and two existing transmission lines.<sup>19</sup> The lake is a focus of tourism, being visible from parts of State Highway 1, from Karapiro village, and from the southern bank. Part of the lake surface is used as a venue for international rowing competitions, and other water sports.

[1081] The proposed overhead transmission line would cross Lake Karapiro about 3 kilometres west of Horahora Bridge (where the lake is about 200 metres wide), pass through the Maungatautari SLCA for about 5.5 kilometres, and then pass through the Arapuni SLCA for about 1 kilometre.

[1082] Transpower proposes that a total of seven structures supporting the line on each side of the lake crossing (three to the north and four to the south) would be monopoles instead of lattice towers.

## **Landscape and visual effects**

[1083] Ms Buckland and Mr Lister agreed that the sensitive locations along the route are the crossing of the Waikato River at Karapiro, Arapuni and the crossing of Ruru to the north. Ms Buckland also considered that the route in the vicinity of Maungatautari is also sensitive, but Mr Lister did not agree with this assessment. The crossing at Karapiro and the route in the vicinity of Maungatautari are addressed in the section below.

[1084] The landscape where the proposed line crosses the Waikato River near Arapuni is, in the opinions of both Mr Lister and Ms Buckland, not an outstanding natural landscape: rather it has high landscape quality but not as high as the landscape at the proposed crossing at Karapiro. They also agreed that parts of the margin of the river have high natural character values, and that the proposal would be an inappropriate development in terms of section 6(a) of the RMA.

[1085] Ms Buckland and Mr Lister agreed that the proposed line would be a prominent feature crossing the range adjacent to Ruru. They also agreed that Ruru is already dominated by the telecommunications tower that detracts from the naturalness of the peak, and that the line would compete visually with Ruru and reduce the apparent scale of the mountain.

[1086] Mr Lister acknowledged that the proposed line would detract from the picturesque aesthetics of parts of the district, including the northern-most part of the district around Ruru Range, but that in other locations the landscape has a relatively high capacity to accommodate the line because of its working character, the presence of the existing transmissions lines, and lower visibility from roads and houses.

[1087] Visually from roads, the proposed alignment would be moderately prominent because there is a network of local roads that would be crossed; the rolling topography means that the proposed line would be prominent where it crossed skyline ridges. Mr Lister's assessment was that around 55 residences in this section would fall within 1 kilometre of the proposed line.

[1088] Mr Lister stated that the assessment of visual effects on houses was not intended to suggest that there would be no visual effects on land around residences. He gave his opinion that the estimation of effects from houses is pertinent information on which to assess the significance of effects.

[1089] Mr Lister agreed with Mr Copstick and Ms Brennan that it is not possible to mitigate all adverse effects of the proposed line but asserted that, contrary to these submitters' views, what Transpower is offering in mitigation is a responsible approach.

[1090] The Board accepts Mr Lister's assessment, and finds that there would be adverse landscape and visual effects on the environment along this section of the proposed line through the northern part of the Waipa District. More significant landscape and visual effects would occur in the vicinity of Ruru, of Te Miro, and south of Whitehall.

[1091] The Board finds that the western bank of the Waikato River at Arapuni does not qualify as an outstanding natural landscape in terms of section 6 (b) of the RMA, but it does have a high landscape quality. The expert landscape witnesses who assessed the effects on the natural character of the Waikato River at the crossing near Arapuni for Transpower and for the Waipa and South Waikato District Councils differed; those differences are addressed in the South Waikato District Council section paragraphs [1140]–[1179] of the present chapter.

[1092] The Board notes that there was general agreement amongst the expert witnesses about the landscape and visual effects within Waipa District, except in relation to the effects on Karapiro and Maungatautari.

## **Effects on Karapiro and Maungatautari**

### **District Plan provisions**

[1093] As mentioned in Chapter 4, the Waipa District Plan identifies Lake Karapiro and Maungatautari (among others) as SLCAs; and states policies of protecting the existing landscape of volcanic cones, and the present character of the upper slopes of Maungatautari, and of protecting the landscape character of Lake Karapiro as seen from State Highway 1, and of protecting the land-use quality of Lake Karapiro.

[1094] The plan classifies utility structures as permitted activities if not more than 25 metres in height, 110 kV, and 110 MVA capacity per circuit. It classifies as discretionary activities utility structures that do not comply with the standards for permitted activities. It provides criteria for deciding applications for discretionary activities, including whether the size or location of the structure will affect significant views from State Highway 1, together with the extent of any measures taken to avoid, remedy or mitigate such effects; and whether alternative locations, or other options are physically, technically or operationally possible to protect the environment having regard to the costs and benefits of doing so.

## **Karapiro and Maungatautari are outstanding natural landscapes**

[1095] In considering whether Lake Karapiro and Maungatautari are outstanding natural features or landscapes in terms of section 6(b) of the RMA, the Board needs to resolve a difference that appeared about whether a feature or landscape needs to be natural as well as outstanding in order to qualify. Then differences of expert evidence about the extent to which each qualifies can be considered.

### ***To qualify, landscapes have to be natural as well as outstanding***

[1096] Ms M Buckland is a consultant who has worked in landscape architecture for 40 years, 26 of them in private practice in New Zealand, specialising in landscape assessment and planning, and evaluating the visual and landscape effects of a wide variety of development.

[1097] This witness had, in a report for the Waipa District Council in 1993, identified Maungatautari as an outstanding natural feature and landscape, and Lake Karapiro as an outstanding natural feature. She had since made a further study on whether those SLCAs that would be affected by the proposed transmission line would be outstanding natural features and landscapes. In her evidence she detailed an extensive process by which she had come to the opinions that they are both outstanding natural features and landscapes.

[1098] Ms Buckland included in her evidence her comments on Mr Lister's evidence. Relevantly, in respect of outstanding natural landscapes and features in terms of section 6(b), Mr Lister had stated that to qualify, features and landscapes had to be both outstanding and natural. Ms Buckland stated that she did not agree with that, particularly as it applies to hydro lakes, which she considered can be outstanding without being entirely natural, but may be modified.

[1099] In cross-examination, Ms Buckland explained that she disagreed with the Environment Court decision in *Wakatipu Environment Society v Queenstown-Lakes District Council*<sup>20</sup> which she had cited, that section 6 landscapes must be both outstanding and natural. She gave her understanding that the Court decision refers very specifically to that district; and in the North Island, looking at different landscapes, a landscape does not have to be natural in order to be outstanding. She noted that there is an emphasis on natural character in section 6, but considered that a broader assessment should be undertaken.<sup>21</sup>

[1100] Transpower submitted that the interpretation of section 6(b) stated in the *Wakatipu* case is correct, and that there is a continuum of naturalness depending on context, rather than it necessarily being absolute. Counsel for the Waipa District Council did not join issue with those submissions.

[1101] The Board considers that the meaning to be given to section 6(b) is a question of interpretation. Although the application of the provision may lead to different results in different contexts, the meaning to be given to the provision of the Act is to be the same for all parts of the country. So the Board does not accept the notion that for section 6(b) to apply to a landscape in the Wakatipu district it must be both outstanding and natural, but for the section

to apply to a landscape in the North Island, it need not be both outstanding and natural.

[1102] With respect, the Board finds persuasive the legal reasoning given in the *Wakatipu* decision for the interpretation of section 6(b). No reasoning based on the law about interpretation of statutes was presented to the contrary. So the Board follows the *Wakatipu* decision, and holds that the interpretation of section 6(b) given in it is correct.

[1103] The Board also accepts Transpower's submission that there may be degrees of naturalness, so that a landscape that is not absolutely natural might still qualify in terms of section 6(b), though one that has little natural character would not.

### ***Lake Karapiro is an outstanding natural landscape***

[1104] Even though the Waipa District Plan identifies SLCAs to give effect to section 6(b), that is not determinative of whether they are outstanding natural features or landscapes for the purpose of applying that provision of the Act.<sup>22</sup> RMA decision-makers are to make their own assessment, based on the evidence.

[1105] In considering whether, in the vicinity of the proposed crossing by the overhead transmission line, Lake Karapiro is an outstanding natural landscape, Ms Buckland gave her opinion that it is. Mr Lister considered that it has moderately-high natural character, modified by existing buildings and infrastructure, and concluded that it warrants being regarded as an outstanding natural landscape. Dr Steven disagreed because the lake is by no means natural in that it is the product of human modification of nature. He regarded it is a visual amenity landscape.

[1106] The Board does not accept that a lake has necessarily to be treated as ineligible to be an outstanding natural landscape if it has been created by an artificial dam. As a question of degree, the landscape value of Lake Karapiro is slightly diminished by the formation and pattern of flows being no longer natural, as it is also diminished a little by the buildings and infrastructure.

[1107] The Board finds Mr Lister's consideration of the question well balanced and that, in the vicinity of the crossing point, Lake Karapiro is an outstanding natural landscape.

### ***The upper part of Maungatautari is an outstanding natural landscape***

[1108] Applying the criteria described in the *Wakatipu* decision, Ms Buckland came to the opinion that Maungatautari is an outstanding natural feature and landscape. Mr Lister agreed, but did not include in that category the lower slopes, which do not share the same landscape qualities. Dr Steven also agreed about the upper, forested slopes. He considered the natural quality of the lower farmed slopes to be in the moderate to moderate-low category.

[1109] The Board found persuasive the explanations given by Dr Steven and Mr Lister; and finds that the upper, forested slopes are an outstanding natural feature and landscape; and that the lower farmed slopes are not.

## **Effects of proposed line on Karapiro and Maungatautari**

### ***Effects on Lake Karapiro landscape***

[1110] In her evidence, Ms Buckland gave an extended explanation of her consideration of this topic, leading to her opinion that the proposed line would have significant adverse effects on the natural character, on significant landscape features, and on the amenity value of the area; and would adversely affect the integrity of the district plan identification of the Karapiro SLCA.

[1111] Ms Buckland gave her opinion that the fact that the ARI-PAK A line is already a feature of the landscape in no way mitigates the adverse visual landscape and amenity effects of the substantially larger and more visually intrusive line. She accepted that some change in outstanding natural features and landscapes may be acceptable, provided the essence of the natural feature or landscape is treated appropriately.

[1112] Mr Lister gave his opinion that the line would detract from the aesthetic qualities by increasing existing effects, because of its larger scale compared with those of the existing transmission line. He described ways in which the alignment, span length and positioning of towers had been modified to reduce the additional effects, and stated that the line would have little effect on biophysical elements or processes of natural character.

[1113] On the district plan criteria, Mr Lister observed that the plan does not prevent all development in SLCAs, but through design guidelines and controlled activity mechanisms, controls the manner in which it is carried out. He concluded that the effects of the transmission line would be mitigated by choice of route (so the crossing point avoids more sensitive parts of the lake), and by removal of the existing line. He also supported the use of monopoles in the vicinity of the lake crossing.

[1114] Dr Steven considered that the lake landscape falls in the semi-natural to agricultural range, and that the towers are the elements of the line that would most impact on the aesthetic qualities of the landscape. He supported the use of monopoles instead of lattice towers to reduce the visual impact and come to an acceptable outcome. He accepted that the conductors would have a visual impact, but considered that it would be only a marginal increase over that of the existing conductors spanning the lake at that location.

[1115] Dr Steven considered that the perception of scale of the lake corridor landscape would remain largely unaltered by the proposed line, and that the conductors crossing the lake would not impact on the natural character of the lake as a whole.

[1116] Having considered the opinions of the expert witnesses, the Board finds that although the lake landscape is already modified, the towers and conductors of the proposed line would substantially further reduce its natural character and aesthetic quality. The excess in height and scale over those of the existing line to be replaced is considerable; but even so, the removal of that line would to some extent remedy the adverse effects. The selection of the crossing point to avoid more sensitive parts of the lake, and the use of monopoles in the vicinity of the crossing, would mitigate the adverse effects to some extent. Yet considerable adverse landscape effects would remain.

### ***Effects on Maungatautari landscape***

[1117] Ms Buckland gave evidence that from Horahora Road the proposed line would interfere with views to Maungatautari, and would contrast with the existing landscape character; its scale and form would not be in keeping with the surroundings. Overall it would have high intrusion and qualitative impacts on the landscape. This witness rated the overall visual effects from that viewpoint as moderate.

[1118] Ms Buckland also reported on the effects looking north-west from a point on Arapuni Road south of the junction with Old Taupo Road. She concluded that the visibility of the proposed line would depend heavily on weather and light conditions. Five pylons would be visible: three would be silhouetted against the sky, and two would be seen against the mountain. Most of the width of the view would be affected by the proposal, which would interfere with the view to the mountain and contrast with the existing natural character. The scale and form would not be in keeping with the surroundings. The new line would have high intrusion and qualitative effects on the landscape, and the visual effects would be moderate.

[1119] Mr Lister stated that there is a clear difference between the natural bush-clad upper slopes of Maungatautari (which he accepted is an outstanding natural landscape) and the settled landscape on the lower slopes along the alignment of the proposed line (which in his view is not an outstanding natural landscape).

[1120] Mr Lister considered that landscape has reasonably high capability to accommodate the line because of its broad scale, modified nature, and the presence of the existing transmission lines and large shelter trees. He considered it would have minor effects on natural elements and processes.

[1121] Mr Lister observed that the proposed alignment is restricted to the route of the existing (smaller) ARI-PAK A line, which it is to replace. He accepted that it would have some effects on views of Maungatautari from two roads to the east.

[1122] Ms Allan described around 5 kilometres of the proposed alignment to the east of Maungatautari (between proposed Towers 303 to 314) that would follow the existing Arapuni to Hamilton A and B 110-kV-lines (ARI-HAM A and ARI-HAM B). She stated that this proposed alignment would result in the occurrence of cumulative landscape and visual effects in this locality.

[1123] Dr Steven considered that the proposal would not be a significant downgrading of either natural character or landscape significance, because the alignment is at the margins of the Maungatautari SLCA, with an agricultural landscape of moderate naturalness, and in an area currently traversed by transmission lines. The outstanding natural landscape is at a sufficient horizontal and vertical remove to ensure that visual effects are kept to an acceptable level. In summary, Dr Steven considered that the values identified for Maungatautari would be unaffected by the proposed transmission line, and that the landscape would remain rural in character.

[1124] Ms Buckland disagreed with Mr Lister's view that the lower slopes do not appear to be part of the mountain, and asserted that they are part of the landscape feature as a whole.

[1125] The Board is persuaded by the evidence of Mr Lister and Dr Steven that, although the lower slopes are of course part of Maungatautari, they are perceptibly different from the bush-clad upper slopes which are what gives this feature its outstanding natural quality. Routing the proposed line across the upper slopes would be difficult to justify. But the Board has to assess the effects of routing it over the lower slopes generally along the alignment of the one of the existing lines that it is to replace.

[1126] Even there, the line would be visible from public and private viewpoints, possibly more so than if it had been routed through the bush. As Ms Buckland reported, its scale and form would not be in keeping with much of the character of the lower slopes. Its height and scale is so much greater than those of the existing line which is to be replaced, that removal of the latter could only remedy the adverse effects to a moderate extent.

[1127] Even so, the route would avoid the even greater effects of a line passing higher on the mountain over the part that is an outstanding natural feature and landscape.

[1128] The Board is not persuaded to share Dr Steven's opinions that the proposal would not be a significant downgrading of natural character or landscape significance, and that the visual effects would be at an acceptable level. The Board finds that even though routed to avoid affecting the upper slopes, the proposed line would be a significant downgrading of landscape values; would result in cumulative effects on the existing transmission lines; and that the visual effects would be greater than desirable.

### **Application of s 6(b) directions and district plan criteria**

[1129] The Board has to consider the effects of the proposal on the Lake Karapiro and Maungatautari outstanding natural landscapes by the extent to which it recognises and provides for the protection of those outstanding natural features and landscapes from inappropriate development. As the height, voltage and current capacity of the proposed line exceed the district plan standards for permitted activities, the Board should also consider those effects by the district plan criteria.

[1130] By section 6(b) the Board is to recognise and provide for the protection of the outstanding natural landscape of Lake Karapiro from inappropriate development. The proposed development is inappropriate to the extent of its considerable adverse landscape effects. The landscape is partly protected from the potential effects by the remediation and mitigation measures already mentioned. To the extent that considerable adverse landscape effects would remain, that is a negative factor to be considered in the ultimate judgement of the designation requirement.

[1131] The Board has also to recognise and provide for the protection of the outstanding natural landscape of Maungatautari from inappropriate development. That landscape would be protected from the potential adverse



effects by being routed to avoid affecting the upper slopes that form the outstanding natural landscape. The landscape values of the lower slopes would be significantly downgraded, and the visual effects would be greater than desirable. Regard is to be had to those effects on the environment. But the direction to recognise and provide for protection of outstanding natural features and landscapes from inappropriate development does not apply in that respect.

[1132] The first relevant district plan criterion is whether the size or location of the structures would affect significant views from State Highway 1. This is to be considered by the extent of any measures taken to avoid, remedy or mitigate those effects.

[1133] The Board finds that the size and location of the proposed towers would affect significant views from State Highway 1. It also finds that measures have been taken to avoid, remedy or mitigate those effects in selection of the route and crossing point, in removal of the existing transmission line structures, and in proposing that monopoles be used instead of lattice towers in the vicinity of the highway and lake.

[1134] The other relevant district plan criterion calls for consideration of alternative locations or other options.

[1135] A district plan, being subordinate legislation made under the RMA, cannot be inconsistent with the RMA itself. The RMA provides by section 171(1)(b) the extent to which a functionary considering a requirement for a designation is to have regard to alternative sites, routes or methods of undertaking the work. So the Waipa District Plan cannot require a decision-maker facing a designation requirement to consider alternative locations or other options to any greater extent.

[1136] In Chapter 7 of this report, the Board has already set out its consideration, and stated its findings, on the adequacy of the extent to which consideration has been given to alternative sites, routes or methods of undertaking the Grid Upgrade Project. To the extent that this satisfies the Board's duty under section 171(1)(b), it has also to satisfy the district plan criterion.

### ***Alternative eastern route***

[1137] Ms Buckland had assessed the effects on landscape values of an alternative eastern route for the line, which she found would not affect any outstanding natural feature or landscape, and would only affect open farmland.

[1138] Mr Lister commented that Ms Buckland had downplayed the landscape qualities of the eastern route, and had overstated the differences in landscape quality between the two. He stated that the eastern route would traverse a settled landscape; would affect a number of houses; and traverse outskirts of two towns. It would cross an area of open landscape adjacent to State Highway 29 likely to result in high visual effects.

[1139] As the Board has stated in Chapter 7 its findings on the adequacy of consideration of alternative routes, it declines to address further, or make

any finding, on the relative merits of the eastern alternative route identified by Ms Buckland.

## Overhead line route within South Waikato District

### The issues

[1140] The South Waikato District Council submitted that the proposal fails to acknowledge that it would introduce a substantial new structure and network into the rural primary production landscape of the district without mitigation measures to address the resulting direct and indirect effects on landowners, the South Waikato community, and future generations. The Council submitted, that in particular, there had been inadequate evaluation in terms of landscape and visual effects; that the landscape evaluation did not support the route sought by Transpower; and that the size and scale of the pylons preclude the ability of the landscape to absorb the proposed structures. The Council also considered that inadequate consideration had been given to the landscape and amenity value provisions of the South Waikato District Plan. It sought that the notice of requirement over a land corridor within the South Waikato District be declined.

[1141] Other submitters, including Mrs H Burton, National Wetland Trust, Mr D Riley, Ms J Colliar, Mr T Colliar and Mr J A Townsend, made submissions about the adverse impact on the natural character of the landscape, and how the proposal would ruin the green landscape of the South Waikato. Mr J A Townsend stated that the proposal would result in visual 'uglification'. Some submitters made specific comments about the visual effects of the proposed line when viewed from their properties.

[1142] New Era Energy South Waikato, which includes some 20 affected landowners in South Waikato, submitted that the proposal would result in adverse effects on the environment including adverse visual and amenity impacts. Of particular concern was that the proposed route was a 'greenfields' route instead of following the existing transmission corridor through South Waikato. New Era Energy also contended that, given the size of the proposed works and pylons, visual impacts on individual landowners would not be able to be mitigated. This would mean that the visual zones of influence from the highly intrusive pylon structures and lines would extend several kilometres either side of the proposed corridor, depending on the intermediate landforms.

[1143] New Era Energy asked that the proposal be declined, or that the proposal only be approved with conditions that address adverse visual and landscape effects. Proposed conditions included requiring monopoles or compact design structures for 220-kV-capacity lines, and more extensive underground installation, including in South Waikato.

[1144] A group of six residents of Mangakino, including Mrs T Jakes, Mrs S Polatsek, Mrs P Wilson and Mrs R Winterburn, submitted that the proposed transmission lines in the area of Lake Maraetai would impact on the landscape amenity value of the land opposite the Mangakino township. This group of submitters all sought that the proposed overhead lines follow the same route as existing transmission lines to the west of the Mangakino township, to keep all

the visual 'pollution' to one area. They also stated that if the proposed line did stay to the east of the town as proposed, the alignment should be such that the visual impact be mitigated by using the natural topography such as natural valleys. These submitters also sought an increase in the number of towers used so that there is a reduction in the height of the towers.

[1145] Transpower replied that adverse environmental effects were avoided and mitigated through the ACRE process, and that the route chosen was a result of the rigorous application of that process. Transpower stated that the landscape and visual amenity provisions of the district plan had not been dismissed, and accepted that particularly in close proximity to the line, visual amenity values would not be maintained or enhanced. Transpower submitted that landscape mitigation is proposed for properties within 1 kilometre of the line.

## Existing landscapes

[1146] This section of the proposed route enters South Waikato at the Waikato River crossing that is 800 metres north of Arapuni township. The landscape south of Arapuni has low to moderate relief, small streams and distinctive ignimbrite outcrops and hummocky landforms. Further south, the proposed line traverses more than 30 kilometres through an ignimbrite plateau dissected by a complex drainage pattern into a series of rolling hills and steep-sided valleys.

[1147] Land use is predominantly dairying at the northern end of the proposed route and forestry at the southern end. There is a transitional area south of Wiltsdown Road where pine plantations are being cleared and converted to large-scale dairying operations. Four settlements; Arapuni, Waotu, Pikitū Marae and Puketūrua, are located in the rolling dairying country.

[1148] Further south, the forestry activities predominate and there is only transient public access to the forests from State Highway 32 that traverses the forest. The town of Mangakino is located within Taupo District but overlooks Lake Maraetai on the Waikato River. The proposed line would be visible from the town across Lake Maraetai. The route would then cross the Waikato River again immediately north of the Whakamaru Substation.

[1149] Mr Lister assessed the landscape from Arapuni south as having a moderate natural character and having a working character dominated by productive activities. He stated that the landscape had an attractive rural appearance with some of the rock features and knolls being local landmarks.

[1150] Ms D J Lucas, consultant landscape architect, agreed that this section of the proposed route is a traditional dairying landscape. She also agreed that the landscape is a fine-scaled landscape with a moderately close settlement pattern. She stated that its character is as a lived-in, producing landscape, and not a more recent lifestyle-type place.

[1151] Further south, Mr Lister stated that the landscape character continues to be of a working rural character, with dairying and forestry, but here it is on more of an industrial scale. Mr Lister did not regard this

landscape as having particular significance or special amenity. Mr Lister considered that Lake Maraetai is the most significant landscape feature in this section of the proposed line.

[1152] The proposed crossing point of the Waikato River near Arapuni was assessed by Mr Lister and Ms Lucas as having a moderately high degree of natural character and landscape value. Ms Allan and Dr Steven did not rate the natural character of this crossing area as highly as the other witnesses due to the range of structures, exotic plantings and formal shelter belts.

[1153] Mr Lister and Dr Steven both considered the section of the Waikato River where the proposed line would cross north of Whakamaru to have a relatively high natural character, although surrounded by a more modified forestry and agricultural landscape.

## **Landscape and visual effects**

[1154] Mr Lister accepted that the route chosen through the ACRE process had greater visual and landscape effects than other potential routes in South Waikato because it had to be a connected route with sections to the north and south. The ACRE process and the consideration of alternative routes has already been addressed in Chapter 7 of this report.

[1155] In a year-2000 draft landscape study for the South Waikato District Council, Mr Lister characterised the landscapes in the district as having a “high standard of landscape amenity across the entire district” and in cross-examination, he confirmed he still agreed with this.<sup>23</sup>

[1156] Ms Lucas and Mr Collier confirmed that for the South Waikato District the protection of special landscapes and visual amenity values is recognised in objectives and policies in the district plan. Special landscapes are not explicitly mapped in the district plan as the methods chosen were voluntary. Ms Lucas contended that Transpower had underestimated the landscape and visual effects for lands in the Arapuni/Te Waotu/Tokapuhi area, and that the intricate and multi-factor character of the landscape would be demeaned and dwarfed by the large structures proposed.

[1157] Ms Lucas gave her opinion that Transpower should not have equated the vacuum of delineated landscape values in official documentation with a vacuum with regard to highly valued landscapes on the ground.

[1158] Ms Lucas stated that the classic rural landscape character that the South Waikato landscapes epitomise would be disrupted and detracted from through being traversed by the collection of large unrelated structures. The line would read as an intruder in this heritage agricultural landscape.

[1159] Dr Steven contended that the concepts of ‘classic rural landscape character’ and ‘heritage agricultural landscape’ used by Ms Lucas are meaningless because they are undefined, and no robust assessment criteria are provided. In his opinion, the South Waikato landscapes could be considered in the same manner as other dairy or agricultural landscapes generally.

[1160] Mr Lister gave his opinion that the proposed alignment would avoid the most picturesque and historically significant landscapes closer to the Waikato River to the west, and to the east at Hodderville. He considered that the fine scale of the landscape, and its lack of existing transmission lines, reduce its capacity to accommodate the proposed line. But by following broader landscapes with a more working character, and where vegetation clearance could be minimised, the effects of the proposed route would be moderated by the settled and modified nature of the landscape.

[1161] In the southern part of the proposed route, Mr Lister concluded that the landscape has a high capability to accommodate the line because of its large-scale topography, plantation cover and working character. Visual effects from State Highway 32 would vary according to when in the plantation rotation it is viewed, being a prominent feature during times of felling and replanting of forest adjacent to the proposed alignment.

[1162] Mr Lister described the proposed route of the line as being more than 1 kilometre inland from the recreational area on the edge of Lake Maraetai and 2 kilometres from Mangakino township. The route had been chosen to follow the lowest terrace opposite the lake with higher ground behind the line. In Mr Lister's opinion, the bulk of the line would be screened by trees, but its prominence would vary depending on when areas of forest were felled and replanted. No other evidence was given on the landscape and visual effects on Mangakino township.

[1163] The South Waikato District Council submitted that "it is common ground that particularly in proximity to the line, visual amenity values will not be maintained and enhanced".

[1164] Transpower submitted that its visual evidence supported this assessment. Transpower stated that the landscape and visual mitigation conditions are proposed for properties within 1 kilometre of the line. No other evidence was provided about mitigation proposals to address the visual effects that were agreed by all parties would occur.

[1165] The Board finds that there would be significant landscape and visual effects in the fine-scaled landscapes of the dairying country along the proposed route south of Arapuni.

[1166] The Board also finds that the forestry and dairy conversion country at the southern end of the proposed route through the South Waikato district is a landscape with a high capacity to accommodate the line, and that effects on this landscape would not be significant.

### **River crossings within South Waikato District**

[1167] The effect of the proposed two crossings of the Waikato River in this district on the river and its margins natural character was raised in evidence given by the landscape witnesses for Transpower and the Waipa and South Waikato District Councils.

### ***Arapuni crossing***

[1168] As stated above, the witnesses Ms Buckland, Mr Lister and Ms Lucas assessed the natural character of the crossing point of the river near Arapuni more highly than did Ms Allan and Dr Steven.<sup>24</sup> Ms Lucas stated that in the past, structures associated with the hydro-electricity activities at Arapuni had not been placed to the north and east of the power station, and as a consequence a natural river section had been retained. She contended that the proposed crossing would be inappropriate because of the effect on the natural character, landscape, heritage and amenity values of the river corridor.

[1169] Mr Lister stated that while natural character considerations are important at the Arapuni crossing, the fact that the landscape is modified is also relevant when assessing whether the line is appropriate.

[1170] Mr Lister described the tower proposed on the southern bank of the river as being in a prominent and open location on the crest of a high river terrace escarpment where it would be prominent from the river below, and visible in longer distance views from the north along Lake Karapiro.

[1171] Dr Steven and Ms Allan concluded that some further reduction in natural character would occur with the proposed introduction of unnatural elements into the predominately agricultural landscape. Ms Allan stated that in her opinion the set-back of the towers from the river margins, and the short line crossing at right angles to the river flow, meant that the proposed crossing was not inappropriate. Dr Steven gave his opinion that, seen in the context of the hydro-electric generation and distribution along this stretch of the Waikato River, the proposed crossing is an appropriate use of the river margin.

[1172] Mr Lister gave his opinion that monopoles might be warranted at this crossing because of its moderately high natural character, moderately high landscape values, the prominent and open location of the southern back tower, and the future continuation of the South Waikato River Trail along the river. Ms Buckland and Mr Lister had agreed that should monopoles be used at Arapuni, it was preferable that these replace Towers 321, 322 and 323 on the south bank. Mr Lister also considered that there should be one tower on the north bank, Tower 320. Ms Lucas did not seek that monopoles be used at this crossing.

[1173] The Board agrees with Ms Buckland, Mr Lister and Ms Lucas that the margins of the Waikato River at the crossing point near Arapuni have a high natural character in terms of section 6 (a) of the RMA. The Board has already found that the crossing is not within an outstanding natural landscape in terms of section 6 (b) of the RMA. The Board considers that while not outstanding, the landscape is relatively unmodified and that the proposed crossing would have adverse landscape and visual effects.

[1174] The Board accepts that the visual effects of open structure lattice towers recede with distance. This type of tower would have less effect on the natural character of the margins of the river at the proposed crossing point than would monopole towers.

[1175] The Board finds that the proposed crossing at Arapuni would have adverse effects on the landscape and natural character of the margins of the

Waikato River. The crossing at Arapuni would be an inappropriate development in terms of section 6 (a) of the RMA.

[1176] The Board finds no justification for stipulating that monopole towers be used at this crossing.

### ***Whakamaru crossing***

[1177] Mr Lister and Dr Steven agreed the proposed line crossing near Whakamaru would have a modest effect on the natural character and landscape qualities of that section of river. Dr Steven gave his opinion that of all the proposed crossings of the Waikato River, the Whakamaru crossing point displays the highest level of natural character.

[1178] The crossing point was described by Dr Steven as being where the river is confined within a narrow canyon with steep rock cliffs. The proposed towers would be set well back from the canyon edge, and it is unlikely that they would be visible from the river. Dr Steven gave his opinion that this crossing has a landscape context of hydro-electricity generation and distribution activities similar to Arapuni.

[1179] The Board finds that the crossing of the Waikato River adjacent to the Whakamaru Substation is an appropriate use in terms of section 6 (a) of the RMA in relation to the preservation of the natural character of the Waikato River and its margins, because the proposed line would be within the context of the hydro-electricity development and structures that already exist in the surrounding landscape.

## **Substations and overhead line route within Taupo District**

[1180] The components of the Grid Upgrade Project that are within Taupo District consist of an extension and modification of the existing Whakamaru Substation, the construction of a new 220-kV/400-kV substation on a new site 1 kilometre north of the existing substation, and new overhead lines from the crossing of the Waikato River immediately north of the existing Whakamaru Substation to the site of the proposed new substation.

### **The issues**

[1181] Ms E Wallace submitted that the visual effects of the proposal would scar the environment and ruin the natural beauty of Whakamaru and surrounding area. Ms Wallace asked that the proposed substations and overhead line not be allowed to be built at Whakamaru. Mrs J Berry submitted that the proposed lines would cross her property and she was concerned about their visual ugliness. She sought the lines to be re-routed behind the Mangakino village.

## **Existing environment and landscape and visual effects**

[1182] The site of the existing and proposed substations and overhead line at Whakamaru were described by Mr Lister as a working landscape that is already visually affected by the existing substation, by five parallel transmission lines, and by adjacent infrastructure. The main potential landscape and visual effect for this part of the proposed route is the crossing of the Waikato River, and this is addressed paragraphs [1140]–[1179] of the present chapter.

[1183] No other evidence was presented on these issues.

## **Conclusions on substations and overhead line route within Taupo District**

[1184] The Board finds that the landscape and visual effects of the proposed substations and overhead line at Whakamaru would, in context, be minor.

## **Cumulative effects**

[1185] Many submitters raised cumulative effects on the landscape and visual effects of the proposed overhead line. In particular, cumulative effects were raised in relation to the proposed route sections 4 to 7 along the Hunua, Paparimu and Kopuku-Taniwha-Waiterimu valleys where sections of the line were proposed to be located near the existing OTA-WKM A, B and C transmission lines. A proposed section of line to the east of Maungatautari that would run parallel to the existing ARI-HAM A and ARI-HAM B lines was also raised as an area of likely cumulative effects.

[1186] Most of the landscape witnesses also questioned whether cumulative effects had been adequately considered as part of Transpower's route selection, including the assessment of landscape and visual effects undertaken by Mr Lister.

[1187] Ms Peake contended that Mr Lister's approach had been to presume that existing lines were just another element of the receiving environment, and outside the scope of the assessment. Ms Peake also disputed Dr Steven's evidence because she considered that he had not compared the cumulative effects arising from using an existing alignment, with the new effects from selecting a 'greenfields' alignment.

[1188] Mr M Ball maintained, in relation to the Hunua area, that it seemed that Transpower had used the fact that an area already had a lower quality of environment because of existing transmission lines, to propose that the area could be subject to a further lowering of environmental quality.

[1189] Transpower submitted that in those sections of the route where the line would be aligned adjacent to an existing line, the residual effects of the proposed activity (after mitigation) would not cause an unacceptable increase in cumulative adverse effects.



[1190] Mr Lister gave his opinion that there is no simple answer to cumulative effects of transmission lines. He stated that existing lines had been taken into account in each phase of the ACRE process, as detailed in Ms Allan's evidence. Mr Lister and Dr Steven agreed that the consideration of cumulative effects in using an existing corridor rather than introducing new effects to a landscape by choosing a 'greenfields' alignment, involves the consideration of many complex and often competing factors. The decision would depend on the context of the options that were available.

[1191] Dr Steven stated that he was not aware of any valid instrument that could be employed to provide a detailed and useful comparison of these effects.

[1192] Mr Lister did not agree with Mr Ball's contention. He stated that the approach taken was to select the best route for the proposed line, not to select a route based on modified areas being preferred because of their low environmental quality.

### **Conclusions on cumulative effects**

[1193] In the sections of this chapter that consider the landscape and visual effects in the Hunua and Paparimu Valley, the Kopuku-Taniwha-Waiterimu valley and the lower slopes of Maungatautari, the Board has found that the proposed line would have significant adverse visual and landscape effects that, in places, would be cumulative on similar effects of existing transmission lines nearby.

### **Avoidance, remedy and mitigation measures for landscape and visual effects**

[1194] Many submitters requested various measures to avoid, remedy or mitigate the landscape and visual effects of the proposed line. These measures include: planting to screen the proposed line, deviations to the line or placement of individual towers, underground installation of sections of the line, the use of monopoles, the type of line, eg, 220 kV, and compact towers. Many of these proposed measures were suggested to address other effects as well, such as effects on farming operations, or on future urban development, and ecological considerations.

[1195] Other submitters, including the Manukau City Council, the Hon Mr W R Storey, Federated Farmers, Mr Copstick and Ms Brennan, suggested that the mitigation measures proposed by Transpower would not be able to be implemented because they rely on planting and other activities occurring on adjacent properties and road verges. These submitters questioned how these mitigation measures could be undertaken, maintained, and enforced. They were also concerned that some mitigation measures such as planting would occupy additional productive land to the actual line easement, and that there would be no compensation for this use of land.

[1196] Some submitters were also concerned that the planting patterns in the Transpower mitigation guidelines were not always appropriate for particular landscapes, and that the planting only sought to address visual

effects from residences, rather than the wider visual effects of the proposed line from within farmland in general.

[1197] As outlined at the beginning of this chapter, some submitters questioned the use of a 1-kilometre distance for deciding if properties would be included in Transpower's proposed landscape mitigation programme.

[1198] Transpower replied that the ACRE process was the primary approach to avoiding and mitigating adverse landscape and visual effects in terms of the proposed alignment. It contended that the removal of the existing ARI-PAK A line where the proposed line would follow its alignment, is a remedy,<sup>25</sup> and that a range of mitigation measures had been proposed to reduce localised adverse effects.

[1199] Mr Lister and Mr Steven provided evidence about the various landscape mitigation measures, including the proposed:

- a) replacement of vegetation removed
- b) screen planting from roads
- c) screen planting from individual houses
- d) design and rehabilitation of earthworks
- e) screen planting of specific facilities, such as at substation.

[1200] Mr Lister stated that the landscape mitigation guidelines would be used to design specific responses that tie in with the landscape patterns specific to each site. Dr Steven considered that there are some limiting factors, such as the restrictions on the height and, therefore, the species of trees that could be replanted within the designation corridor; and the time it would take for trees to grow and provide effective screening that would diminish or delay the effectiveness of the proposed landscape mitigation techniques.

[1201] Dr Steven emphasised that any screen planting proposals, both in relation to dwellings, and along roads, would require close liaison with residents, the local authority and Transit New Zealand (now the New Zealand Transport Agency). Dr Steven explained that the landscape mitigation process proposed by Mr Lister provides for consultation and approaches that would address the limiting factors he had identified.

[1202] Mr Lister and Dr Steven stated that they both supported some of the mitigation proposals put forward by Ms Gilbert. In the Matamata-Piako District section of this chapter, the proposal for the establishment of an avenue of trees on SH26 is outlined. In Chapter 14 of this report, other mitigation proposals put forward by the Matamata-Piako District Council are considered.

[1203] Ms Buckland suggested that views of Lake Karapiro could be enhanced by removing short sections of vegetation between State Highway 1 and the lake. Mr Lister agreed with this proposal.

## **Conclusions on avoidance, remedy and mitigation measures for landscape and visual effects**

[1204] The Board has made its finding in relation to the ACRE route selection process as a method of avoiding adverse landscape and visual effects; and the proposed removal of the ARI-PAK A line as a way of remedying the adverse effects of the proposed new transmission line.

[1205] As already stated at the beginning of this chapter, the Board agrees that the proposed visual assessment process, including the 1-kilometre threshold for participation in the landscape mitigation programme, is appropriate.

[1206] The Board addresses many of the mitigation measures suggested by submitters as they relate to specific sections of the proposed line in Chapter 7, in the present chapter and in Chapters 13 and 14.

[1207] The Board finds that the proposed mitigation measures are adequate, and are appropriately reflected in the proposed conditions for the designation.

[1208] Clearing vegetation for views to Lake Karapiro, while discussed as a possible mitigation measure, is not subject to the proposed conditions because the land involved is administered by other parties.

## **Conclusions on landscape and visual effects**

[1209] The Board has considered all the landscape and visual effects evidence that was presented to it. The Board has used this evidence to assess the landscape and visual effects, and has made findings about what the effects are likely to be.

[1210] The Board notes that all parties agreed that there would be adverse landscape and visual effects from the proposal. However, there were differences in opinion about what the effects might be and the magnitude of them.

[1211] The Board judges that the proposed overhead line will have significant visual and landscape effects on the Hunua and Paparimu Valley; the Kopuku-Taniwha-Waiterimu valley (proposed overhead line sections 6 and 7) in the Waikato District; Ruru, Te Miro and south of Whitehall in the northern part of the Waipa District; at the crossing of the Waikato River at Arapuni, and the dairy country south of Arapuni in the South Waikato District.

[1212] The Board also finds that the adverse visual and landscape effects in the Hunua and Paparimu Valley; the Kopuku-Taniwha-Waiterimu valley (proposed overhead line sections 6 and 7) in the Waikato District and along part of the proposed route across the lower slopes of Maungatautari would be cumulative on the existing transmission lines in these localities.

[1213] The Board finds that in the vicinity of the proposed crossing point, Lake Karapiro is an outstanding natural landscape, and that considerable adverse landscape effects would remain at Lake Karapiro even after avoidance and mitigations measures are taken into account.

[1214] The Board also finds that the upper, forested slopes of Maungatautari are an outstanding natural feature and landscape; and that the lower farmed slopes are not. Along the proposed route across the lower slopes of Maungatautari, the Board finds that there would be cumulative effects on the existing transmission lines, and that the visual effects would be greater than desirable.

[1215] The Board finds that there will be significant adverse visual effects in relation to the proposed Brownhill Substation, and that the mitigation measures proposed in relation to the site are appropriate and are included in proposed conditions to the designation.

[1216] On the evidence, the Board finds that the proposed line would detract from the visual amenity and landscape value of the existing environment of the Whitford/Brookby/Ardmore-Clevedon valleys; within Matamata-Piako District, particularly along the crest of hills south of Morrinsville and at the proposed crossing at Arapuni, where there will also be adverse effects on the natural character of the margins of the Waikato River.

[1217] The Board further finds that the crossing at Arapuni would be an inappropriate development in terms of section 6 (a) of the RMA.

[1218] Even with the mitigation proposed in various places and in various ways, and even with remediation with the removal of the ARI-PAK A line, the Board finds that substantial adverse landscape and visual effects would remain. There would be significant landscape and visual effects on the environment, and also cumulative effects on the effects of existing transmission lines.

## Endnotes

- <sup>1</sup> *Wakatipu Environmental Society Inc & Ors v Queenstown-Lakes District Council* [2000] NZRMA 59.
- <sup>2</sup> The use of these criteria for landscape assessment was challenged by Ms D J Lucas.
- <sup>3</sup> Chapter 4, para [176]–[190].
- <sup>4</sup> See Chapter 7, para [580]–[656].
- <sup>5</sup> See Chapter 7 para [629].
- <sup>6</sup> Transcripts 05/06/08, pp35–36.
- <sup>7</sup> See Chapter 3, paras [55]f.
- <sup>8</sup> Transcript 05/06/08, p41.
- <sup>9</sup> Transcript 04/06/08, p17.
- <sup>10</sup> Transcript 04/06/08, p29.
- <sup>11</sup> Transcript 06/06/08, p5.
- <sup>12</sup> Transcript 04/06/08, p29.
- <sup>13</sup> Transcript 06/06/08, p5.
- <sup>14</sup> Transcript 12/09/08, p6.
- <sup>15</sup> *Upland Landscape Protection Society v Central Otago District Council* (HC Dunedin 16/09/08 Fogarty J [66]).
- <sup>16</sup> *TV3 Network Services v Waikato District Council* [1998] 1 NZLR 360; [1997] NZRMA 539; per Hammond J.

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- <sup>17</sup> The District Plan requires regard to be had to “The Preliminary Visual and Landscape Study”, October 1992 (Volume D) prepared by LA4 Landscape Architects.
- <sup>18</sup> The Arapuni-Pakuranga A, and the Arapuni-Hamilton A and B lines.
- <sup>19</sup> The ARI-PAK A line, and the Hinuera-Karapiro A line.
- <sup>20</sup> [2000] NZRMA 59 para 87.
- <sup>21</sup> Transcript 8/07/08, p41; 9/07/08, pp1f.
- <sup>22</sup> *Chance Bay Marine Farms v Marlborough District Council* (HC Wellington 15/12/2000 Doogue J); *Unison Networks v Hastings District Council* (HC Wellington 11/12/07 Potter J); *Long Bay-Okura Great Park Society v North Shore City Council* (Environment Court Decision A078/2008); *Briggs v Christchurch City Council* (Environment Court Decision C045/2008).
- <sup>23</sup> Transcript 04/07/08, p11.
- <sup>24</sup> See also the Waipa District Council section in this chapter for Ms Buckland’s assessment of this crossing point on the Waipa District side of the Waikato River.
- <sup>25</sup> Transcripts 06/06/08, p10.

## CHAPTER 11: NOISE AND ELECTRONIC INTERFERENCE

### Introduction

[1219] In this chapter, a variety of potential sources of other adverse effects on the environment are addressed: audible noise, electronic interference with radio and television reception; potential third-party telecommunications; earth potential rise and transferred and induced voltages and current; ground heating (from underground cables); electric and magnetic fields around underground cables and substations; and induced voltages associated with underground cables.

### Audible noise

[1220] The Board addresses separately audible noise from construction activities, and from routine operation of the overhead line and substations: corona discharge noise; wind-induced noise; and noise from transformers and circuit-breakers.

### Construction noise

[1221] Some submitters (for instance, Ms L Bilby, Mr A Loveridge, Mr R McKenzie, Mr C Riddell and Mr M Spring) raised their concerns about the noise that would be generated by construction of the overhead line: especially by numerous heavy-truck movements, and by helicopter movements, which they considered would disturb and frighten livestock and spoil a quiet way of life. Messrs R McKenzie and M Spring explained their concern that noise of construction activities in the Brownhill Road catchment would be amplified due to adjacent hillsides, and asserted that there is very little background noise in that environment.

[1222] Transpower responded that it proposed conditions requiring that the noise from construction activities comply with the New Zealand Standard on Construction Noise NZS 6803:1999 (and with the Standard DIN4150 in respect of structural vibration). Further, amendments to the proposed condition suggested by the Manukau City Council had also been accepted by Transpower, and are incorporated in the proposed consolidated conditions.

[1223] An independent acoustical consultant, Mr Warren, acknowledged that most district plans refer to New Zealand Standard 6803:1999 (Acoustics – Construction Noise) to control construction noise; and gave his opinion that it would be appropriate to control noise from construction of the Grid Upgrade Project.

[1224] He observed that although construction activity for the project would be likely to be spread over 2 years, each site is likely to experience construction noise of less than one month over three specific working periods

(foundations, tower construction, and stringing); and the preparation stages would be of a scale normally anticipated in a rural working environment.

[1225] Mr Warren acknowledged that implosive jointing of conductors may occur in some locations; and that night-time construction activities could sometimes be necessary to avoid unacceptable disruption to essential services such as major roads. In those events, noise would be controlled by construction noise management plans.

[1226] On construction of the Brownhill transition station and substation, Mr Warren stated that each of the stages is anticipated to take about 12 to 18 months; and that night work after 8 pm and before 6:30 am is not generally anticipated. All earthworks would take place during Stage 1; and an all-weather service road within the site is to be constructed in Stage 1 or Stage 2. Upgrading Brownhill Road would be carried out progressively so that it could take transformers up to 300 tonnes in Stage 3.

[1227] Mr Warren gave his opinion that noise associated with construction and earthworks would be consistent with noise associated with residential development and forestry clearance being undertaken in the vicinity. He predicted that the noise effects of constructing the transition station and substation would be minor, except during heavy-vehicle movements and major earthworks.

[1228] Cross-examination of Mr Warren raised no doubt about the acceptability of the witness's evidence.

[1229] Another independent acoustics consultant, Mr N R Lloyd, recommended refinements to the proposed conditions which have subsequently been incorporated. Mr Lloyd was not cross-examined.

[1230] No other expert evidence was given about noise that would be generated by construction of the overhead line.

[1231] On the basis that the construction would be controlled by the proposed conditions (incorporating the Standard for Construction Noise) and by the amendments suggested by the Manukau City Council and by Mr Lloyd, the Board finds that the noise would be appropriately constrained, and no significant adverse effect on the environment would result.

### **Noise from operation of overhead line**

[1232] Several submitters (among them Mrs F Aldridge, Ms L Bilby, Mr M Chitty, Ms S Hall, Mr P Hexter, Ms A Jones, Mr R McKenzie, Ms W Parker, Mr E J Smith, Mr C Riddell, and Mr M Spring) raised their concerns about noise that would be generated when the Grid Upgrade is in operation, particularly corona noise, and noise of wind. They contended that these noises would be unpleasant for humans working nearby, and would also have detrimental effects on wild animals, farmed animals, birds and insect life.

[1233] Mr Chitty also raised a perception that increased noise in wet weather would frighten horses and affect market confidence in Haunui Farm's horse stud business.<sup>1</sup> Mr Hexter described the corona noise from an

existing transmission line as crackling, and an eerie sound;<sup>2</sup> and Mr E J Smith described it as a loud constant noise, audible for a considerable distance in wet conditions.<sup>3</sup> Messrs R McKenzie and M Spring stated their concerns that a noise consultant engaged by Transpower had measured the background noise in winter when most mornings, due to the low-lying nature of the landscape, the valley is covered in a blanket of fog which would increase the corona noise.

[1234] In his evidence, Mr Warren identified the sources of audible noise associated with the Grid Upgrade Project as wind-induced noise in the overhead conductors and towers; corona discharge noise from overhead conductors; and noise from substation transformers and circuit-breakers. Potential noise from those sources is now addressed.

### **Corona discharge noise**

[1235] Mr Warren explained that corona discharge noise is due to ionisation of the air surrounding a conductor, caused by a voltage difference applied across a column of air. He stated that corona discharge noise is wideband noise (hiss, crackle etc) generally only audible in wet conditions such as rain or fog, together with a much lower level of steady 100-Hz hum.

[1236] Mr Warren gave evidence, based on empirically derived formulae and measurements, that at 400 kV at the 65-metre designation edge, the broadband noise level would be 35 dB; that the average level of the 100-Hz hum would be in the order of 25 dB; and that there would be no cumulative increase above the level of the broadband noise when both are present.

[1237] This witness also stated that when the line is operated at 220 kV, the noise levels would be considerably lower.

[1238] Mr Warren had considered the extent of time the Waikato is affected by rain or heavy fog, and explained his assumptions that wet conductor conditions would occur for 11 per cent of the time in the northern part of the line, and 12 per cent of the time in the southern part.

[1239] He gave his opinions that, even in wet-conductor conditions, the corona discharge noise level of 35 dBA at the designation boundary would comply with the noise limits of all the applicable district plans; and that at the initial 220 kV, it would be lower still. Mr Warren recommended an  $L_{Aeq}$  40-dB noise limit to control corona discharge noise, applied at the designation boundary. He also stated that the lower predicted corona discharge noise level of 35 dBA at the edge of the designation would be well below a level likely to cause sleep disturbance; that it would meet the AS/NZS 2107:2000 Standard; and that the predicted noise effects from operation of the line at the maximum voltage of 400 kV would be minor.

[1240] On disturbance of animals by noise, Mr Warren described his experience that farm animals habituate to noise readily without any detrimental impact; he referred to horses and, in particular, cattle and sheep grazing right beside a busy road.<sup>4</sup>



[1241] Mr K M Rooney, a veterinarian, disputed this. He contended that the noise generated by the proposed transmission line could have adverse effects on equine health at Haunui Farms. In addition the safety of workers could be jeopardized if horses were startled by the noise from the line. The witness stated in rebuttal evidence that the impact on horses or donkeys on other properties would be less, due to the generally quieter nature of these farms and the quiet nature of donkeys; by comparison, Haunui Farms are thoroughbred breeding farms.

[1242] In supplementary evidence, Mr Khot stated that the audible corona discharge noise increases in rain, fog or mist; it is highest in heavy rain, but then the noise of the rainfall itself tends to mask the noise from the conductors. In moderate rain audible noise could be higher than in heavier rain). The tolerance between 35 dBA and 40 dBA allows for this and for noise due to spots on the surface of conductors resulting from broken strands or bird droppings.

### **Wind-induced noise**

[1243] Mr Warren described two sources of wind-induced noise: wideband turbulent noise and Aeolian noise (tones and whistles that vary in frequency with wind speed) caused by air fluctuations across a conductor. He explained that the surface profiles of the proposed conductors would be similar to those used elsewhere, and are known not to cause Aeolian noise problems.

[1244] This witness estimated that in a stiff breeze (about 10 metres per second), the Aeolian noise level would be less than 25 dBA at the designation edge, and would have a low tone at a frequency of about 150 Hz. The tone would be likely to be masked by other wind noise effects (such as vegetation), and would not increase the overall ambient noise level. He added that insulators of the type proposed would not produce tonal noise. He also told the Board that he had never come across a noise problem generated by a transmission tower itself, or by current tracking across insulators.<sup>5</sup>

### **Noise from transformers and circuit-breakers**

[1245] Mr R McKenzie and Mr M Spring stated concern about noise from the proposed substation at Brownhill Road.

[1246] Mr Warren described modelling and assessment of noise from activities at each of the substations. The Brownhill Substation is to be developed in stages. The first stage is a transition station, which would have no transformers or circuit-breakers. The second stage is to be a 220-kV gas-insulated switching station with several circuit-breakers and an emergency standby generator. The circuit-breakers would be inside the building and the generator is to be sound-attenuated. The third stage (anticipated to be constructed in about 2033) is to include seven 400/220-kV transformers (including one spare unit) and a 400-kV gas-insulated switching station enclosed in another building. The generator would also be sound-attenuated. Mr Warren gave his opinion that, in practice, there would only be significant noise emissions from Stage 3.

[1247] The witness explained that transformer noise is relatively constant, and most likely to be noticed at night when noise from other sources is at lowest levels.

[1248] Assuming six transformers operating, noise screening from site earthworks and three-sided firewalls around the transformers, and a westerly wind of 2.5 metres per second, Mr Warren predicted noise levels slightly in excess of 30 dBA for existing residences to the west, and in excess of 50 dBA at the north-eastern boundary, but capable of being considerably reduced by four-sided enclosures around the transformers.

[1249] With four-sided enclosures for the transformers, the witness predicted that in 'worst-case' downwind conditions at all existing residences and realistic future residential locations, the noise level would be less than 30 dBA; and at the most affected boundary of the Transpower property, 45 dBA.

[1250] Mr Warren accepted that it would be reasonable to aim for noise control design that achieves an  $L_{10}$  of 35 dBA at existing and realistic future notional boundaries, and considered that this could be achieved by setting a night-time limit at the designation boundary of 45 dBA. To provide a high standard of protection against intrusive noise for existing dwellings, he proposed limits at the designation boundary of 55 dBA  $L_{10}$  daytime, 45 dBA  $L_{10}$  night time, and 75 dBA  $L_{max}$ ; and 45/35 dBA  $L_{10}$  and 75 dBA  $L_{max}$  at the notional boundaries of existing dwellings.

[1251] The witness explained that the notional boundary control would provide a high standard of protection for existing dwelling, and would be readily complied with at stages 1 and 2. The designation boundary limits would be relevant in Stage 3, when the 400-kV transformer equipment is installed. It would protect future dwellings, and provide long-term certainty for Transpower.

[1252] Referring to the noise of the circuit-breakers (which are to be enclosed in buildings), Mr Warren considered that they would readily be able to meet the  $L_{max}$  limit of 75 dBA at the designation boundary, and 65 dBA at the notional boundary of any existing or future dwelling.

[1253] No concern was raised about audible noise effects from transformers or circuit-breakers at other substations. The noise from the long-established Otahuhu Substation would be reduced by installation of newer quieter transformers; and the noise environment there is significantly elevated by noise from industrial activity and noise of traffic on the Southern Motorway, so the substation noise alone could not be measured effectively.<sup>6</sup> The noise from the Pakuranga Substation is exceeded by the ambient noise environment; with enclosure of the new transformers, it can comply with the district plan limits. Noise from new transformers at Whakamaru North is predicted to comply with the Taupo District Plan.

[1254] Mr Lloyd also contributed to the conditions proposed in these respects.

[1255] Mr Warren's evidence was not shown by cross-examination to be unacceptable, and Mr Lloyd was not cross-examined, nor was Mr Rooney. No

other expert evidence was given on noise from operation of the overhead line or the associated Brownhill Substation.

[1256] The Board accepts the evidence of Messrs Warren, Lloyd and Rooney and finds that, if operated in compliance with the proposed conditions, any noise from the overhead line and substation would be limited so as not to amount to a significant adverse effect on the environment.

## **Radio, television, and other electronic interference**

[1257] Mr J Sexton (Sexton Farms) stated that he had been a licensed radio amateur operator since 1961, and his father since 1957; that they operate on all high-frequency and very high-frequency radio bands, and have aerials on 15-metre and 13-metre steel towers respectively; and wire aerials for the lower high-frequency bands extend 80 metres from the house and 15 metres high. Mr Sexton stated his concern that the proposed 400-kV line closer than 150 metres would make high-frequency radio communication almost impossible.

[1258] Messrs W Jamieson and K Willoughby, presenting submissions on behalf of Orini Downs Station, stated that they are unsure whether communications on the farm (mobile phone or hand-held radio-frequency radios) would be affected by the transmission line. Mr E J Smith (Greenhaven Farm) stated his concern that the electromagnetic radiation emanating from the line would have substantial adverse effect on wireless transmission affecting television, mobile phone and internet communications. Mr H K Ruffell expressed similar concern.

[1259] Mr A Loveridge stated his concern that the overhead lines would have an effect on the electronics of his new million-dollar milking shed, as they would be only 250 metres away.<sup>7</sup> Ms L Bilby stated her concern that electric-fence controllers may be blown out; and also referred to an 'incredible light' seen on foggy nights in the vicinity of an existing high-voltage transmission line.<sup>8</sup> Mr E J Smith stated his concern that electromagnetic radiation emanating from the new line could damage computer hardware. Lichfield Farms expressed similar concern. Ms S Hall stated her concern that the electromagnetic fields from the proposed line could cause interference with the large antennae on Mount Ruru.<sup>9</sup>

[1260] Mr P and Mrs D Dombroski expressed concern that energy fields from the transmission line would have serious effects on farm vehicles, causing them to malfunction; and that this could be a costly, inconvenient and ongoing problem.

[1261] Mr R D Cooper is an independent consultant professional engineer with specialist expertise on effects of electric and magnetic fields from transmission lines on electrical equipment and appliances. In his evidence he referred to the standards applicable to the design and building of transmission lines (emission standards and immunity standards), and described the effect of magnetic fields on electric and electronic equipment.

[1262] Mr Khot had calculated the magnetic field strengths from the proposed overhead line. Based on his evidence, Mr Cooper concluded that there should be no issue with magnetic fields affecting cathode-ray tube

monitors on computers and television sets beyond the edge of the designation until 2015. After that year, with expected increase of maximum winter loading conditions of the line, the magnetic field strength at the designation edge may increase to 1.25 microtesla ( $\mu\text{T}$ ) but he stated that there is unlikely to be any issue with cathode-ray tube monitors on computers, as by then they would have been replaced by liquid-crystal display equivalents. He assessed the probability of specific effects on cathode-ray tube television sets as probably very small, perhaps only once per year.

[1263] This witness stated that disruption to radio and television reception can be affected by electric corona noise (having a bandwidth of about 1–1500 MHz), reflections (such as aircraft nearby, glass-covered buildings, or water), and shadowing effects (such as a tower, transmission line or hill blocking radio or television signals). Corona noise and shadow effect are the most likely to arise from the new 400-kV-capable transmission line; in most cases shifting the affected antenna would solve the issue.

[1264] Mr Cooper also advised that telephones, computers, printers, fax machines, cordless and DECT phones, stereos, and digital clocks and similar appliances are generally immune to magnetic fields of at least 50  $\mu\text{T}$ , and the maximum magnetic field likely to be experienced underneath the line is 28.4  $\mu\text{T}$  (during maximum winter loading after 2042). If users of hearing aids with telecoils, or assisted listening systems were to experience interference, then remedial solutions could be implemented. Pacemakers are immune to mains frequency magnetic fields of at least 400  $\mu\text{T}$ .

[1265] Cross-examination of Mr Cooper did not leave question in the Board's minds about the acceptability of his evidence; and there was no expert evidence to the contrary of his. The Board accepts it.

[1266] In reliance on Mr Cooper's evidence, the Board finds that the overhead line would not have any significant adverse effect on radio communications, television reception, electric-fence controllers, computer equipment, or on other electronic devices.

## **Third-party telecommunications**

[1267] Although the topic does not appear to have been addressed by counsel for Carter Holt Harvey, in his evidence Mr Parrish raised concern that the telecommunication line to be strung on the overhead line structures might be used for conveying third-party telecommunications for added value.

[1268] In rebuttal evidence, Ms Allan responded that she had no experience of designations expressly excluding activities that are not ancillary to the purpose of the designation.

[1269] The Board sees no need to depart from the provisions of section 176(2) by which activities on designated land for a purpose other than the designated purpose are subject to the district plan. The Board adds that it is not aware that there would be any adverse effect on the environment of the telecommunication line being used for third-party communications; and that there may be a positive benefit of avoiding an extra structure to carry the third-party communications.

## **Earth potential rise and transferred voltages associated with overhead line**

[1270] Earth potential rise can occur for a short time when current arising from an earth fault on a transmission tower flows through the ground. Step and touch voltages can arise where a human or animal contacts two different voltages simultaneously. Depending on the magnitude of the current, this may be felt as an electric shock. Voltages and currents may be induced in conductive objects (such as unearthed wire fences, cables and pipelines) near the transmission line.

[1271] Mr Mitton gave evidence of systematic analyses he had made of risks from these phenomena in respect of the proposed overhead line, based on New Zealand Standards for risk AS/NZS 4360:2004 and HB 436. The basis for his opinions that the risks would be low, was that appropriate mitigation can be implemented to minimise them so that the line would not introduce any significant risk to people or to third-party infrastructure.

[1272] None of the submitters cross-examined Mr Mitton, nor called contradictory expert evidence.

[1273] In reliance on Mr Mitton's evidence the Board finds that the overhead line, constructed and operated in compliance with the proposed conditions, would not have any significant adverse effect on the environment by earth potential rise, step and touch voltages, or induced currents.

## **Ground heating from underground cables**

[1274] The proposed underground cables from the Brownhill Substation to the Otahuhu and Pakuranga Substations are designed to operate at a nominal voltage of 220 kV; they would generate heat that would be dissipated through the sheathing and serving into the surrounding ground and then to the atmosphere. After about 2032, Transpower intends to install forced water cooling to increase the rating of the cables by circulating water through polyethylene pipes laid about 50 mm from the cables. Water would be pumped through the pipes, and the heat discharged to the atmosphere.

[1275] Mr Wildash, an electrical engineer having considerable professional experience with underground power cables, gave evidence that under normal conditions the cable serving would have a maximum surface temperature of about 50° to 60° C, and that special thermally stable backfill would be placed under and around the cables during installation.

[1276] There was no evidence to the contrary, and the Board finds no basis for any adverse effect on the environment from dissipation of heat from the proposed underground cables.

## **Electric and magnetic fields around underground cables and substations**

[1277] In paragraphs [766] and [767] of Chapter 9, the Board summarised the evidence given by Mr Mitton, on the electric fields around underground cables and substations. He also gave evidence that modelling had shown that during steady-state operation in normal and peak loading, the levels of electric and magnetic fields around the underground cables and substations, at ground level and at 1 metre above ground, would not exceed reference levels recommended by the National Radiation Laboratory. In particular, he produced details showing that the magnetic fields above the cables are below the ICNIRP Guideline of 100  $\mu$ T for public exposure. (For further discussion see Chapter 9, para [777].)

[1278] Mr Mitton was not cross-examined by submitters, nor was contradictory evidence given or called by any of them. The Board finds that the proposed underground cables and substations would not have adverse effects on the environment in terms of electric or magnetic fields around them during steady-state operation under normal and peak loading.

## **Induced voltages associated with underground cables**

[1279] Mr Mitton also gave evidence about induced voltages associated with the proposed underground cables. He had calculated maximum acceptable lengths of metallic structures or services parallel and 1 metre from the cables and induced voltages in steady-state and fault conditions. For fault conditions, the maxima are 2.1 kilometres for fences, 0.9 kilometre for communications cables and 1.4 kilometres for water or gas pipelines.

[1280] Mr Mitton gave his opinion that specific analysis and mitigation should be considered in respect of metallic structures that are closer or longer than the maximum lengths used in his calculations.

[1281] Mr Mitton's evidence was not called in question, and the Board finds that potential induced currents associated with the underground cables would not be likely to have any significant adverse effect on the environment.

## **Conclusions**

[1282] In summary, the Board finds that if the Grid Upgrade is constructed and operated in compliance with the proposed conditions, it would not have significant adverse effects on the environment in terms of: audible noise; interference with radio, television or other electronic equipment; earth potential rise or transferred, step, touch, or induced voltages or current; ground heating or electric or magnetic fields; or induced currents associated with underground cables.

## Endnotes

- 1 Transcript 24/0/08, p 34.
- 2 Transcript 25/07/08, p 6.
- 3 Greenhaven Farm submissions, para 5.
- 4 Transcript 13/05/08, p 30.
- 5 Transcript 13/05/08, pp 26f.
- 6 Transcript 13/05/08, p 27.
- 7 Transcript 28/08/08, p 6.
- 8 Transcript 27/08/08, p 20.
- 9 Transcript 28/08/08, p 27.

## CHAPTER 12: OTHER ADVERSE ENVIRONMENTAL EFFECTS

### Social effects

#### The issue

[1283] A number of submitters contended that the construction and existence of the overhead transmission line would have adverse social effects on the environment. Such concerns were expressed by several submitters from the Te Miro district as well as by submitters from elsewhere along the route.

[1284] The different kinds of social effects raised were mainly in these categories:

- a) feelings of powerlessness: imbalance of resources in resisting or opposing a State-owned enterprise; severance by the line of a farm dwelling from a milking shed, or from other farm facilities; being unwilling to grant an easement, being threatened with it being taken compulsorily under the Public Works Act; seeing land and easements being bought by Transpower even before the Inquiry had been completed; and affront at Transpower's insensitive and belittling responses of 'adapt or move away'
- b) feelings of being unsettled, of stress, anger and despair: from the prospect of living and working close to the transmission line; annoyance at the unwanted presence of the line; fears of cancer and other serious physical or mental ill-health for oneself or one's family from living and working close to the line; concern of marriage break-ups or other family dispersals due to the transmission line
- c) inability to obtain from Transpower clear understandings of the timing, duration, nature and extent of impacts on farm management etc of construction, and of impacts of eventual restrictions on activities in the vicinity of the transmission line
- d) disappointment of long-term investments already made or committed in business developments (including farm developments such as plantations, shelter-belts, milking sheds, workers' housing, and potential subdivisions); long-term expectations for retirement, and intergenerational succession jeopardised
- e) sense of unfairness: where land entirely beyond designation limits is adversely affected and unsellable with no compensation or mitigation of effects; and where land is to be the subject of an easement, that compensation can only be by lump sum, not by periodic payments
- f) fears of disintegration of mutually supportive local communities due to sales of farms, schools closing due to reduced rolls, and



loss of community and family identity on sales of farms that have been held by families for generations.

[1285] Transpower accepted that social impacts would occur during the project planning, consultation, construction, operation, and decommissioning stages. It contended that mitigation and avoidance of adverse effects had been ongoing. It proposed a stakeholder management plan; a communications plan; landowner management plans; construction management plans; and site works plans to manage and mitigate the effects of the project at the level of community, household and landowner.

[1286] Transpower contended that construction of the project is expected to have the greatest social effects, so construction management plans are to involve opportunities for communities to engage with contractors. Transpower also acknowledged that once works have been established, social effects would arise, though they are expected to be minimal.

[1287] Transpower accepted that anxiety and stress could occur due to uncertainty at the planning and construction stages. It proposed offering counselling assistance as a mitigation measure, and included a condition of the designations to that effect.

## Evidence

[1288] Dr P H Phillips, who has extensive experience of social impact assessments of many infrastructure projects, gave evidence of having (with professional colleagues) prepared a social impact assessment in respect of the proposed transmission line. He acknowledged that the absence of detailed information about the construction programme had limited the assessment of potential effects on individual properties.

[1289] On the planning stage, Dr Phillips had found that the prospect of the Grid Upgrade Project had been a significant disruption to the order of people's lives. He affirmed that stress and anxiety from uncertainty about the effects of the project could be a particular issue for some people, resulting in physical and mental symptoms of stress, including disagreements between partners, and fears about strangers entering private property affecting the occupiers' sense of security.

[1290] Although he had found concerns about unfairness, Dr Phillips did not consider that the project threatens cultural integrity in continuation of local traditions and customs; nor that effects on school rolls would be more than minor and temporary.

[1291] This witness concluded that Transpower had mitigated those impacts by keeping the decision-making period as short as possible; by providing accurate and timely information about the project and its effects; and by developing effective working relationships with individuals and groups where possible.

[1292] Dr Phillips had also considered potential social impacts of the construction phase. He had found that it would impact directly on landowners and land users, particularly because of the seasonal nature of farming

activities. He considered that provision and management of suitable housing and services for the construction workforce, which avoided the need for construction camps, would minimise potential effects on communities.

[1293] Once constructed, Dr Phillips considered that the social effects of operation of the line would be more modest, with 'turnover' in communities resulting in greater acceptance of the line. He accepted the potential for ongoing stress and resentment, but anticipated that eventually the majority of people would accept the line or leave the district. Dr Phillips acknowledged that there may still be a measure of anger, along with acceptance or resignation, particularly where landowners are affected by loss of freedom of activities on part of their land. He considered that these issues would be addressed through compensation, mitigation, change in the population, and acceptance of the existence of the line.

[1294] Dr Phillips's social impact assessment had been the subject of peer review by Ms J Meade Rose, a social anthropologist with wide experience of social effects assessment. In her evidence, Ms Meade Rose gave her opinion that Dr Phillips's assessment of social effects had been comprehensive and appropriate. She recommended more extensive opportunities for counselling, and had advised Transpower about setting up such a service.

[1295] Ms Meade Rose gave her opinion that effects from the planning phase had been considerable, and many of them had been unavoidable due to the large scale and complex nature of the project, of the approval processes, and of public involvement. She anticipated that the social effects of the construction phase would be manageable, and those of the operation phase, negligible.

[1296] Even so, Ms Meade Rose gave her opinion that the submissions about social effects are valid, and represent issues of varying degrees of concern by individuals and groups. She considered that consultation and mitigation measures would enable concerns to be worked through and, where appropriate, mitigated.

## Consideration

[1297] The Board does not doubt, nor belittle, the social effects already experienced as a result of the planning process up to the Board's Inquiry into the designation requirements and associated resource consent applications: the announcement of the proposed route, the Electricity Commission processes, and the preparation for and participation in the Board's public hearing. However, nothing in the Board's power could ameliorate those effects; and the Board's task relates to the designations and resource consents sought by Transpower to authorise the construction and operation of the project: the overhead line, the transition, switching and substations, and the underground cables. So the Board limits its findings to the potential social effects on the environment of the construction and operation of those elements of the project.

[1298] As observed by several submitters, and acknowledged by Dr Phillips, there is not enough detailed information about the construction programme to reliably assess the potential social effects in respect of individual properties. At the general level, there is potential for considerable social

impact. Some of that impact would be unavoidable, given the scale, and complexity of the works. That makes the mitigating and remedying of those social effects the more important.

[1299] Yet the extent to which the mitigating and remedying of the social effects is effective depends on the aspects about which there cannot be prescription: the sensitivity, understanding, respectful attitude and competence with which Transpower's contractors deal with landowners and occupiers, and communities. That is true of mitigating the physical effects of activities on private land which comprises people's homes and workplaces, and which may be the scene of ancestors' lives, and the location of current owners' aspirations for their futures, and those of their descendants. It is also true of attempts to remedy by counselling any social harm done by the existence of the project and its construction and operation.

[1300] Aspirations about sensitivity, understanding, respectful attitudes and competence by contractors are too judgement-laden to sensibly be the subject of conditions of designations or resource consents. So it is fortunate that in the present case the requiring authority is a State-owned enterprise that has a statutory responsibility to exhibit a sense of social responsibility by having regard to the interests of the communities in which it operates; and by endeavouring to accommodate and encourage these when able to do so. The communities, and the people of them, are entitled to more than lip service. They are entitled to a corporate culture that is determined and effective in willingly giving full effect to discharging that social responsibility.

[1301] In terms of section 319(2) of the RMA, the Board expressly recognises adverse social effects only to the extent that they are mitigated and remedied as fully as they can be by sensitivity, understanding, respectful attitude and competence with which Transpower contractors deal with landowners and occupiers, members of the public, and communities in mitigating and remedying social impacts of the project, and the works in constructing it. The Board makes its findings about the social effects of allowing the designations and resource consents on the basis that they would be mitigated and remedied in those ways and to that extent.

[1302] Having considered the submissions and evidence, and on the bases mentioned in the previous two paragraphs, the Board finds that the construction, operation and maintenance of the proposed transmission (overhead line, transition, switching and substations, and underground cables) would have adverse social effects in these respects:

- a) feelings of powerlessness over one's own property, and affront at responses from Transpower to 'adapt or move away'
- b) feelings of being unsettled, stress, anger and despair from unwilling imposition of the line and fears of serious ill-health and family fragmentation
- c) uncertainty about timing, duration, nature and extent of impacts
- d) disappointment of long-term expectations and commitments to farm and business developments and family continuity
- e) sense of unfairness of effects on different properties, and about entitlements to compensation
- f) fears of disintegration of local communities.

[1303] Although the severity of those social effects may vary from property to property and community to community, and may be abated over time, these are significant effects that deserve to be considered in an ultimate judgement about whether the designations should be upheld or withdrawn.

## Traffic effects

[1304] The construction of the proposed transmission line has potential for significant adverse effects on normal use of public roads. Traffic flows could be interrupted in installing underground cables in public roads if cut-and-cover methods are used instead of underground thrusting; and heavy vehicles carrying transformers and other major components to substation sites, major elements of towers, and lengths of conductor for the overhead line, could also interrupt use of roads for emergency and normal use in both urban and rural areas.

[1305] Submitters who live in Gray Road, Te Miro, pointed out that they are solely dependent on the use of that road for access. They contended that they should not be cut off from using it whenever they need for routine and emergency purposes by heavy vehicles associated with construction of the line. Submitters who live in Brownhill Road also raised concerns about effects of construction traffic on safety and free use of that road. Those are examples of effects that could arise elsewhere as well.

[1306] In general, interruptions to use of public roads for construction purposes are subject to approval by the relevant road controlling authority under the Local Government Act. However, the Board finds that the extent of the potential effects on the environment of constructing the proposed Grid Upgrade Project warrants conditions of the designations that set parameters within which road-controlling authorities would exercise their authority.

[1307] Transpower proposed common underground cable route conditions to be attached to the designation in the Manukau City District Plan in respect of the installation of underground cables there. Among those conditions several would limit the adverse effects of the works on use of public roads, including development (in consultation with identified stakeholders) of a traffic management plan that is generally consistent with Transit New Zealand's Code of Practice for Temporary Traffic Management. The conditions require that the traffic management plans recognise that the paramount purpose of roads is the free passage of the public and its vehicles.

[1308] The conditions referred to in the previous paragraph are specific to the installation of the underground cables in roads, mostly in the urban environment of East Tamaki, but including Brownhill Road. Similar conditions were proposed for the Pakuranga, Brownhill and Whakamaru North Substations (in respect of transport of transformers to those sites).

[1309] The concerns expressed by submitters from Te Miro also raise potential effects that could be mitigated by conditions of all the designations in respect of the overhead line, and transition, switching and substations.

[1310] The proposed common overhead line conditions 19–21 require traffic management plans in respect of road crossings and local roads used by heavy

traffic. However, by comparison with the corresponding condition in respect of underground cables, they omit provision requiring that traffic management plans recognise the paramount purpose of roads, and a requirement for consultation with key stakeholders. The Board does not understand why effects on users of rural roads affected by construction of the overhead line should be the subject of less effective mitigation than for users of mostly urban roads affected by installation of the underground cables.

[1311] The Board finds that if the designations for the overhead line are upheld, the potential adverse effects on free passage by the public and its vehicles on public roads should be mitigated by the imposition of conditions of the designations as proposed; and that the common conditions in respect of traffic management plans should be amended in those respects to conform with those for underground cables.

## **Effects on farming**

### **Submitters' concerns**

[1312] Many submitters (including the Waikato District Council and Federated Farmers) raised concerns about anticipated detrimental effects on management of land for farming or on other businesses, that could be caused by entry over the land by Transpower or its contractors for construction, operation or maintenance of the overhead line; or by limitations on the use of their land due to the presence of the line crossing the land.

[1313] Submitters described respects in which management of their farms, including location and timely movements of livestock in appropriate paddocks and on farm races at various seasons, and activities sensitive to disturbance such as calving, lambing, and mating, could be substantially disturbed by entry of contractors, and their heavy vehicles and machinery; and occupation of substantial areas of land for construction activities (the evidence establishing that a 'pulling station' for stringing wires from towers could occupy as much as 4000m<sup>2</sup> or thereabouts).

[1314] Federated Farmers stated its members' concerns that Transpower does not have systems and procedures that are satisfactory to farmers for resolving indemnity and compensation questions, and submitted that those questions are relevant to the Board's consideration of the requirements, and should be considered under section 171(1)(d). Federated Farmers also acknowledged that consideration of easements and compensation are private matters between landowners and those seeking easements, but submitted that compulsory powers overhang negotiations between Transpower and landowners.

[1315] Submitters also cited temporary effects during construction of the line, and permanent effects after it is commissioned; and these are now summarised below.

### Temporary construction effects

[1316] On temporary construction effects, submitters stated concerns that:

- a) all or some of a farm would not be able to be used for pasture or cropping for longer or shorter periods, resulting in losses of production
- b) soil would be rendered unproductive or less productive due to compaction by heavy vehicles, and due to deposit on it of roading and other construction materials
- c) both cropping and management of livestock (particularly young animals and during calving, lambing and mating) would be more difficult and more expensive due to disturbance by contractors' machinery and vehicles; to vehicle tracks dividing paddocks; and due to disruptions to routes for stock races to milking sheds etc
- d) removal of trees and shelterbelts, and premature removal of plantations (or parts of them) for production or erosion control, would adversely affect economics of farm businesses
- e) interruptions to the use of farm airstrips and aerial topdressing would delay timely application of fertiliser, grass seed or weed spray
- f) piping networks for livestock watering would be interfered with
- g) milking sheds, and other infrastructure would have to be relocated
- h) construction activities would create risks for farm workers and their families.

[1317] Submitters' examples of permanent effects having long-term impacts on the economics of farm businesses included:

- a) parts of farms becoming unproductive or less productive as a result of restrictions on normal farming activities near the transmission line, such as restrictions on placement of fences; on fires; on activities that result in dust in the air; and difficulties in driving tractors and moving irrigators around and near the pylons
- b) restrictions on, and extra cost of, aerial application of fertiliser, grass seed, and weed spray, making some parts of a farm unproductive; cost of having to buy supplementary feed currently grown on-farm; and lost opportunities to use farm airstrips for scenic flights
- c) having to remove or trim trees, shelter belts, and plantations for production, and for erosion control; and lost opportunities for new plantations, and for future development of farm infrastructure (including dwellings) near the transmission line
- d) tracks currently used for stock races no longer being suitable for animals' hooves due to roading metal laid to enable heavy-vehicle access to the transmission line for maintenance activities

- e) difficulties with recruiting workers and with ownership succession, due to people's aversion to living and working near high-voltage transmission lines.

### **Transpower's response**

[1318] Transpower did not dispute that disturbance and disruption to farming activities could result from the construction of the transmission line. It contended that the construction activities can readily be managed so the disturbance and disruption would be minimised. It explained that this would be done through conditions of designations and of resource consents; through cost incentives to the contractor; through inclusion of Transpower staff in an alliance with the contractor; through a construction management plan; and through stakeholder relationship management plans and landowner management plans.

[1319] Transpower asserted that the construction process would be managed so that affected parties would have advance information of construction activities, including the timing and nature of work to be carried out, and the impacts that may result; so that disturbance and disruption could be minimised. It explained that an important part of achieving that would be consultation by Transpower and its contractors with landowners, with a view to reaching agreement about managing construction and longer-term changes to farming practices. Transpower acknowledged that there would be some alteration to aerial topdressing practices etc, for a relatively small number of properties; but it contended that the long-term effects would be minor, and farmers would be able to adapt their practices to the presence of the line.

[1320] Mr F J Hall, a qualified and experienced farm-management consultant, gave evidence on the potential physical effects of the construction and operation of the Grid Upgrade Project on agricultural activities, including farm management; tracks and races; fencing; water supplies; cowsheds and other buildings; and trees that provide shelter.

[1321] This witness considered that livestock would be able to graze between legs of the transmission towers, so the direct impact of tower placement on grazing would be minimal. He recognised that areas under the towers would not be able to be used for cropping, but stated that the majority of land along the route is not used for cropping, other than for feed crops (hay and silage); and he considered that the impact of towers on feed crops would be minor.

[1322] Mr Hall acknowledged that two milking sheds on the proposed route would have to be relocated or replaced; also a woolshed and some hay barns. He considered that there could be some benefits to farmers from relocating or rebuilding in more appropriate locations; and he acknowledged that a new building would need to be completed prior to demolition of the existing one. He explained that those impacts would be addressed by Transpower purchasing easements, and by offering agricultural advice on selection of new building sites.

[1323] Mr Hall acknowledged that some trees and shelterbelts would be removed from most properties through which the transmission line would pass; in his opinion the agricultural impact would be low. He stated that if

trees are replanted, it would take 4 to 6 years for them to provide shelter; and he considered that it would be appropriate for Transpower to discuss options for replacement, and to proceed with replanting at the earliest stages.

[1324] He considered that the impacts on effluent and irrigation systems would be addressed by Transpower meeting the costs of relocating them. He acknowledged that new access tracks would need to be formed on virtually all properties on the route. Landowners would be able to choose whether to have these systems left, or removed and the land rehabilitated. Similar arrangements would be needed over disposal of spoil.

[1325] Mr Hall acknowledged that fencing would be likely to be affected, and that Transpower should address the impacts of inefficient grazing through the easement process. He also acknowledged the potential for disruption to farm management during construction of the proposed line; and that the extent of the impact would depend on the time of year. He considered that the timing of construction would need to be planned ahead and specific arrangements made for mitigation.

[1326] Mr Hall acknowledged that addressing the effects of the transmission line on farming activities by mitigation works or purchase of easements would require careful liaison between Transpower and individual landowners. He considered that Transpower landowner liaison officers should offer the services of an agricultural adviser to consider site-specific issues, including timing of entry.

[1327] Mr P Rasul, Transpower's project manager for the overhead section of the Grid Upgrade Project, gave evidence of the process for constructing the overhead line. He described the role of the landowner liaison officers, who would maintain contact with landowners prior to, and throughout, the various stages of construction; and stated that sensitive times would be incorporated into the programme wherever practicable.

[1328] Mr Rasul stated that, following completion, the sites would be reinstated to their original conditions so far as reasonably practical; and all surplus materials and temporary access roads would be removed (unless the landowner requested they remain), except for four-wheel drive access tracks for maintenance and emergencies. He explained that works such as breaking up compacted topsoil would be carried out in accordance with best agricultural practice; and following joint inspection, the agreement of the landowner would be sought that the final condition of the land be considered acceptable.

[1329] He confirmed that Transpower would be adopting best international practices; and that the comprehensive set of project controls and mitigation measures would ensure that, through sound construction practices, disturbances would be minimised.

[1330] In his evidence Mr P J Patrick, a Transpower transmission-line field engineer, explained the detail of site works plans for each property, including agreements on entry, access routes, protection of infrastructure, gates, materials on roads, times of work, reinstatement, and disposal of spoil. He acknowledged that some disruption would be inevitable; and acknowledged



that measures would need to be taken to prevent dust nuisances and avoid sediment in waterways.

[1331] Mr Patrick confirmed that a comprehensive ongoing programme of consultation would be needed, and agreement where practical on measures to limit potential adverse effects. He described measures for mitigating temporary losses of grazing, including minimisation of damage, repair of damage, compensation for damage done, and for loss of facility. Mr Patrick also detailed reinstatement works to be carried out, including re-establishing topsoil and pasture, re-aligning fences, and promptly repairing damaged gates and fences.

## Consideration

[1332] On considering the submissions and evidence on this topic, the Board finds that there is potential for substantial adverse effects on management of land for farming or other business. Those potential effects could result from entry by Transpower or its contractors on private land, and carrying out works for construction of the line; and from restrictions on private activities in the vicinity of the line (both within the designation and potentially beyond its limits).

[1333] The Board understands that, from past experience with agents for Transpower, there is not universal confidence among those whose property would be adversely affected, that Transpower would deal with them as considerately as it represented to the Board that it would, and as its witnesses described that it would. However, as explained in Chapter 16, the Board should not be influenced by reports of such past experiences.

[1334] The Board accepts that, even with all the measures described by Messrs Hall, Rasul and Patrick, some disturbance and disruption would remain, and there would be unwanted change in farm management practices for many. Even so, the purpose of the RMA is not to preclude unwanted change: the Board is concerned to identify adverse effects on the environment that could not and would not be avoided, remedied or mitigated by the proposed measures.

[1335] Potential effects on use of farm airstrips, and on aerial application of fertiliser, weedspray and grass seed, are important for those who would be affected. The Board addresses these effects specifically in Chapter 13 of this report.

[1336] The nature and extent of disturbance and disruption effects would vary according to the circumstances of each property, according to the particular works on that property, to their timing, and to the quality of the relationship between Transpower's contractors and agents and the owners and occupiers of the land. Some of the effects could be remedied by replacement works, or by payment of compensation. The effects cannot be evaluated from a general review.

[1337] In Chapter 4 the Board stated its understanding that Transpower is free to negotiate agreements with landowners to access their lands; that landowners are free to agree to or refuse entry; and that Transpower and landowners are free to stipulate terms and conditions for entry. If agreement

is not reached, Transpower could apply to the Minister of Lands to invoke taking powers under the Public Works Act. If that is done, landowners would be entitled to seek an inquiry by the Environment Court.

[1338] The effect is that, if Transpower seeks to enter private land at a time or in ways that would significantly disturb management of the land for farming or other activities, the landowner is not obliged to accept that entry, or can stipulate reasonable terms and conditions on which entry may be acceptable.

[1339] Those are matters for negotiation and private agreement between Transpower and the landowners concerned. They are outside the designations required under the RMA, and beyond the scope of the Board's Inquiry and decision.

[1340] The perception that negotiations may be 'overhung' by potential for invocation of powers of entry under the Public Works Act is limited by the parts to be taken by the Minister of Lands and potentially by the Environment Court in any such process. The Board considers those provisions give assurance that Transpower would not act oppressively in negotiating entry on private land at a time or in ways that may significantly disturb farming or other activities on it.

[1341] The outcome is that the Board finds that:

- a) there could be substantial adverse effects on management of land for farming and other businesses
- b) Transpower proposes to avoid, remedy and mitigate those effects in business-like ways
- c) landowners would have opportunities to propose ways in which adverse affects could be avoided, remedied or mitigated
- d) Transpower and landowners have mutual interests and negotiating stakes likely to result in adverse effects being minimised as far as practical.

## CHAPTER 13: OTHER NECESSARY CONSIDERATIONS

[1342] A territorial authority considering a requirement for a designation, and a consent authority considering a resource consent application, is required to have regard to any other reasonably necessary matter.<sup>1</sup>

### Tāngata whenua issues

#### Introduction

[1343] Functionaries managing use, development and protection of natural and physical resources under the RMA are (among other things) to:

- recognise and provide for the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga<sup>2</sup>
- have particular regard to kaitiakitanga<sup>3</sup>
- take into account the principles of the Treaty of Waitangi.<sup>4</sup>

[1344] The Board refers to the objects of those duties collectively as tāngata whenua issues.

[1345] Four submitters raised tāngata whenua issues in their original submissions on the Grid Upgrade Project: Pohara Marae Committee; Raukawa Trust Board; Ms J Colliar for herself and on behalf of Taniwha Marae; and the Waikato Raupatu Trustee Company Limited.

#### Pohara Marae

[1346] At the hearing, the Pohara Marae Committee raised two matters of substance: that the proposed transmission line would separate the marae from their awa; and from their urupā.

[1347] On the committee's behalf, Mr S Wilson asserted that Transpower and the committee had not established a dialogue in any substantive way.<sup>5</sup> He contended that the Grid Upgrade Project is promoted by Transpower on behalf of the Crown, and as a state-owned enterprise, it is required to act consistently with the principles of the Treaty of Waitangi.<sup>6</sup> He cited a decision given on 31 August 2005 by Chief Judge Williams,<sup>7</sup> as Chairperson of the Waitangi Tribunal, declining an application for urgency for the Tribunal to deal with a claim under the Treaty of Waitangi Act 1975.<sup>8</sup> In that decision, Chief Judge Williams held that, for the purposes of section 6 of that Act, the Grid Upgrade Project is a policy or practice promoted by Transpower on behalf of the Crown. Mr Wilson asked the Board to direct Transpower to engage with the marae committee in best-practice consultation according to a model referred to by the Royal Commission on Genetic Modification, and adopted by Carter Holt Harvey.<sup>9</sup>

[1348] Mr Wilson called three other speakers to assist in their presentation to the Board: Messrs W Papa, T Tauroa and Dr Brett Graham. A common theme amongst those speakers was a desire “to seek a direct relationship with Transpower”. The Board sees that as positive for both parties.

### **Raukawa Trust Board**

[1349] By its original submission, the Raukawa Trust Board raised an extensive list of generic issues, including the assertion (without giving particulars) that the duties described by sections 6(e), 7(a) and 8 of the RMA had not been followed.

[1350] However, the Raukawa Trust Board did not attend the Board’s hearing to present its submission.

### **Taniwha Marae**

[1351] Ms Colliar, for Taniwha Marae, raised at the hearing: a breach of cultural protocol during the consultation process; and the impact of the transmission line on the ability of the people of the marae to connect with their history, namely, the site of the former Tanua Pā. Ms Colliar described Transpower’s attempt at consultation as inadequate and disrespectful, in that a hui having been arranged, Transpower representatives had entered the marae without having been invited, and started setting up their equipment.<sup>10</sup>

### **Waikato Raupatu Trustee Co**

[1352] The Waikato Raupatu Trustee Co informed the Board at the hearing that the main issues it had raised could not be dealt with by the Board, and so it did not present evidence or submissions at the hearing.

### **Transpower**

[1353] In response to issues raised in respect of section 6(e) of the RMA, Transpower submitted that the relationship of iwi with their awa tūpuna, and other wāhi tapu had been recognised and provided for throughout the consultation process, and by avoiding the siting of transmission towers within the river or near its banks. It asserted that many of the issues raised on behalf of Pohara Marae related to historic events, and as such are not relevant matters that the Board should consider with regard to the proposed Grid Upgrade Project.

[1354] Transpower contended that it had appropriately addressed tāngata whenua issues, so the Board might be satisfied that they had been recognised and provided for.

### **Evidence**

[1355] Neither the Pohara Marae Committee nor Ms Colliar for herself or on behalf of Taniwha Marae, had lodged evidence in support of the submissions

to be given at the Board's hearing, so their submissions were not able to be tested in cross-examination.

[1356] The only evidence given to the Board bearing on tāngata whenua issues was that of Mr B Mikaere (an independent consultant in tāngata whenua consultation and cultural issues under the RMA, whose testimony was not challenged by cross-examination or contradictory evidence); and (as no submitter sought to cross-examine them) affidavits lodged by Transpower of the evidence of Ms H G Hendren and Mr T F N Ngakete describing in detail the parts they had taken in the process of consultation with iwi about the Grid Upgrade Project.

[1357] In his evidence, Mr Mikaere described in detail a programme of consultation and investigation that had been followed by Transpower to identify and address potential tāngata whenua issues, including identifying known iwi and hapū organisations along the routes, and their affiliations; identifying Māori-owned land that might be affected; identifying marae and associated activities, wāhi tapu, including urupā, and significant cultural sites, such as former pā.

[1358] The witness also detailed Transpower responses to all identified cultural issues that had been raised by iwi and others. He gave his opinion that the proposed routes and tower placements represent the best amalgam of public and iwi-held information, and that adjustments had been made in response. In his opinion the greater number of identified cultural issues could be provided for.

[1359] Mr Mikaere also gave his opinion in evidence that he did not expect there would be significant impact on Māori except – as with other landowners – where the transmission line would have a direct impact on land, and compensation issues would arise. He remarked that the same process in determining compensation would be available to Māori as to other landowners.

[1360] This witness also gave evidence that the care that had been taken by Transpower in respect of wāhi tapu, sites, and waters, illustrated an acceptance of the need to have particular regard to kaitiakitanga; and that this duty had been properly discharged.

[1361] Regarding section 8 of the RMA and the allegation that consultation undertaken by Transpower was inadequate, Mr Mikaere stated that Transpower had been attempting to consult with the marae and its people since late 2004, but its efforts were continually blocked by local politics. Consequently, Transpower submitted that a direction from the Board to engage in a mutually agreed consultation process sought by the Pohara Marae Committee was unnecessary.

[1362] Mr Mikaere also addressed the Treaty principle of active protection of rangatiratanga; and gave his opinion that in identifying the tāngata whenua of the lands affected, Transpower had 'protected' the rangatiratanga of the Māori parties involved. He addressed, too, the Treaty principle of mutual benefit, and noted that Māori are part of the community that would benefit from the Grid Upgrade Project.

## Consideration

[1363] As the Raukawa Trust Board and the Waikato Raupatu Trustee Co did not pursue their submissions at the hearing, the issues raised by them (to the extent that they were specific) do not require further consideration by the Board.

[1364] The Board accepts the unchallenged evidence given by Ms Hendren, Mr Ngakete and Mr Mikaere.

[1365] The Board finds that in the processes of consultation and selecting the proposed routes for the transmission line and underground cables, Transpower recognised and provided for the relationships of Māori and their culture and traditions with their ancestral lands, waters, sites, wāhi tapu and other taonga; and had particular regard to kaitiakitanga.

[1366] The Board also finds that, in those processes, Transpower has taken into account the applicable principles of the Treaty of Waitangi, in particular protection of rangatiratanga, and also mutual benefit.

[1367] Of the specific issues raised by Ms Colliar for herself and for Taniwha Marae, the Board addresses the first (a breach of protocol in consultation) in the next section of this chapter. The second of the specific issues raised by Ms Colliar and for Taniwha Marae related to connection with the site of the former Tanua Pā. She described that site as located west of Taniwha, located on a hill, and taking in sweeping views of the valley; and asserted that the proposed line would be yet another physical structure that would segregate them from their original pā site.<sup>11</sup>

[1368] It is not evident to the Board that there is a substantial tāngata whenua issue involved, as distinct from a landscape issue, even though the adverse landscape effects would be perceived by Māori, as well as by others.

## Adequacy of consultation

### Submitters

[1369] Some submissions contained allegations that Transpower had lacked good faith throughout the consultation process. Dr McQueen's second submission (No 1076) contained this allegation:

Transpower have not followed required consultation processes, and the so-called 'consultation' they have undertaken has not been done with a true intention of proposing a 'least environmental impact' solution. The consultation processes they have used are unlawful and have not been undertaken in the spirit that the RMA intended.

[1370] Dr McQueen gave substantial evidence on other relevant topics, but did not offer evidence in support of the allegation in his Submission No 1076 about consultation. In submissions at the hearing, he asserted that the consultation process had been driven to meet the letter of the regulations

requiring consultation, rather than the spirit of true consultation about alternatives.<sup>12</sup>

[1371] In their joint evidence, Ms Brennan and Mr Copstick gave their opinion that serious flaws in Transpower's consultation process showed it to be bogus, and a box-ticking exercise, rather than a genuine attempt to address the real damage their proposal would inflict on the environment and communities. They referred to Transpower having confined personal consultation to landowners from whom they want to purchase an easement, and not contacting owners of other land that would be impacted (who were deemed unaffected and excluded from information about the proposal). They reported harassment and threats of court action against landowners; and perceptions by landowners of dismissive, patronising and offensive attitudes by Transpower contractors; and that Transpower was not sincerely interested in engaging in genuine consultation.

[1372] At the hearing, Mr C Richards submitted that he and his neighbours had spent hours trying to find out from Transpower what impact the lines would have on their properties and businesses, and that they had very little success. He stated their perception that Transpower had not listened to any of their concerns, and had ignored them to stick to their grand plan; that although he and his neighbours were willing to work with Transpower, Transpower had been not willing, and had kept pushing them with the Public Works Act.<sup>13</sup> (The particulars given by Mr Richards do not relate to environmental effects of the proposed transmission line, but mainly to questions in respect of easements, construction access, fencing, liability, land-use constraints, compensation, betterment, and taxation.)

[1373] Mr C C Tylden spoke of what he described as Transpower's bullying tactics, and stated that right from the first communications with Transpower, they had used the threat of the Public Works Act.<sup>14</sup>

[1374] Ms C Baldwin made submissions on behalf of New Era Energy Incorporated and New Era Energy South Waikato, that Transpower had failed in its obligation to consult adequately or correctly with landowners and the community; she described the consultation as a sham; she spoke of struggles landowners had had to get information, maps and other data; and she described the consultation process as an insulting and arrogant failure. In response to a question from the Board, Ms Baldwin gave as an example questions asked of Transpower consultation contractors about effects of the proposed transmission line on old marae sites and places of historic interest, and how they would be handled: stating there had been no opportunity for dialogue or for answers to be given.<sup>15</sup>

[1375] In their submissions, Ms Brennan and Mr Copstick stated that Transpower's evidence about consultation of fine-sounding objectives and respectful approach did not reconcile with what they described as the arrogant and often confrontational faces at the community consultation meetings. They described the community consultation as part of the ACRE process as being too little, too late, insincere, and irrelevant.<sup>16</sup>

[1376] In their submission, Ms S Jones and Mr V Jones were also critical of Transpower's consultation and unresponsiveness.<sup>17</sup> Mr S Jefferis, presenting

submissions for Te Hoe Holdings Limited, stated that after the initial route had been altered to go through the middle of their mature podocarp bush, consultation had never existed.<sup>18</sup> In his submissions, Mr A Kinsler referred to consultation having been too little and too late; and stated his belief that Transpower had already made up its collective mind about what they wanted to do, and “we were going to be ignored anyway”, remarking that this was not consultation, but being dictated to.<sup>19</sup> Mr C McKenzie stated his experience of the consultation as having been very one-sided, high-handed, and a farce.<sup>20</sup> Presenting submissions for Haunui Farm, Mr M Chitty spoke of his concern about the lack of consultation Transpower had with him as a severely affected landowner.<sup>21</sup> Mrs J van het Bolscher, speaking to the submission by herself and her husband, described Transpower’s consultation as an empty gesture.<sup>22</sup>

[1377] Mr R McKenzie agreed in cross-examination that movement of the Brownhill Substation site to a less visually prominent location, and selection of a monopole for Tower 5, had come about through the consultation process; but he was critical that the consultation process had not shown him the wider panorama in which his property would have views of two other towers which would not be monopoles: so he felt slightly misled by the consultation process as far as it went.<sup>23</sup>

## Response by Transpower

[1378] Transpower submitted that consultation (other than with tāngata whenua) is not required by the RMA, nor is it one of the matters that the Board is required to consider.<sup>24</sup>

[1379] Transpower explained the stages of the consultation it had undertaken. It stated that after it had published the indicative alignment in July 2005, consultation on the centreline and detailed tower locations had occurred between that month and January 2006, a process that was still continuing at the time of the hearing. Transpower reported that during the July 2005/January 2006 consultation phase, more than two-thirds of the 432 proposed towers had been moved to accommodate landowner concerns. Further changes had been made before the notices of requirement were lodged, and between then and the hearing, 28 further minor tower movements had been proposed, either in response to further landowner requests, or for improved outcomes.

[1380] Transpower also stated that information gathered in consultation had been important in the final design of the project, including the choice between the western and eastern routes. It maintained that in the result, the proposed designation alignment takes into account a large number of constraints, taking all practical steps to mitigate impact on dwellings, farm buildings, and indigenous vegetation.

[1381] Further, Transpower contended that consultation with landowners and other affected persons had been a core aspect of the ACRE route selection process (which from the outset had taken into account social aspects such as settlement patterns, cultural and heritage values); and that it had considered, and (where appropriate) actioned, landowners’ requests for mitigation and adjustments to address environmental effects.



[1382] Transpower denied Mr Copstick and Ms Brennan's assertions that consultation had been confined to landowners from whom they want to purchase an easement. Counsel explained that a distinction had been made between people whose properties would be crossed by the line, and those whose properties would not be crossed, to recognise the different nature of potential impacts; but that the distinction had no impact on whether or not people were consulted. The only people identified by Mr Copstick and Ms Brennan as having been omitted were Mr V and Ms S Jones, and Transpower reported that its records showed 29 inward and outward contacts with them.

[1383] Transpower stated that it had continued to attempt to engage with the Pohara Marae Committee, and had been frustrated; and submitted that a direction by the Board (as requested by Mr S Wilson) would have doubtful validity.

[1384] Transpower acknowledged that the breach of tikanga that had led to the cancellation of the hui at Taniwha Marae had been regrettable, and reported that it had apologised to Taniwha Marae for the perceived breach of tikanga, but the apology had not been universally accepted. It submitted that consultation is a reciprocal process, and that a party who withdraws from consultation or declines to take part, cannot complain that Treaty principles have been infringed. It submitted that the cancellation of one hui did not mean that the consultation was flawed; nor did it invalidate the process. Its repeated offers to request another hui had not been taken up until after the Taniwha Marae submission had been lodged.

### **Transpower's evidence**

[1385] Dr Phillips had designed and implemented an extensive and lengthy community consultation for Transpower, including numerous public meetings, newsletters and individual letters, and visits to groups and individuals described in his evidence to the Board.

[1386] In rebuttal evidence, Dr Phillips rejected assertions by Mr Copstick and Ms Brennan that people whose properties would not be crossed by the line had not been contacted; and he rejected that Transpower had kept one small part of the community informed and the rest of the community in the dark. He confirmed that there had been a number of individual contacts with Mr V and Ms S Jones, and provided details.

[1387] Dr Phillips reported on having provided aerial photographs showing the indicative centreline, possible tower positions, and bounds of the designation; and stated that landowners had been encouraged to meet with case managers so they could have input in the process. He stated that he had been unable to identify instances that could support allegations of bullying tactics.

[1388] In cross-examination, Dr Phillips gave his opinion that, as a whole, the consultation Transpower had undertaken was appropriate, and had worked well.<sup>25</sup>

[1389] On the cancellation of the hui at Taniwha Marae, Mr T F Ngakete (a kaumātua of Ngāti Noho) gave evidence that he had made an error of

marae tikanga in that Transpower representatives had entered the marae prior to the pōwhiri, which had been seen as an affront by some of those present. He had apologised to the whānau, and his apology had been accepted by some, though not accepted by others due to previous animosity to him. Mr Ngakete gave his opinion that no fault could be attached to the consultation he had been involved in.

[1390] Mr Mikaere gave his opinion that the breach of tikanga and cancellation of the hui had not disadvantaged members of the marae, because its submissions contained no issue that had not already been noted and addressed.

[1391] In respect of the Pohara Marae, Mr Mikaere acknowledged that apart from the initial meeting, there had been no formal 'sit-down' with them, but reported on several meetings with their representatives, as well as exchanges by telephone and mail.

## **The Board's findings on consultation**

### **The law**

[1392] Section 36A of the RMA was enacted by the Resource Management Amendment Act 2005. The effect of that section is that, as applicant for resource consents and as requiring authority for designations, Transpower was able to consult any person, but did not have a duty under that Act to consult any person. So to the extent that some submitters had an understanding that Transpower was obliged by the RMA to enter into consultation with them or anyone else, the Board holds that they were mistaken.

[1393] Dr McQueen's contentions that the processes Transpower used were unlawful, and that Transpower did not follow required consultation processes, appear to be based on a misunderstanding of the law, and are not cogent.

### **The evidence**

[1394] Three other contentions about Transpower's consultation processes are also immaterial.

[1395] Dr Phillips's evidence to the contrary being unchallenged, the evidence does not support Ms Brennan's and Mr Copstick's contentions that Transpower had excluded from consultation owners of land over which easements are not required. In any event, Transpower was not obliged to consult anyone, and was free to consult with whom it chose. Dr McQueen's submission that the consultation processes were not undertaken in the spirit that the RMA intended is also immaterial, as the RMA does not require any consultation. The Pohara Marae Committee's request that the Board direct Transpower to engage with them according to a certain consultation model is outside the scope of the functions conferred on the Board by the RMA.

[1396] The other contentions about Transpower's consultation processes are criticisms about how Transpower carried them out: that it was arrogant; bogus; confrontational; dismissive; disrespectful; making an empty gesture; a

farce; not genuine; lacking good faith; too late; high-handed; insincere; insulting; misleading; offensive; patronising; not revived on change of route; a sham; and negated by threats of court action under the Public Works Act.

[1397] As a state-owned enterprise, Transpower has a duty to have regard to the interests of the communities in which it operates, and to endeavour to accommodate and encourage these when able to do so.<sup>26</sup> However, the Board's duties are under the RMA, and it has no function under the State-owned Enterprises Act. As the RMA does not impose a duty on Transpower to consult anyone, the Board excludes from influence on its decisions the contentions alluded to, because they are irrelevant to its function.

## Conclusion

[1398] The Board does not belittle the strong dissatisfaction with Transpower's consultative process expressed by the 16 submitters who raised the issue. Given Transpower's use of statutory powers, all people potentially affected should have been treated better than as described in the allegations in the submissions and evidence referred to in this section of the report.

[1399] Even so, only four submitters<sup>27</sup> gave evidence of their experiences of the consultation process, and even those four omitted particulars of their assertions that would have made testing their statements practicable.

[1400] The total number of people who might potentially be affected by the Grid Upgrade Project proposal appears to exceed 10,000.<sup>28</sup> Although the Board does not condone any lapse in the quality of consultation, it considers that it would be disproportionate to allow the regrettable experiences of fewer than a score of submitters to influence the decisions to confirm or cancel the designations, or to grant or refuse the resource consents.

## Animal health

[1401] Effects of the overhead line on animal health were raised by some submitters, including Haunui Farm, the Hon Mr W R Storey, Mrs L Storey, Mr Copstick and Ms Brennan.

[1402] In his evidence, Mr K M Rooney, veterinarian, identified potential effects on animal health arising from noise, construction site debris, the season in which construction and maintenance of the proposed overhead line occurred, and electric and magnetic fields.

[1403] Electric and magnetic fields have the potential to affect farmed mammal species similarly to humans. However, in his opinion based on the available animal epidemiological evidence, the levels of EMFs from the proposed line would present no health hazard to animals, including effects on equine conception or pregnancy.

[1404] Some submitters were concerned about leakage of electrical current from the proposed line. Dairy cows may show behavioural changes, restlessness, irritation and a reduction in milk production when exposed to

current leakage or stray voltages as low as 0.5 V. This distress is associated with mastitis and increased bulk somatic cell counts.

[1405] Mr Rooney asserted due to its design, the proposed line is highly unlikely to have direct electrical effects that would result in distressed cows. He reported that typically current leakage affecting cows occurs in milking-machine electrical installations that are inadequately earthed. Mr Rooney gave his opinion that in the unlikely event that current leaked from the transmission line, the source would be able to be detected, and the leakage rectified.

[1406] Mr Rooney gave evidence that as horses have very well-developed hearing, noise from the conductors in adverse weather conditions is likely to startle some horses, in particular yearlings and foals. Since horses run away at high speed when startled, this could result in trauma. That potential effect would be reduced by the design of the proposed line, which is associated with less noise compared to current lines. In his opinion it could also be managed by minimising handling and by shifting horses in adverse weather.

[1407] This witness concluded that in the case of Haunui Farm, a thoroughbred breeding farm, there would be potential effects for equine health and farm worker safety if the horses are startled by noise from the line. In rebuttal evidence he stated that the impact on horses or donkeys on other properties, including lifestyle blocks, would be less: due to the lower stock rate, the generally quieter nature of horses on these properties compared to those on thoroughbred breeding farms, and the quiet nature of donkeys.

[1408] Mr Rooney considered that other potential effects on animals, such as stress from disruption to farm activities and construction noise, and consumption of construction debris, could be avoided or minimised by close advance liaison between the farmer and contractors, and actions included in the site works plan.

[1409] In response to queries raised about effects of EMFs on food animals (Mr G E Orbell, Mr D and Mrs L Daley), Mr Rooney stated that there is no evidence suggesting any human health risk from consumption of meat or milk from animals grazed in the vicinity of high-voltage transmission lines.

## **Conclusion**

[1410] In the absence of contradictory expert evidence and cross-examination, the Board accepts Mr Rooney's evidence that the proposed line would not result in long-term significant adverse effects on animal health. It finds that there would be a potential adverse impact on horses, in particular at Haunui Farm. There would also be some potential short-term effects on other farm animals during construction and, to a lesser extent, during maintenance; these effects would need to be addressed in site works plans and property easement agreements.

## Design of towers

[1411] Some submitters raised issues about the design of the towers for the overhead line, including the use of monopoles as an alternative to lattice towers.

[1412] The HPVRA raised the design of the towers. Its submission referred to the scale of the proposed towers being significantly greater than that of existing pylons and lines. HPVRA submitted that replacing the lattice towers with less intrusive monopoles or more compact structures would be a desirable option for avoiding, remedying or mitigating the adverse effects of the Grid Upgrade Project.

[1413] Mr D A Parker gave evidence for HPVRA and asserted that, as well as the capacity of the line being greater than was needed, Transpower had misunderstood the ICNIRP guidelines in defining electrical parameters: this had been one of the factors resulting in large-scale towers.

[1414] Mr Parker urged that either (smaller) compact towers, monopoles or both be used in place of the larger towers proposed. The akimbo type of compact tower was a particular type of compact tower that Mr Parker described in his evidence.

[1415] HPVRA and others stated that the benefits of using compact towers or monopoles would afford an opportunity to avoid, remedy or mitigate the adverse visual effects of the proposed Grid Upgrade Project.

## Response by Transpower

[1416] Transpower submitted that the proposed line would be predominantly constructed using double-circuit steel lattice towers, ranging in height from 46 to 70 metres (with single-circuit towers proposed for two transposition sites along the proposed line, and at Brookby Ridge, due to a height restriction associated with Ardmore Airport).

[1417] Transpower also submitted that the heights of the towers are principally set by the minimum clearance to the ground and the underlying topography; and that the quality of the landscape is one of the main factors to take into account in considering whether to use monopoles.

## Transpower's evidence

[1418] Mr Boyle gave evidence that the transmission line needs to be designed for energised maintenance (also referred to as 'live line maintenance') to ensure that the transmission system supplying the upper North Island has high availability. A line designed for energised maintenance would minimise the number of line outages for maintenance, but would need increased distances (vertically and horizontally) between bundles of conductors, and would result in structures that are wider and higher than compact towers.

[1419] In his evidence, Mr R J C Noble explained that the first part of the development of an overhead transmission line design is to select a structure

type and conductor; and that the type of structure, including the height, is a function of a number of parameters including the operating voltage, tower spacing, audible noise, and safety requirements (including for electric and magnetic fields).

[1420] Mr Noble stated that cost is also a major factor, and referred to recent Australian experience showing that monopoles are approximately 2.6 times the cost of steel lattice towers of similar strength.

[1421] In his evidence, Mr Khot identified the electrical design parameters that are taken into account when the line and towers are being designed. These parameters included limits of electrical and magnetic fields at the boundaries of the designations, those affecting the performance of the line and its electrical stability, and minimum safe distances for people carrying out maintenance of the tower and conductor components. He also gave evidence on the design features used to minimise the effects of lightning on the line.

[1422] Mr Khot asserted that although 'line compacting' is a desirable concept wherever possible, where line reliability is paramount other factors, such as live line maintenance capability, govern the design of the towers.

[1423] In rebuttal evidence, Mr Khot rejected the assertion that Transpower had misunderstood the ICNIRP guidelines in relation to Reference Level and Basic Restriction electric field levels. In doing so, he also referred to the evidence of Dr Black and Mr van Rongen.

[1424] In rebuttal of Mr Parker's evidence, Mr Lake provided his analysis of the design and operational characteristics of akimbo insulator arrangements on towers. He identified some Transpower towers that have been fitted with these insulator arrangements.

[1425] Mr Lake asserted that a disadvantage with akimbo arrangements is that they lack direct access to the conductors. He gave his opinion that akimbo insulators should only be proposed in special situations where normal cross-arms and single vertical insulator arrangements cannot be used.

[1426] He also gave his opinion that it is a very unlikely scenario for a tower to fail so that its total height is laid flat and perpendicular to the line. Mr Lake stated that towers are to be sited so that they are not in line with any houses.

## **Consideration**

[1427] The Board finds that Transpower is required to ensure the reliability of the transmission system, and that this had led to it selecting a structure type and physical size that provided acceptable electrical and magnetic fields limits, capable of live line (energised) maintenance.

[1428] Mr Parker does not have directly relevant experience in the field of high-voltage electrical engineering.

[1429] In the absence of contradictory expert evidence, the Board accepts the opinions of Messrs Boyle, Noble, Khot and Lake in relation to the design of the transmission line, and particularly in regard to 'compact' towers and

‘akimbo’ insulator arrangements. The Board finds that neither ‘compact’ towers, nor akimbo insulator arrangements would allow for the energised maintenance that would provide reliable availability of proposed line for grid security such as Transpower has to achieve by the GPS and GRS.

[1430] The Hunua and Paparimu Valley Residents’ Association request for use of monopoles instead of lattice towers in the Hunua locality is addressed elsewhere in this chapter.

## **Underground cables or overhead lines**

[1431] Many submitters contended that the effects of the proposed Grid Upgrade Project could be avoided, remedied or mitigated by using underground cables instead of an overhead line in their locality of interest.

[1432] One such submitter, ‘Underground in Manukau’, submitted that the entire route of the overhead 400-kV-capable line in Manukau City be placed underground. Other submitters made similar suggestions.

[1433] Manukau City Council (Mr Freke, Group Manager, Transportation) acknowledged that it is not economically viable to take the entire route underground. However, the submitter contended that the extent of the route that is laid underground should be greater than that proposed by Transpower.

[1434] The reasons advanced by Manukau City Council for underground cable installation were the adverse effects of the 400-kV-capable overhead line on the Whitford Valley and the Brookby Valley areas. Manukau City Council was seeking an extension to the proposed underground cable section, but with 400-kV cabling south from the Brownhill Substation.

[1435] New Era Energy South Waikato sought a greater length of underground cable installation than proposed, including in the South Waikato.

## **Response by Transpower**

[1436] Transpower responded that taking small segments of the proposed line underground, while technically feasible, would carry a high cost; and that transition substations would be needed where the overhead lines connect to the underground cables.

[1437] Transpower contended that even a short cable link in an overhead line would reduce the availability of the overall circuit. Reduced circuit availability may require additional circuits to be installed earlier than would otherwise be necessary, or other measures may need taking to ensure the required level of grid security is maintained.

[1438] Transpower also contended that long sections of underground cable have a potentially detrimental effect on system reliability and security and, in the event of failure, are difficult and costly to repair.

## **Transpower's evidence**

[1439] Mr Wildash, a Transpower senior development engineer, gave evidence that for EHV networks, underground cables have much greater costs than overhead line; and that the capital cost ratio for taking a section of a 400-kV 2700-MVA line underground is about 15:1.

[1440] Mr Wildash also gave evidence on the lower reliability of underground cable relative to an overhead line, due to the long outage times required to locate faults underground and to repair cables. He stated that, although installing cables underground is technically feasible, it would be very costly, and would also degrade the reliability of the 400-kV circuits because of the length of time to repair cable faults.

[1441] Cross-examination of Mr Wildash did not reveal any basis for the Board not accepting his evidence; and no qualified witness gave evidence that contradicted him.

## **Consideration**

[1442] Manukau City Council submitted that Mr Wildash's evidence on costs was deficient, simplistic, unsubstantiated, inherently unreliable and not probative.

[1443] The Board regards those criticisms as overstated, and apparently based on a misunderstanding of the witness's evidence.

[1444] The Board accepts that more extensive underground installation of the transmission line could substantially mitigate adverse landscape and visual effects. It accepts Mr Wildash's evidence that the cost of taking part of an EHV system underground can be up to or above 15 times that of overhead line; and that locating and repairing faults in underground cables takes significantly longer than it does in respect of faults in overhead lines. The Board also accepts that as Transpower has to work within the constraints of the GPS and the GRS, it has to favour options that support reliability and security of supply.

[1445] The environmental benefits of taking larger sections underground cannot be ascribed a reliable monetary value; but the Board judges that the additional cost of further underground installation, and the resulting reduction of reliability and security of supply, would be disproportionate to the perceived benefits. So the Board finds that it is not justified in requiring more of the transmission line to be taken underground.

## **Effects on local roads**

### **Submissions**

[1446] The Waikato District Council, and several submitters having land in its district, raised concerns about potential damage to public roads caused by significant numbers of heavy vehicles using the roads for construction of the proposed overhead line. The Council maintained that many of the roads concerned have not been designed nor constructed to cope with the numbers



and weights of vehicles that would be used; and contended that the traffic would have adverse effects on the surface pavements, and also long-term effects on the life of the underlying foundation structure of the roads.

[1447] The Council contended that it would be inequitable for this burden to fall on the ratepayers of the district, and that Transpower should be required to defray those costs. It argued that a condition proposed by Transpower for surveying road condition in the immediate vicinity of construction entries off public roads would be inadequate for uncertainty, and would not extend far enough.

[1448] The Council asserted that the potential costs of restoring the roads would be significant, and that it would not be equitable nor easily affordable for the community to bear the cost of remedying those adverse effects. It sought conditions of the designation requiring preparation and approval of a traffic management and mitigation strategy, monitoring, and mitigation (including repair of damage to roads).

[1449] The Waikato District Council referred to damage caused to public roads by heavy traffic associated with construction of Transpower's Ōhinewai Switching Station. Mr Patrick gave evidence that this project is not comparable, as the former had involved 7340 heavy-vehicle movements concentrated on one road; and the Upgrade Project would involve about 200 movements per tower, not necessarily concentrated on one road.

[1450] However, Mr A D A Gray (a consultant professional engineer) responded that as there are to be 115 towers within the Waikato district, its proportion of Mr Patrick's estimate of the total likely 61,169 trips would require between 15,000 and 20,000 heavy-vehicle trips; and its proportion of Mr Patrick's estimate of the maximum of 194,648 trips would require between 50,000 and 60,000 heavy-vehicle trips. On those calculations, Mr Gray estimated that the Council could incur a potential cost of \$250,000 for loss of pavement life (though he stated in cross-examination that the amount of that estimate is only illustrative of the potential scale<sup>29</sup>).

[1451] Transpower accepted that it should pay for short-term damage caused to roads in the vicinity of access ways to properties, and it proposed conditions for that.

[1452] On the Waikato District Council's concern with potential damage to the underlying road pavement and loss of pavement life, Transpower contended that the Council's case is opportunistic in that it is seeking to have its roads upgraded at Transpower's (and ultimately the electricity consumer's) expense on the basis that the Grid Upgrade Project is not a permitted activity; yet the Council does not expect compensation from milk tanker operators for loss of pavement life caused by their use of roads.

[1453] Transpower submitted that loss of pavement life is included in road-user charges, which Transpower and its contractors would be paying in the normal course. It contended that there is no legal basis for territorial authorities to impose conditions of designations levying such a payment; and that the Board should not impose such a condition in respect of a matter that

was not the subject of district plan provisions, nor clearly identified in the Council's legal submissions or evidence.

## **Consideration**

[1454] The Board accepts the general thrust of Transpower's submissions on local roads.

[1455] In its original submission on the relevant designation requirement, the Waikato District Council made a general request for conditions requiring Transpower to mitigate the effects of construction traffic on roads. However, the Council did not state in its submission the condition that it wanted imposed. Nor did it do so in its evidence statements, nor its submissions at the hearing.

[1456] If the designation is upheld, the effect of section 176 is that the activities of constructing the Grid Upgrade and maintaining it will be as fully authorised in terms of the RMA as are permitted activities under the district plan. Levying of financial contributions under the RMA is conditional on appropriate plan provisions, and none were brought to the Board's attention. The Board accepts that, like operators of other heavy vehicles such as milk tankers, Transpower and its contractors would contribute to the cost of maintaining roads by payment of road-user charges in the normal way.

[1457] The Board is not persuaded that there is a basis in principle for singling out Transpower for levying liability to compensate for loss of pavement life when other operators of heavy vehicles are not levied. Nor is the Board persuaded that in the circumstances there is a basis in law for imposing a condition requiring such a financial contribution.

[1458] So (except to the extent of conditions set out in Appendix K to this report) the Board declines to impose conditions sought by the Waikato District Council, and in particular, declines to require Transpower to repair, restore or rehabilitate any local road in its district, or to contribute to the cost of any such work, or to compensate the Council for any long-term impact of construction traffic on the underlying design-life of roads in its district.

## **Effects on safe use of Ardmore Airfield**

### **Introduction**

[1459] Ardmore Airfield (near Papakura) was originally a wartime military aerodrome. It is now used for general civil aviation, predominantly pilot training. The airfield has about 250,000 movements per year by fixed-wing aircraft and helicopters. It has one operational runway, aligned 30°/210°.

[1460] At present four Transpower transmission lines pass to the east of the airfield: the OTA-WKM A, B and C lines (1.4–2.2 kilometres from the north-easterly end of the runway), and further east the ARI-PAK A line (4.7 kilometres from that end of the runway).

[1461] The proposed new transmission line would also pass to the east of the airfield, beyond the existing lines and five kilometres beyond the north-easterly end of the runway. It would have a height of 72.4 metres above mean sea level, and would replace the closer ARI-PAK A line, which would be dismantled.

[1462] By its submission, Ardmore Airfield Tenants and Users Committee alleged that the proposed lines and pylons would constitute a hazard to aircraft operations at Ardmore Airfield, and that risk analysis by Transpower and its consultants had been totally inadequate. The Committee also asserted that an aircraft impacting the lines would be a massive single-point failure of the grid. The Committee asked for independent professional reports on pilot and passenger occupational safety and health; and that the lines be required to be laid underground for 500 metres on either side of an extension of the centre-line of the airfield runway, between two well-lit pylons.

[1463] At the hearing, the Committee was represented by its acting chairman, Mr McCreadie. He has a degree of Bachelor of Engineering (Chemicals and Materials Engineering), and has experience as a private pilot (a total flying time of 853 hours including training), including precision competition work. His professional work has included analysis of client and public risks. On the Committee's behalf, Mr McCreadie cross-examined certain witnesses called by Transpower, and himself gave evidence on which he was cross-examined by counsel on behalf of Transpower.

[1464] Transpower disputed the Committee's allegations, and contended that the risk analysis made by its consultants (Airbiz Aviation Strategies) is reliable, and that the marginal safety effect of the new transmission line instead of the ARI-PAK A line would be *de minimis*.

[1465] Transpower called evidence from Mr Sullivan who is a professional engineer with 40 years' experience in the aviation industry: 15 years as a specialist airport consultant in airport operations including safety management systems and training, and safety compliance audits. Mr Sullivan had made an independent assessment of the potential aviation risks presented by the proposed transmission line.

[1466] Transpower also called rebuttal evidence from Mr M B Stevens, a former Deputy Director of the Civil Aviation Administration (CAA) who had been in charge of aerodrome safety throughout New Zealand for over 12 years.

[1467] Transpower remarked that the CAA and Ardmore Airport Limited had been consulted in preparation of the Airbiz report, and had not seen it necessary to make any submission to the Board; and that the Airways Corporation of New Zealand had made a submission, but not in opposition.

[1468] Much of Mr McCreadie's challenge to Transpower's position on this topic concerned in some detail his criticism of the risk analysis made by Airbiz. Yet although the Airbiz report was of course presented to the Board, none of its contributors were called to give evidence. Instead, the evidence called on Transpower's behalf on this topic was that of Messrs Sullivan and Stevens, both of whom are independent of Airbiz. The Board is able to make its finding on the topic on the evidence before it, without having to decide on Mr McCreadie's challenge to the Airbiz report. Rather the Board identifies

the material differences between Mr McCreadie on the one hand and Messrs Sullivan and Stevens on the other, and states its reasons for its decision on those differences.

[1469] Before doing so, the Board records Transpower's submission that this question involves a comparison of the marginal adverse effect on the safety of aircraft operations posed by the proposed transmission line in place of the existing ARI-PAK A line. That was put to Mr McCreadie in cross-examination. He agreed, explaining that he was referring to the marginal total additional effect.<sup>30</sup> The Board accepts that.

[1470] Those material differences between Mr McCreadie and Messrs Sullivan and Stevens relate to: the ICAO Safety Management Manual; the Ardmore Aerodrome Obstacle Limitation Surface; the nature of risk to aircraft in distress; the risk posed by the existing OTA-WKM A, B and C lines to an aircraft in distress; and the marginal additional risk that would be posed by the proposed line to an aircraft in distress.

## **ICAO Safety Standard and Surfaces**

[1471] The International Civil Aviation Organisation (ICAO) administers the Chicago Convention, to which New Zealand is a signatory. In his evidence Mr Sullivan referred to the ICAO Safety Management Manual.

[1472] Mr McCreadie gave his opinion that the ICAO safety management template used by Mr Sullivan is a simplistic and archaic system providing for omnipotent bureaucracies to impose risk judgements on stakeholders who have not agreed to the analysis, or to accept or share those risks without compensation; and is not appropriate for multiple uncontracted parties.

[1473] Mr Stevens gave evidence that most states, including New Zealand, apply ICAO technical standards and recommended practices for domestic aviation; that New Zealand has adopted them to a very large extent, and the CAA is committed to an ongoing programme of doing so.

[1474] In his rebuttal of Mr McCreadie's reference to the ICAO document as archaic, Mr Sullivan gave evidence that the first edition had been published in 2006, and that it had been specifically developed to assist the consistent worldwide implementation of safety management systems by aviation industry operators and service providers, drawing on best practice and giving specific acknowledgement to Australia and New Zealand.

[1475] Mr Sullivan acknowledged that New Zealand has not yet adopted the 2006 document, and remarked that its safety assessment process is similar to the risk management process described in AS/NZS 4360:2004 that was relied on by Mr McCreadie.

[1476] Mr McCreadie is of course entitled to his opinion about the value of the ICAO 2006 document. However, in the absence of any evidence that his view of it is shared generally by experts in aviation safety, on the evidence of Messrs Sullivan and Stevens, the Board sees no reason for not accepting Mr Sullivan's expert opinion on that question.

## **Ardmore Obstacle Limitation Surfaces**

[1477] In his evidence Mr Sullivan referred to the Obstacle Limitation Surfaces (OLS) for Ardmore Airfield, the lower limits of which are designed to provide adequate vertical clearance above potential obstacles for pilots complying with visual flight rules and aerodrome traffic rules. The witness stated that none of the proposed towers or conductors would penetrate the navigable airspace defined by the OLS; and that normal flight operations through the Clevedon Valley are protected.

[1478] In cross-examination, Mr McCreadie accepted that none of the current or proposed structures penetrates the Ardmore OLS defined by civil aviation regulations. However, he stated that he did not consider they are relevant to continuous fence-type obstacles directly across the track.

[1479] In rebuttal, Mr Sullivan disputed Mr McCreadie's opinion that the OLS is not relevant to assessment of the transmission line. He observed that the OLS makes no distinction between the type of obstacles, but simply requires that structures not extend above the individual or collective surfaces; and that fence-type structures that do not penetrate the OLS are permitted without special constraint.

[1480] The Board accepts Mr Sullivan's evidence that the intangible or imaginary surfaces adopted for limitation of obstacles to flights in and out of airports would apply to the proposed transmission line structures. There is no dispute that the proposed transmission line structures would not penetrate those surfaces. The Board sees no basis for accepting Mr McCreadie's opinion that this is not relevant to assessment of the extent to which the proposed line would pose a threat to safety of flights leaving or approaching Ardmore Airfield.

## **Nature of relevant risk to aircraft in distress**

[1481] Mr McCreadie explained fully the nature of the risk to an aircraft in distress in a real emergency, namely potential loss of control in avoiding obstacles. He classified as having the bulk of significant and unavoidable risk a complete or partial loss of power on take-off, or on final approach to land, or in transit through the Clevedon Gully.

[1482] Mr McCreadie also referred to the fact that Ardmore is predominantly a training aerodrome, and that student pilots have a tendency for slower response times and increased chance of taking inappropriate actions in emergencies. He gave his opinions that introducing 60-metre-high electric fences would add considerably to the complexity of responding to an engine failure or serious power loss at less than 500 feet above ground level, that it would cut down the number of safe options, and would increase the number of potential inappropriate actions.

[1483] In cross-examination Mr McCreadie acknowledged that he is an interested party, an advocate, and cannot be an advocate and treated as an expert witness.<sup>31</sup>

## Risk from OTA-WKM lines

[1484] Both Mr Sullivan and Mr Stevens gave their opinions that the existing OTA-WKM A, B and C lines pose a greater risk to aircraft leaving or approaching Ardmore than would the proposed transmission line. In cross-examination by Mr McCreadie, Mr Sullivan explained why he considered the new line as less significant.<sup>32</sup>

[1485] Mr McCreadie accepted that although the proposed towers would be five metres or so higher above mean sea level than the towers of the existing OTA-WKM C line, the latter are about 3.5 kilometres closer to the runway; although he pointed out that engine failure could occur at any point.<sup>33</sup> He also agreed that laying the proposed line underground would not fix the existing obstacle posed by the OTA-WKM A, B and C lines.<sup>34</sup> He stated his opinion that the risk from the proposed line would be cumulative on the risk from the existing lines,<sup>35</sup> explaining that an aircraft flying in the circuit is exposed in a crosswind situation to the ARI-PAK A line or the new line for a longer period than it is exposed to the existing lines which are crossed at 90°.<sup>36</sup>

[1486] The Board accepts that although OTA-WKM lines are lower in terms of height above mean sea level, being much closer to the runway they pose a greater risk to aircraft leaving or approaching Ardmore than would the proposed transmission line. However, given the distance between the route of the proposed lines and that of the existing OTA-WKM lines, the Board does not see the practical significance of their existence to assessing the marginal additional effect of the proposed lines.

## Risk from proposed line

[1487] In his evidence, Mr Sullivan noted that in normal operations in the Ardmore Mandatory Broadcast Zone, aircraft would be flying with at least 500 feet vertical clearance above the proposed line; that bona fide low-level operations (such as aerial topdressing) could be at 250 feet or less above ground level, but the proposed line would not increase the risk posed by the ARI-PAK A line. A similar opinion was given by an expert witness in topdressing aviation, Mr A J Nichol.

[1488] In respect of emergencies in taking off, Mr Sullivan considered that the OTA-WKM C line represents the critical obstacle, an opinion with which Mr McCreadie agreed in terms of performance rating and slope of climb.<sup>37</sup> On risk of engine failure, Mr Sullivan gave his opinion that the risk to an aircraft in distress posed by the proposed line would be one in 68 years, which is no marginal addition to the risk posed by the existing ARI-PAK A line that is to be replaced. The witness also considered abnormal flight operations, and stated that conflict with the proposed line would be a gross deviation from normal flight altitude, which he regarded as an insignificant risk.

[1489] Mr Stevens gave his opinion that even in the case of engine failure, in no case would the new line pose a credible threat; and engine failure below an altitude of 500 feet would involve an aircraft taking off or landing close to the aerodrome, in which case the proposed line would be irrelevant because of its location.

[1490] In cross-examination, Mr McCreadie agreed that aircraft flown by student pilots should not be anywhere near the proposed line unless in an emergency.<sup>38</sup>

[1491] Accepting its importance, the Board has reviewed all the evidence bearing on this topic. On comparing the respective qualifications and professional experience of Messrs Sullivan and Stevens with those of Mr McCreadie, and taking into account the independence of Messrs Sullivan and Stevens, the Board finds the latter opinions more credible where they differ.

[1492] In summary, the Board finds that the marginal additional risk to the safety of aircraft using Ardmore Airfield posed by replacing the existing ARI-PAK A line with the proposed transmission line would not be significant, and would not amount to an adverse effect on the environment.

## **Effects on use of farm airstrips**

[1493] Transpower acknowledged that the overhead line would have some effects on aerial topdressing and similar activities, and would be an additional obstacle for agricultural and other small aircraft. It maintained that those effects would be limited to areas close to the line, and to a relatively small number of larger properties which depend on aerial application; and contended that the effects would be manageable.

[1494] Although the topic had not been raised in its submission on the designation requirement, nor in its counsel's submissions in presenting its case, these effects were raised by a witness called by the South Waikato District Council. Consultant planner, Mr Collier, raised as a primary concern effects on farming practices, such as the ability to apply fertiliser by air.

[1495] Mr Collier stated in evidence that normal activities of many farms in the South Waikato District would be hindered in that the aerial application of fertiliser would be severely affected by the lines, and their effects on air strips. He also raised cumulative effects of reduced fertiliser application rates affecting nutrient levels, and in turn the soil productivity of the district.

[1496] A number of other submitters also raised concerns in relation to topdressing, including Mr K Baker (Lichfield Farms); Mr M S and Mrs C K Bill; Mrs J M Sceats; Mrs L Storey, the Hon Mr W R Storey, Mr J Lyons, Mrs L E Lyons, and Mr G W H Vercoe.

[1497] Mr A J Nichol is the managing director of an aerial topdressing business, having had decades of experience in that industry (including 16,300 flying hours); he is member of the governing committee of the New Zealand Agricultural Aviation Association, and its observer on the Aircare Safety Committee of the Aviation Industry Association. Mr Nichol also has knowledge of farm practices and requirements in relation to agricultural aviation. He professed, too, to have a good understanding of agricultural helicopter operations, although he acknowledged that he had no operational experience of flying helicopters.

[1498] Mr Nichol explained that in assessing effects of the overhead line on agricultural airstrips, distance of an airstrip from the line is relevant, as are

the orientation and elevation of the airstrip, and the number of properties that are served by it.

[1499] The witness explained that transmission towers are generally visible unless in cloud or fog; and that the main hazard that a line presents is the conductors which, in certain light conditions, can be virtually impossible to see (especially the top wires). However, he stated that generally they do not cause a problem, as pilots operating in the district and region have local knowledge.

[1500] Mr Nichol gave his opinion that where the ARI-PAK A line is being replaced by the proposed line, there would be little difference in the area of land that is inaccessible to topdressing; although he acknowledged that aircraft would need to climb to a greater height to cross the new line, or alter a flight path to cross only at a tower for enhanced safety. Either would add to flight distance and time. He considered that there would be relatively few airstrips that would be rendered unusable.

[1501] The witness reported that he had identified 33 airstrips in proximity to the proposed line, of which he had inspected nine. He considered that three of them would be seriously affected: Lyons' at Papparimu, Rangers' near Putaruru, and Scherers' near Putaruru. As agricultural operations are not carried out from the Scherers' airstrip, Mr Nichol considered that it is not part of the aerial topdressing activity of the district. He also gave his reasons for considering that the effects of the proposed transmission line on the other six airstrips he had inspected would be of little consequence.

[1502] Mr Nichol also addressed the particular cases of individual submitters who had raised concerns about topdressing on their farms, concluding that in general there are potential economic disadvantages to some, due to increased fertiliser application costs; but if pilots are operating in compliance with the rules, there should be no additional risk.

[1503] In cross-examination by the Hon Mr Storey, Mr Nichol estimated that the extra cost could be between 10 and 20 per cent, depending on the location, elevation and size of the airstrip, and the amount of the load.<sup>39</sup> He also agreed that any constraint on topdressing can affect land use; and if the orientation of the airstrip has to be changed, there could be additional costs.<sup>40</sup>

[1504] The Board accepts the submissions, and finds that the overhead line would have adverse effects on aerial application of fertiliser, pesticides etc and would be an obstacle for small aircraft (and a greater obstacle than the existing ARI-PAK A line that it is to replace over much of the route).

[1505] The extent of the adverse effects on aerial application would differ widely according to circumstances. In some cases, inability to replace an airstrip with another as serviceable and safe could result in considerable and ongoing increase in costs of application, and reduce the existing potential productivity of part of a farm.

[1506] In principle, the extent of such effects is capable of being mitigated to some degree by sensitive and competent Transpower case managers, determined to identify and provide constructive measures to remedy impacts



or redress them. Despite reports of past experiences with Transpower representatives, that might be achieved by determined application in practice of a general policy to give full effect to the social responsibility mandate entrusted to Transpower by Parliament.

## Effects on Arapuni

[1507] The route of the proposed overhead line would cross Lake Karapiro about 800 metres northeast of Arapuni. The water in Lake Karapiro is a reservoir for generation of electricity by Mighty River Power Limited (MRP), which expressed concern that the Grid Upgrade Project not adversely impact on its operations.

[1508] The South Waikato District Council submitted that in selecting the route for the overhead line, inadequate consideration had been given to the partly developed Waikato River Trail in the vicinity of Arapuni. Ms Lucas considered that safeguarding the rural amenity values associated with this had been underestimated and would be adversely affected.

[1509] Mr D A Bamford, a recreation and tourism consultant, gave evidence that the Waikato River Trail has been established from Arapuni Dam to Jones Landing on the right bank of the river over a length of about three kilometres, and that there is a plan to develop this walking path further. He stated that recreational use of the path does not appear to be impacted by the existing hydro facilities at Arapuni, and that the proposed line would not directly impact on, or interfere with, recreational fishing, swimming or walking.

[1510] Mr Lister gave his opinion that the area that would be crossed by the line has moderately high natural character and landscape values, that a tower proposed on the southern bank would be in a prominent and open location on the crest of a high river terrace escarpment, and that a future continuation of the walking trail is planned for the eastern bank.

[1511] MRP reported that it had come to an agreement with Transpower that a condition be attached to the relevant designation to the effect that Transpower (as requiring authority) undertake all works and activities, including erection of structures, in a manner that does not prevent or hinder the continued operation of the Waikato Hydro System in accordance with its resource consents.

[1512] The Board accepts Mr Bamford's opinion, and finds that the proposed line would not have a significant adverse effect on the walking trail or on other amenities of Arapuni. If the designation requirement is confirmed, the condition proposed by Transpower and MRP is to be imposed.

## Effects on Brookby

### The issue

[1513] The Manukau City Council submitted that the proposed overhead line through Brookby would have significant adverse effects on the long-term potential for development of that area. The Council contended that the Board

should decline the notice of requirement in respect of the part of the route from where the overhead line would enter the Brookby Valley in the vicinity of Tower 14, or from just south of Ardmore flight path, as that part of the line should be underground.

[1514] Other submitters made similar contentions, particularly Underground in Manukau, Haunui Farm, and Mr J and Mrs B Addison.

[1515] Transpower contested the contentions about effects on the future potential environment, arguing that the Board could not consider effects on it and that the evidence did not establish any material impact on the long-term development potential of the area.

## **Planning status**

[1516] Brookby is beyond the Auckland metropolitan urban limit; it is zoned rural in the Manukau City Council's district plan, which limits subdivision and non-rural activities. No planning instrument indicates that any part of Brookby is intended for urban development or for countryside living.

[1517] Parts of Brookby are affected by height restrictions associated with Ardmore Airfield and Auckland International Airport. Three towers of the existing ARI-PAK A line infringe a protection surface for Ardmore, and one also infringes a control for Auckland Airport. None of the towers of the proposed line would infringe any of those controls.

## **Description of proposal in Brookby**

[1518] The route for the proposed overhead line diverges from that of the existing ARI-PAK A line between Brookby and the urban edge. Two single-circuit towers are proposed on the Brookby Ridge to avoid infringing the height restriction associated with Ardmore Airfield.

[1519] Mr Freke stated his belief that Transpower had not progressed or investigated further various substation/transition station sites and cable options. That was disputed by Ms Allan, who cited her Interim Report on Northern End Modifications.

[1520] Having reviewed that document, the Board does not accept Mr Freke's evidence in that respect.

## **Effects on existing environment**

[1521] Mr D J Scott stated his opinion that the proposal would have significant adverse effects on recreation areas of Brookby, including the pony club and the school. He described Haunui Farm as a trophy property of the area, and remarked that the proposed line would have a much more significant effect on it than the existing ARI-PAK A line does. He also expressed concern about clearance and trimming on the fringe of an area of secondary kahikatea bush at spans 12 and 13.

[1522] Other submitters raised landscape and visual effects on the Brookby area; the Board addresses these in the relevant chapter of this report.

### **The potential future environment**

[1523] The Manukau City Council asserted that Brookby contains large areas suitable for possible future urban development, although no formal planning document provides for future urbanisation and it is not earmarked in any policy document.

[1524] Mr C McKenzie had made a brief analysis of available information to confirm the suitability of Brookby as a possible future area, and stated that it may at some future time be considered as a possible urban area, but further investigations are needed to assess whether underground installation through the Brookby Valley is appropriate. His evidence did not pre-empt a future comprehensive study of possible urbanisation, and he had not been aware that the ARI-PAK A line across the Brookby Valley is to be removed.

[1525] Mr D J Scott identified Brookby as one of several South Auckland catchments ideally placed to accommodate environmentally responsible future settlement opportunities, but in cross-examination he agreed that no document outlines his vision of a future urban area at Brookby, and that he could not give evidence indicating that the community shared that vision.<sup>41</sup>

[1526] Mr Freke gave his opinion that it is inevitable that the metropolitan urban limit will be reviewed, and although that does not automatically mean all areas in the vicinity of current limit will be urbanised, he considered Brookby a prime candidate (though not immediately), and he acknowledged that there is no Council initiative to address or change its zoning.

[1527] Transpower responded that by the Local Government (Auckland) Amendment Act 2004, urban expansion in the area would require the Auckland Regional Council to approve the extension of the metropolitan urban limit; and that there is no sufficient or reliable evidential foundation for the existence of a vision for Brookby or urbanised or countryside living. Ms Allan gave evidence that submissions to the Manukau City Council seeking extension of Plan Change 8 into Brookby had been declined by the Council, pending a full study and consultation.

[1528] On that evidence the Board finds that future urbanisation of Brookby is no more than a long-term possibility, and is no more than conjectural.

### **Effects on potential future environment**

[1529] The Manukau City Council acknowledged that future urban development would not be prevented by the proposed transmission line, but argued that development would be constrained and options for development limited, in that the line would create a corridor limiting urban design options and severing connectivity by pedestrian and vehicular passage. It argued that infrastructural projects with significant impacts should not be allowed to drive the future pattern of settlements and development, and foreclose options.

[1530] Mr D J Scott gave opinion evidence along those lines. Mr Freke gave his opinion that the Board should have regard to the likely future urban form, and give weight to it when considering the Transpower proposal. Mrs Tuck gave her opinion that if the line goes ahead and development proceeds across Brookby, there is a future slum in the making.

[1531] Transpower responded that there was no evidence to show that the overhead line would have any material impact on the long-term development potential of Brookby, nor any qualified evidence on the practicality or merits of or justification for laying underground cables through Brookby, or of specific sites for a transition station.

[1532] The Board accepts Transpower's submission that the evidence does not tend to show that the line would have any material impact on the long-term future environment of Brookby.

[1533] If the Board were free to have regard to potential effects of the Grid Upgrade Project on a future urban environment in Brookby, the suppositious nature of it would make rational assessment of those effects impracticable. In the event, as explained in Chapter 4, the Board holds that it would not conform with the law to have regard to such speculative effects.

## **Conclusion on Brookby**

[1534] The Board declines to make any finding about effects on a possible future environment in which Brookby might have been urbanised.

## **Effects on Morrinsville and district**

[1535] In its submission, the Matamata-Piako District Council asked that the transmission line be installed underground along the western periphery of Morrinsville, or an alternative route be used. Those requests are addressed in Chapter 14 on local specific modifications.

[1536] In presenting their submissions at the hearing, N G Richards Farms Ltd, Mr C C and Mrs M A Tylden, and Mr P J and Mrs V R Phillips asked that the route of the line through their properties south of Morrinsville be altered. That is also addressed in Chapter 14.

[1537] In his submission, Mr G W H Vercoe asked that the proposed line be re-routed in the vicinity of his property at Tauhei; that, too, is addressed in Chapter 14.

[1538] Mr A L Loveridge, who has a dairy farm on the outskirts of Morrinsville, submitted that the proposed transmission line is not needed; that alternative technology should be used, that an easement 600-metres wide should be provided; that there would be adverse health effects from electric and magnetic fields; that farming activities would be disturbed by construction of the line, and from its existence over his farm; and that the line would interfere with electronic controls for his milking shed. All those topics are addressed generally elsewhere in this report.

[1539] Mr H M and Mrs B J Seales have a farm at Hangawera Road, near Morrinsville. In their submissions they contended that: better alternatives should be used, including building a power station in Auckland; that other technology be used; that an easement 600-metres wide should be provided; that there would be health effects from electric and magnetic fields; that their security would be compromised; that farming activities would be disturbed; that subdivision of their farm would be jeopardised; and that adequate compensation is uncertain. All those topics are addressed generally elsewhere in this report.

## Effects on South Waikato district

[1540] The proposed overhead line would pass through the South Waikato district, involving the erection of 108 towers, and two crossings of the Waikato River. The route is a greenfields route, in that it does not follow the route of an existing transmission line. Effects on Arapuni specifically have already been addressed in this chapter.

[1541] The South Waikato District Council submitted that the transmission line would result in adverse effects on the environment: in particular that the size and scale of the towers would have landscape, visual and amenity effects on owners of land through which it passes, and on the wider community's social and cultural well-being. The Council contended: that those effects could not be avoided, remedied or mitigated, having particular regard to the district plan; that inadequate consideration had been given to alternative routes and methods of undertaking the work; that the proposal does not recognise and provide for preservation of the natural character of lakes and rivers and their margins, and their protection from inappropriate use and development; and that it would not maintain and enhance amenity values or the quality of the environment.

[1542] New Era Energy South Waikato, in submissions presented by Ms C Baldwin, raised its concerns about disturbance of farming activities, including adverse effects on soil, fencing and irrigation; restriction of aerial topdressing; safety of farm workers, and employers' responsibilities for them; health effects of electric and magnetic fields; adverse effects on the health and well-being of livestock; effects on the ability to attract and retain farm workers; economic effects on farm businesses; negative effects on farm values; width of easement; and restrictions on potential for subdivision.

[1543] A number of farmers in the South Waikato made submissions about adverse effects of the line, particularly there being better alternative methods and technology; health effects of electric and magnetic fields; visual and landscape effects; disruption of farm activities including livestock management; effects on use of farm airstrips and restrictions on aerial topdressing; interference with electronic systems for livestock management; risk of towers falling; recreation and tourism effects; inadequacy of compensation; and potential liability for outages.

[1544] Drummond Dairy and Scenic Dairies, whose farm properties in the South Waikato would be crossed by the proposed line, asked that the towers be relocated to remove them from their properties, or realigned within their properties. Those requests are addressed in Chapter 14.

[1545] The route of the proposed overhead line would cross Lake Maraetai at Whakamaru, downstream of the Whakamaru Hydro Station. The water in the lake is a reservoir for generation of electricity at Maraetai Hydro Station.

[1546] MRP was concerned that the Grid Upgrade Project not adversely impact on its operations there. The agreement it reached with Transpower extended to the attaching of a condition to the relevant designation to the same effect as that already referred to in respect of Arapuni Hydro Station and Lake Karapiro at Arapuni.

[1547] Hancock Forest Management and Carter Holt Harvey have interests in substantial forests in the South Waikato district. To the extent that their submissions sought specific local modifications to the relevant designation, that is addressed later in this chapter. Concerns raised by them about compensation, indemnification against potential liability, and third-party use of telecommunication capability of the proposed work, are addressed elsewhere in this report.

[1548] Elsewhere in this report the Board specifically addresses the adequacy of the consideration given to alternative routes and methods; the landscape and visual effects of the proposed line in the South Waikato district; social effects of the Grid Upgrade Project; disturbance of farming activities; health effects of electric and magnetic fields around the line; effects on the health and well-being of livestock; the width of the easement; effects on the use of farm airstrips and aerial topdressing; interference with electronic systems for livestock management; risk of towers falling; and the relevance of compensation and potential liability for outages.

[1549] On examination, submissions about effects on amenity values, and on tourism and recreation, in the South Waikato district did not raise particulars that were distinct from landscape and visual effects. To the extent that the proposed line would fail to provide for preservation of the natural character of lakes and rivers and their margins, and their protection from inappropriate development, the Board has regard to those topics in Chapter 18 in coming to its ultimate judgement on the requirements.

[1550] On MRP's submission, the Board considers its judgement on whether to uphold or withdraw the designations on the basis that if it upholds them, it will impose the condition proposed by MRP and agreed to by Transpower.

## **Effects on Te Miro district**

[1551] A number of people lodged submissions about potential effects of the proposed overhead line in Te Miro district. Most of them also submitted that the line is not needed, that the scale and capacity of the line is excessive, and urged alternative methods (especially generation in Auckland) and alternative technology.

[1552] Questions of the need for the Grid Upgrade Project, the choice of that method, and the scale and choice of technology, have been addressed elsewhere in this report; specific consideration of them in respect of Te Miro district is not needed.

[1553] The submitters also raised effects on the environment of Te Miro district. To the extent that they raised health effects, inadequacy of the width of the designation or easement, and insufficient consideration of environmental costs of the proposal, their submissions are included in general consideration of those topics elsewhere in this report.

[1554] Although only two of the submitters from Te Miro raised landscape and visual effects in their written submissions, most of them addressed the Board on those effects during the hearing. The Board addressed the landscape and visual effects in Te Miro district in Chapter 10 of this report.

[1555] One submission related to danger to aircraft movements posed by the transmission line towers. Earlier in this chapter, the Board addressed the question of effects on use of farm airstrips. In the course of that, reference was made to the expert evidence of Mr Nichol, who gave his opinion that transmission towers do not generally cause a problem as pilots operating in a district have local knowledge.

[1556] The Board has no basis for doubting that this opinion is applicable to the proposed transmission line in Te Miro district.

[1557] In summary, the Board accepts that the proposed transmission line would have significant adverse landscape and visual effects on the environment of Te Miro district; and that it could also have some social effects during construction and for a period of operation until the residents become used to it. Those effects would be remedied to an extent by removal of the existing ARI-PAK A line. The effects can also be mitigated to some extent by the way in which Transpower manages its relationships with local residents.

## **Effects on Taniwha and Waiterimu district**

[1558] Numerous submissions were made by farmers from the Taniwha and Waiterimu district. They raised contentions (in common with many other submitters) that: the Grid Upgrade Project is not needed; that the scale and capacity of the proposed transmission line are excessive; that alternative methods should have been adopted; that alternative technology should be used; that an alternative route should have been chosen; and that the proposed width of the designation is inadequate. The Board has addressed those general topics in earlier chapters of this report.

[1559] The submitters contended that the line would have several adverse effects on the environment of the district, including risks of ill health from electric and magnetic fields; landscape and visual effects; effects on farming activities including constraints on aerial topdressing, and removal of shelter belts; effects on recreation through the district; effects on family heritage and on succession planning; and risks from sabotage or earthquake damage to the line.

[1560] Elsewhere in this report the Board addresses generally questions of risks of ill health from electric and magnetic fields; landscape and visual effects; effects on farming activities and aerial topdressing; social effects including effects on family heritage and succession planning; and risks of the line collapsing.

[1561] To the extent that submitters from this district argued for specific local modifications of the line (Mr G Athy, and Mr E J Mackay, and Te Hoe Holdings), those are addressed in Chapter 14.

[1562] These submitters, in common with many others, raised questions of unfairness; reverse sensitivity; property devaluation; and potential liability for outages. Those topics are also addressed elsewhere in this report.

[1563] In summary, the Board finds that the proposed transmission line would cause significant adverse landscape and visual effects on the environment in the Taniwha and Waiterimu districts; that it has potential for significant social effects; and for significant disruption to farming activities, especially during the construction phase.

## **Effects on Whitford district**

[1564] In respect of the Whitford district, submissions were made by the Manukau City Council, Underground in Manukau, and several landowners.

[1565] They raised concerns about alternative methods; choice of technology; and demand growth, being general questions (not specific to the Whitford district) that were also raised by many other submitters, and which the Board has addressed earlier in this report.

[1566] Some submissions also questioned the selection of the site for the Brownhill Substation, and suggested another site that they considered more suitable. In the event, once it was confirmed that the Brownhill Substation would be a GIS facility, with monopoles, and planting and landscaping mitigation, the challenge to the proposed site was not substantially pursued, except by Mr R and Mrs M McKenzie, Mr M A and Mrs R D Spring, and Regis Park Stage 2 Limited. Their requests for specific local modifications are addressed later in Chapter 14.

[1567] Manukau City Council, Underground in Manukau, and several individual submitters contended that the proposal to take the transmission line underground should be extended further south than the Brownhill Road site proposed by Transpower. The Board accepts that underground cables would have less environmental effects than overhead line.

[1568] Earlier in this chapter the Board has addressed the comparison of overhead and underground transmission, and stated its finding that although the latter has less environmental impact, there are substantial counter-indications in terms of costs of construction, installation and maintenance, and in reliability for security of supply. The cases of the submitters did not address those directly in any substantial way. Rather, they emphasised the environmental advantages, and suggested that if the transmission line is to be imposed on the community, the costs of minimising the environmental effects by underground installation should be accepted.

[1569] The Board does not accept that. It understands that the basis for making decisions under the RMA calls for identification and evaluation of costs and benefits associated with a proposal, and having regard to them, along with the relevant and applicable statutory instruments, in a process



that is subject to Part 2 and for the purpose stated in section 5. In doing so, the Board will have regard to the effects on the environment of Whitford (and elsewhere) of the proposal, involving overhead line to a substation at the Brownhill Road site, and underground cables from there to Pakuranga, and (eventually) to Otahuhu.

[1570] The adverse effects on the Whitford environment presented by the submitters included risk of ill-health from electric and magnetic fields, landscape and visual effects of the overhead line and substation; disturbance of farming and foreclosing of property development; interruption of use of public roads, especially during construction; noise, particularly from corona discharge; inadequate width of designation; social effects; potential liability for outages; and reduction in property values.

[1571] Those topics are not specific to Whitford, and are addressed more generally elsewhere in this report.

[1572] In summary, the Board finds that the proposed transmission line would cause significant adverse landscape and visual effects on the environment in the Whitford district (as elsewhere along the route); it has potential for significant social effects and for significant disruption to farming activities, especially during the construction phase.

## **Comments on Draft Report and Decision**

[1573] Under section 148 of the RMA the Board released its Draft Report and Decision on the 27 May 2009. In accordance with section 148(4) of the Act, the Board invited the persons to whom the draft report had been sent to send comments on any aspects of it to the Board by the 24 June 2009. Thirty-two comments were received on a variety of issues. The Board has considered these as set out below.

### **Support of the Board's findings**

[1574] Three submitters lodged comments in support of the Board's findings and the process that it followed; these were Glencol Energy Limited and the Stirling family, W Phillips and Mighty River Power Limited. The Board acknowledges those comments.

### **Disagreement with the Board's findings**

[1575] Many submitters (L Bilby, K Brennan and G Copstick, B Burwell, J Gasnier, R Habergham, P Phillips, C Richards and C Tylden, J Self, B and C Silvester, and N and M Sweetman) expressed disappointment at the Board's findings and reiterated their opposition to the proposal. The Board has noted these submitters' points of view and thanks them for their thoughtful comments.

## Compensation

[1576] Many submitters making comments again raised their view of the inadequacy of the law relating to compensation. The Board reiterates its opinion that consideration of compensation is outside the scope of its duties.

## Conditions

[1577] Transpower and the eight councils who made comments on the draft report, provided the Board with helpful suggestions to correct cross-references and wording in the conditions. The Board has adopted those suggestions. The Board has also corrected the commencement date for Mighty River Power's resource consents for the Waikato Hydro Scheme in condition 12 in Appendix F.

[1578] Six councils (Manukau City and Franklin, Waikato, Matamata-Piako, Waipa and South Waikato Districts) suggested alterations to conditions, including some new conditions in appendixes C to U of the draft report. The Board invited Transpower to consider these suggested changes and provide a response to the Board.

[1579] The Board has considered the council's requests and Transpower's responses to these requests. Nothing in the material provided by the councils to support the suggested changes to the conditions convinces the Board that the findings that the Board recorded in the draft decision should be amended. The Board also agrees with Transpower's contention that many of the changes suggested by the councils had not been raised previously at the hearing, and that other suggested changes were an attempt to re-litigate matters that had been raised by submitters but had not been accepted by the Board.

[1580] The Board considers that the time for the advancement of significant changes to the draft conditions was at the hearing, not at the time of providing comments on the draft report.

[1581] The Board notes that Transpower has stated in its response to the councils' suggested changes to conditions that it proposes to continue to work through the issues that had been raised by the councils to see where further agreement could be reached between them.

[1582] The Board accepts the changes to conditions that were proposed by Franklin District Council and South Waikato District Council and that were supported or not opposed by Transpower. Those changes clarify aspects of some conditions and extend some time limits for responses from councils from 15 to 20 working days. In particular, amendments to the conditions relating to landscape mitigation assessment notices are to be provided to landowners in writing, and a requirement for an "advice note" relating to temporary road closure after the Traffic Management Plan condition.

[1583] The Board accepts Transpower's submission that it is appropriate to make these changes in all conditions for all designations because of the generic nature of the conditions for the designations along the route of the overhead line.

## Further undergrounding

[1584] Four parties (R Lever, P Rishworth, M and R Hunt and K Holland) submitted comments requesting further undergrounding of the line. The Board has already given its views about undergrounding in this chapter. The Board accepts that underground cables are generally proposed to be on public lands or roads, but also accepts that physical requirements for overhead lines of the scale proposed precludes them being only on public land or roads.

## Transpower New Zealand Ltd

[1585] The Board is grateful for Transpower's focussed and careful comments on the draft report. The Board has incorporated the suggested corrections to condition cross-references and the corrections to the text of the draft report that were set out in Appendixes A and B of Transpower's comments.

[1586] The Board has also considered the more substantive comments by Transpower on the text within the body of the draft report and accepts the majority of these comments as helpful in clarifying the meaning and intent of the text.

[1587] The text in Chapter 13 relating to the effects on local roads has been rewritten in light of comments made by both Transpower and Waikato District Council.

[1588] The references to Maungatautari in the report have been checked for consistency and some amendments made to make it clear when the text refers to the upper or lower slopes of Maungatautari.

[1589] Transpower asked the Board to make a number of amendments to the legal descriptions for land affected by the designations, and to include some new legal descriptions that were not in the original Notice of Requirements. The Board asked Transpower for a statutory declaration to support these changes.

[1590] By its memorandum of further comments dated 3 August 2009 on the Board's draft report, Transpower provided a statutory declaration by David James Viviers about changes of legal descriptions of land affected by proposed designations.

[1591] The Board has considered Mr Viviers' declaration, and finds that generally the proposed changes to the tables of legal descriptions of land would bring up to date the legal descriptions in the notices of requirement, or correct typographical errors; and that no new land that was not subject to the original notices of requirement would be affected by the proposed designations.

[1592] Three particular changes need separate consideration.

[1593] The first relates to the land occupied by existing Whakamaru Outdoor Switchyard. Mr Viviers declared that this land had been included in the relevant notice of requirement, and is correctly described in the table of land to be affected by the proposed designation.

[1594] The Board has examined the map incorporated in the notice of requirement issued to the Taupo District Council and identified on it that the land occupied by the existing Whakamaru Outdoor Switchyard is shown as to be affected by the proposed designation. Therefore, the Board accepts Mr Viviers' declaration in that respect and finds that this land was the subject of the relevant notice of requirement.

[1595] The second piece of land calling for particular consideration is a small part of Franco Lane in Manukau City, which is affected by the proposed designation for the Brownhill to Pakuranga underground cable. Although it was not listed in the schedule of land affected in the original or amended notice of requirement, that part of Franco Lane was shown as affected in a map attached to an amended notice of requirement issued to the Manukau City Council in April 2007.

[1596] Having identified on that map the part of Franco Lane shown as affected, the Board finds that it was subject to that notice of requirement issued to the Manukau City Council.

[1597] The third piece of land calling for particular consideration is that affected by a proposed deviation of the existing Hamilton-Waihou A transmission line, being work ancillary to the proposed new overhead line to allow for the Hamilton-Waihou line to be crossed by the proposed 400-kV-capable transmission line.

[1598] That land was shown on Map 10 incorporated in the notice of requirement issued to the Matamata-Piako District Council, although by oversight, legal descriptions of the land affected were not given in the schedule of land affected in the notice of requirement.

[1599] The Board has examined Map 10 and has identified the delineation on it of land to be designated for the Hamilton-Waihou line; and the Board finds that the land shown on the proposed designation for that line was subject to that notice of requirement issued to the Matamata-Piako District Council.

## **Ardmore Airport Tenants and Users Committee**

[1600] The Board has noted and thanks the Committee for their considered comment, particularly regarding alternatives. The Board considers that the opportunity to comment does not give the Board the opportunity to receive further evidence, or review its findings on the evidence it did receive.

[1601] In its comments, the Committee also questioned the independence of Mr Sullivan from Airbiz. The Committee comment appears to treat a reference to Mr Sullivan as being independent of Airbiz as denying his role as a contributor to the Airbiz report. Though Mr Sullivan contributed to the Airbiz report, he did so in an independent capacity and can therefore be understood to be independent of Airbiz itself.

## **Auckland Regional Council**

[1602] The Board received constructive comments from the Regional Council on minor matters, all of which have been adopted.

## **Federated Farmers**

[1603] The Board notes the comments by Federated Farmers about the consideration of alternative routes and methods. The Board has given its decision and reasoning on the adequacy of the consideration of alternatives in Chapter 7.

[1604] In regard to compensation, the Board gives in Chapter 16 its reasons for holding that its authority does not extend to compensation and nothing in Federated Farmers' comments persuades the Board that its finding in that respect is incorrect.

[1605] Although Federated Farmers seek to find an implication in paragraph [2284] concerning their attitude towards the Wakatipu case, the Board is unaware of any basis for such an implication.

[1606] Finally, in regard to the comment made by Federated Farmers that the proposal does not promote sustainable management, the Board states in Chapter 18 its judgement that the purpose of the Act would be more fully served by granting the proposal, and is not persuaded that this is unsound.

## **Franklin District Council**

[1607] Franklin District Council raised again, through its comments, the matter of Outline Plans of Works. The Board adheres to the opinion stated in Chapter 16 that the application to a particular case of the Outline Plan of Works provisions of 176A of the RMA is outside the scope of the Board's authority to decide on the proposed designations.

## **Manukau City Council**

[1608] The Board is grateful for the Council's full and considered comments and notes with disappointment the Council's disagreement with key factual findings and judgements.

[1609] The Council referred in paragraphs 4-15 to Outline Plans of Works. The Board does not accept that it has any authority in respect of that topic, and leaves it to the application of section 176A.

[1610] The Council refers at paragraph 16-33 to its views on the inadequacy of the law, on compensation. The Board understands this to be a political question, not one of the application of the law and reiterates its opinion that it has no authority to impose conditions on that topic.

## **Matamata-Piako District Council**

[1611] The Board thanks the Council for its concise comments on the draft report. The Council sought the reference to the New Zealand Standards for Noise in the conditions be updated from the 1991 Standards to the more recent 2008 Standards.

[1612] Transpower provided a response to this comment by the Council. The Board accepts the reasoning provided by Transpower that a specific reference to a NZ Standard in resource consent conditions is not automatically updated to the latest version of a Standard, when a new Standard is promulgated. The Board therefore declines to change the citation in the conditions from the 1991 to the 2008 Noise Standards.

## **B and B McAlley**

[1613] The Board thanks the McAlleys for their fully considered comment and notes their opinion about objectives and policies of the Manukau City District Plan and the social effects. Their opinion about deficiencies of the law on compensation is evidently shared with other submitters. However, despite the beliefs of Mr and Mrs McAlley that the Board has the power to make recommendations on that topic, the Board is satisfied that it has not, and gives its reasons in Chapter 16 for coming to that conclusion.

## **R J McQueen**

[1614] The Board received a comment from Dr McQueen explaining his opinion that the draft decision is wrong and that the Board had not applied key tests that it should have done. The Board has considered those comments but remains satisfied that it has applied the tests prescribed by law, and has explained as best it could its reasons for its ultimate judgement.

## **I Newsome**

[1615] The Board is grateful for Ms Newsome's comments, but these are not within the scope of the Board's authority. The Board invites her to discuss these questions with the Transpower case manager.

## **P Phillips, C Richards and C Tylden**

[1616] The Board thanks Messrs Phillips, Richards and Tylden for their comments. The Board has amended the headings in the tables in Chapter 19 from "easement width" to "designation width" in response to comments made by these submitters and Transpower.

[1617] The Board sought Transpower's response to the submitter's comments about an access track and a hayshed on Mr Richard's property. The Board believes that the draft report accurately reflects the evidence about these matters put before the Board at the hearing. The Board understands that Transpower and Mr Richards have discussed an alternative

to the original access track since the hearing. These subsequent discussions are not a topic that the Board can include in this report.

### **H M Seales**

[1618] The Board thanks Mr Seales for his thoughtful comments. The Board understands that it would be more acceptable to people in his position if there was no provision for betterment, that farmers whose lands are badly impacted had the opportunity to sell to Transpower at what they consider a realistic price, and if compensation paid to landholders was not taxable. However, none of these is a matter within the Board's authority, and there is nothing the Board can do to assist him in these respects.

### **R Smart**

[1619] The Board thanks Dr Smart for his full comments on health risks. The Board heard conflicting points of view, and has given its reasons in Chapter 9 for the findings it has made.

### **South Waikato District Council**

[1620] The Board has considered South Waikato District Council's comments on the ACRE model, and remains of the opinion that in all the circumstances, Transpower's consideration of alternatives adequately addressed the need to avoid, remedy and mitigate adverse landscape effects in the South Waikato District.

[1621] On the Council's request for the use of monopoles and undergrounding of cables, the Board addresses those topics in Chapters 10, 13 and 15 where it explains its approach to those suggestions. The Board considered the river crossing at Arapuni carefully, and concluded that monopoles were not justified and stated reasons in Chapter 10 and Chapter 15.

### **Waikato District Council**

[1622] The comments made on behalf of the Waikato District Council relate to the Board's consideration and findings in relation to construction traffic effects, and conditions of the designation in respect of them.

[1623] The Council commented that the description in paragraph [1447] of the draft report of the conditions that it had requested did not accurately reflect what the Council had asked for. The Board has therefore re-worded the second sentence of that paragraph, to more fully describe the scope of the conditions sought by the Council.

[1624] The Council also commented that paragraph [1450] of the draft report confuses two issues, because of the different subject-matter of the preceding two paragraphs. To avoid risk of confusion, the Board has moved the text of paragraph [1450] and inserted it to follow directly after paragraph [1446].

[1625] The Council commented that paragraph [1451] incorrectly stated that there had been a meeting with it. To correct that, the Board has omitted the second sentence of paragraph [1451].

[1626] The Council commented that paragraph [1455] of the draft report was incorrect by stating "...the Council did not state in its submission the condition that it wanted...", citing draft conditions produced as an exhibit by a witness called by it, Mr Gray. However, the Board has verified that neither those, nor any other, conditions were stated in the Council's submission on the requirement for designation in the Council's district plan, lodged on 8 October 2007. So the text of paragraph [1455] stands.

[1627] The Council also commented that paragraph [1456] of the draft report was incorrect in stating that agreement had been reached over compensation for short-term damage. The Board has therefore omitted the text of what was paragraph [1456] of the draft report.

[1628] The remainder of the Waikato District Council's comments on the Board's draft report are directed to advancing grounds for the Board to reconsider its decision declining to impose the draft conditions produced by Mr Gray, and to impose them.

[1629] The Board understands that the Council is disappointed at having failed to persuade the Board to impose them. However, the Board also understands that the opportunity to comment on its draft report does not extend to provide for the Board to review the substance of the decisions contained in the draft report to the extent of granting what it had decided to decline. In short, it is not an opportunity for relitigating matters in issue.

[1630] Paragraph [1459] of the draft report required amendment consequential on the amendments itemised above, without altering the substance of the decision stated in it.

## **Waikato Regional Council**

[1631] The Board has made the corrections requested to the numbering of the resource consent conditions requested by the Waikato Regional Council.

[1632] The Waikato Regional Council and Transpower both requested that condition 9 in Appendix U (for consents 116904, 116902 and 116905) refer to an updated technical report. The Board asked Transpower to explain what authority the Board has to refer to a document that was not in existence at the time that the Board's hearing was completed.

[1633] The Board agrees with Transpower's explanation that the Board does not have the authority to do so, and has not updated this reference in the conditions.



## Waipa District Council

[1634] The Board appreciates the comments received from Waipa District Council. The Council's comments about conditions have been addressed above with the comments made by other councils about the conditions.

[1635] The Council also raised the issue of the removal of the ARI-PAK A line, as did Messrs Phillips, Richards and Tylden. The Board sought a response from Transpower about this issue. The Board understands that some of the designation for the 400-kV-capable line will overlap with the existing ARI-PAK A line and some of the ARI-PAK A line is outside of the designation.

[1636] The Board is satisfied that the conditions covering activities within the designation are appropriate to deal with the effects of removal of those parts of the ARI-PAK A line within the designation. The Board notes that Transpower has stated in an "advice note" its commitment to applying these conditions in relation to sections of the ARI-PAK A line outside the designation.

[1637] The Board also notes that there is no current designation for the ARI-PAK A line, so no action is required by Transpower under section 182 of the RMA.

## Endnotes

- 1 RMA, ss171(1)(d) & 104(1)(d).
- 2 RMA s 6(e).
- 3 RMA s 7(a).
- 4 RMA s 8.
- 5 Transcript 7/10/08, p 32.
- 6 Transcript 7/10/08, p 32.
- 7 As he then was, now a High Court Judge.
- 8 WAI 1294.
- 9 Transcript 7/10/08, p 33.
- 10 Transcript 8/10/08, p 24.
- 11 Transcript 8/10/08 p 23.
- 12 Transcript 22/07/08, p 8.
- 13 Transcript 21/07/08, pp 2, 3, 7, & 9.
- 14 Transcript 21/07/08, p 12.
- 15 Ibid, pp 27f.
- 16 Transcript 24/07/08, p 12.
- 17 Transcript 23/07/08, pp 9, 11, 12, 14.
- 18 Transcript 5/08/08, p 9.
- 19 Transcript 12/09/08, pp 22f.
- 20 Transcript 23/09/08, p 49.
- 21 Transcript 24/09/08, p 34.
- 22 Transcript 24/09/08, p 37.

- <sup>23</sup> Transcript 24/09/08, p 46.
- <sup>24</sup> Citing RMA, s 36A.
- <sup>25</sup> Transcript 20/05/08, p 7.
- <sup>26</sup> State-owned Enterprises Act 1986, Part 1 4(1).
- <sup>27</sup> Ms Brennan, Mr Copstick, Mr R McKenzie, and Mr M Spring.
- <sup>28</sup> Dr Phillips reported letters and newsletters being sent to more than 10,000 properties.
- <sup>29</sup> Transcript 7/07/08, p 21.
- <sup>30</sup> Transcript 24/09/08, p 9.
- <sup>31</sup> Transcript 24/09/08, p 6.
- <sup>32</sup> Transcript 22/05/08, p 34.
- <sup>33</sup> Transcript 24/09/08, p 11.
- <sup>34</sup> Ibid, p 12.
- <sup>35</sup> Ibid, p 9.
- <sup>36</sup> Ibid, p 11.
- <sup>37</sup> Idem.
- <sup>38</sup> Ibid, p 14.
- <sup>39</sup> Transcript 23/05/08, pp 5f.
- <sup>40</sup> Ibid, p 6.
- <sup>41</sup> Transcript 10/09/08, pp 11–13.

## CHAPTER 14: LOCAL SPECIFIC MODIFICATIONS

[1638] Many submitters asked the Board to make specific modifications to the requirement, mostly local alterations to the route, use of monopoles instead of lattice towers, or laying cables underground instead of overhead lines.

[1639] As stated in Chapter 4, the Board holds that, by combination of sections 147(8) and 172(2) of the RMA, its power to modify the requirement is limited to changes that do not render it inconsistent with the requirement as notified.

[1640] Mr Noble noted the flexibility built into the notices of requirement for lateral movement of the transmission towers. It provides for moving towers up to 5 metres laterally and up to 40 metres along the alignment without rendering the requirement inconsistent with that notified.

### G Athy

[1641] Mr Athy has an organic glasshouse business on a 1-acre block in Taniwha Road near Te Kauwhata. By his submission he opposed the transmission line as un-needed, out-of-scale, and on too narrow an easement. In presenting his submission, Mr Athy contended that the transmission line would be 75 metres from his property; and that it would destroy the business and its resale value; and referred to uncertainty in development options. He told the Board that the existing 110-kV line is within 35 metres of his boundary.

[1642] If the Board confirms the designation generally, there is no sufficient basis for modifying the route to take it further from Mr Athy's property.

### Camperdown Holdings Ltd

[1643] By its submission, Camperdown Holdings Limited (CHL) described its interest in developing an unformed section of Caldwell's Road (which is part of the route for the proposed underground cable between Brownhill and Pakuranga), and in designing a satisfactory intersection of that road with Sandstone Road, with particular reference to sight-lines. In the submission, CHL did not ask for a specific modification to the requirement in respect of the underground cable.

[1644] At the hearing, CHL announced that it had reached agreement with Transpower over a designation condition for protection of sight-lines at the intersection, and an agreement with Manukau City Council over depth of the cable at the intersection to protect it from future road works. Transpower included such a condition in the set of specific conditions it proposed for the cable designation.

[1645] To the extent relevant to the Board's Inquiry, those agreements would be given effect by Conditions 4 and 4B of the proposed specific conditions for the Pakuranga to Brownhill underground cable route.

[1646] If the Board confirms the requirement, it will impose those conditions.

## **K H Carter and J E Carter**

[1647] The submissions by Mr and Mrs Carter (0348 and 0349) were in standard form, and stated their opposition to the proposed transmission line in general on grounds of not being needed, there being better alternatives, it being out-of-scale, and on too narrow an easement. Each submission stated explicitly that the submitter did not want the proposal modified by conditions, but wanted it turned down completely.

[1648] At the hearing, Mr Carter stated that he and his wife have a deer stud on land overlooking Lake Karapiro; that an existing pylon on the property would be removed, and a new pylon erected on a neighbour's property, with the lines passing over a corner of the Carters' property. He asserted that a number of pylons would be visible from the property, that it is not a question of 'not in our back yard', but that the project is basically flawed.

[1649] If the Board upholds the designation generally, there is no sufficient basis for modifying the route to take it further from the Carters' property.

## **Hancock Forest Management and Carter Holt Harvey**

[1650] By its submission (No 1014) Hancock Forest Management (NZ) Limited (HFML) stated that it manages forest holdings owned by Taumata Plantations Limited and by Carter Holt Harvey Properties that would be affected by the requirement. HFML asked that the requirement be declined, or amended to extend the designation width. The submission did not specify the exact width sought.

[1651] At the hearing, counsel (Mr R Simpson) appeared on behalf of HFML and also for CHHL, presenting a joint case for both. CHHL had not lodged a submission on the requirement, and counsel did not clarify the nature of its standing in the Inquiry. Evidence was also given on behalf of CHHL by its Environment Manager, Mr Parrish, in which he summarised the relief to which he considered CHHL was entitled. Mr Parrish had himself lodged a submission which contained no indication that he did so as an agent for CHHL.

[1652] In addressing the Board on behalf of both HFML and CHHL, Mr Simpson sought that any designations and resource consents be made subject to conditions requiring Transpower to take additional steps to protect the network from damage, such as: to acquire additional land establishing a wider corridor than the current proposal of 130 metres; and use of overhead chains, signs, and other safeguards where contractors cross the corridor to gain access to forestry blocks. Counsel also proposed that the network be re-routed to circumvent production forestry land; or conditions requiring Transpower to acquire additional land for a buffer zone.

[1653] Evidence was given on behalf of HFML by Ms Strang, its environment manager. This witness stated that the proposed designation route passes through Kinleith Forest for a distance of approximately

18.6 kilometres, of which 4.8 kilometres are on Taumata Plantations land, and 13.8 kilometres on forests held under forestry right, the underlying land being owned by CHHL to which it is to be returned following harvest.

[1654] Ms Strang stated that the notice of requirement provides an indicative maximum width of the proposed designation of 100 metres; and that subsequent discussions with Transpower had identified that the minimum width required to protect the proposed lines from damage due to tree toppling is 130 metres. The witness stated that land (mostly steeper country) has been identified along the route outside of the 130-metre corridor, where production forestry would become impracticable due to the presence of the power lines. She reported the view of harvesting staff that such areas would need to be harvested prior to construction of the proposed power line, and retired.

[1655] However, Ms Strang brought the Board up to date by presenting an addendum to her evidence statement: she reported that Transpower and HFML had reached agreement by which the concerns she had detailed had been resolved to HFML's satisfaction, and that the agreement is to be formalised by a single easement.

[1656] In cross-examination, Ms Strang confirmed that HFML accepted the 130-metre designation width.

[1657] In respect of local modification of the requirement, Mr Parrish stated that he would like to see the width of the designation significantly increased. However, during the cross-examination of Mr Parrish, Counsel for CHHL (Mr Simpson) announced to the Board that it consented to widening the requirement to 130 metres, subject to resolving issues of liability for outages, and for damage to forests by fire.

[1658] In his rebuttal evidence (and in cross-examination by Mr Simpson), Mr J C Miles (Transpower's Property Manager) confirmed that Transpower proposes a designation width of a minimum of 130 metres in forestry areas, and wider in some places.

[1659] The right of a landowner to grant an easement over its land is independent of that land being designated. As explained in Chapter 16, although issues of liability may be relevant in negotiations over the possible grant of an easement, the Board holds that they are not relevant to whether the requirement or designation should be confirmed or withdrawn; they are beyond the scope of the Board's Inquiry, and beyond its power to direct.

[1660] The parties affected (being Transpower, HFML and CHHL) are in agreement, and no submitter opposes, the widening of the designation through Kinleith Forest to 130 metres. The Board accepts Transpower's submission that this modification would not alter the essential nature of the project (the route and physical structures being unchanged), and would not be inconsistent with the requirement as notified. So if the Board upholds the requirement, it will direct that the width of the designation where it passes through Kinleith Forest is to be 130 metres.

## Drummond Dairy and Scenic Dairies

[1661] On 4 October 2007 a submission (No 0852) was lodged by Agricultural Investments Limited (AIL). By that submission, AIL stated that it was the conditional purchaser of certain land at Waotu that would be crossed by the proposed designation; and asked that the towers be realigned to remove them from the property completely, or relocated as shown on a map attached to the submission (Map B) as a preferred route.

[1662] On 5 October 2007 a submission (No 1001) was lodged by Mr K Baker, who stated that he was a director of Lichfield Farms Limited (LFL), as owner of 1135 hectares of dairy farming land; and that LFL wished to oppose the granting of resource consent. That submission did not contain any request for any specific local modification of the requirement or designation.

[1663] At the hearing, counsel for Drummond Dairy Limited (DDL) and Scenic Dairy Limited (SDL) presented submissions in support of AIL's submission, stating that DDL and SDL are successors in title to the submissions lodged by AIL and LFL, having purchased from AIL parts of the land formerly owned by LFL.

[1664] None of them AIL, LFL, DDL or SDL had lodged any evidence statement with the Board within the time originally stipulated, nor within the extended time allowed; nor had any of them applied for a waiver to adduce evidence that had not been lodged in time.

[1665] As well as legal submissions presented by counsel for DDL and SDL, Mr G Evans presented submissions on behalf of DDL; and Mr R P Landers on behalf of SDL.

[1666] The general thrust of the submissions on behalf of those companies was that the designation would enable transmission towers close to farm infrastructure, which would adversely affect management and development of the farms in various respects; and seeking realignment of the route away from DDL's and SDL's properties, or at least realigning the designation as proposed in AIL's submission on the lands now owned by DDL and SDL, so the line would have significantly less impact.

[1667] In response, Transpower contested the claims by DDL and SDL to be successors in title to the submissions lodged by AIL and LFL. As described in evidence by Messrs Noble and Hall, Transpower submitted that it had given consideration to the relocation suggested; and that as neither DDL nor SDL had adduced evidence, their assertions had not been tested.

[1668] The Board considers first Transpower's challenge to the entitlement of DDL and SDL to be heard in support of AIL's submission. None of them, AIL, DDL, or SDL, adduced formal evidence to establish the DDL and SDL are now owners of land that was previously owned by AIL, being the subject of its submission 0852. Even so, Mr Evans stated in his submission that DDL's farm is one of three properties previously collectively known as Lichfield Farms Limited, Scenic Farm being another; and that Drummond Farm had been syndicated by AIL, and taken over by a group of investors in December 2007. Mr Landers stated in his submission that SDL had been part

of the Lichfield Farms Group that had been split into three equity partnerships, and that SDL owns and operates Scenic Farm.

[1669] The statements by Mr Evans and Mr Landers did not describe the succession of ownership of the land in legal language, nor in evidence statements lodged prior to the hearing that would allow for considered cross-examination. Mr Hall gave evidence consistent with their statements that the property had been sold by LFL on 12 November 2007. There being no evidence to the contrary, the Board considers the statements by Messrs Evans and Landers and the evidence of Mr Hall an adequate basis for finding (as it does) that, as current owners of parts of the land being the subject of the AIL submission, DDL and SDL were entitled to be heard in support of AIL's submission as successors of AIL.

[1670] The Board turns from the question of standing to the merits of DDL's and SDL's cases for re-routing the designation through their lands as sought in AIL's submission. There is no evidence as such in support of those cases, only submissions by Messrs Evans and Landers that were not able to be tested by cross-examination. There is evidence by Mr Noble to the effect that the re-routing would extend significantly outside the designation boundaries; that it would encroach on a property owned by Te Raparahi Trustees and affect the alignment and number of towers on a neighbouring Maxwell Farms property; and that it would be significantly more expensive as it would add approximately 450 metres in length and require an additional tower and a heavy strain tower. There is also evidence by Mr Hall of having visited the properties and, acknowledging construction impacts, giving his opinion that the proposed line would not adversely affect the productivity of the land. Neither of those witnesses was cross-examined on behalf of AIL, DDL or SDL.

[1671] On Mr Noble's evidence, the Board finds that the proposed modification of the requirement would be inconsistent with the requirement notified. The Board accepts Mr Noble's evidence about consequential effects on other properties, and Mr Hall's opinion about the productivity of the land not being affected adversely. Therefore, the Board declines to modify the requirement as sought by AIL, DDL and SDL.

## **Glencoal Energy Ltd and the Stirling family**

[1672] By their submission (1070) Glencoal Energy Limited, Mrs M J Stirling, Ms J J Stirling and Mr A J C Stirling sought that the location of towers 88 and 89 be moved to avoid land under which their coal deposits lie.

[1673] At the hearing, the submitters and Transpower informed the Board that they had reached agreement by which Towers 88 and 89 would be shifted, and other conditions of the designation are proposed, to reduce the impact on harvesting the submitters' coal resource.

[1674] Statements of evidence by Mr Coleman and Ms Stirling were presented to the Board, and an affidavit by Dr I R Brown (a senior chartered professional engineer specialising in geological engineering) was lodged, in which he confirmed that the alteration to the line route and the proposed conditions would address the issues that he would have raised in evidence.

[1675] The Board was informed that the effect would be that one tower would be moved by about 35 metres, another by 125 metres, that there would be increased clearance above the proposed State Highway 2 bypass to the north of Tower 88, and uniform line span lengths.

[1676] Mr Noble gave rebuttal evidence that the only party potentially directly affected is Transit New Zealand (as it was then called), which had advised Transpower in writing that it had no objection. He stated that he did not consider there would be any impact on other parties as a result of the proposed tower moves. That evidence was not challenged by cross-examination or by contradictory evidence, and the Board accepts it.

[1677] The proposed specific designation conditions relate to tower heights, locations, and foundations, and to open-pit mining activities under the line.

[1678] The Board accepts that the local modifications proposed by Transpower and those submitters are mitigation measures that would not alter the essential nature of the Grid Upgrade Project and are within the ambit of the relief sought by the submitters in their original submission; that the Board has authority to direct that they be made; and that, no party being prejudiced, it is appropriate that if the designation requirement is confirmed, those amendments to the proposal be made, and those conditions imposed.

## **V P Jones, S B Jones, and J Parry**

[1679] These submissions (0176, 0177 and 0178), in standard form, stated opposition to the proposed transmission line in general on grounds of not being needed, better alternatives, out-of-scale, and on too narrow an easement. Each submission made clear that the submitter did not want the proposal modified by conditions, but wanted it turned down completely.

[1680] At the hearing, Mr and Mrs Jones emphasised the adverse environmental and health effects that they feared from the proposed transmission line. They stated that their home would be 93 metres from one of the largest pylons, and another would be directly in front of their view. They, and Mrs Jones's father, Mr J Parry, maintained their opposition to the proposal as a whole, and they made no request for any modification, whether of the route or the design of the structures.

[1681] Even if the Board upholds the designation, there is not, in its judgement, sufficient basis for modifying the route to take it further from Mr and Mrs Jones's property.

## **E J Mackay**

### **The submitter's case**

[1682] By his submissions (0556 and 0807) Mr E J Mackay, as well as opposing the proposed line in general, also opposed the proposed alignment over the J F Mackay Estate's farm at Taniwha, and requested that the line be moved 40 to 50 metres to the west. By Submission 0807, Mr Mackay explained that the proposed alignment would pass over an existing woolshed



and a shelter belt, both of which would have to be removed, with significant impact on farming operations. He had sought advice from an engineering consultant with transmission line experience, who had advised that the move would be relatively easy and would cost significantly less than would remedial work if the proposed route is used. Mr Mackay attached a letter from the consultant, Mr W D McIntosh of Odyssey Energy Ltd, giving technical details of moving Towers 133–138 westward.

[1683] At the hearing, counsel for Mr Mackay added that the current alignment would pass 111 metres from the dwelling on the property, from which it would have a very high visual impact; that the construction of the line would require removal of a shelterbelt of nine macrocarpa trees that contribute to general landscape character, and are a significant shelterbelt for livestock; and that a woolshed and implement shed would also have to be relocated. Counsel also argued that it is not reasonably necessary for the line to be located on the Mackay property exactly as proposed; and that it could be re-aligned and still achieve Transpower's objective.

[1684] Counsel identified five neighbouring properties that would be affected by the alternative alignment proposed by Mr Mackay; and stated that the owners of three of them support the re-alignment. In respect of one of the other two properties, owned by the Smith family, counsel asserted that by moving Tower 133 by 8.7 metres and increasing its height by 3.1 metres, the line would be approximately 1 to 2 metres closer to the dwelling on that property. In respect of the other property, owned by the Ian Storey family, moving Tower 134 by 17.3 metres and increasing its height by 4.1 metres would move the line 17 metres further away from the dwellings on that property; and moving Tower 15 by 25.5 metres and increasing its height by 1.6 metres would move the line about 20 metres further away from the dwelling. Counsel submitted that the impact of the relocation on those properties would be less than minor; and that the positive benefits to Mr Mackay and his neighbours would outweigh any adverse effect on neighbours who have not provided written consent; and that there are no identifiable adverse effects. Counsel also contended that the requested modification is required to mitigate adverse effects on the Mackay property; and that it is not plausible that anyone who did not lodge a submission would have done so had the proposed modified alignment been notified.

[1685] Due to Mr McIntosh not being available, evidence was given by Mr R J Loveless, managing director of Odyssey Energy Ltd, of his peer review of Mr McIntosh's report. The witness gave his opinion that within certain technical limitations declared by Mr McIntosh (arising from use of a different software version) the proposed re-alignment is a practical alternative; and that a change of structure type for Tower 138 would involve a small increase in overall cost. The witness reviewed the re-alignment by certain principles of alignment selection and tower positioning referred to by Mr Noble, and gave his opinion that it is a technically viable alternative.

[1686] In cross-examination, Mr Loveless accepted that the change of structure type of Tower 138 would result in it being about 40 per cent heavier.<sup>1</sup> He also agreed that it is technically feasible to move the woolshed.<sup>2</sup>

[1687] Mr Mackay submitted that by moving Tower 138 westward by 40 to 50 metres, removal of the shelterbelt and destruction of the woolshed and yards would be avoided. He remarked that it would be decades before new plantings could provide the same level of shelter as the existing shelterbelt (which he described as a prominent landscape feature); and that removal of the shelterbelt and construction of a 52-metre-high tower and 20 conductors on the proposed alignment would have an adverse visual impact on the estate property and for members of the public using Taniwha Road.

[1688] Mr Mackay also submitted that if the proposed line is moved westward, the impact on the farm business during construction of the line should be manageable, subject to availability of a reliable work schedule from Transpower.

[1689] On the additional cost of constructing the line on the modified alignment, Mr Mackay submitted that it would be covered by the existing budget which, he said, is costed to an accuracy of plus or minus 20 per cent; and that the cost of relocating or rebuilding the woolshed, removing the existing sheep dip, removing trees and replacing them with fabric windbreak and shelter, and associated remedial work, is \$150,000. He produced copies of letters from R M McAlpine, Hansens Farm Ltd and Mr D and Ms C Short supporting the requested re-alignment.

## **Transpower's response**

[1690] Transpower resisted the realignment sought by Mr Mackay on two main grounds: landscape effects and engineering reasons.

[1691] In his evidence-in-chief, Mr Noble stated that Mr Mackay's request had been investigated several times, and had been declined for visual landscape reasons. The witness confirmed that in his rebuttal evidence.

[1692] In his evidence-in-chief, Mr Noble explained that the requested re-alignment would introduce a 'dogleg' of angles at the crossing of Taniwha Road, angling about 9 degrees to the left at Tower 138, and about 4 degrees to the right at Tower 139. He stated that Tower 136 could be shorter by about 1.5 metres; and that in its new position, Tower 138 would be about 1.5 metres higher and about 40 per cent heavier, resulting in a small increase in project cost.

[1693] In his rebuttal evidence, Mr Noble stated that the re-alignment described by Mr McIntosh would require repositioning six towers, would require movement of the designation over six properties (the offsets being significantly more than the 5-metre lateral movement tolerance proposed in the notice of requirement), and confirmed that it would create a 'dogleg' in the alignment at Tower 138.

[1694] Mr Noble also described another possible realignment forming new angle points at Towers 137 and 138 (the latter being repositioned outside the proposed designation). He stated that these moves would not comply with the design principle of preferring straight consistent lines to numerous angle changes or varying tower heights and spacings; but he acknowledged that it would be technically possible from an engineering perspective.

[1695] In his rebuttal evidence, Mr Lister explained that there are both benefits and ‘disbenefits’ of the requested realignment. He identified the main landscape benefit as retention of three macrocarpa trees, and also some visual amenity benefit for views from Mr Mackay’s house; and the disbenefits as introduction of a ‘dogleg’ in the line, and the need for a heavier suspension tower. He placed greater value on maintaining a straight alignment.

[1696] In cross-examination, Mr Lister accepted that the realignment sought by Mr Mackay would help avoid very high visual impacts, but stated that it would cause different visual amenity effects on the wider community by introducing a ‘dogleg’ in the line; though he accepted that transient views from the road would have lesser impact on the view than effects on those who reside on the property and wanting to develop farm tourism.<sup>3</sup>

[1697] Shown two possible alternative alignments that had been presented by Mr Noble, Mr Lister gave his opinion that the second of them, with the sharper ‘dogleg’, would have the greater effect, but both would have an adverse effect (but not very high) on people outside the property.<sup>4</sup> Mr Lister said that he had tried to avoid recommending changes that would introduce ‘doglegs’ into the line.<sup>5</sup>

[1698] The limited extent of Mr Lister’s knowledge of the existing environment that would be affected is evident from his not having been on the Mackay property,<sup>6</sup> and being uncertain about the number of macrocarpa trees in the shelterbelt that would have to be removed.<sup>7</sup>

[1699] Mr Hall, an agricultural and farm management consultant, gave his opinion that it would be relatively easy to relocate the existing woolshed, build new sheep yards, and replace existing farm storage sheds. He gave his opinion that the macrocarpa trees are not a true shelterbelt, but could provide limited shade and shelter; though he considered that they are a health risk for dairy cows in calf. He considered that the impact of removal of this cluster of trees would be minor.

## Consideration

[1700] The Board accepts that the requested re-alignment of the designation would be technically feasible, though at increased cost; that it would mitigate adverse effects on the view from the dwelling on the Mackay property and from the road; and that it could avoid removal of the stand of macrocarpa trees (which would not be effectively replaced for many years), and avoid relocation of the woolshed and implement shed.

[1701] The Board also accepts that the re-alignment would not conform with the principle of preferring straight alignments of towers, and minimising angle changes, and varying tower heights and spacings; that by introducing a ‘dogleg’ in the alignment, it would itself result in an adverse visual effect on the environment; and that it would increase adverse effects on the Smith and Ian Storey properties, the owners and occupiers of which do not consent to the re-alignment.

[1702] The Board does not accept Mr Mackay’s contention that the resulting effects on those properties would be less than minor; nor does it accept that

the positive benefits to Mr Mackay and his neighbours should prevail over the effects on the Smith and Ian Storey properties. Rather, the Board finds that the requested re-alignment and relocating six towers, including construction of a strain tower and creating a ‘dogleg’, and altering the designation over six properties, would be inconsistent with the requirement as notified. Therefore, the Board declines to modify the requirement in the way described in Mr Mackay’s submission.

## Manukau City Council

[1703] By its submission, the Manukau City Council asked for local modifications to the proposal: that the transmission lines be underground north from the flight paths of Ardmore Aerodrome; that if the overhead transmission line is approved, it is to be limited to 220 kV, with consequential changes to pylon design, scale and appearance to minimise impacts; and that the Brownhill Substation be declined, as a more appropriate location exists.

[1704] The Council also asked the Pakuranga Substation be gas-insulated not air-insulated switch gear, but did not pursue that request, nor call evidence to support it. The Council also made requests about conditions to be attached to the designation, and subsequently reached agreement with Transpower in those respects.

[1705] Elsewhere in this report the Board has given its findings on whether the extent to which the line is to be underground should be prolonged further south; on whether the overhead line should be limited to 220 kV instead of 400-kV-capable; and on changes in pylon design, scale and appearance. The remaining request for a local modification relates to the location of the Brownhill Substation. However, that was not pursued in the submissions presented on the Council’s behalf; and in cross-examination Mr Freke explained that the location of the substation was consequential on the request for more extensive underground cabling, the main concern being the overhead lines rather than the substation *per se*.<sup>8</sup> As the Board has not been persuaded to modify the requirement in that respect, the challenge to designating a transition station and substation at the Brownhill site falls as well.

## Matamata-Piako District Council

[1706] By its submission (1113) the Matamata-Piako District Council asked that the transmission line be installed underground, or that the requirement be withdrawn if the impacts are incapable of being mitigated; more particularly, it sought that the line be installed underground along the western periphery of Morrinsville; and it sought—

That if alternative routes exist which can minimise the impact of the proposed transmission line on the productive capacity of the land resource then that the notice of requirement be modified accordingly.

[1707] At the hearing, to the extent that the Council’s opening submissions related to local modifications to the proposal, the focus was on the effects of

the proposed line close to the western entry to Morrinsville, urging strongly that this part be placed underground, or if not, that monopoles be used.

[1708] Mr D Phillips, an urban designer, gave his opinions that it would be a mistake to justify the route of the proposed line at the western approach to Morrinsville, due to significant visual impact for travellers entering the town; and that there is likely to be residential and rural-residential development on the western side of Morrinsville within the next 20 years (referring to his expectation that current zoning would be replaced).

[1709] This witness had not himself carried out statistical analysis to support assumptions about projected growth of the town, and in cross-examination stated his belief that another witness, Mr Rademeyer, had been involved in some statistical analysis.<sup>9</sup> Mr Phillips also referred to enormous growth in building consents and subdivision applications in the last two years, but provided no figures or other data about that;<sup>10</sup> he agreed that he had not taken into account availability of servicing of land for future development, nor natural hazards or geotechnical issues (beyond his own understanding from site visits), and though ecological issues may have come into it, he had not taken high-class soils into account.<sup>11</sup> He had not identified floodplains of the Piako River or the Waitakaruru Stream in relation to future development of the town.<sup>12</sup>

[1710] This witness also stated that studies about urban growth or growth potential had not been adopted in any Council reports or annual plan (though he referred to a current process of changing some of the plans), nor in any consultation document for public comment.<sup>13</sup> He also accepted Statistics New Zealand population projections for the district of which the low and medium projections are for declines, and the highest is an increase of 3000 people over 25 years.<sup>14</sup>

[1711] Mr Rademeyer gave his opinion that Morrinsville will develop as a dormitory town for Hamilton commuters by expanding to the west, although he conceded that the district plan does not provide for future growth of the town beyond the existing industrial and rural-residential zones. He stated that the proposed transmission line would be an impediment to future growth to the west.

[1712] In cross-examination, Mr Rademeyer agreed that no further statistical analysis had been made since Statistics New Zealand had found that the population of the district is likely to remain constant over the next 20 or 25 years;<sup>15</sup> agreed that existing zoning has capacity for 1300 additional dwellings in a town that currently has about 2500 dwellings;<sup>16</sup> and also agreed that many things could affect growth projections as a dormitory town.<sup>17</sup>

[1713] Ms Gilbert referred in her evidence to the western approach to Morrinsville, describing the view of the proposed towers to the south as transitory and of incongruous scale, and visually prominent against a bare hillside and skyline; and to the north dwarfing the existing vegetation. She argued that the towers would further reduce the quality of visual landscape in the western approach, and discourage future development that seeks to enhance the western edge of the town.

[1714] Ms Gilbert gave the opinion that use of monopoles in the vicinity of Morrinsville is worthy of consideration, although she accepted that a transition between monopoles and lattice towers is likely to be visually discordant. This witness considered that underground cable installation would provide the optimal solution, but gave her understanding that this option would be prohibitively expensive.

[1715] In cross-examination, Ms Gilbert agreed that in the same location a monopole would be the same height, and the conductors would be the same size, as a lattice tower, and the base footprint would still be large; but she considered their visual character aesthetically preferable.<sup>18</sup>

[1716] The Matamata-Piako District Council's request that the transmission line be re-routed to minimise the impact on the productive capacity of the land resource is problematic for three reasons. First, it is vague about where the new route is proposed to pass. Secondly, it is clear that it is not a minor deviation that is sought, but an entirely different route. That would be inconsistent with the requirement as notified, and outside the limit of the Board's power to modify the requirement.

[1717] Thirdly, the evidence did not sustain a finding that the transmission line would have a significant impact on the productive capacity of the land. Mr Orbell accepted in cross-examination that by and large the line through the Matamata-Piako District almost entirely avoids Class 1 and Class 2 land,<sup>19</sup> and that virtually no land would be taken out of productive use as a result of replacing the existing Arapuni-Pakuranga line with the proposed line.<sup>20</sup> Mr M B O'Connor's survey of opinions by landholders did not provide a probative basis for finding to the contrary.

[1718] For those reasons the Board declines to require that the proposed transmission line be re-routed.

[1719] The Council's request that a section of overhead line along the western edge of Morrinsville be replaced by underground cables or monopoles was based on an expectation of rural-residential and residential development around the western approach to Morrinsville within the next 20 or 25 years. The Board is not persuaded that this expectation is soundly based, neither in the extent of likely demand, nor in the location of future development. The district plan does not support it. So in the Board's judgement, the Council's grounds for modifying the requirement to replace overhead line with underground cables, or to replace lattice towers with monopoles, do not justify the Board requiring either.

[1720] Ms Gilbert's opinion that the visual character of monopole towers is aesthetically preferable to that of lattice towers is shared by some (but not all) of the landscape architects who gave evidence, among whom there is general agreement that a transition between monopoles and lattice towers in the same view can be discordant. It is not clear how that discordance could be avoided if monopoles were used to support the proposed overhead line in the open country to the west of Morrinsville.

[1721] The Board's overall judgement is not to make any modification to the requirement as notified in the vicinity of Morrinsville.

## **Orini Downs Station Ltd, Orini Hilltops Ltd, Waikato Quarries Ltd and Perry Aggregates Ltd**

[1722] These four companies have various interests in respect of land at Tauhei used for farming and for quarrying. By their submissions (0837, 0838, 0839 and 0840), in addition to opposition to the proposed transmission line in general, they sought local modifications in re-alignment of the proposed line on their properties in recognition of the long-term strategic value of quarriable rock reserves; and also sought a uniform easement width of at least 75 metres across the property. None of those submissions identified with particularity the re-alignment requested.

[1723] Those requests were pursued by these submitters at the Board's hearing. It was contended that the proposed line would divide the dairy farm; would double the area of it on which spray and fertiliser could not be spread from the air; would preclude use of a potential staff housing site; and would require removal or trimming of trees planted for landscaping, gully stabilisation, and wetland enhancement. Reference was also made to a condition of a 2005 resource consent for quarry expansion limiting dust effects on the ARI-PAK A line.

[1724] In her submissions, counsel for the submitters (Dr Forret) contended that if the requirement is confirmed, the route should be re-aligned in Orini Downs Station in recognition of the long-term strategic value of the rock reserves and operation of farming activities. Further submissions on behalf of Orini Downs Station were presented by Messrs Jamieson and Willoughby. However, neither counsel, nor those presenters, identified with specificity the re-alignment proposed; and no evidence was adduced in support of the submissions.

[1725] In closing, Transpower referred to the submissions presented by Messrs Jamieson and Willoughby, and remarked that the submitters had not lodged any evidence to establish their concerns, so depriving Transpower of the opportunity to give a detailed response to any site-specific issues raised; and submitted that factual assertions in the submissions presented by Messrs Jamieson and Willoughby should be given little, if any, weight.

[1726] Mr Rasul gave evidence that the proposed alignment and tower positions had been established in the ACRE process (including consultation); and that any change of alignment that may suit these submitters would impact on the affected landowners to the north and south of the Orini Downs property.

[1727] Ms Allan gave evidence that the current quarry is at the closest point 230 metres from the proposed line, and that on information provided with the application for the quarry consent, any future quarry development would be on a path away from the line. This witness concluded that the submissions expressed unnecessary concern about the effect of the proposed line on the value of the quarriable rock reserves.

[1728] Neither of those witnesses was cross-examined on behalf of Orini Downs Station or associated companies.

[1729] The Board accepts that the linear nature of the proposed transmission line means that any re-alignment would be likely to have consequential changes to the effects on properties to the north and the south of Orini Downs Station. The particular re-alignment sought is described in the submissions in such general terms that people who may be affected could not have understood the extent of the potential effects; nor can the Board compare the effects on the environment of the proposed line with those of altering the line to suit Orini Downs Station; nor can the Board make a finding whether the modification to the requirement would be consistent with the requirement as notified.

[1730] The condition on the 2005 resource consent relates to effects on the Arapuni-Pakuranga line. The resource consent condition relates specifically to the ARI-PAK A line, which is to be dismantled if the proposed new line is constructed. The condition does not extend to the proposed new Brownhill-Whakamaru line. So the Board is not persuaded that the condition accepted by these submitters on the 2005 resource consent provides a rational basis for altering the alignment of the proposed line.

[1731] On the width of an easement across these submitters' property, the original submission (professionally prepared) specifically refers to the *easement*, not to the *designation*. The distinction in substance between the designation and the easement was identified early in the public hearing; and when (later in the hearing) the submissions of Orini Downs Station Limited and associated companies were presented, there was no suggestion that the original submissions had referred to the easement in error, or that alteration to the width of the designation had been intended.

[1732] An easement is a property right over land. It is not created under the RMA, but by the owner of the land. If the owner of Orini Downs Station chooses to grant to an easement over the land for the proposed transmission line, it can, as an exercise of its property rights as owner, stipulate the width and location of the strip of land over which the *easement* is to apply. By contrast, the authority of decision-makers under the RMA (including the Board) is to decide whether to uphold, modify or withdraw (cancel) the *designation*. The possible scope of modifications to the requirement may extend to the width of the *designation*; but it cannot extend to the width of an *easement*.

[1733] In summary, the Board declines the requests by Orini Downs Station and associated companies for local modifications in respect of the alignment, and in respect of the width of the easement.

## **M J and G Ranger**

[1734] By their submissions, Mrs M J Ranger (0616) and Mr G Ranger (0611) stated that the proposed line would be immediately in front of their house and view, and asked that if more lines are required they use the present corridor where the A and B lines are established.

[1735] At the hearing, Mrs Ranger presented submissions on behalf of the extended Ranger family, in which she spoke on several issues important to them (including their support for upgrading the existing [Otahuhu-



Whakamaru] A and B lines. But Mrs Ranger did not address the earlier request that the proposed transmission line be re-routed to the corridor in which those lines have been established.

[1736] The Board infers that the Rangers no longer want the transmission line re-routed to that corridor, perhaps because of the effects on those who would be affected. The Board is not in a position to compare the effects on the environment of establishing the proposed transmission line on the notified route with those of establishing it in the corridor occupied by the existing lines. It therefore declines to modify the requirement as requested.

## **Regis Park Stage 2 Ltd**

[1737] By its submission (0765), Regis Park Stage 2 Limited (Regis Park) asked for the requirement to be modified by moving the Brownhill Substation, stipulating that it be gas-insulated, not air-insulated: requiring that the transmission line be underground within Manukau City; limiting the Brownhill-Pakuranga underground cable to the Sandstone, Whitford Park, Brownhill Roads route; and declining the Brownhill-Otahuhu underground cable.

[1738] In his evidence in support of Regis Park's submission its General Manager, Mr M Mason, asserted that the Grid Upgrade Project proposal is flawed because the site for the transition station/substation is not in the vicinity of the urban boundary; that the metropolitan urban limit in the Auckland regional policy statement is not the urban boundary; and that the line should be laid underground from much further south, to the south of Ardmore.

[1739] In cross-examination, Mr Mason agreed that the Regis Park land is beyond the metropolitan urban limits currently set, and that any change to the limits needs to be agreed to by the Auckland Regional Council;<sup>21</sup> that the Regis Park development is in the Flatbush Countryside Transition Zone,<sup>22</sup> and that Regis Park's undeveloped land is in the Whitford Rural A zone, and subject to Plan Change 8.<sup>23</sup> Mr R Bruce (a director of Stage 2) gave evidence that the metropolitan urban limit is a work in progress, not a line that's drawn in the sand that says there's going to be no future growth outside it.<sup>24</sup>

[1740] Transpower submitted that Regis Park had a misunderstanding about the metropolitan urban limits in claiming that they are a work in progress. Transpower maintained that the proposed design of the overhead line in the vicinity of Brownhill Road and the substation site are appropriate, and the proposed mitigation measures address any relevant concerns of Regis Park.

[1741] Ms Allan gave evidence that two other sites for the transition station/substation had been evaluated, and that for practical reasons Transpower had decided not to proceed with either. She gave her opinion that the Brownhill Road site is an appropriate location for the development. In cross-examination, Ms Allan agreed that the gas-insulated version of the substation would take up a smaller area and footprint than the air-insulated version; and that the two other sites considered would only be possible if gas-insulated.<sup>25</sup>

[1742] Mr Lister gave his opinion that potential adverse visual amenity effects of the substation would be avoided to a considerable extent by use of gas-insulation and by tubular superstructure and a monopole at Tower 5; and that the scale of the proposed building is not unknown in rural landscapes. He stated that the site is a reasonable distance from the Regis Park area, and located at a lower elevation in the valley.

[1743] In cross-examination, Mr Lister agreed that he had been involved with a team that looked at a number of substation sites; he gave his opinion that the Brownhill termination point for the overhead line is the best of the options considered; and said that they had scoped around the area for other termination points as well.<sup>26</sup> He confirmed that he had considered the effects on the Regis Park area and on development likely to occur along Redoubt Road extension; and that the most prominent part of the project for the Regis Park area by a long way would be the transition site and substation site, which includes Tower 5.<sup>27</sup> The witness estimated that the distance from Redoubt Road and the Regis Park subdivision to Tower 5 would be about 600 metres, and explained that the line follows a valley to the south and then bends around to the east in a curve.<sup>28</sup> The towers are not 70 metres high, and would be running in a valley between quite steep hills running away from the site; they would be prominent, but not exceptionally prominent, features.<sup>29</sup> Mr Lister gave his understanding that the substation site would be quite tucked away from most of the Whitford Basin.<sup>30</sup>

[1744] Later in cross-examination, Mr Lister described the effect of the towers on properties in the Regis subdivision as less than moderate; and he stated that about six substation sites had been considered in total, and that of these the site selected would meet the criteria best.<sup>31</sup> He also explained that the effects of the line would be reduced by putting it on the alignment proposed, rather than through the middle of the Whitford Valley along the existing ARI-PAK A line, where it would be visible by a much wider range of people, and across the middle of the basin rather than in the periphery.

[1745] Returning to the modifications requested by Regis Park, Transpower has chosen gas-insulated technology for the Brownhill Substation, and has chosen the Sandstone, Whitford Park and Brownhill Roads route for the Brownhill-Pakuranga underground cable. The Board is considering the requirement on the basis of those choices, so it is appropriate that the designation is limited to them.

[1746] Regis Park's request that the transmission line be placed underground within Manukau City was not based on grounds that stand independently of similar requests by Manukau City Council and Underground in Manukau, except to the extent that it focused on adverse effects on the landscape as viewed from its own existing and possible future development of its land.

[1747] In the latter respect, the Board holds that the law requires it to ignore possible future development that is not currently permitted or authorised. The adverse effects on the landscape viewed from the existing Regis Park development would be mitigated by Transpower adopting gas-insulated technology for the substation, reducing the scale of the eventual

substation buildings; by using a monopole for Tower 5; and by using a tubular structure, rather than lattice, in the transition station/substation grounds.

[1748] The Board accepts the opinions of Ms Allan and Mr Lister that several sites for the transition station/substation were considered in a methodical way, from which the proposed Brownhill Road site was preferred; and judges that requiring use of another site would not be justified.

[1749] The Board also accepts that the selection of the route of the overhead line was the result of a similar methodical process; and accepts Mr Lister's opinion that the adverse landscape effects of the towers, experienced from existing and permitted or consented development on the Regis Park land, would be low to moderate. The Board judges that these effects would not justify placing underground that section of the overhead line.

[1750] The other local modification requested by Regis Park was that the requirement for the proposed Brownhill-Otahuhu underground cable be declined. However, that request was not specifically addressed in Regis Park's submissions or evidence; and the Board finds that Transpower's affirmative case for that requirement was not damaged or weakened by Regis Park's submissions or evidence.

## **N G Richards Farms Ltd, C C and M A Tylden and P J and V R Phillips**

[1751] By its submission (No 0894), N G Richards Farms Limited stated it wanted the project totally stopped while alternatives are pursued, such as a HVDC line. It contended that the proposed AC transmission line poses a health risk (particularly of cancers), that it would be an environmental disaster, that the easement is too narrow, and that the project would significantly devalue its property.

[1752] By their submissions in standard form, Mr and Mrs Tylden (No 0593) and Mr and Mrs Phillips (Nos 0724 and 0735) stated that they did not want conditions, they wanted the applications wholly turned down.

[1753] At the hearing Mr C Richards presented the submissions of N G Richards Farms Ltd, and the Tylden and Phillips families. Mr Richards urged that the line be relocated sideways by about 12 metres to the west to allow maintenance of boundary fences and electric fences for controlling livestock; and to avoid having to shift a hay barn. He acknowledged that this could affect the property of a Mr Josevich, as well as other landowners Mr Richards was representing; and that he had been advised by Transpower that the route alteration he wanted could also have a consequential effect on the proposed line crossing the existing Hamilton-Waihou 110-kV line, though Mr Richards considered that the crossing would actually be easier.

[1754] Mr Patrick gave evidence that it is now proposed to access the tower site on the Richards property from the neighbouring property adjacent to the western boundary; and that the access across the Richards property would be less than 200 metres long, with a carriageway width of up to 4 metres, and

would avoid the existing drive, trees, daffodils and sheep yards of concern to Mr Richards.

[1755] None of these submitters had asked for alteration of the route in initial submissions, and none lodged a statement of evidence at the time directed, or even later. So counsel for Transpower did not have opportunity to make a considered response to the suggestion, nor to cross-examine on it. The Board acknowledges that Transpower has responded to Mr Richards's concern, and judges that local modification of the requirement is not warranted.

## **P F Robinson**

[1756] By his initial submission (No 0094), Dr P F Robinson asked that the requirement for the overhead line be turned down in whole. By a later submission (No 0643), Dr Robinson again asked for refusal of consent, and added that if consent is to be granted, he wanted re-routing of the line to avoid a stand of trees, or ecological compensation.

[1757] At the hearing, Dr Robinson gave evidence of having been told that an important stand of mature kahikateas in excess of 1 hectare on his property would have to be removed; explained the landscape and ecological values that they contribute; and argued that removal of them would have a devastating effect for him and for the community. He asserted that the proposed route would place the proposed line too close to existing OTA-WKM A and B lines for prudence, and argued that there is scope for moving the line so the trees would not be affected.

[1758] Dr Robinson did not propose a specific alternative route, and when asked about that in cross-examination, he referred to at least two other routes, further to the east, that had been seriously looked at by Transpower, indicating that there is some scope for realignment. He acknowledged that people with greater expertise than himself would need to look at that. He also acknowledged that he had discussed replacement plantings with Mr S H Beale, and remarked that there is no way that those trees could be replaced. He conceded that he was satisfied that he could manage the effects on his farm that might affect its organic status.<sup>32</sup>

[1759] In response, Transpower observed that no evidence or other material had been provided about where relocation would occur, or whether it would affect other properties.

[1760] Mr Beale acknowledged Dr Robinson's concerns, and stated that the tallest trees in the stand are in the order of 30 metres in height or greater. This witness described the reasons why, in general, clearance of trees in the designation is required; and also described the mitigation, including replanting with selected species within the designation, and planting in another location on an affected property, with an equivalent area of vegetation of species similar to those removed.

[1761] Mr Beale described the kahikatea stand on Dr Robinson's property as ecologically significant; and stated that this stand lies almost entirely within the designation and would need to be removed due to the height of the trees, along with a number of trees outside the designation. He stated

that it is proposed to plant an area between two existing kahikatea fragments immediately to the west of the affected stand so as to eventually form one stand.

[1762] Mr Lake gave evidence about the engineering design and reliability of towers and tower foundations. In the absence of any technical challenge to his evidence, the Board does not accept the prudence argument presented by Dr Robinson as a ground for moving the proposed alignment further from the existing OTA-WKM A and B lines.

[1763] Ms Allan gave evidence about the ACRE process used for selecting the route for the overhead line. Dr Robinson did not present any detailed critique of the method adopted; earlier in this report the Board has given its finding on the general acceptability of it.

[1764] Therefore, although the Board shares Dr Robinson's regret at the prospect of removal of his stand of mature kahikateas, it has no basis for comparing the environmental harm with what might result from a realignment; it has no knowledge of what other properties might be affected; and is not persuaded that directing realignment of the relevant section is warranted.

## **Sexton Farms Limited**

[1765] As well as raising general grounds of opposition that are addressed in general elsewhere in this report (such as visual effects, width of easement, potential liability for outages, and inadequacy of compensation), by its submission Sexton Farms stated that the proposed route would require relocation of the whole farm infrastructure of dairy shed, farm races, water supply, effluent disposal, power lines, calf shed, three large implement sheds, and two farm homes with established gardens. That was demonstrated to the Board on site by Mr J Sexton.

[1766] Even so, by its submission Sexton Farms sought that the Board withdraw the requirement: it did not seek a specific local modification to the route or the proposed line.

[1767] At the hearing, Sexton Farms was represented by Mr Sexton, who made submissions on its behalf. In summary, the subjects were general opposition to the proposal as being unnecessary; potential liability for outages; absence of expectation of more generation to justify the capacity of the transmission line; economic effects, including inadequacy of compensation and costs of relocating the farm infrastructure; visual impact; adverse health effects; reverse sensitivity; climate change (including potential liability for carbon emission charges if trees removed for the line cannot be replaced); and disruption to farm activities and lifestyle (including amateur radio activities). The Board was asked to withdraw the requirement; but was not asked to direct a specific local modification of the route.

[1768] In his evidence, Mr Hall acknowledged the extent of relocation of farm infrastructure that would be required.

[1769] In the absence of a specific request for modification of the route, Transpower would not have been able to address such a modification, and did not do so.

[1770] Therefore, the Board is not able to direct modification of the proposed route in respect of its crossing of Sexton Farms property. It expects that Transpower would need to negotiate with Mr Sexton over rights of entry, acquisition of an easement, and mitigation of losses and costs.

## **M A and R D Spring, R and M McKenzie**

[1771] By their submissions, these submitters asked for local modifications of the requirement in these respects: relocating the Brownhill Road transition station and substation from the current site to a site at the rear of Mr and Mrs Dodd's property; and requiring that it be gas-insulated, not air-insulated.

[1772] These submitters also asked that the line be laid underground further to the south than Whitford. The Board has addressed that topic earlier in this chapter.

[1773] At the hearing, evidence on behalf of the Springs and the McKenzies (and other residents of lifestyle properties on Brownhill Road, apart from Mr and Mrs Dodd) was given by Mr M McKenzie.

[1774] He stated that the main views from those properties are over a valley in farmland and native bush, where the proposed transmission line and towers, and the Brownhill Substation, are to be located; and that earthworks for the substation would create dust, debris and noise, and would scar the landscape.

[1775] Mr McKenzie also stated that Mr and Mrs Dodd had offered Transpower a 4-hectare block of their land for the substation, where it would be less visually intrusive, being hidden behind a small ridge and a group of macrocarpa trees. He added that if the substation is approved on the Brownhill site, the submitters asked that the Board require that monopoles be installed instead of lattice towers at positions 6, 7 and 7A as well as for Tower 5.

[1776] Ms Allan gave evidence that four possible sites had been considered for the substation, in what she described as a robust process; and referred to a report on it dated February 2007.<sup>33</sup> This witness also described consideration given to the site for the substation offered by Mr and Mrs Dodd, and stated that the results had been included in a report dated July 2007 which identified reasons why the site was not proceeded with.<sup>34</sup>

[1777] Mr D A Burns is an experienced consultant in engineering geology and geotechnical engineering. He gave evidence that he had evaluated seven possible transition sites, on geotechnical risk and cost of development due to slope stability. He gave detailed reasons (including screening potential) for his opinion that what is identified as the GIS 2 option on the proposed site is suitable and preferable.

[1778] Mr Burns had subsequently considered the possible site on the Dodd property. He gave his reasons for his opinion that the geotechnical risk

associated with developing that site would be greater than for the GIS 2 option, and (based on preliminary assessment) the cost of civil engineering works to develop the Dodd-property site would be considerably higher. Mr Burns was not cross-examined by or on behalf of the Springs or the McKenzies; and no expert evidence was given that contradicted his evidence or called in question the opinions he gave in his evidence.

[1779] Mr B L Stark gave evidence in rebuttal of typical practice during significant earthworks, to use a water cart as required to control dust by spraying water over dry exposed soil.

[1780] Mr Warren gave rebuttal evidence that the effect of damp conditions in assessing corona discharge from transmission lines had been taken into account in recommending noise limits.

[1781] The Board has reviewed both reports referred to by Ms Allan. Section 2 of the February 2007 report relates to the South Auckland transition station/substation. It describes the requirements for a site as well as consultation processes and outcome; it analyses written submissions; identifies a possible alternative site; describes further investigations made into environmental issues associated with development of the proposed site, comparison of development options; and gives reasons for preferring the gas-insulated option 2.

[1782] The July 2007 report describes the site on the Dodd property; investigations of its suitability; and attaches an independent geotechnical report outlining that development over Turanga Creek would be needed, and that the geotechnical risk and cost of development on the Dodd-property site would be considerably greater than of the proposed site. The report records the reasons for not proceeding with the Dodd-property site, being additional cost, engineering, natural character effects, statutory process risk, and insufficient space for ultimate installation of replacement plant.

[1783] The Board finds that modifying the requirement to require development of the transition station/substation on the Dodd-property site would be inconsistent with the requirement notified. The Board also finds that adequate consideration was given by Transpower to that site; and that it was rejected for business-like reasons.

[1784] Mr Spring's request, made at the hearing, for monopole towers instead of lattice towers at positions in the Whitford Valley, was apparently based on his opinion (shared with some other submitters for whom he spoke) that use of monopoles would mitigate the adverse visual effects created by use of lattice towers. However, not everyone prefers monopoles to lattice towers; and opinions may depend in part on the distance from which the towers are viewed.

[1785] The original submission made by Mr and Mrs Spring made no reference to seeking monopole towers instead of lattice towers, nor did the submission lodged by Mr R and Mrs McKenzie. People who (perhaps because of the distance of their view of the towers in question) preferred lattice towers could not have known that Mr Spring would make this request at the hearing, and had no opportunity to contest it or express differing views on it.

[1786] The Board is not confident that the request for monopoles is supported widely among those who might be affected, and is unwilling to direct a change that may not be supported widely by those who would be affected.

## **Te Hoe Holdings**

[1787] By its submission (1161) Te Hoe Holdings Ltd asked that the line be moved so the towers and line would not require the removal of native podocarp forest for its construction.

[1788] At the hearing, Mr Sam Jefferis presented submissions on the company's behalf. He explained that the route of the proposed line is to pass through a patch of native bush, with an angle tower right in the middle of a piece of virgin podocarp forest, although it could go straight on the existing alignment of the ARI-PAK A line, and avoid having to remove more native trees.

[1789] Mr Beale gave evidence that during engineering and environmental investigations, it had been recommended that Tower 112 be shifted further to the east beyond the edge of the forest, to significantly reduce the degree of vegetation clearance of this forest remnant. That recommendation had been endorsed by Transpower. However, Mr Beale reported that in subsequent discussions with the landowners who would be affected (the Tubics), the proposal was rejected, as it would move the proposed overhead line closer to their house.

[1790] Mr Beale recognised that the forest remnant has ecological value, and is locally significant. He described Transpower's proposal to carry out significant replanting of shrubs and pioneer tree species that attain a height at maturity no greater than 14 metres along the corridor in the large kahikatea fragment affected by Tower 112; and for plantings of kahikatea, tōtara and kōwhai on the eastern side of the stand beyond the designation to offset loss of trees from within the designation.

[1791] The Board understands the submitter's regret at the prospect of removing trees from within their valued podocarp forest remnant. However, the understandable opposition to the proposed re-routing by landowners who would be affected is a considerable deterrent to that measure to avoid having to remove the trees.

[1792] The proposed mitigation planting will take years to mature, and cannot fully remedy the loss meantime. Even so, the Tubics' opposition based on the effect on their home of the proposed re-routing precludes directing that modification of the requirement.

## **G W H Vercoe**

[1793] By his submission, Mr Vercoe asked that in the vicinity of his farm property at Tauhei, the proposed line be re-routed to follow the line of the existing Arapuni-Pakuranga A transmission line.



[1794] At the hearing, Mr Vercoe explained that the deviation from the existing line would bring the new line extremely close to his boundary and impact on his farming ability there, and interfere with his daughter's wish to build a new house. He argued that if the new line is built and followed the existing line, it would not impact on his property any more than the existing line that has been there for many years.

[1795] In answer to a question from the Board, Mr Vercoe explained that the proposed towers would be on his neighbour's property, and dominate his property.

[1796] The Board understands that the deviation from the existing line referred to by Mr Vercoe is between Towers 195 and 201.

[1797] In rebuttal evidence, Mr Noble explained that the proposed line deviated from the Arapuni-Pakuranga alignment in the vicinity of Tower 200 to avoid a number of farm buildings at Tauhei Road and near Tower 198. He confirmed that the angle in the line at proposed Tower 200 is about 35.5 degrees.

[1798] Mr Noble's evidence in those respects was not challenged by cross-examination or by contradictory evidence. The Board accepts it, and finds that the selection of a different route than that followed by the existing Arapuni-Pakuranga line was based on respectable reasons. The potential for the requested deviation having greater adverse effects on other land (whose owners and occupiers may be unaware of the alteration) was not negated.

[1799] The proposed re-routing is not warranted.

## **Waipa District Council**

[1800] The Waipa District Council lodged two submissions (0919 and 0984) by which it sought that the requirements for designations be rejected; and alternatively that the line be re-routed away from special landscape character areas, or installed underground through those areas. In neither submission did the Council identify the alternative route away from special landscape character areas that it sought.

[1801] At the hearing, counsel for the District Council (Mr Kirkpatrick) repeated the alternative outcome that the Council had asked for, but did not identify the preferred route either.

[1802] The Council called as an expert witness an experienced planning consultant, Mr Olliver. This witness gave his opinion that adverse visual effects could have been avoided or mitigated by either re-routing the alignment clear of Waipa's sensitive landscapes, or by choosing the eastern route option<sup>35</sup> which, he asserted, is physically, technically and operationally possible, and feasible.<sup>36</sup>

[1803] In cross-examination, Mr Olliver agreed that when it comes to a linear route the Board has to look beyond local authority boundaries, and decisions have to be made between routes, and between different local authority areas, to combine sections to obtain a continuous route.<sup>37</sup>

[1804] Mr Olliver agreed that he had read a sensitivity analysis on choice between the western and eastern routes before finalising his evidence, but had not referred to it in his evidence statement, as he considered it would not have added anything to his evidence. The witness conceded that for completeness he should have drawn the Board's attention to it.<sup>38</sup>

[1805] Mr Olliver identified that the eastern route did not encounter outstanding landscapes, or river crossings; but agreed that the Council had not commissioned reports dealing with Māori land, archaeological sites, social impact, degree of property difficulty, or other matters of that nature in respect of the eastern route;<sup>39</sup> and had not asked Transpower for information and other specialist reports it may have had.<sup>40</sup> He accepted that the archaeological assessment of the eastern route had made a recommendation that Section 13 be avoided on archaeological grounds;<sup>41</sup> and explained his opinion that in consideration of alternatives, there were some aspects of Transpower's assessment that he considered insufficient.<sup>42</sup>

[1806] Later Mr Olliver agreed that Transpower had applied RMA weightings, but he considered that where finely balanced, section 6 matters had not come through strongly enough.<sup>43</sup> He would have expected the multi-criteria analysis to be used to inform the RMA assessment, as opposed to possibly the RMA analysis just being one of a number of criteria to be taken into account; but he did not mean that in choosing between routes using a multi-criteria analysis, regard can only be had to Part 2 matters.<sup>44</sup>

[1807] Mr Olliver agreed that the Waipa District Council had not carried out its own investigation, or put forward any specific option other than the eastern route, though it had raised with Transpower that the line may be able to be re-routed to go outside the special landscape character areas.<sup>45</sup>

[1808] Mr Olliver also accepted that matters that had been taken into account in choosing between the eastern and western routes, such as Crown land, numbers of dwellings, and property compensation costs, were matters that Transpower had every right to take into account; but explained that in his mind they were much less significant than specific Part 2 matters. He also agreed that if there were section 6(e) or section 6(f) matters in respect of other routes, that could alter his opinion.<sup>46</sup>

[1809] In answer to questions from the Board, Mr Olliver gave his opinion that re-routing to avoid the special landscape character areas, or a combination of re-routing and underground installation may be within the scope of modification of a requirement or perhaps conditions; but he acknowledged that re-routing is difficult in the absence of a specific re-routing proposal; and that those who have interests in the alternative route do not have the suggestion before them. The witness accepted that unless it was very minor, that would be a significant obstacle to re-routing.<sup>47</sup>

[1810] The Board declines the Waipa District Council's request for re-routing the transmission line because—

- a) No specific alternative route was identified in the original submission, nor in submissions or evidence at the hearing.

- b) The deviation would not be consistent with the required notification.
- c) The evidence does not establish that overall, the net adverse effects of using the alternative route would be less than those of using the proposed route.

## Endnotes

- <sup>1</sup> Transcript 4/08/08 p11.
- <sup>2</sup> Ibid, p12.
- <sup>3</sup> Transcript 5/06/08, p50.
- <sup>4</sup> Ibid, p51.
- <sup>5</sup> Ibid, p45.
- <sup>6</sup> Ibid, p52.
- <sup>7</sup> Ibid, p56.
- <sup>8</sup> Transcript 11/09/08, p4.
- <sup>9</sup> Transcript 18/07/08, p4.
- <sup>10</sup> Ibid, p5.
- <sup>11</sup> Ibid, pp7f.
- <sup>12</sup> Ibid, p14.
- <sup>13</sup> Ibid p8.
- <sup>14</sup> Ibid, p10.
- <sup>15</sup> Ibid, pp 39f.
- <sup>16</sup> Ibid, p43.
- <sup>17</sup> Ibid, pp40f.
- <sup>18</sup> Transcript 17/07/08, p34.
- <sup>19</sup> Ibid, p23.
- <sup>20</sup> Ibid, p23.
- <sup>21</sup> Transcript 23/09/08, p28.
- <sup>22</sup> Idem.
- <sup>23</sup> Ibid, p30.
- <sup>24</sup> Ibid, p34.
- <sup>25</sup> Transcript 7/04/08, p18.
- <sup>26</sup> Transcript 4/06/08, p16.
- <sup>27</sup> Transcript 5/06/08, p10.
- <sup>28</sup> Ibid, p11.
- <sup>29</sup> Ibid, p17.
- <sup>30</sup> Ibid, p22.
- <sup>31</sup> Ibid, p44.
- <sup>32</sup> Transcript 23/09/08, p7.
- <sup>33</sup> MWH New Zealand Limited, 2007.
- <sup>34</sup> Allan, 2007.
- <sup>35</sup> Mr J B Olliver, Statement of Evidence, para 96.

<sup>36</sup> Ibid, para 101.

<sup>37</sup> Transcript 9/07/08 p23.

<sup>38</sup> Ibid, p25.

<sup>39</sup> Idem.

<sup>40</sup> Ibid, p26.

<sup>41</sup> Ibid, p27.

<sup>42</sup> Ibid, p28.

<sup>43</sup> Idem.

<sup>44</sup> Ibid, p29.

<sup>45</sup> Ibid, p35.

<sup>46</sup> Transcript, 9/07/08, p36.

<sup>47</sup> Transcript, 9/07/08, p40.

## **CHAPTER 15: MITIGATION AND REMEDIAL MEASURES AND CONDITIONS**

[1811] Previous chapters of this report concerned particular topics especially those about health effects, landscape and visual effects, audible noise and electronic interference, and the Board has addressed ways by which possible adverse effects on the environment might be mitigated.

[1812] Mitigation measures proposed by Transpower, and by submitters, included deviations to the alignment, more extensive underground installation, more use of monopoles, and mitigation planting.

[1813] Some mitigation measures are permissible within the scope of the requirements that allow flexibility for minor tower movements up to 40 metres longitudinally, and 5 metres laterally. Others, beyond those limits but not rendering the requirement inconsistent with the requirement as notified, may be within the scope of the Board's authority to modify a requirement.<sup>1</sup> The modifications for Glencoal Energy and the Stirling family, and for Hancock Forest Management and Carter Holt Harvey, described in Chapter 14, are examples.

[1814] Natural justice requires that proposals for deviations of the line, or other modifications beyond the scope of the tolerances incorporated in the requirements can only be considered if owners of land that could be adversely affected have given informed written approval, or have had proper notice and opportunity to be heard on the modification.

### **Underground installation**

[1815] Numerous submitters proposed extensions to the length the transmission line is to be laid underground, as a mitigation measure.

[1816] The Board accepts that more extensive underground installation of the transmission line could substantially mitigate significant adverse landscape and visual effects, including cumulative effects.

[1817] The Board addressed this issue in paragraphs [1431]–[1445] of Chapter 13 of this report, where it gave its reasons for finding that it is not justified in requiring further underground installation of the transmission line.

### **Use of monopoles**

[1818] A number of submitters requested that monopoles be utilised in place of lattice towers at various locations along the proposed route. These submitters included Manukau City Council, Matamata-Piako District Council and South Waikato District Council.

[1819] Evidence about the use of monopoles was given by a number of landscape experts. Little consensus was achieved about the appropriateness of using monopoles. Mr Lister considered that monopoles are less visually

cluttered than lattice towers; Dr Steven noted that they are nonetheless industrial elements, and no less incongruous in a landscape than lattice towers. In addition Dr Steven did not agree with Mr Lister's opinion that the benefits of monopoles diminish with distance. Ms Peake concurred with Mr Lister's opinion about the benefits of monopoles over lattice towers when viewed at a short distance, and that lattice towers blend better into the landscape when viewed from a distance. Mr D J Scott, Ms Buckland, Ms Gilbert and Ms Lucas also gave evidence about the use of monopoles. There was no consensus among the expert witnesses on whether it would be appropriate to use monopoles in the Grid Upgrade Project.

[1820] In his evidence-in-chief, Mr Lister suggested locations where the use of monopoles could be appropriate for mitigation of adverse visual effects: on the north and south banks of Lake Karapiro (three and four respectively), it being a high-value landscape and a part of a scenic corridor; the Waikato River crossing at Arapuni (three on the south bank and one on the north bank) the proposed river trail, having moderately high natural character and moderately high landscape values.

[1821] Although Mr Lister recommended the use of monopoles at those locations, he did not assert that their use is *required*.<sup>2</sup>

[1822] Transpower proposes to use seven monopoles at the crossing of Lake Karapiro, and a condition to that effect is included in the conditions for the designation in the Waipa District Plan for the overhead line.<sup>3</sup>

[1823] Transpower asserted that the use of monopoles in the locations in the South Waikato District is unnecessary, citing a lack of consensus amongst experts.

[1824] The Board's opinion on the use of monopoles as a mitigation measure is detailed in Chapter 10. In summary, the Board supports the use of monopoles at the Waikato River crossing at Lake Karapiro, and in the position of Tower 5 at the Brownhill Substation. The Board is not persuaded that imposing a requirement on Transpower to use monopoles in the Hunua and Paparimu valley, at Morrinsville, or at Arapuni would be justified.

## Proposals of conditions

[1825] During the course of the hearing, Transpower and various submitters proposed various conditions for requirements or resource consents. The Board summarises those proposals.

## Auckland Regional Council

[1826] Auckland Regional Council and Transpower jointly proposed conditions for resource consents in the Auckland region. The conditions are set out in Appendixes P, Q, R and S, and are summarised in paragraphs [2293]–[2308] of Chapter 17 of this report.

## **Waikato Regional Council**

[1827] Waikato Regional Council and Transpower jointly proposed conditions for resource consents in the Waikato region, which are set out in Appendixes T and U, and are summarised in paragraphs [2309]–[2318] of Chapter 17 of this report.

## **Manukau City Council**

[1828] Manukau City Council and Transpower jointly proposed conditions for the designations required in the Manukau City District Plan, which are set out in Appendixes C, D, E, G, H and I. Manukau City Council stated that subject to the imposition of the respective conditions, it no longer opposes requirements for the Pakuranga Substation, for the Otahuhu Substation, nor for the underground cable routes.

[1829] The suggested conditions agreed upon by Transpower and Manukau City Council included amendments suggested by Mr N I Hegley, acoustics consultant, to the original conditions restricting emission of noise. The Council stated that in the light of the incorporation of Mr Hegley's suggested amendments, it no longer sought a GIS substation at Pakuranga.

[1830] Manukau City Council maintained its opposition to the designation for the overhead line within its district, and its conditional opposition to the requirement for designation of the Brownhill Substation.

## **Glencoal Energy Ltd and the Stirling family**

[1831] Glencoal Energy Ltd and the Stirling family, and Transpower, jointly proposed conditions for the designation of the overhead line relating to the proposed Towers 88 and 89, by which they are to be shifted. The conditions are set out in Appendix K.

[1832] In addition to the conditions set out in Appendix K, Glencoal Energy Ltd and the Stirling family proposed a further condition, prohibiting Transpower from withholding its consent under section 176 of the RMA to open-pit mining on the Maxwell Block, provided the mining operations meet the restrictions identified in the conditions.

[1833] Transpower did not consent to the imposition of that condition, and maintained that it would be unnecessary. It explained that, although it is appropriate for Glencoal Energy Ltd and the Stirling family to be provided with as much certainty as possible about the future of the coal resource, it had confirmed in writing to the submitters that, should the designation be confirmed and the conditions set out in Appendix K be imposed, it would not withhold its consent for the purpose of section 176 of the RMA. Transpower asserted that this confirmation is sufficient, and that the further condition proposed by Glencoal Energy Ltd and the Stirling family is not necessary.

[1834] The Board considers that for it to impose the further condition would be inconsistent with the scheme of the RMA, by which it is the requiring authority whose consent is required for activity that would prevent or hinder

work to which a designation relates. The territorial authority has no power to impose a condition that would deprive the requiring authority of its freedom to grant or withhold consent. Therefore, the Board declines to impose the further condition requested by Glencoal and the Stirling family.

## **Vector Ltd**

[1835] Vector originally lodged a submission in support of the Grid Upgrade Project as a whole, but opposing aspects of the requirements: mainly because the underground transmission cables would be buried largely in roads, adjacent to Vector's conduits for gas, electricity and communications.

[1836] Vector and Transpower subsequently reached agreement on a *Protocol for Future Works in close proximity to existing assets in the proposed designation*; and jointly proposed minor amendments to the original conditions. The amendments have been incorporated in the conditions set out in Appendixes G and H.

[1837] Vector did not pursue its submission further.

## **New Zealand Historic Places Trust**

[1838] By its submission (0992), the New Zealand Historic Places Trust (NZHPT) sought various modifications, conditions and advice notes to be attached to the designations for the Grid Upgrade Project.

[1839] At the hearing, NZHPT announced that it had reached agreement with Transpower on conditions of the designations and resource consents that would protect archaeological and Māori spiritual needs.

[1840] The agreed amendments have been incorporated in the conditions in the appendixes to this report.

## **Camperdown Holdings Ltd**

[1841] The Trustees of the Zong You Family Trust (the Trust), successors to the submitter Camperdown Holdings Ltd (CHL), stated they were only concerned with the Grid Upgrade Project in that they sought assurance that the interests of the Trust would not be adversely affected; and that, where appropriate, the parties would work together on any matters that were mutually beneficial.

[1842] Their principal concern related to the potential for the location of the Pakuranga to Brownhill underground cable to affect roading development in the area of the Trust's property.

[1843] A designation condition was proposed by the Trust and Transpower to ensure that sight-lines would be protected, and that cables are laid at a depth to ensure future road construction would not impact on them. These conditions are set out in specific condition 29 in Appendix G.



## Transpower

[1844] The Board questioned the wording of the proposed landscape conditions,<sup>4</sup> and whether the provision in respect of a 'landscape adjudicator' delegated an adjudicative role to a third party, in conflict with the case of *Turner v Allison*.<sup>5</sup>

[1845] Following review of the relevant case law, Transpower submitted amended landscape conditions which, it submitted, would not offend against the principle in *Turner v Allison*, in that the independent landscape architect could certify that relevant thresholds have been met, rather than taking an adjudicatory role.

[1846] No submitter argued to the contrary.

[1847] The Board accepts that the amended landscape conditions would entrust an independent landscape architect with a certifier role, not an adjudicatory role; and would not offend against the principle identified in *Turner v Allison*; and holds that they might lawfully be attached to designations.

[1848] The conditions in the appendixes incorporate the amendments that avoid entrusting a third party with an adjudicatory function.

## Conditions

[1849] At the closing of the Inquiry hearing, Transpower submitted to the Board proposed conditions for the designation requirements and for the resource consents. The Board sets out those conditions in appendixes to this report as follow:

[1850] *Conditions on designations:*

1. Pakuranga Substation (Appendix C)
2. Otahuhu Substation (Appendix D)
3. Brownhill Substation (Appendix E)
4. Whakamaru and Whakamaru North Substation (Appendix F)
5. Pakuranga to Brownhill underground cable (Appendix G)
6. Brownhill to Otahuhu underground cable (Appendix H)
7. Overhead line section: Manukau City (Appendix I)
8. Overhead line section: Franklin District (Appendix J)
9. Overhead line section: Waikato District (Appendix K)
10. Overhead line section: Matamata-Piako District (Appendix L)
11. Overhead line section: Waipa District (Appendix M)
12. Overhead line section: South Waikato District (Appendix N)
13. Overhead line section: Taupo District (Appendix O).

[1851] *Conditions on resource consents:*

Auckland region

1. Conditions for works in the bed of a watercourse and diversion of surface water (Appendix P)
2. Conditions for the discharge of contaminants (Appendix Q)
3. Conditions for land-use consents for earthworks (Appendix R)
4. Conditions for land-use consents for earthworks/roading and tracking and discharge of contaminants permit (Appendix S)

Waikato region

1. Condition for discharge permit for composting/mulching of vegetation (Appendix T)
2. Condition for land-use consent for tower foundation drilling below the water table, land-use consent for vegetation clearance and earthworks in a high-risk erosion area, and a discharge permit for site water and drilling fluids (Appendix U).

## Conclusion

[1852] The Board is satisfied that, if the requirements are confirmed and if the resource consents are granted, the proposed conditions in those appendixes should be imposed.

[1853] When, in Chapter 18, the Board applies Part 2 of the RMA, and comes to the ultimate judgements on whether or not the requirements are to be confirmed and the resource consents granted, it does so on the basis that if they are confirmed and granted, those conditions will be imposed.

## Endnotes

<sup>1</sup> RMA, ss 147(8), 148(8), and 171(2)(b).

<sup>2</sup> Transcript, 4/06/08, p12.

<sup>3</sup> Appendix M, Condition 2.

<sup>4</sup> Transcript, 16/06/08, p59.

<sup>5</sup> [1971] NZLR 833 (SC).

## CHAPTER 16: TOPICS BEYOND SCOPE OF INQUIRY

[1854] Submitters raised several matters that, on consideration, the Board finds are beyond the limits of its Inquiry. The Board recognises that the submitters may want the Board to state its findings on those matters. However, the Board's decisions on the designation requirement and on the resource consent applications should not be influenced by findings on matters that are outside the scope of the Inquiry. Consideration of the range of matters that are properly within the scope of the Inquiry is sufficient to occupy the Board's attention, which should not be diverted by consideration of arguments on matters that should not influence the decision.

### Institutions

[1855] If they had not been called in by the Minister for the Environment, the designation requirements and submissions on them would have been considered and decided by the relevant territorial authorities. Similarly, the resource consent applications and submissions on them would have been considered and decided by the relevant regional councils.

[1856] The effect of the call-in of the requirements and applications is, that the Board considers and decides them instead of the territorial authorities and regional councils respectively. The scope of the Board's task, and its powers for carrying it out, are no greater than those the territorial authorities and regional councils would have had under the RMA in considering and deciding the requirements and applications, had they not been called in.

[1857] Other institutions have, or might have, authority in respect of, or arising out of the proposed Grid Upgrade: the Electricity Commission in considering whether to grant or withhold approval under the electricity legislation identified in Chapter 4; the Environment Court in considering objections under the Public Works Act to taking of interests in land for the proposed upgrade structures; the Land Valuation Tribunal in considering claims to compensation for interests in land taken or injurious affection, disturbance or business loss under the same Act; and the Department of Labour in respect of construction and operation of the Grid Upgrade in terms of the Health and Safety in Employment Act 1992.

[1858] The Board's Inquiry is made under the RMA. It does not extend to any other legislation, nor to the functions of any of those institutions under those Acts.

### Electricity Commission process

[1859] Transpower submitted that in considering the need for the Grid Upgrade, and whether it is reasonably necessary for achieving its objectives, the Board may and should have regard to the fact that the Electricity Commission had approved the project. Transpower reminded the Board that the Commission's decision had followed extensive peer reviews, independent

reports and analysis, demand forecasts, public briefings and hearings, consultation sessions, and sensitivity testing; and that submissions had been received from participants in the energy industry, from city councils, business, industry and business associations, landowners and members of the public. It submitted that in coming to its decision, the Commission had applied rigorous criteria and good industry practice, grid reliability standards, and the grid investment test.

[1860] Some submitters disputed Transpower's submission that the Board should have regard to the Electricity Commission's approval of the proposal.

[1861] The Waipa District Council contended that—

- a) matters of environmental sustainability and the assessment of full costs of a proposal are obligatory considerations within the principal objectives of the Electricity Commission and the specific outcomes it must seek, and should have been addressed as part of compliance with section 172N of the Electricity Act
- b) the Commission's decision on the proposal under the Electricity Act has limited Transpower's assessment of the proposal under the RMA, especially by effectively foreclosing any adequate investigation of alternative methods and routes.

[1862] The Manukau City Council contended that the Electricity Commission approval decision had been made on a narrow and limited economic basis: driven by the grid investment test, and excluding consideration of external costs such as impacts on the environment, and economic and social effects on surrounding communities.

[1863] Mr G Copstick and Ms C Brennan contended that, if the Commission had been asked to rule on the total project rather than just the first stage, it would not have been approved; and that the staging meant the Commission had been prevented from assessing whether energising the line at 400 kV would pass the tests under the Electricity Governance Rules.

[1864] Dr McQueen contended that the Commission's process had been manipulated to grant approval, and he objected to the Board relying on it as evidence that the proposal is needed and economically preferable.

[1865] In reply, Transpower acknowledged that the Commission's approval does not resolve the issue of need, nor is it a substitute or proxy for the RMA issue on which the Board has to make its own decision. Rather, Transpower contended that the Board may take comfort from the Commission's process and decision.

[1866] The Waipa District Council accepted that reviewing the Electricity Commission's decision is not within the scope of the Board's Inquiry. The Board accepts that, and holds that the question whether or not the Commission should have addressed environmental sustainability and assessed the full costs of the proposal, and whether or not it did so, are not for the Board to consider.

[1867] The Board also holds that the questions whether or not the Electricity Commission's decision limited Transpower's assessment of the proposal, and

whether or not the Commission's investigation of alternative methods or routes was adequate, are also outside the proper scope of the Board's Inquiry.

[1868] The Board has to consider the effects on the environment of allowing the requirements, having particular regard to whether adequate consideration has been given to alternative sites, routes and methods of undertaking the work. The Board has to make its own findings on the evidence before it, independently of the Electricity Commission's process and decision. In coming to its findings on those questions, the Board is not required to, and should not, be influenced by whether Transpower's consideration of alternative methods or routes was effectively limited by the Electricity Commission's decision. There should be comity among statutory institutions, but the Board implies no disrespect for the Commission in making its own findings and judgements in terms of the RMA independently of the Commission's approval decision under the electricity legislation.

## Outline plan process

[1869] In Chapter 4, the Board summarised the effect of section 176A concerning conditions in which a requiring authority is to submit to the territorial authority an outline plan of proposed work.

[1870] In its opening submissions, Transpower contended that the outline plan provisions are a quite separate process, and not a matter for the Board to consider as part of the current hearing.

[1871] There was some discussion during the Inquiry hearing over the extent to which the Board should leave details of the structures and other works to the outline plan process, rather than impose conditions concerning them.

[1872] Mr Freke urged that key issues around effects and design and appearances should be dealt with comprehensively in conditions, rather than being deferred and addressed at the outline plan of works stage.

[1873] Mr D A Parker referred to Transpower having requested that it be exempt from having to provide outline plans. Ms S J Allan explained that the exemption request had been made because of the adequacy of the information available on the overhead line.

[1874] In its submissions in reply, Transpower contended that the extent and location of required monopoles should be resolved by the Board rather than being left to decide at the outline plan stage.

[1875] The Board considers that the contents of this report and the proposed conditions adequately describe the effects that are recognised. In particular it accepts that in deciding on the requirements for designations, it could make decisions requiring that certain structures be monopoles rather than lattice towers. However, the Board accepts as correct Transpower's submission that outline plan requirements are not part of the current process.

[1876] The Board holds that it does not have authority to grant an exemption from any obligation that Transpower may have under section 176A to submit outline plans. Any questions about whether outline plans are

required would need to be decided (at least in the first instance) by the relevant territorial authority.

## **Past behaviour of Transpower representatives**

[1877] A number of submitters described past incidents when the behaviour of Transpower representatives on their lands had been what they considered unacceptable. If the behaviour described had been relevant to the Board's Inquiry, and had been the subject of particularised evidence statements lodged in time, the number of such incidents might have indicated a general attitude of inconsiderate treatment of private landowners; such as would be unacceptable in agents of a State-owned enterprise exercising statutory powers. Such behaviour and attitudes would also be counter-productive to negotiating consents to enter private land for the purpose of planning, constructing and maintaining new transmission assets.

[1878] Even so, the incidents complained of do not bear on the Board's decisions on the proposed designations and resource consents. They are not relevant to the Inquiry, and the Board makes no finding on them.

## **Future behaviour of Transpower contractors**

[1879] It is understandable that people who have had what they regard as unsatisfactory experiences with Transpower representatives may lack confidence that contractors and agents of Transpower seeking to enter their lands for planning, constructing and maintaining the proposed works will behave with the consideration appropriate to exercise of public powers on private land.

[1880] The Waikato District Council raised concerns over detrimental effects on management of private land and livestock due to unsatisfactory and insensitive entry on it by Transpower or its contractors. The District Council acknowledged the value of Transpower managing entry in accordance with a standard protocol.

[1881] Federated Farmers also supported the development of a standard protocol, and was critical of contents of a draft proposed by Transpower.

[1882] By the law that would be applicable to entry for the purpose of the proposed designations, owners of private land would be entitled to refuse entry to Transpower contractors and agents, except on terms and conditions agreed to by the landowner concerned, or in terms of an easement over the land. The only potential exception to that general statement would be entry under the Public Works Act for which the parts to be taken by the Minister of Lands and (if invoked) the Environment Court would give assurance of appropriate terms, conditions and behaviour.

[1883] The Board understands that a standard protocol might provide a useful starting point for negotiation of rights of entry or easement, but holds that it is beyond the scope of its Inquiry to form and express views about the contents of Transpower's draft.

[1884] So although the Board understands the concerns expressed arising from experience of past incidents, it holds that its decision on the designation requirements should not be influenced by them.

## **Restrictions on use of private land**

[1885] Many submitters stated their concerns that, although not the subject of negotiations with Transpower for acquisition of property rights, restrictions on farming and other lawful activities in the vicinity of the overhead transmission line might be imposed for protection of the line, perhaps by instrument under the Electricity Act.

[1886] Actions in times past may have provided a basis for such concerns. The current electricity legislation shows an approach by which restraints on use and activities on private land for use for transmission assets are generally to be purchased from landowners.

[1887] The Board has no basis for assuming that restrictions on property rights would be imposed in a way inconsistent with that approach to transmission assets.

## **Effects on potential for subdivision**

[1888] Some submitters (including Ms A A Jones and Mr H M and Mrs B J Seales) raised concerns that the designation for the overhead line across their land, and creation of an easement for it, would constrain their options for potential subdivision of the land.

[1889] The Board accepts that in general the designation, and a corresponding easement, would have some constraining effect on potential future subdivision. The extent of the constraint would depend on the size and shape of the property that might be subdivided, and the closeness of subdivision appropriate.

[1890] The extent to which that kind of constraint may devalue the property would be considered in assessing the consideration for purchase of the easement, or (if need be) the compensation for taking of the easement. However, it is too speculative and remote for the Board to consider it in deciding on the designation requirement.

## **Adequacy of compensation**

[1891] Some submitters raised their concerns about the adequacy of compensation that might be payable in respect of allowing Transpower access to their lands, granting easements over it, and injurious affection resulting from the construction use and maintenance of the proposed line.

## **Contentions of submitters**

[1892] Although not a subject of its original submission on the designation requirements, at the hearing Federated Farmers questioned whether

compensation paid in a lump sum would qualify as full compensation by not taking account of inflation, and urged that compensation would not be adequate unless assessed as annual payment amounts.

[1893] By its submission, the Waikato District Council raised its concern about compensation for landowners detrimentally affected by the Grid Upgrade Project, including limitations on the use of their land. However, at the hearing the Council acknowledged that the Board is not able to grant direct relief in that respect, because it is a matter between Transpower and individual landowners.

[1894] Many other submitters asserted that the compensation that might be payable in respect of entry on private land to carry out works for construction and maintenance of the proposed transmission line, for disturbance of farming and other activities, for injurious affection caused by visual, noise, and health effects (including effects on the health of people beyond the designation, and on land in respect of which easements are not to be acquired) would not be adequate. The insufficiencies of compensation that were alleged included that:

- a) the amounts of lump-sum payments would be inadequate to redress losses that would be incurred
- b) full compensation should be made by periodic rentals, rather than lump-sum payments
- c) compensation should extend to land injuriously affected even though interests in that land are not to be taken
- d) amounts for betterment arising from demolition of the existing ARI-PAK line could be deducted.

### **Transpower's response**

[1895] Transpower responded that it will apply the law in making compensation, which includes deducting set-offs for betterment. Transpower submitted that it is not for a territorial authority considering a requirement for a designation, nor for a consent authority considering a resource consent application, to have regard to whether the applicable provisions of the law on compensation of owners of land entered for construction of the line, or from which an easement for the line is taken, are fair or adequate. It argued that the Board has no business having regard to those questions either.

### **Consideration**

[1896] The RMA does not confer power to assess compensation on a territorial authority considering a requirement for a designation, nor power to prescribe methods for assessing compensation that differ from the general law on that topic contained in Part 5 of the Public Works Act.

[1897] Even if the Board were to purport to insert conditions about assessment of compensation that differed from the law contained in Part 5 of the Public Works Act, such purported conditions would not bind the Land



Valuation Tribunal, which is a specialist tribunal established by law for that task, and the conditions would be ineffective.

[1898] It is not the business of a territorial authority considering a designation requirement to consider and make findings on whether the law about assessment of compensation is adequate. That is beyond the scope of its functions under the RMA. The same limits apply to a board of inquiry considering a designation requirement that has been called in.

[1899] So the Board holds that if agreement is not reached, the assessment of compensation is within the jurisdiction of the Land Valuation Tribunal under the Public Works Act, and beyond the scope of the Board's Inquiry under the RMA.

## **Depreciation and injurious affection**

[1900] Many submitters contended that the existence of the proposed transmission line would cause the market value of land over which it passes, and of other land in the vicinity, to be substantially depreciated; and would also be more difficult, and take longer, to sell. Many submitters (including the Manukau City Council – Mr Freke's evidence) also protested that there is no provision for compensation in respect of injurious affection to parcels of land none of which is to be taken.

[1901] In paragraph [1899] of this chapter, the Board held that considering whether the law about assessment of compensation is adequate is beyond the scope of the Board's Inquiry. The same reasons apply to consideration of the adequacy of the law about compensation for depreciation and for injurious affection. So the Board holds that the contentions that there would not be adequate compensation for land values depreciated by existence of the transmission line, or for injurious affection to land none of which is to be taken, are beyond the scope of its Inquiry.

## **Risk of structure collapse**

[1902] Some submitters expressed concern about the risk of transmission line towers toppling over and injuring people or damaging property.

[1903] Parliament has exempted systems of network utility operators from requiring building consents under the Building Act. The erection of them is governed by and under the Electricity Act 1992.

[1904] Mr Lake gave evidence about the structural design and reliability of towers including monopoles and for the foundations. This evidence included changes to the design level in New Zealand from a historic 350-year return-period wind event up to about the last 10 years when it was revised, to a 300-year return-period wind event, to be aligned closer to the Australian practice; and a recent increase by Transpower making its design level for core grid lines to a 500-year return-period event, to be consistent with international practice. (A 500-year return-period event basically means that there is a 1 in 500 probability of the design load being exceeded in any one year.)

[1905] Mr Lake reported that there had been 54 failures of transmission line structures since 1924. Forty-one of these failures were due to tower structure issues, and the other 13 failures were due to issues with tower foundations. He stated that tower and foundation design methods and behaviour have been progressively improved and developed, and in conjunction with full-scale testing, provide a reliable method to ensure tower and foundation designs are practical and appropriate.

[1906] Mr Lake gave detailed explanations of how the structures and component loads would be designed in accordance with international practice. He explained that every tower is designed to accommodate the expected residual tension load from a broken conductor; and that all proposed tower types and relevant foundation types would be tested to identify and confirm their capacity and suitability for the line. In rebuttal evidence, Mr Lake confirmed that for higher-voltage transmission towers, lattice steel towers are internationally preferred.

[1907] Mr Lake also gave his opinion that for a tower to topple, so that its total height is laid flat and perpendicular to the line, is a very unlikely scenario. He added that towers are to be sited so that they would not be in line with any houses.

[1908] On earthquake risks, Mr Lake explained that the proposed route does not cross any active fault, and where it crosses land vulnerable to liquefaction, tower foundations would be designed to accommodate that.

[1909] The Board accepts the evidence of Mr Lake in relation to tower design levels, and that towers are to be designed to take account of expected tensions due to conductor failure.

[1910] The Board is satisfied the structures of the line are to be designed and constructed in accordance with high standards of engineering practice; and that their suitability for satisfactory mechanical and electrical performance is by law supervised under the Electricity Act.

[1911] It is beyond the scope of the Board's Inquiry under the RMA to investigate and make findings about the likely integrity of the proposed structures, which have not yet been the subject of detailed design.

## **Community benefits**

[1912] By its submission, the Waikato District Council sought conditions requiring Transpower to undertake community good projects in local communities affected by the Grid Upgrade. However, at the hearing, the Council accepted that the Board could not lawfully impose such conditions.

[1913] Similarly, the Manukau City Council (Mr Freke's evidence) commended a more enlightened practice as followed by Transit New Zealand in trading off project costs with benefits to the community. However, Mr Freke acknowledged that the Board does not have the role of finding the optimum or best alternative, and cannot directly have regard to such matters. Rather he suggested that providing clarity in what is required of the project would assist any subsequent Electricity Commission decision.

[1914] A territorial authority considering a designation requirement will have regard to community benefits proposed by the requiring authority in mitigation of adverse environmental effects. However, the Board accepts as correct those acknowledgements that obliging a requiring authority to provide community benefits is beyond the scope of consideration of a designation requirement.

[1915] Similarly it is not the role of the Board to express an opinion about what the Electricity Commission should consider in subsequent decisions. The Manukau City Council is free to make representations about amendment to the electricity legislation under which the Commission makes its decisions. The experience of the Council and of Mr Freke would qualify them to make representations in that context.

[1916] In short, the Board holds that requiring community benefits other than those offered by the requiring authority is beyond the scope of its Inquiry.

## **Equity issues**

[1917] Dr McQueen addressed the Board about what he called the ‘inequity of the battle between landowners and Transpower’ in the legal resources and expert witnesses that Transpower used. He also spoke of external pressure being put on approval of the line for political advantage; and asserted that Transpower had not dealt fairly with landowners in negotiating equitable purchases of easements, and in refusing to consider compensation based on both one-time and rental components of those easements.

[1918] The Board is aware that most submitters would not be able to match the resources that Transpower could bring to bear in presenting its case to the Board. That is why the Board allowed some tolerance to submitters in the presentation of their cases, particularly in their cross-examination of Transpower witnesses, and in considering submitters’ cases. Even so, as indicated in Chapter 4, the Board has looked to evidence of probative value in making its findings.

[1919] The Board is unaware of any external or political pressure for approval of the line. Had any such pressure been evident to the Board, it would have been ignored. The Board has confined its consideration to the submissions and evidence presented at its public hearings, and endeavoured to deal with them in accordance with law in preparing this report and reaching its judgements.

[1920] The Board is not aware of any evidence before it tending to show that Transpower had not dealt fairly with landowners in negotiating purchase of land or easements. It infers that any dissatisfaction by landowners over compensation offered may have resulted from landowners and Transpower having differing opinions about the application of the law on compensation for public works. As already explained, it is not for the Board to express a view on the question which of those opinions is correct.

[1921] In summary, the Board holds that the equity issues raised by Dr McQueen are outside the scope of the Inquiry.

## **Stress, uncertainty, and changes to expectations**

[1922] Many submitters stated their discomfort, in some cases distress, at the stress, uncertainty and changes to expectations that they have experienced in the period of some years since the Grid Upgrade Proposal was first announced.

[1923] The members of the Board sympathise with those submitters. Their calm and considered presentation of their submissions at the hearing, despite those experiences, has assisted the Board in understanding what they wanted to contribute to the Inquiry.

[1924] However, those experiences are not matters that should influence the Board's decision on the designation requirements or resource consent applications.

## **Perceptions of adverse effects (including stigma effects)**

### **Submissions**

[1925] New Era Energy and other submitters submitted that public perception of risks associated with transmission lines would lead to reduction in land values, referred to as a 'stigma effect'. They also raised problems in attracting and retaining farm workers, due to perceptions by workers or potential workers or their families of ill-health effects from living or working in the vicinity of the high-voltage transmission line. Some submitters also asserted that markets for their produce would be affected by perceptions by potential buyers of harm from consuming or using produce from farming in the vicinity of the line; and others contended that opportunities for taking part in the tourism industry would be limited by similar perceptions.

[1926] Counsel for New Era Energy cited Environment Court decisions<sup>1</sup> in which (she submitted) such effects had been considered.

[1927] Transpower responded that those decisions had been based on other legislation, or on different points, and did not support the assertions about perceived effects being sufficient to equate to relevant RMA effect.

### **Consideration**

[1928] The question raised by the submissions of New Era Energy and others, arises where the Board has not found that giving effect to the designation or resource consent would have effect asserted. The question is whether the Board is required to, or should, have regard to perceptions that giving effect to the designation or resource consent might have that effect; or to any effect consequential on any such perception.

[1929] A question of perceptions of what is or is not offensive is different, and cases about those kind of perceptions<sup>2</sup> do not assist in deciding the question in point. The Board does not refer further to those cases.

[1930] There is a line of judicial decisions in planning and resource management law to the effect that subjective perceptions of potential harm, although sincerely held, are not taken into account as effects on the environment if, on the evidence, those perceptions are not well founded.

[1931] Starting with the decision of the highest authority, the Court of Appeal has held that if a decision-maker finds that the thing in question would not be affected, it is not necessary to make provision for views to the contrary.<sup>3</sup> The High Court has held that a rule-of-reason approach must prevail, and that a decision-maker is to consider, objectively, the effects of the particular activity.<sup>4</sup>

[1932] The Planning Tribunal rejected claimed perceptions in export markets of contamination of primary exports arising from proximity of export factories to proposed activities,<sup>5</sup> and in *Transpower v Rodney District Council*,<sup>6</sup> the Tribunal held that it would not be appropriate for it to weigh suspicion, even when expressed by one who is qualified as an expert witness, against the opinions of even better qualified experts that are consistent with the consensus of the international scientific community. In *McIntyre*,<sup>7</sup> the Tribunal held that the existence of a serious scientific hypothesis, or even one that is regarded as deserving priority for testing, is not necessarily sufficient by itself to establish a potential effect, even a potential effect of low probability which has a high potential impact.

[1933] More recently, the Environment Court has considered submissions based on perceived risk of harm.

[1934] In *Telecom v Christchurch City Council*,<sup>8</sup> the Court held that social angst and lack of well-being in the community affected is not a material consideration.

[1935] In *Aquamarine v Southland Regional Council*,<sup>9</sup> the Court held that a no-risk regime is not compatible with sustainable management as defined in section 5(2).

[1936] In *Shirley Primary School*,<sup>10</sup> the Court held that if the risk of adverse effects is acceptable, then the fears of certain members of the community, or even of sufficient people to be regarded as a 'community', would be unlikely to persuade the decision-maker that consent should be refused, because the individual's or the community's stance is unreasonable. Following *Department of Corrections v Dunedin City Council*,<sup>11</sup> the Court endorsed consideration of whether there are likely to be adverse effects on the environment.

[1937] In *Contact Energy*,<sup>12</sup> the Environment Court considered submissions that a geothermal power station and other development of a geothermal field would have adverse effects on the tourism appeal of the Taupo area; and of community concern and economic impacts on property. The Court held that it would not be consistent with the provisions of the RMA for deciding resource consent applications for the outcome to be influenced by the number of people who perceive themselves to be at risk or concerned about possible adverse effects. The Court stated:

[254] ... Because the Court has the same duty in respect of a decision appealed against as the primary decision-maker,

it acts on its findings based on evidence of probative value in having regard to the matters directed by section 104 and making the discretionary judgment to grant or refuse consent conferred by section 105 for best achieving the purpose of the Act defined in section 5. There is ample scope in that process for the Court's decision to be influenced by adverse effects on the environment which are shown on the evidence to be well founded. However, there is no place in that process for the Court to be influenced by mere perceptions of risk which are not shown to be well founded.

[255] Claims of effects on tourism appeal ... like claims of depreciation of property values, are derivative. If they are well founded, that is because of adverse effects on the environment, and it is the adverse effects themselves, rather than the supposed secondary results of them, that should be considered in the ultimate judgement. If they are not proved to be well founded, we hold that they should not influence the Court's decision.

[1938] In *Beadle*,<sup>13</sup> the Court held that claims about people's attitudes, and fears, however genuinely held, have to be assessed objectively; and if it is found on probative evidence that there would be no adverse actual or potential effect on the environment of allowing an activity, then the fact that some people remain fearful and unconvinced by the weight of evidence is not a relevant matter to be taken into account; and that there is no place in the process for a decision-maker to be influenced by perceptions of harm which are not shown to be well founded.<sup>14</sup>

[1939] In *Sea-Tow*,<sup>15</sup> the Court held that beliefs of effects that are not supported by the evidence do not provide an appropriate basis for judicial findings of adverse effects on the environment, and should not influence the Court's judgment of whether or not a proposal would represent sustainable management of natural and physical resources.<sup>16</sup>

[1940] Those judicial decisions are consistent with the binding authority of the judgments of the higher Courts cited previously.

[1941] The Board has considered the decisions relied on by counsel for New Era Energy.

[1942] The decision in *Fernwood Dairies*,<sup>17</sup> was not about a designation or resource consent application under the RMA requiring consideration of effects on the environment. It was a decision under the Electricity Act about a proposal by Transpower to upgrade existing transmission lines crossing private land; and the question for the Court was whether Transpower's proposal would injuriously affect that land. So the question was essentially one of private property rights, under legislation completely different from the RMA.

[1943] In *Fernwood Dairies* the landowner expressed concern about risks of increased cancer growth and of leukaemia in children from magnetic fields around the upgraded transmission line. On the evidence, the Court found that

Transpower's proposal would have no unreasonable effect on the amenities of the land, and no injurious affect on it. The Court also held that injurious affection under that Act includes any loss in value of the land, including loss caused by public fear of the proposed upgrade, whether or not that fear is unreasonable. However, the Court found that the proposed upgrade would not cause a reduction in the value of the land, and would have no injurious affect.

[1944] In that decision, the Court treated loss of land value due to unreasonable fear as an element in injurious affection for the purpose of the Electricity Act. It does not follow that such loss should be treated as an adverse effect on the environment for the purpose of the RMA. To do so would be inconsistent with the authorities and the line of judicial decisions under that Act already listed.

[1945] The other Environment Court decision relied on by counsel for New Era Energy was *Oasis Clearwater*.<sup>18</sup> On reading and re-reading that decision, it is not evident that the necessary determination of that decision has any bearing on the question whether a decision-maker under the RMA is to have regard to a perception of a potential adverse effect that is not objectively supported by probative evidence.

[1946] The Board applies the authorities to the effect that a decision-maker under the RMA is to take a rule-of-reason approach and consider, objectively, the effects of the particular activity; and if it is found on the evidence that the thing in question would not be affected, it is not necessary to make provision for fears to the contrary that it might be affected. The reasoning in the line of Planning Tribunal and Environment Court decisions cited is consistent with those authorities, and the Board follows the reasoning in those decisions.

[1947] The Board has considered the evidence bearing on all relevant assertions of adverse environmental effects of the proposal, and made its findings on them, applying the extended meaning of 'environment' directed by section 2, and the extended meaning of 'effect' directed by section 3. Where the Board has found that there would be an adverse effect on the environment of giving effect to the designation or resource consent, the Board will take it into account. Where, on considering the evidence, the Board has not found that giving effect to the designation or resource consent would have an adverse effect asserted by submitters, the Board holds that it is not required to, and should not, have regard to perceptions that giving effect to the designation or resource consent might have that effect; nor to any effect consequential on any such perception.

## Engagement and retention of farm workers

[1948] Some submitters urged that construction of the overhead line across their farms would make it difficult to engage and retain farm workers, who would be unwilling to spend their working days close to the line due to perceptions of health effects.

[1949] There was little direct evidence of farm workers taking such attitudes. In any event for the Board to allow the possibility to influence its decision on the designations would be to give weight to putative perceptions that are inconsistent with the Board's assessment of the evidence in Chapter

9, and with its finding on consideration of the evidence that there is no significant risk to health from operation of the Grid Upgrade in compliance with the proposed conditions.

## **Potential liability for outages**

[1950] Some submitters (including Federated Farmers, Carter Holt Harvey and Hancock Forest Management, Orini Downs Station and New Era Energy South Waikato) expressed concern that landowners may potentially have liability for outages in the proposed line, and consequential losses, as a result of some action or negligence on the landowner's part. They argued that the consequential losses may be very significant, and ruinous on landowners or disastrous for them.

[1951] Transpower submitted that there is no evidence to support such a result, and that the probability is too remote to be considered an environmental effect.

[1952] The Board agrees with that. It also considers that the question is more one of private property interests than of the public objectives sought by the RMA. The Board considers that whatever the law is about liability in such circumstances, it is not for territorial authorities considering requirements for designations under the RMA (or, where the designation has been called in, for a board of inquiry) to be concerning themselves with the application of that law. It is for the courts deciding individual cases, or if necessary for Parliament amending the law, to ensure that application of the law does not work injustice.

## **Relative numbers of opponents and supporters**

[1953] Federated Farmers submitted that Parliament intended that regard should be had to the relative numbers of submissions for and against the proposal. Other submitters made similar remarks.

[1954] Transpower replied that there is nothing in the Act or case law that supports the view that regard should be had to the number of submissions for and against a proposal, and that the Board's decision should not be influenced by the degree of public opposition to the Grid Upgrade Project.

[1955] The law is that making decisions under the RMA is not according to the number of submitters but rather to the quality of their submissions.<sup>19</sup>

[1956] The Board applies the law, and holds that its decisions should not be influenced by the relative numbers of opponents and submitters.



## Endnotes

- <sup>1</sup> *Fernwood Dairies v Transpower* (Environment Court Decision C171/06); *Oasis Clearwater Environmental Systems v Selwyn District Council* (Environment Court Decision C027/07).
- <sup>2</sup> Eg *Zdrahal v Wellington City Council* [1995] 1 NZLR 700; *Minhinnick v Watercare Services* [1998] 1 NZLR 294; and *Stratford District Council v Adams* (Environment Court Decision W52/07).
- <sup>3</sup> *Friends of Ngawha v Minister of Corrections* (2002) 9 ELRNZ 67, 73 (lines 30-36); [2003] NZRMA 272 [24]; per Blanchard J.
- <sup>4</sup> *TV3 Network Services v Waikato District Council* [1998] 1 NZLR 360; [1997] NZRMA 539; per Hammond J.
- <sup>5</sup> *Northern Wairoa Dairy Co v Dargaville Borough Council* (Planning Tribunal Decision A181/82); *Affco v Hamilton City Council* (Planning Tribunal Decision A3/84); *Purification Technologies v Taupo District Council* (Planning Tribunal Decision W10/95).
- <sup>6</sup> Planning Tribunal Decision A85/94.
- <sup>7</sup> (1996) 2 ELRNZ 84; [1996] NZRMA 289.
- <sup>8</sup> Environment Court Decision W165/96.
- <sup>9</sup> Environment Court Decision C126/97.
- <sup>10</sup> *Shirley Primary School v Telecom Mobile Communications* [1999] NZRMA 60.
- <sup>11</sup> Environment Court Decision C131/97.
- <sup>12</sup> *Contact Energy v Waikato Regional Council* (Environment Court Decision A4/2000).
- <sup>13</sup> *Beadle & ors v Minister of Corrections* (Environment Court Decision A074/02).
- <sup>14</sup> Those findings were not upset by the higher Courts on appeal: HC Wellington 20/06/02, Wild J; CA (refusing special leave to appeal) [2003] NZRMA 272; 9 ELRNZ 67, per Blanchard J.
- <sup>15</sup> *Sea-Tow & anor v Auckland Regional Council* (Environment Court Decision A066/06).
- <sup>16</sup> *Ibid*, [405]. Although that decision is subject to appeal, the part of the Environment Court decision referred to is not impugned by the notices of appeal.
- <sup>17</sup> *Fernwood Dairies v Transpower* (Environment Court Decision C171/2006).
- <sup>18</sup> *Oasis Clearwater Environmental Systems v Selwyn District Council* (Environment Court Decision C72/2007).
- <sup>19</sup> *Upland Landscape Protection Society v Central Otago District Council* (HC Dunedin 16/09/08 Fogarty J [66]).

## CHAPTER 17: APPLICATION OF RELEVANT CONSIDERATIONS

[1957] In Chapter 4, the Board described the legal context, including identifying the relevant provisions of the RMA, and of instruments made under it. In subsequent chapters, the Board has considered the submissions and evidence on the main issues, and stated its findings on them. It has now to continue the decision-making process by applying the relevant provisions of the Act and subordinate instruments to those findings, before coming to its judgements on the ultimate issues.

[1958] The Board applies the considerations relevant to the designation requirements, then those relevant to the resource consents.

### The designation requirements

[1959] In paragraph [155] of Chapter 4, the Board quoted the directions to a territorial authority considering a requirement. The direction to consider the effects on the environment of allowing the requirement is expressed to be subject to Part 2. In paragraphs [163]–[164] of that chapter, the Board gave its reasons for applying Part 2 after having made findings and assessments on the environmental effects, and the other considerations that are to be evaluated. So the Board summarises its findings on the effects on the environment; applies them to the applicable instruments listed in section 171(1); and then applies Part 2 in Chapter 18.

### Effects on the environment

[1960] There would be positive and adverse effects on the environment of allowing the requirement.

#### Positive effects

[1961] In Chapter 6, the Board identified these positive effects on the environment of allowing the designation requirements.

[1962] The upgrade represents long-term planning, reflecting that electricity transmission assets typically have lives exceeding 50 years.

[1963] The route largely uses an existing transmission corridor, rather than establishing a new corridor or multiple lines.

[1964] The upgrade would replace older assets of smaller capacity with new assets of higher capacity and greater reliability.

[1965] The upgrade would promote renewable generation by facilitating transmission of electrical energy from renewable sources to the major market.

[1966] The upgrade would make up a predicted deficiency with a reliable supply of electrical energy at Auckland at times of peak demand.

## **Adverse effects**

[1967] In Chapter 10 the Board found that allowing the proposed overhead transmission line would have significant adverse landscape and visual effects on the environment, which in some parts would be cumulative on similar effects of existing transmission lines.

[1968] In Chapter 12, the Board stated its findings that allowing the designation requirements would have significant potential adverse social effects on the environment, albeit that they may vary from property to property and community to community, and may abate over time; potential effects of disturbance of farming and other activities on private land; and potential adverse effects on free passage by the public and its vehicles on public roads. Those adverse effects should be mitigated by compliance with proposed conditions of the designations.

## **Planning instruments**

### **Hauraki Gulf Marine Park Act 2000**

[1969] This Act applies to the whole of the catchment of the Hauraki Gulf, and sections 7 and 8 are to be treated as a New Zealand Coastal Policy Statement. It seeks, among other things, to protect the quality of the water in the Gulf. Parts of the alignment are within remote catchment areas of the Gulf.

[1970] Ms Allan gave evidence that the construction activities, being confined in area and to be managed in ways that avoid potential for contaminants in surface runoff to affect waterways, would not conflict with the Act.

[1971] There being no submission or evidence to the contrary, the Board accepts Ms Allan's opinion, and so finds.

## **National Policy Statement on Electricity Transmission**

### ***Submissions***

[1972] Transpower referred to passages in the preamble to the NPS recognising that technical, operational and security requirements associated with the transmission network can limit the extent to which it is feasible to avoid or mitigate all adverse environmental effects; that the adverse environmental effects of the transmission network are often local, while the benefits may be in a different locality and/or extend beyond the local to the regional and national, making it important to balance local, regional and national environment effects (positive and negative); and that significant upgrades are expected to be required to meet demand and the Government's objective for a renewable energy future, so strategic planning for transmission infrastructure is required.

[1973] Transpower quoted the Objective in the NPS in respect of recognising the national significance of the transmission network by establishment of new transmission resources to meet the needs of present and future

generations, while managing the adverse environmental effects of the network and the adverse effects of other activities in the network.

[1974] Transpower also cited Policy 1, of recognising and providing for the national, regional and local benefits of sustainable, secure and efficient electricity transmission; and stating that the benefits may include improved security of supply of electricity; or efficient transfer of energy through a reduction of transmission losses; or facilitation of the use and development of new electricity generation, including renewable generation which assists in the management of the effects of climate change.

[1975] Transpower referred as well to Policy 2, directing that decision-makers are to recognise and provide for the effective operation, maintenance, upgrading and development of the electricity transmission network.

[1976] On behalf of Orini Downs Station, Dr Forret referred to the Objective of the NPS, and noted that it provides that the adverse environmental effects of the network are to be managed, as well as the adverse effects of other activities on the network. Counsel acknowledged that the NPS recognises that electricity transmission activities will have adverse environmental effects, and that these cannot always be avoided, remedied or mitigated. She drew attention to Policy 6 by which substantial upgrades of transmission infrastructure should be used as an opportunity to reduce existing adverse effects of transmission, including effects on sensitive activities where appropriate; and to Policy 10 by which decision-makers must, to the extent reasonably possible, manage activities to avoid reverse-sensitivity effects on the electricity transmission network, and ensure it is not compromised.

[1977] On behalf of Mr Mackay, Mr and Mrs Dombroski, Drummond Dairy and Scenic Dairies, their counsel drew attention to the same provisions of the national policy statement.

[1978] For Orini Downs Station, Dr Forret submitted that it is arguable that any decision to establish a new component of the transmission network must take into account existing activities so that reverse sensitivity effects can be avoided, avoiding existing quarries, dwellings and other sensitive activities.

[1979] Counsel for the Hunua and Paparimu Valley Residents Association, Mr D A Allan, referred to Policy 4 about having regard to the extent to which any adverse effects have been avoided, remedied or mitigated by the route, site and method choice. He stated the Association's concern that the method chosen by Transpower (the 400-kV-capable lattice tower line) rather than reducing effects, would generate very significant adverse visual amenity effects.

[1980] As Dr Forret and Ms J Bright had, Mr D A Allan cited Policy 6 and submitted that benefits of removing the existing ARI-PAK A line are minimal in the context of the additional adverse effects generated by the new line. Counsel contended that this is particularly so in the part of Hunua (Hunua Road to Ararimu Road) where the new line is on a different alignment from the line being removed, but is proposed to be very close to other existing lines.

[1981] Mr D A Allan referred to Policy 8 of avoiding adverse effects on existing sensitive activities. He submitted that houses are sensitive activities

and that particular care needs to be taken to mitigate effects through rural areas with relatively higher densities of dwellings close to the line, such as Hunua.

[1982] On Policy 13, of recognising long-term planning for development operation and maintenance of transmission infrastructure, the Association contended that the 25-year period in which the 400-kV-capable line would not be used to capacity is beyond a reasonable planning horizon.

### ***Evidence***

[1983] In supplementary evidence, Ms Allan gave her opinion that the decisions made for the Grid Upgrade Project accord with the objective and relevant policies of the NPS.

[1984] In explaining that opinion, this witness stated that although the NPS had not existed at the time, in determining the substation locations and overhead line and underground cable routes, and mitigation proposals, the adverse environmental effects of them and of other activities of the network had adequately and appropriately been managed; and that existing adverse effects, and potential for future adverse environmental effects on the new transmission resources, had also been so managed.

[1985] On Policy 1, Ms Allan stated the national, regional and local benefits of sustainable, secure and efficient electricity transmission that are identified in that policy are applicable to the Grid Upgrade, and there may be others as well, instancing the removal of the ARI-PAK A line, and economic benefits of construction and maintenance of the new infrastructure.

[1986] On Policy 2, the witness gave her opinion that integration of the Grid Upgrade Project into the network in a location of high demand and significant supply, as well as the capacity and staging of the transmission, would contribute to a high level of overall effectiveness of the network. She observed that a project with less ultimate capacity would be less effective.

[1987] Ms Allan addressed Policy 3 about consideration of technical and operational requirements of the network in relation to measures to avoid, remedy or mitigate adverse environmental effects. She acknowledged the technical evidence that the overhead line is appropriate for technical and operational requirements, and that it would have unavoidable environmental effects associated with the height of the conductors to meet EMF requirements, and spacing of arms to allow for maintenance. Ms Allan remarked that a 220-kV line would have quite similar effects. By contrast the underground cables, though not as convenient technically and operationally, would largely avoid long-term adverse environmental effects. She observed that the use of gas-insulated switching substation technology proposed for the Brownhill Substation would mitigate adverse visual effects.

[1988] On Policy 4, Ms Allan gave her opinion that the adverse effects of the 400-kV-capable overhead line would only be marginally, if at all, greater than those of any other feasible method of transmission having equivalent long-term capacity and capability, and likely to be less than those of two 220-kV lines. She stated that the route-selection process had sought to avoid adverse

environmental effects, and that any remaining effects that cannot be avoided are to be mitigated.

[1989] Policy 5 directs that when considering the environmental effects of transmission, decision-makers are to enable reasonable operational, maintenance and minor upgrading requirements of established transmission assets. Ms Allan observed that this is relevant to upgrading existing transmission assets, such as the Whakamaru Substation; and to the proposed assets when they exist: for example, the eventual conversion to 400 kV.

[1990] Policy 6 applies to substantial upgrades of transmission infrastructure. Ms Allan was uncertain whether that is applicable to the proposed Grid Upgrade Project, but noted that it would involve reductions of existing adverse effects of transmission, including those on sensitive activities, such as removal of the ARI-PAK A line from near Paparimu School in the Hunua Valley and at the Lake Karapiro crossing; and also laying the line underground through urban areas.

[1991] Policy 7 mandates minimising adverse effects on urban amenity and avoiding adverse effects on town centres, areas of high recreational value or amenity and existing sensitive activities. Ms Allan gave her opinion that this would largely be achieved, by underground cable installation in urban areas, and by the route avoiding urban growth areas, schools, residences, hospitals. The Hunua Regional Park has also been avoided.

[1992] As Ms Allan observed, Policy 8 applies in rural environments. It states that planning and development of the transmission system should seek to avoid adverse effects on outstanding natural landscapes, areas of high natural character and areas of high recreation values and amenity and existing sensitive activities. The witness gave her opinion that all the matters listed had been taken into account and largely, if not entirely avoided. She gave particulars in support of her opinion, referring to the line avoiding the Hunua Ranges, the upper slopes of Maungatautari, and the lower part of Lake Karapiro; and acknowledged that visual and amenity effects on some houses, and a small number of schools, had not been able to be avoided fully.

[1993] Policy 9 directs that provisions dealing with electric and magnetic fields associated with the transmission network are to be based in the ICNIRP Guidelines and recommendations from the WHO monograph 238 and applicable New Zealand standards or national environmental standards. Ms Allan gave evidence that conforming with the ICNIRP guidelines had been one of the main drivers of the design of the proposed line, which would comply fully with them over the life of the Grid Upgrade Project and under all normal operating conditions. She considered that Policy 9 would be achieved.

### **Consideration**

[1994] Policies 10 and 11 relate to managing the adverse effects of third parties on the transmission network. Important as that topic is, it is not relevant to deciding on Transpower's requirements for designations. Policy 12 is a direction to territorial authorities about identifying the transmission network on planning maps, and is also irrelevant to the Board's Inquiry. Policy 13 directs decision-makers to recognise that the designation process

can facilitate long-term planning for transmission infrastructure. Policy 14 is immaterial to the Board's Inquiry.

[1995] Having reviewed the submissions and evidence on the application of the National Policy Statement, the Board finds that there was no material dispute that the proposal is consistent with Policies 1, 2, 3, 5, 7, 9 and 13. The Board now considers Policies 4, 6, and 8 (on which there were differences of opinion), before coming to an overall judgement about attaining the objective of the NPS.

[1996] On Policy 4, the Board's finding in Chapter 10 was to the effect that adverse visual and landscape effects on the environment in the Hunua and Paparimu Valley, cumulative on similar effects of existing transmission lines nearby, would not be fully avoided, remedied or mitigated by the route, site and method selection. Even so, in several ways they would be avoided, remedied or mitigated to some extent in the choice of route, design of the line, the removal of the existing ARI-PAK A line (albeit much smaller than the proposed line), and in being a single higher-capability line, rather than (eventually) two lines of lower capability.

[1997] The policy is not an absolute, but one of degree: "decision-makers must have regard to the extent to which any adverse effects have been avoided, remedied or mitigated". It is to be read in the context of the functional imperatives in Policies 2 and 3.

[1998] The Board's judgement is that the extent to which adverse visual and landscape effects (cumulative with those of existing lines) would not be fully avoided, remedied or mitigated by the route, site and method selection would be partly mitigated and remedied in other ways mentioned; and in the context of the functional imperatives.

[1999] Remembering that Policy 6 is about using substantial upgrades as an opportunity to reduce existing adverse effects of transmission, the Board finds that removal of the ARI-PAK A line qualifies; and it judges that for those affected by the appearance of that line, the benefits of removing it would be more than minimal even though, due to its scale, the landscape and visual effects of that line are not as great as those of the proposed line.

[2000] On Policy 8, the Board finds that in planning the line, Transpower did seek to avoid adverse effects on outstanding natural landscapes, areas of high natural character, areas of high recreational value and amenity and existing sensitive activities. It may not have avoided all such areas to the extents desired by the Waipa District Council and the HPVRA, but it certainly avoided the areas mentioned by Ms Allan.

[2001] Returning to the more general objective of the NPS, the Board judges that, in facilitating the establishment of new transmission resources to meet the needs of present and future generations, Transpower has also managed the adverse environmental effects of the network. In so doing, the proposal does not conflict with the national policy statement.

## **New Zealand Coastal Policy Statement**

[2002] Generally the Grid Upgrade Project is not in the Coastal Marine Area (CMA). However, Ms P M Hunter gave evidence that the Brownhill-Otahuhu route for the proposed underground cables crosses Otara Creek just inside the CMA between Johnstones and Franklin Roads, Otara.

[2003] As Ms Hunter observed, the designation cannot and does not extend into the CMA; and the crossing of Otara Creek requires resource consent from the Auckland Regional Council.

[2004] Some parts of the routes of the underground cables, and the Otahuhu and Pakuranga Substations, might be considered to be in the coastal environment.

[2005] Ms Hunter gave her opinion that, given the nature of the existing environment, and the mitigation measures proposed, there would be no conflict with the provisions of the New Zealand Coastal Policy Statement (NZCPS). That was not contested by any submitter.

[2006] Ms A T McGovern, a consultant environmental planner, gave evidence that the whole route of the proposed Brownhill-Pakuranga underground cable is a sufficient distance from the coastal boundary that the NZCPS is not applicable. That was also not contested by any submitter either.

[2007] The Board finds that to whatever extent the Otahuhu and Pakuranga Substations and routes for underground cables to them are within the coastal environment to which the NZCPS applies, the existing development of the substations and the parts of Manukau City affected by the cable routes are such that the NZCPS would not influence the decision on the proposed designations in respect of them. It follows that confirming the requirement on the proposed conditions would not significantly hinder achievement of the objectives or implementation of the policies of the NZCPS.

## **Auckland Regional Policy Statement**

### ***Submissions***

[2008] At the Board's hearing, the Auckland Regional Council stated that it accepted that a secure supply of electricity to the Auckland region, with sufficient capacity to meet current and future demand, is a fundamental prerequisite to the social and economic objectives of the region. It also accepted that a shift towards renewable energy may require a strengthened transmission network; and that for the foreseeable future, the majority of Auckland's base-load energy supply will come from outside the region, and will rely on transmission infrastructure.

[2009] In respect of proposed Change 8 to the regional policy statement, the Regional Council reported that it had decided to vary the landscape component of the proposed change, and that this process is still pending. It accepted that the weight to be given to it must reflect that it is still at a relatively early stage.



[2010] The Regional Council urged that the Board avoid or mitigate landscape and visual effects on the natural and rural character of the rural parts of the region, but did not propose any specific measures to do so.

### **Evidence**

[2011] Ms Peake gave her opinion that the proposal would not comply with landscape policies of the regional policy statement, as cumulative effects are not avoided, the transmission line would have adverse effects beyond the boundary of numerous sites, and the visual coherence or integrity of the wider landscape will be reduced.

[2012] Ms Allan referred to the ARPS as a high-level policy document, which identifies the need for energy, and utility network systems, including electricity transmission. She described the statement as focusing on efficiency in use and transmission, and use of sustainable energy resources.

[2013] Ms Allan referred to passages in the regional policy statement which recognise that the National Grid is reaching capacity, the need to ensure a reliable and secure supply of electricity, and that failure to do so would severely restrict the region's economic and social growth and development. The regional policy statement indicates that strategic policies for regionally significant infrastructure are to be given effect through provisions of district plans and/or the designation process.

[2014] Ms Allan referred to proposed Change 6 to the regional policy statement, including a policy that assessments of environmental effects of transmission proposals are, when necessary, to be carried out in accordance with the 4th Schedule to the RMA. She stated that this had been done in the documentation presented with the notices of requirements in respect of the Grid Upgrade Project.

[2015] There are many objectives and policies in the regional policy statement on matters of significance to iwi, on maintaining the quality of water, on conservation of soil, and other important topics, that do not bear particularly on decision of the requirements for the proposed designations.

[2016] A policy that does bear on the designations is protecting the quality of identified outstanding natural landscapes and regionally significant landscapes; and elsewhere, protecting the elements, features and patterns which contribute to the character and quality of the landscape and its amenity value, or which help to accommodate the visual effects of development, by avoiding, remedying or mitigating any adverse effects on them.

[2017] Ms Allan gave her opinion that the proposal avoids outstanding natural landscapes and regionally significant landscapes.

[2018] Ms Allan also referred to proposed Change 8 to the regional policy statement, which would (among other things) replace the policy on landscape, and identify an area in the Hunua Valley for significant landscape values. Landscape effects have been considered in Chapter 10 of this report.

[2019] Ms Allan concluded that the proposed overhead line is consistent with the broad policy intentions of the regional policy statement.

### **Consideration**

[2020] The Board has had particular regard to the relevant provisions of the ARPS. It finds that the proposed Grid Upgrade Project is supportive of the policies about ensuring a reliable and secure supply of electricity with sufficient capacity to meet current and future demand, and related policies.

[2021] The route for the overhead line has been selected to avoid identified outstanding natural landscapes and regionally significant landscapes; and the proposal has been designed to avoid, remedy and mitigate landscape and visual effects elsewhere to varying extent.

[2022] As the identification by proposed Change 8 of the area north of Gelling Road, Hunua, as an outstanding natural landscape is subject to a variation that is not before the Board, and the process for resolving a dispute over that identification has not been completed, the Board considers it premature to give the proposed identification of that area any significance at this stage.

[2023] Although adverse landscape and visual effects would remain, the Board accepts Ms Allan's opinion and judges that, in the scale of the need for transmission to meet future demand, the outcome would be proportionate, and not in conflict with the regional policy statement read as a whole.

[2024] The Board finds that confirming the requirements would not significantly hinder achievement of the objectives, or implementation of the policies, of the ARPS.

### **Waikato Regional Policy Statement**

[2025] Relevantly, Policy One in Chapter 3.12.2 of the WRPS is promoting efficiency and conservation in transmission of energy; and Objective 3.13.2 concerns maintaining and enhancing continued operation of regionally significant infrastructure (including network utilities).

[2026] In those respects, Ms Allan gave her opinion that the proposed Grid Upgrade Project would accord with that policy and be in agreement with that objective as it represents an efficient transmission system and regionally significant infrastructure, replacing one of lesser capacity. That was not challenged by any submitter in the context of the regional policy statement.

[2027] Mr Olliver also stated that the Grid Upgrade Project is broadly consistent with the energy philosophies of the regional policy statement, in that it has the potential to influence improved efficiency in the transmission of energy; and that it is not inconsistent with the infrastructure policies.

[2028] Mr A M Collier drew the Board's attention to Objective 3.3.7 of the regional policy statement of net reduction in the effects of accelerated erosion and avoiding those effects where practicable; and gave his opinion that erosion and sediment control measures can ensure that effects of earthworks can be appropriately managed.

[2029] Mr Collier also drew attention to Objective 3.3.9 of maintaining versatility and productive capacity of the region's soil resources, and expressed concern that application of fertiliser by aerial topdressing would be

severely affected by the lines and by effects on airstrips. In cross-examination this witness agreed that erosion is a matter covered by conditions of the regional consents; and that he had visited two airstrips and was unclear how fertiliser could be applied.<sup>1</sup>

[2030] The Board considers that Mr Collier's knowledge about airstrips and aerial topdressing is insufficient to cause doubt about the acceptability of Mr Nichol's opinion that the effects on aerial topdressing would be minor.

[2031] Overall the Board finds that the proposed transmission line would be consistent with the broad policy intention of the WRPS; and that confirming the requirements would not significantly hinder achievement of the objectives, or implementation of the policies, of the WRPS.

### **Manukau City District Plan**

[2032] In Chapter 4, the Board identified relevant provisions of this plan.

[2033] Transpower submitted that the proposed upgrade is in general accordance with its provisions; and that visual impacts have been avoided and mitigated as far as practicable by route choice and alignment design.

[2034] Ms Allan gave her opinion that the district plan effectively contains a separate code for network utilities, including transmission of electricity; and presented a detailed assessment of the policy framework, from which she stated her conclusion that there is no major inconsistency with policy in the plan. She acknowledged that objectives and policies to protect or enhance amenity values may not be fully achieved because of visual impacts of the overhead line and Brownhill Substation structures, despite avoiding, remedying and mitigating those impacts to the extent practicable. Even so, she concluded that there is no significant inconsistency between the substation proposal and the policy framework.

[2035] Ms McGovern and Ms P M Hunter gave evidence about the application of the district plan to the Pakuranga Substation, and to the proposed underground cables between Brownhill Road and the Pakuranga and Otahuhu Substations.

[2036] The network utility provisions of the district plan apply to the underground cables and the Pakuranga Substation, with which they are consistent. They also found that the construction of the cables, being short-term and temporary activities, would not greatly impact on the plan provisions for the various zones through which the cables pass. Ms McGovern observed that the Pakuranga Substation has for decades been operated in a manner compatible with the surrounding land uses; and that its zoning as Residential is anomalous.

[2037] The evidence of those witnesses was not challenged or contradicted, and the Board accepts it.

[2038] The Board finds that the proposed upgrade generally conforms with applicable provisions of the Manukau District Plan; and the landscape and

visual effects of the proposed structures would be avoided, remedied or mitigated to the extent practicable.

### **Franklin District Plan**

[2039] Relevant provisions of the Franklin District Plan were summarised in Chapter 4.

[2040] Transpower submitted that the plan includes objectives and policies that support the proposed infrastructure and the particular alignment, taking into account the potential for growth of Hunua township and the important values associated with the Hunua Regional Park.

[2041] Ms Allan gave her opinion that the objectives and policies support major infrastructure (that would include the proposed overhead transmission line) and the alignment avoiding Hunua township and the Hunua Regional Park.

[2042] That evidence was not challenged or contradicted; and accepting it, the Board finds that the proposal conforms with the Franklin District Plan.

### **Waikato District Plan**

[2043] In Chapter 4, the Board identified provisions of the operative Waikato District Plan and of the proposed district plan that might be relevant.

[2044] Transpower acknowledged that the proposed transmission line is not entirely consistent with the objectives and policies; and explained that the matters raised by the policy framework of the plan had been taken into account in selecting the route so as to avoid and mitigate effects, and address other policy issues, to the extent practicable.

[2045] Ms Allan gave evidence that the choice of route had provided the initial basis for avoiding or mitigating adverse effects; and acknowledged that visual effects of large structures are unavoidable. She explained that choosing a route that largely avoids elevated areas and ridgelines had reduced and mitigated those adverse effects; and that removal of the ARI-PAK A line would remedy them to some extent. She observed that the policy framework appeared more directed to controlling rural subdivision and development, than to limiting infrastructure development.

[2046] Ms Allan referred to policies seeking underground cable installation and co-location where practicable, and remarked neither is practicable for a transmission project of the scale needed. She concluded that although not entirely consistent with all the objectives and policies of the plans, relevant matters in the policy framework had been taken into account, and adverse effects avoided or mitigated to the extent practicable.

[2047] No submitter contended otherwise; and the Board accepts Ms Allan's opinions about the application of the plans to the proposal.

### **Matamata-Piako District Plan**

[2048] Relevant provisions of the Matamata-Piako District Plan were summarised in Chapter 4.

[2049] Transpower accepted that the visual impacts of the proposed overhead line would not necessarily conform with the policies in that respect; and contended that generally, policy relating to amenity values is achieved with the alignment and line design. It remarked that the plan contains no policies suggesting that the west of Morrinsville is a future growth area.

[2050] Ms Allan gave her opinion that the proposed line is relatively consistent with provisions of the plan applying to works and network utilities. She acknowledged that, observed from close to the line, the visual impacts of the line would not be consistent with the general policies about amenity values, but stated that generally the policy about amenity values is achieved with the alignment and line design.

[2051] Ms Gilbert gave her opinion that the proposed line would be contrary to the objectives and policies. However, in cross-examination she agreed that she had not considered relevant objectives and policies relating to utilities.<sup>2</sup>

[2052] The Board considers that, compared with Ms Allan's analysis, Ms Gilbert's was incomplete in that respect. The Board finds Ms Allan's evidence more helpful and preferable.

[2053] In summary, the Board finds that the proposal would conform with the district plan provisions about network utilities; and although it would not fully conform with those about amenity values, they would be avoided, remedied and mitigated to the extent practicable.

### **Waipa District Plan**

[2054] The Board summarised relevant provisions of the Waipa District Plan in Chapter 4.

#### ***Submissions***

[2055] Transpower submitted that there is no inherent conflict with the policies in respect of the Rural Area and SLCAs through which the overhead line would pass; but considerable consistency with the overall policy framework for rural areas.

[2056] Waipa District Council submitted that the integrity of the SLCAs should be regarded as forming a matter of national importance and weighed accordingly; and that the district plan provisions should be accorded primacy in the assessment of effects and given great weight.

#### ***Evidence***

[2057] In her evidence, Ms Allan noted that the district plan seeks to protect the landscape character of the river valley while allowing activities including rural-residential development in areas where they will have minimal adverse visual impact on the landscape. She found that identifying a SLCA along the

river corridor does not prohibit development which may be appropriate where visual impact is minimised.

[2058] In cross-examination, Ms Allan explained that although the policy discourages development, by the rules a considerable amount of development is possible as a controlled activity, applications for which cannot be refused; and she considered that large dwellings and other buildings could be more obvious over a longer view in the landscape than lattice towers.<sup>3</sup>

[2059] Ms Allan remarked the alignment of the transmission line, where it crosses the lake, is in a less-sensitive location and the structures, (though larger) are fewer in number than those of the existing ARI-PAK A line that is to be removed. She concluded that there is no major inconsistency with the policy.

[2060] In respect of the other areas of identified landscape values that would be crossed by the line (Maungatautari and north of Arapuni), Ms Allan considered that those areas are less sensitive, and do not justify special treatment.

[2061] Ms Allan gave her opinions that the proposed transmission line would not conflict, but would have considerable consistency, with the policy framework for the Rural Area; and that the alignment is consistent with the objectives and policies for public works and works of utility service operators.

[2062] Mr Olliver gave his opinion that the alignment of the overhead line through the SLCAs would be in direct conflict with the rules, policies and objectives of the district plan. He acknowledged the protection policies do not prevent development, and that they envisage some forms of development. He stated the proposed line would be out of scale and located in highly visible parts of the State Highway 1 corridor; that it would fail to protect the landscape character of the Waikato River valley and lakes; and that adverse effects on the environment could not be avoided nor sufficiently mitigated.

[2063] Mr Olliver considered that the proposal conflicts with the policy of discouraging further development which could have an adverse effect on the landscape qualities of the scenic landscape protection corridor along State Highway 1, including restrictions on the erection of further powerlines. He also considered that adverse visual effects on the environment at the Arapuni crossing (a locality that has a high degree of natural character) could not be minimised, and is contrary to Policy RU14; and also to RU15 in respect of the Waikato River south of Horahora Bridge. He also maintained that the proposal is inconsistent with Objective PW2, in that adverse visual effects could have been avoided or mitigated by re-routing clear of Waipa's scenic landscapes, or by choosing an eastern route option.

[2064] Mr Olliver acknowledged that the district plan does not prohibit activities in the SLCAs, explaining that it controls development in them by objectives, policies, rules and performance standards. He referred to the conditions for structures in SLCAs by which specific permitted activity thresholds are set, and some activities prohibited. He acknowledged that the rule does not prohibit erection of structures and buildings in SLCAs, and

explained that it restricts the scale and location of structures relative to the skyline and proximity to public roads or the Waikato River.

[2065] Activities that do not comply with those thresholds are classified as controlled activities, and are to be assessed under Rule 2.6.1. By that rule the matters over which the Council can exercise control include protecting visual amenity of outstanding landscapes; assessment includes location of structures relative to skylines, the extent to which activities would be obtrusively visible, and the extent to which measures are taken to avoid, remedy or mitigate effects.

[2066] Mr Olliver gave his opinion that the line would not satisfy the criteria in Rule 12.3.3 for utility services that are not permitted activities, in that it would be obtrusively visible; would detract from the amenities of the area and would affect significant views from State Highway 1; and discards an alternative location which is physically, technically and operationally possible: the eastern route.

[2067] Mr Olliver concluded that the requirement is not consistent with the district plan and directly conflicts with a number of its rules, objectives and policies.

[2068] In cross-examination Mr Olliver agreed that the policy for protecting the present character of Maungatautari only applies to the upper slopes<sup>4</sup>; and that not every part of the SLCA is an outstanding natural landscape.<sup>5</sup>

[2069] In reply, Transpower submitted that there is a distinct lack of integrity in the SLCAs identified in the district plan.

### **Consideration**

[2070] To the extent that the Board's Inquiry is into a requirement for a designation, the framework for consideration of alternative routes is that explicitly set by section 171(1)(b). A territorial authority is not able to extend the scope of consideration of alternatives by provisions of its district plan. So the Board discards Mr Olliver's point about choosing an eastern route.

[2071] Having considered the evidence, the Board finds that the proposed overhead line would not support the policies applicable to the landscape context of State Highway 1, the Waikato River valley, and the SLCAs; but could qualify for resource consents judged by the criteria and having regard to the positive effects of the proposal, and the extent to which adverse landscape and visual effects have been or would be avoided, remedied and mitigated – including by selection of the route, use of monopoles near the lake crossing, and removal of the existing ARI-PAK A line. The Board is not persuaded that the alignment south of Horahora Bridge, and the proposed crossing at Arapuni, would challenge the policies to the same extent.

[2072] In summary, the proposal would not support important policies of the Waipa District Plan, but balanced with the positive effects, and the extent of avoidance, remedying and mitigating measures, the Board judges that it would qualify for resource consent in terms of the district plan.

## **South Waikato District Plan**

[2073] Relevant provisions of the South Waikato District Plan are summarised in Chapter 4.

### ***Submissions***

[2074] Transpower submitted that the overhead transmission line is generally in accord with the policy framework of the South Waikato District Plan, except in terms of visual impact on amenity values; and that the further development of the Whakamaru Substation, and development of the proposed new Whakamaru North Substation, would not be inconsistent with that framework.

[2075] South Waikato District Council contended that there would be adverse effects on the environment having particular regard to the relevant provisions of the district plan; and that the proposal is generally contrary to the objectives and policies of the plan; would not produce the outcomes in the anticipated environmental results for network utilities; and would have effects incompatible with existing land uses in the Rural zone.

[2076] New Era Energy South Waikato submitted that the proposal is inconsistent with the objectives and policies of the district plan.

[2077] Transpower replied by observing that inconsistency with a district plan is not determinative of whether requirements should be confirmed. It contended that any inconsistency with the district plan could be overcome by imposition of the proposed conditions; and that as the plan does not identify any valued landscapes or features, any route for the transmission line through the district would have been likely to have been inconsistent with its policies.

### ***Evidence***

[2078] In her evidence, Ms Allan presented an analysis of the relevant policies, and gave her opinion that the transmission line would be generally consistent with the policy framework, except in terms of visual impact on amenity values. She observed that the route would avoid parts of the district having special amenity values.

[2079] Ms Allan remarked that because of the scale and capacity of the line, it is substantially outside what is contemplated by any permitted activity provisions. She identified a policy conflict between national and regional needs (which the Grid Upgrade Project is designed to meet) and amenity policies interpreted at a localised level. She considered that designations can provide for network utilities that may not be able to attain approvals in any other way.

[2080] Mr Collier gave his opinion that the proposal would be generally contrary to the objectives and policies of the district plan.

[2081] In terms of the rules governing network utilities, Mr Collier stated that as the voltage of the line would exceed 110 kV, it is a discretionary activity. He also remarked that the height of the structures would exceed the 10-metre height limit for permitted development in the Rural zone.



[2082] Mr Collier considered the proposal incompatible with policies about the scale of development, non-compliant with performance standards for permitted public works; not avoiding, remedying or mitigating significant adverse effects; using a greenfields corridor instead of co-siting with compatible facilities where technically feasible and practical; and no underground cable installation to avoid adverse effects on amenity values. He considered that the transmission line would not meet minimum environmental conditions; would adversely affect amenity values by significantly affecting landscape and visual character; and would result in significant disruption to people and communities.

[2083] Mr Collier acknowledged that the district plan does not give any particular recognition in terms of landscape values to any particular area, leaving them to be evaluated on specific proposals.

### **Consideration**

[2084] The Board accepts that the district plan does not contemplate a project of the scale of the proposed transmission line to serve national and regional needs, which results in the proposal being inconsistent with policies developed with smaller utility structures in mind. That underlies the inconsistencies with the policies drawn to the Board's attention by Mr Collier.

[2085] In particular, that also explains incompatibility with policies about scale of development; non-compliance with performance standards for particular public works; and no underground cable installation to avoid adverse effects. In Chapter 7 of this report the Board has addressed the selection of the route; and the choice of an overhead line rather than underground cables; and disruption of activities. Sharing an existing transmission corridor rather than using a greenfields route which was not practicable.

[2086] There was no issue that, particularly due to the scale of the structures, the line would have adverse landscape and visual effects on the amenity values of the South Waikato environment. In that respect, the proposal is inconsistent with policies of the district plan.

[2087] Even so, if weighed with the positive effects, and the extent of avoidance, remedying and mitigating measures, the Board judges that it would qualify for resource consent in terms of the district plan.

### **Taupo District Plan**

[2088] Provisions of the Taupo District Plan that might apply to the Grid Upgrade Project were summarised in Chapter 4.

[2089] Transpower submitted that the short stretch of the overhead line within the Taupo district is in accord with the policy framework of the district plan.

[2090] Ms Allan produced an analysis of the district plan policies applicable to the short stretch of overhead line and a single tower leading to the

Whakamaru Substation complex; and gave her opinion that the work would be consistent with the applicable policy framework.

[2091] No submitter contended otherwise.

[2092] The Board accepts Ms Allan's opinion, and finds that the proposal would not be contrary to the district plan.

### **Summary of findings on planning instruments**

[2093] The Board has, as directed, paid particular regard to the relevant provisions of the prescribed classes of planning instruments.

[2094] The Board has found that the proposal would not conflict with the Hauraki Gulf Marine Park Act; the NPS; or the Auckland and Waikato RPSs. In respect of the ARPS, the Board noted a reservation about the adverse landscape and visual effects.

[2095] The short extent of work in the coastal marine area led the Board to find that in the circumstances the New Zealand Coastal Policy Statement would not influence the decision on the relevant requirement.

[2096] The Board found that the proposal generally conforms with Manukau City, Franklin, Waikato, Matamata-Piako, and Taupo District Plans, again with reservations about landscape and visual effects, acknowledging that they have been, and are to be, avoided, remedied and mitigated to the extent practicable.

[2097] The Board found that the proposal would not support important policies in the Waipa and South Waikato District Plans concerning landscape and visual effects; though that is to be weighed against the positive effects of the proposal and the extent to which those effects have been and are to be avoided, remedied and mitigated.

### **Consideration of alternatives**

[2098] In Chapter 7, the Board addressed particularly the question whether adequate consideration had been given to alternative sites, routes or methods of undertaking the work; and concluded that, considered overall, adequate consideration had been given to those alternatives.

### **Necessity for achieving objectives**

[2099] In Chapter 8, the Board addressed particularly whether the work and designation are reasonably necessary for achieving Transpower's objectives for which the designations are sought; and concluded that both the work and the designations are reasonably necessary for achieving them.

## Other necessary matters

[2100] In Chapter 13, the Board addressed a number of particular matters to decide whether it is reasonably necessary to consider any of them in order to make a decision on the requirements.

[2101] In that chapter, the Board found that there is no tāngata whenua matter that needs to be considered in making that decision; no consultation matter; no matter about the design of the overhead line towers; no matter about the extents to which the transmission line is proposed to be overhead and underground; no matter about the long-term effects on the life of foundations of local roads; no matter about the marginal additional risk to the safety of aircraft using Ardmore Airfield; and no matter about the effects on use of farm airstrips.

[2102] In Chapters 10, 12 and 13, the Board addressed whether there would be effects on particular localities that it is reasonably necessary to consider in order to decide whether to confirm or withdraw the requirements. In summary, the Board found that even after the extent to which they are avoided, remedied and mitigated, the overhead line would have significant remaining adverse landscape and visual effects on the environment, including parts with enhanced visual amenity values (including Lake Karapiro and Maungatautari); and would also have potential social effect and effects of disruption to farming and other activities. Those effects on the environment have to be considered in deciding whether the requirements are to be confirmed or withdrawn.

[2103] In Chapter 14, the Board addressed whether any local specific modifications to the requirements should be made at requests of particular submitters. The Board concluded that these local modifications should be made:

- a) on the property the subject of the submissions by Glencoal and the Stirling family, the sites for two towers should be moved; there should be increased clearance above the State Highway 2 bypass north of Tower 88; and there should be uniform line span lengths
- b) the designation through the Kinleith Forest should be widened to 130 metres.

[2104] Those modifications should be considered in making decisions on the requirements.

[2105] In Chapter 15, the Board stated its intention that, if the requirements are confirmed, it would impose proposed conditions on the designations. It is necessary that the Board have particular regard to that intention in making decisions on the requirements.

## Summary on designations

[2106] In summary, in considering the requirements and making decisions on the designations sought, the Board will, subject to Part 2:

- a) consider the positive effects on the environment of allowing the requirements:
- b) consider the adverse effects on the environment of allowing the requirements, being significant landscape and visual effects, including parts with enhanced visual amenity values and cumulative effects of those kinds; potential social effects; potential effects of disturbance of farming and other activities on private land; potential effects on free passage by the public and its vehicles on public roads; and the extents to which they are avoided or would be remedied or mitigated by compliance with proposed conditions:
- c) have particular regard to its findings that the proposal would not conflict with the Hauraki Gulf Marine Park Act; the NPS; the Auckland and WRPSs; generally conforms with Manukau City, Franklin, Waikato, Matamata-Piako, and Taupo District Plans; would not support important policies in the Waipa and South Waikato District Plans concerning landscape and visual effects; subject to a general exception that the proposal would not be consistent with policies for protection of landscape and visual amenity values, qualified by the extents to which adverse landscape and visual effects have been and are to be avoided, remedied and mitigated.
- d) have particular regard to its findings that adequate consideration had been given to alternative sites, routes or methods of undertaking the work;
- e) have particular regard to its findings that both the work and the designations are reasonably necessary for achieving Transpower's objectives for which the designations are sought;
- f) have particular regard to its findings about local specific modifications to the requirements, and imposition of proposed conditions referred to in paragraphs [2039] and [2041] respectively of this chapter.

## **The resource consent applications**

[2107] In paragraph [213] of Chapter 4, the Board quoted the directions to a territorial authority considering a resource consent application. The direction to consider the effects on the environment of allowing the requirement is expressed to be subject to Part 2. In paragraphs [157]–[164] of that chapter, the Board gave its reasons for applying Part 2 after having made findings and assessments on the environmental effects, and the other considerations that are to be evaluated. So the Board summarises its findings on the effects on the environment; applies them to the applicable instruments listed in section 104(1); and then (in Chapter 18) applies Part 2.

## **Description of resource consents**

[2108] In this section, the activities to be authorised by the resource consent applications to the Auckland Regional Council and the Waikato Regional

Council are described. The application of the statutory instruments applying to each consent is included later in this chapter.

[2109] Some flexibility about the sites of the towers is allowed for in the applications to allow for minor changes, partly because Transpower had not been able to gain access to some properties. This flexibility also provides for unexpected ground conditions or archaeological or ecological finds, where it would be appropriate to move a tower slightly to avoid an adverse effect. Ms Allan stated her view that the effects resulting from such changes would be *de minimis*, and generally done for beneficial reasons.

[2110] The resource consents needed for the construction of the underground cable between Otahuhu and Brownhill Substations are not being sought now, because that work is unlikely to commence prior to 2020 and consents granted now would lapse before they could be exercised. It is also possible that changes in construction methods or technology may have occurred by then.

[2111] In its opening legal submission Transpower submitted that most construction activities would be permitted activities. However, to cover all eventualities, global consents have been applied for.

### **Consents – Auckland region**

[2112] In June 2007, Transpower applied to Auckland Regional Council for resource consents for work associated with the construction, installation, use, operation and maintenance of a new 220-kV underground transmission cable between the Pakuranga Substation and Brownhill Road, and for works that are proposed to be located within the area of the requirements for designation of the overhead line section. The application also extends to the area of the required designation for the Brownhill Substation.

[2113] In July 2007 Transpower applied for further resource consents from the Auckland Regional Council for work associated with the construction of towers for the new (400-kV-capable) transmission line and ancillary works, including tower access and some topographic modification within the designated area.

### ***Brownhill-Pakuranga underground cable***

[2114] By Application 34102, Transpower sought a land-use consent for earthworks (including but not limited to trenching, excavation test pits, geotechnical drilling, backfilling or clean filling) to enable the installation and maintenance of a 220-kV underground transmission cable inside and outside any sediment-control protection area.

[2115] By Application 34370 Transpower sought consent to discharge contaminants to land from ancillary activities that produce wastewater or wash water. The proposed activities would include: the use of chemical cracking rock-breaking techniques; dewatering sediment-laden water from the trenches; the washing of vehicles, plant or machinery; geotechnical drilling activities; dust suppression, and concrete or asphalt laying or

reworking, associated with the installation and maintenance of the 220-kV underground cable.

[2116] By Application 34372, Transpower sought consent to works in the bed of a watercourse for these activities:

- a) trenching through a watercourse for the installation and maintenance of a 220-kV transmission-cable structure under the bed of the unnamed watercourse immediately north of Ti Rakau Drive adjacent to a Manukau City Council Stormwater Management Area
- b) placement of a bridge over the bed of the Turanga Creek, Brownhill Road, Whitford for the installation and maintenance of a 220-kV transmission cable, including the placement of abutments and a Reno mattress on the stream banks
- c) placement of two culverts in the bed of the Mangemangeroa Stream, Caldwell's Road, East Tamaki, including the placement of fill above those culverts for the installation and maintenance of a 220-kV transmission cable
- d) placement of a bridge over the Mangemangeroa Stream, Caldwell's Road, East Tamaki for the installation and maintenance of a 220-kV transmission cable
- e) placement of a culvert and fill over an unnamed stream directly above Dunvegan Rise (and below Point View Drive) East Tamaki, including the associated disturbance of the streambed for the installation and maintenance of a 220-kV transmission cable
- f) land-use consent for the placement of a bridge over an unnamed stream directly above Dunvegan Rise (and below Point View Drive) East Tamaki, including the associated disturbance of the streambed for the installation and maintenance of a 220-kV transmission cable.

[2117] By Application 34373, Transpower sought consent for the diversion of a stream flow associated with the placement of two culverts in the end of the Mangemangeroa Stream, Caldwell's Road, East Tamaki for the installation and maintenance of a 220-kV transmission cable.

### ***Overhead line and Brownhill Substation***

[2118] Transpower applied for the following resource consents for works within the area of the requirement for the overhead line section of the Grid Upgrade Project. The works would also intrude into the area of the designation for the Brownhill Substation.

[2119] By Application 34711, Transpower sought land-use consent for earthworks (including but not limited to benching, foundation excavation, topographic modifications, geotech drilling, backfilling or clean filling), to enable the construction of tower foundations inside and outside any sediment protection control area. In addition it would facilitate earthworks for roading

and tracking to enable access to the tower construction sites inside and outside any sediment protection control area.

[2120] By Application 34712, Transpower sought consent for the discharge of contaminants to land from ancillary activities that produce wastewater or wash water, such as:

- a) the use of chemical cracking rock-breaking techniques
- b) de-watering sediment-laden water from the trenches
- c) the washing of vehicles, plant or machinery
- d) geotechnical drilling activities
- e) dust suppression
- f) concrete laying or reworking, associated with the installation of the tower foundations.

## **Consents from Environment Waikato**

### ***Overhead line and Whakamaru North Substation***

[2121] Transpower applied for resource consents for works within the area of the requirements for the overhead line section of the Grid Upgrade Project. The works would also extend into the area of the requirement for designation for the Whakamaru North part of the Grid Upgrade Project.

[2122] By Application 116902, Transpower sought land-use consent for vegetation clearance and earthworks associated with tower site preparation and access tracks, within the designated area in high-risk erosion areas.

[2123] By Application 116903, Transpower sought a discharge permit for the composting of vegetation (less than 20 cubic metres per site) for composting/mulching of vegetation generated through vegetation trimming and clearance.

[2124] By Application 116904, Transpower applied for land-use consent for the drilling of tower foundations below the water table.

[2125] By Application 116905 Transpower sought a discharge permit for the discharge of site-water and drilling fluids from drilling activities into surface water.

## **Effects on the environment**

[2126] There would be positive and adverse effects on the environment of allowing the requirement. When addressing these actual and potential effects on the environment, the Board needs to make a judgement based on the realistic possible effects, their likelihood, and potential impacts.<sup>6</sup>

## Positive effects

[2127] In Chapter 6, the Board identified the positive effects on the environment of the Grid Upgrade Project which the activities that would be authorised by the resource consents would enable.

## Adverse effects

### *Ecological effects*

[2128] In his evidence, Mr Beale, independent terrestrial ecologist and resource management expert, addressed impacts of the resource consent applications on terrestrial ecology.

[2129] Mr Beale identified seven areas of *locally* significant vegetation in terms of the values contained in section 6(c) of the RMA, and gave his opinion that none of these areas would be either *regionally* or *nationally* significant. This view was contested by Waipa District Council which contended that the proposed clearance of vegetation would be contrary to Policy RU37 of the Waipa District Plan relating to the protection of areas of significant indigenous flora and fauna. Mr Beale responded that the proposal would not be contrary to the policy because it would not affect any area of significant vegetation or habitats of indigenous vegetation that is listed in Appendix 14 of the district plan.

[2130] Mr Beale stated that the majority of vegetation clearance would be carried out across land that is flat or gently undulating; and that the vegetation stands that would be most affected would be stands of kahikatea in Ardmore Basin, the Paparimu/Hunua Valley area, and across the Waikato plains. Mr Beale acknowledged that in many places, complete removal of stands would be necessary.

[2131] Te Hoe Holdings submitted that the construction of the transmission towers would result in the clearance of “virgin bush”. Mr Beale acknowledged the ecological value of this forest remnant, though he noted that due to stock invasion it could not be described as virgin bush. He reported that relocation of the tower site had been considered, but that this option had been rejected by the affected landowner, because avoidance of the forest remnant would have moved the tower closer to a residence. Transpower therefore proposed a mitigation measure that Mr Beale considered to be extensive, including the replacement of trees within the designation, and establishment of equivalent vegetation outside it.

[2132] Mr Beale acknowledged in his evidence that the selective removal of canopy trees would result in localised disturbances. The main vegetation changes would involve increase in stature of remaining vegetation, and potential reduction in the regenerative capacity of the remnants. Mr Beale also stated that vegetation clearance would result in increased levels of fragmentation in affected remnants; and that increased fragmentation could have significant adverse effects on forest ecosystems, particularly through increased edge effects.



[2133] The National Wetland Trust submitted concerns regarding the potential disruption of ecological corridors through the clearance. Mr Beale agreed that there is a risk of this, but considered that the proposed mitigation would retain corridors without further disruptions in future.

[2134] Mr Beale defined the general purpose of the proposed mitigation measures as being to replace cleared vegetation with either vegetation of a more appropriate stature, or to reinstate the vegetation at another location, giving a list of species suitable for location under the overhead line.

[2135] In his evidence, Mr Beale accepted that, for up to 1 year following establishment, maintenance of all plantings would be Transpower's responsibility; and acknowledged that in practice the landowner's agreement would be necessary.

[2136] On the adverse effects on ecological values as a result of the underground cable and substations, Mr Beale proposed the following mitigation measures:

- a) define all construction site boundaries clearly on the road
- b) ensure that, as far as practicable, no vegetation is disturbed or removed beyond the defined construction zone
- c) replace amenity trees removed elsewhere along the cable routes
- d) relocate native plantings within the stormwater management areas to other parts of these areas beyond the cable route;
- e) replace māhoe trees removed from the steep slopes immediately north of and downslope of Point View Drive
- f) when designing amenity and screening planting schemes for the Pakuranga Substation site and the Brownhill Transition Station site, consider the contributions to the ecological value of the area, including the adjacent riparian areas.

[2137] The Board shares submitters' disappointment at the proposed clearing of valued stands of native trees, and considers those clearances as adverse effects on the environment.

[2138] The Board finds that the clearances are necessary for the establishment of the transmission line, and that the proposed mitigation and remedial measures would mitigate the adverse effects to some extent. Albeit reduced in those ways, adverse effects would remain, to be had in regard in deciding the relevant resource consent applications.

### ***Archaeological effects***

[2139] The land-use consent applications for earthworks relating to both tower foundations and the underground cable have the potential to have significant adverse effects on archaeological and heritage sites.

[2140] Mr B D Druskovich, consultant archaeologist, provided the main evidence relating to the archaeological and heritage effects of the resource consent applications.

[2141] Construction of the underground cable could possibly damage and/or destroy three archaeological sites, and archaeological evidence is likely to be found during the works at the Pakuranga Substation. Mr Druskovich asserted that although these sites may be damaged by the underground cable proposal, the actual impact of effects would be minimal because the sites have already been compromised by farming and other activities in the past. Mr Druskovich noted that modification of the sites would require the approval of the New Zealand Historic Places Trust (NZHPT).

[2142] NZHPT had withdrawn evidence it had previously intended to adduce; and joined with Transpower in proposing archaeological and cultural conditions. Those conditions would require further investigation to be undertaken prior to commencement of construction activity. NZHPT informed the Board that its concerns would be addressed by imposition of the proposed conditions.

[2143] The underground cable from Pakuranga to Brownhill would pass an archaeological site consisting of a flattened knoll with terraces on it. The archaeological significance of the site is unknown. Mr Druskovich stated that, provided the proposed mitigation is undertaken, laying the cables in the area would be acceptable due to the unknown nature of the site, and the fact that only a portion of it would be disturbed.

[2144] Towers 63a to Tower 71 would be located over an area where a number of archaeological finds had been noted. Mr Druskovich stated that he expected to find archaeological evidence on or around all tower sites in that area, particularly the location of Paparata Pa. In his evidence he proposed mitigation measures, regarding which no submitters raised concerns.

[2145] The Board finds that the disturbance of possible archaeological sites would be necessary for the establishment of the transmission line, and that the proposed mitigation measures, and necessity of obtaining NZHPT approval, would avoid adverse effects on the environment.

### ***Noise effects***

[2146] In Chapter 12, the Board addressed audible noise effects from construction of the transmission line. Those findings are applicable to the exercise of the resource consents involving construction activities.

[2147] The Board reiterates its finding to the effect that, if construction activities are carried on in compliance with the proposed conditions, incorporating the New Zealand Standard for Construction Noise NZS 6803:1999 and amendments proposed by the Manukau City Council and Mr Lloyd, emission of noise would be appropriately constrained, and no significant adverse effect on the environment would result.

### ***Construction effects***

[2148] Effects associated with construction process could include removal of clean fill, vibration effects, creation of dust, runoff causing erosion and stormwater discharges into nearby watercourses.

[2149] Mr Patrick, transmission lines engineer from Transpower, described a range of measures that would be used to prevent dust nuisance and management of waterways to avoid potentially adverse effects. Such mitigation would include the watering of track surfaces, refraining from working in sensitive locations, avoiding work during periods of excessive water flow, and avoiding work when ground conditions were unsuitable. There was no contention that these measures would be insufficient to mitigate the adverse effects of the earthworks.

[2150] Ms Allan gave her opinion that construction-related effects would be localised and temporary; and that the distance of construction activities from dwellings, combined with liaison with potentially affected peoples, would be sufficient to mitigate the majority of effects.

[2151] Ms Allan acknowledged that it may not always be practicable to apply dust mitigation efforts commonly utilised in urban environments, such as watering of the ground. She stated that as the receiving environment is not a highly sensitive area, so this would not be a problem. In addition, she stated that in areas of sensitive land use (such as horticultural land) special mitigation methods would be applied: for example, permanent earthwork cut faces and fill areas would be hydro-seeded as soon as possible. As a result of this mitigation, Ms Allan concluded that dust effects would be localised, minor and temporary.

[2152] Federated Farmers submitted that earthworks should be undertaken in a manner that does not create dust nuisance, and when undertaken in waterways should be managed so as not to create a muddy mess.

[2153] Mr A M Collier stated that erosion and sediment control measures could ensure the earthworks would be appropriately managed; and that careful consideration should be given to potential cumulative effects of accelerated erosion as a result of earthworks.

[2154] Mr K Baker of Lichfield Farms Limited raised concerns in his submission relating to disruption to farming practices during construction. Mr Patrick detailed the potential effects of construction on the Lichfield farm property, and stated that the potential for adverse effects would be minimised through liaison and consultation with the affected party. Measures identified in that way would be incorporated into the site works plan for Lichfield Farms.

[2155] The construction of the Brownhill Substation is to be in four stages, of which the first stage and the last two stages would involve earthworks to be authorised by Resource Consent 34711. The majority of those earthworks would be carried out in the first stage and would include, not exclusively, construction of site access, underground cable installation, all the site earthworks, and ground stabilisation.

[2156] Ms Allan gave evidence that elements of the construction stages that impinge on the natural environment, such as the earthworks and stream works, would be mitigated by using varying design methodology and the provision of a construction management plan and a site works plan. Auckland Regional Council's TP90 (Technical Publication No. 90) guidelines would be applied to earthworks. Construction noise would be managed to meet the

requirements of the current Construction Noise Standard (NZS 6803). Dust mitigation would be carried out by using water carts at key locations, hydro-seeding of finished surfaces, wheel washing, and covering dusty loads leaving the site. In the witness's opinion, the overall effects of the substation construction would be temporary, localised and, allowing for the proposed mitigation, minimal.

[2157] Ms McGovern gave evidence that a construction management plan would be prepared in accordance with Auckland Regional Council technical publications. Measures in the construction management plan would be complied with and monitored to ensure that any effects are no more than minor in the surrounding environment. For each site and tower there would also be a site works plan. This would be a specific detailed plan giving layout and activity description, and also referring to procedures or requirements of the construction management plan. Details regarding both site works plans and construction management plans are included in conditions proposed by Transpower and the regional councils.

[2158] By their submission, Mr W and Mrs S Fuller raised concerns regarding the construction of an access road through their property, the removal of vegetation, and proposed 'major' earthworks. Mr Patrick addressed those concerns in his evidence. Mr Patrick also stated that the effects of the access road would be temporary, with the road being removed and the land returned to its previous state at the end of construction. The witness estimated that the area of vegetation to be removed would be approximately 1.2 hectares, and gave the opinion that the impacts would be similar to those of removing trees for harvest. Mr Patrick proposed a range of mitigation measures to alleviate the adverse effects resulting from the proposed earthworks.

[2159] In his evidence Mr Rasul, project manager for the Grid Upgrade Project, outlined the proposed construction management plan. The plan would contain:

- a) land stability and sediment management controls
- b) storage and reuse of topsoil
- c) management and disposal of spoil
- d) groundwater and stormwater management, treatment and disposal
- e) silt and dust control, during earthwork stage
- f) traffic/access management
- g) temporary activities and equipment storage in specified areas
- h) alliance car parking in specified areas
- i) security and lighting during construction
- j) contaminated land management practices
- k) construction noise, dust and vibration
- l) hours of work
- m) existing network utilities' protocols and guidelines

- n) cultural protocols and archaeological requirements
- o) vegetation restoration
- p) community information and liaison.

[2160] The Board accepts the evidence given by Mr Patrick, Mr Collier, Mr Rasul, Ms McGovern and Ms Allan. In reliance on their evidence, the Board finds that if the construction activities are carried out in compliance with the proposed conditions, and the proposed mitigation measures are provided, the adverse environmental effects of allowing the construction activities would be minor, and would not warrant refusing the resource consent applications.

### ***Construction-related traffic effects***

[2161] In paragraphs [1304]–[1311] of Chapter 12, the Board addressed the potential for adverse effects of construction activities on use of public roads, particularly interruptions to traffic flows. The Board stated its finding that the potential adverse effects should be mitigated by imposition of proposed conditions.

[2162] The Board is satisfied that the exercise of the activities that would be authorised by the resource consents sought could avoid substantial adverse effects on traffic, but only if such conditions are fully complied with.

### ***Effects on surface or groundwater***

[2163] In her evidence, Ms Allan stated that generally any effects on groundwater would be localised and temporary, except that earthworks at a few towers may involve changes that would permanently but slightly alter groundwater levels in the immediate vicinity. In addition it is possible that the topographic modifications in the vicinity of Tower 9, and between Towers 14 and 16A and B, would have a similar effect. All those areas are elevated and remote, so there would be no adverse effect on the availability, quality or use of groundwater.

[2164] Mr D Cameron, a water quality scientist, provided expert evidence regarding the potential effects on surface water as a result of the Grid Upgrade Project. Those potential effects would include a loss of riparian vegetation, disturbance to stream banks or beds resulting in the discharge of sediment into the watercourse, and introduction of structures in the active channel that might affect ecological function.

[2165] Mr Cameron identified that where the cable line would cross Pakuranga Creek near Ti Rakau Drive, the cable would pass through a stormwater management area. However, he gave his opinion that the effects of placing the cable in this area by an open trenching process would result in minor effects, provided suitable mitigation is undertaken. Mr Cameron advised that sediment mitigation measures should be a part of the proposed construction plan, and recommended that these be consistent with Auckland Regional Council Technical Publication 90.

[2166] Transpower is also seeking two consent options for the cable crossing an unnamed tributary of Pakuranga Stream: a filled embankment; and a

cable bridge. The embankment option would extend the existing culvert upstream by 30 metres. The potential effects of that option would include the loss of 30 metres of existing streambed, and a temporarily increased sediment load downstream. The 30-metre stretch that would be lost is already modified. Mr Cameron gave his opinion that there would be no more than a minor effect on the aquatic ecology. The use of the cable bridge option would require no temporary or permanent construction in the watercourse channel.

[2167] Transpower is seeking consent for two options for the proposed cable crossing of Mangemangeroa Stream at the location of the unformed Caldwell's Road: a fill embankment, and a cable bridge. Both options would require the removal of vegetation, with a 20-metre wide swath necessary for the bridge option, and a 50-metre wide swath for the embankment option. The reach affected by this loss of vegetation would be less than 1 per cent of the entire stream, and Mr Cameron gave his opinion that the effects of the loss would be insignificant.

[2168] The construction of the culvert component of the fill embankment would involve extensive earthworks, and the placement of a culvert in the stream. Those activities could have a range of adverse effects on the stream ecology, particularly on the banded kōkopu present. Mr Cameron outlined a variety of potential mitigation methods to minimise those effects, recommending for both the implementation of appropriate sediment control measures through the construction management plan.

[2169] Mr Cameron gave his opinion that the proposed cable crossing of Turanga Creek would require no works in the stream bed, and no vegetation clearance. The only earthworks necessary would be for abutment fill, for which Mr Cameron supported the development and implementation of a construction management plan incorporating sediment-control measures. Subject to compliance with the plan and implementation of those measures, Mr Cameron classed the potential effects on the stream as less than significant.

[2170] The cable crossing of Otara Creek would involve the removal of a swath of vegetation 10 metres to 20 metres wide, and trenching in the creek bed. This would affect an area of mangroves of 150–300 square metres on the west bank, and up to 100 square metres on the east bank. Mr Cameron stated his opinion that the loss of this vegetation would have no more than a minor adverse effect on Otara Creek. He proposed mitigation of the release of sediment through trenching, including a timing requirement for fish passage and sediment control methods.

[2171] The cable crossing of an unnamed tributary of Turanga Creek is proposed to be done by trenching at times of low flow. Cables would be installed at a depth of 1.5 metres in the ground. This reach of the stream is highly modified, and Mr Cameron assessed the potential effects as no more than minor.

[2172] Mr D J Scott stated in his evidence that the development of Brownhill Substation would “in effect destroy the very elements that the community are actively protecting and enhancing”. The reason for this statement was given as Transpower's intention to modify and fill the stream to form a large level building platform.

[2173] The effects on this stream were identified by Mr Cameron in his evidence. Allowing for the proposed mitigation, Mr D J Scott classed the effects as minor.

[2174] Ms Allan addressed the submission from Mr Scott, and gave her opinion that his opinion was a “significant overstatement”; in particular as she noted that the earthworks had been located following community consultation.

[2175] The evidence of Mr B H Kouvelis, a senior environmental engineer, addressed the potential effects of the resource consents on groundwater. He stated that trenching, tower foundations and possibly cuttings for access roads to tower sites were likely to affect the groundwater, and that the effects of these were likely to be minor and localised.

[2176] The construction phase of the Grid Upgrade Project would result in an alteration in groundwater flow patterns around the immediate area of the tower foundations. Mr Kouvelis gave his opinions that the dewatering and excavation elements of the project would be unlikely to impact on water levels in existing water supply bores; and any of those effects would be temporary, localised and minor. He also noted that the diversion of groundwater in the area is a permitted activity.

[2177] Mr Kouvelis identified the need for detailed geotechnical investigations prior to detailed design of each tower. In addition he considered that any necessary mitigation should be addressed through provisions in the construction management and site works plans.

[2178] Agricultural Investments Ltd (AIL) raised effects on groundwater from drilling below the groundwater table. Mr Kouvelis addressed this concern, and gave his opinion that there would be little likelihood of the two bores close to the AIL property being affected. The two bores in question draw from a significantly greater depth than the drilling that would be carried out as a part of the Grid Upgrade Project.

[2179] The Board accepts the opinions of the expert witnesses and finds that, if the activities that would affect groundwater and surface water are exercised in accordance with the proposed conditions, and with the proposed mitigation measures, any substantial adverse effects would be avoided or mitigated, and any remaining effects would only be of minor significance.

### ***Effects on construction traffic***

[2180] Construction traffic would be moved to sites using the local road network and State Highway 1 and would be subject to normal traffic requirements. Any new or modified access to the roads would either meet district plan requirements, or resource consent would be obtained. Where practicable, access over private land would follow existing farm access tracks, although a number of new tracks will need to be constructed at appropriate times of the year.

[2181] Ms Allan gave her opinion that the construction traffic would cause only minor, localised and temporary disturbance both on and off the sites.

[2182] The Board finds that effects of construction traffic using public roads would be mitigated by compliance with traffic management plans (as discussed in paragraph [2161] of this chapter; and effects of construction vehicles passing over private land could be mitigated by terms and conditions of grants of rights of entry, and of easements.

### ***Social effects***

[2183] Social effects of exercising the resource consents are likely to occur at varying significance along the line ranging from direct interruption of lifestyle (due to construction), and to fear and anxiety. Expert evidence about those potential effects was given by Dr Phillips and Ms Meade Rose, and was described in Chapter 12. They concluded that although the effects may be genuinely felt, and may be significant in those personal terms, given the extent of the line, the impacts would be minor to moderate.

[2184] The Board accepts those assessments of the social effects of activities that are the subject of the resource consent applications. As identified in paragraphs [1285] and [1287] of Chapter 12, Transpower proposes measures to mitigate and remedy those effects.

### ***Cultural effects***

[2185] Most of the potential cultural effects of exercising the resource consents are substantially the same as those of the designation, which were addressed in the archaeological effects section earlier in this chapter.

[2186] In her evidence, Ms McGovern gave her opinion that as there is the potential for excavation work to uncover items of cultural importance, any work in the area would be undertaken in accordance with proposed protocols. The witness considered that they would be adequate to avoid and mitigate any effects on cultural sites found.

[2187] In its submission, the Ngati Raukawa Trust Board expressed concern about the impact of the proposed Grid Upgrade Project on rural marae activities, lifestyles and cultural values.

[2188] In his evidence, Mr Mikaere, specialist in tāngata whenua consultation, gave his opinion that Transpower had met those concerns by ensuring the relevant provisions in Part 2 of the RMA are properly addressed. He added that, where opportunity presents, culturally appropriate steps would be taken to accommodate Māori cultural values.

[2189] The Board finds that any cultural effects of the resource consents would not be distinct from those of the designations, on which its findings were summarised in Chapter 13.

### ***Cumulative effects***

[2190] In her evidence, Ms Allan noted comments in the section 42A report to the Board about potential cumulative effects of the resource consents. She stated that the resource consents relate to discrete areas that are widely



spread, and gave her opinion that as such there would be no cumulative effects associated with them.

[2191] That was not disputed by any submitter.

[2192] The Board accepts Ms Allan's opinion and finds that any adverse effect of the exercise of any of the resource consents sought would not be a cumulative effect.

### **Discharge consents**

[2193] Section 105 of the RMA directs that if an application is for a discharge permit, then the consent authority is, in addition to the matters in section 104(1), to have regard to:

- a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects
- b) the applicant's reasons for the proposed choice
- c) any possible alternative methods of discharge, including discharge into any other receiving environment.

[2194] Two of Transpower's resource consent applications seek discharge permits, so the Board has to have regard to those criteria.

### ***Nature of discharges***

[2195] Exercise of the consent sought by Application 34370 to the Auckland Regional Council would result in the discharge of contaminants to land from ancillary activities that produce wastewater or wash water. Similarly, the consent sought by Application 34712 would result in discharge of contaminants to land from ancillary activities that produce wastewater or wash water. (Details regarding the activities are contained in the description of the resource consent applications in paragraph [2120] of the present chapter.)

[2196] Exercise of the consent sought by Application 116905 to the Waikato Regional Council would result in the discharge of site water and drilling fluid from drilling activities into surface water.

[2197] In his evidence Mr Cameron stated that the development and implementation of appropriate sediment-control measures would be appropriate mitigation measures, and should be included in a construction management plan.

[2198] On the discharge of stormwater and groundwater, Ms McGovern stated that the predominant contaminant would be likely be sediment. In the opinion of this witness, the identification of a stormwater management area in the construction management plan would suitably mitigate any adverse effects of this discharge.

[2199] Ms Allan provided detail of proposed mitigation. She stated that dewatered stormwater would be discharged to nearby vegetated land and directed away from nearby streams. Ms Allan gave her opinion that, following

mitigation, the effects of discharges would be minor or insignificant along the upgrade route.

[2200] Ms McGovern stated that construction of the proposed Pakuranga Substation could result in adverse effects on nearby Pakuranga Creek, such as the creation of dust, and runoff causing erosion. Ms McGovern gave her opinion that the proposed construction management plan, prepared in accordance with Auckland Regional Council technical publications, would be sufficient mitigation of these potential effects.

### ***Sensitivity of the receiving environments***

[2201] The proposed cable route would cross an unnamed tributary of Otara Creek near Te Irirangi Drive. This stream passes through a stormwater management area and is highly modified. Transpower proposes to install cables by open-trenching at times of low flow, a practice that could result in the disturbance of sediment. In Mr Cameron's opinion the effects of this action would be less than minor, due to the low ecological value in that reach of the stream.

[2202] No issue was raised in submissions about the discharges regarding the sensitivity of the receiving environment.

### ***Alternative discharge methods***

[2203] Transpower submitted that the receiving environment has the ability to absorb the discharges from the activity, and that there are no practical alternative methods of discharge currently available.

[2204] No submitter disputed that, and neither of the consent authorities (the Auckland and Waikato Regional Councils) raised any concern regarding the discharge permits. Conditions to be attached to the discharge permits were submitted to the Board by Transpower and the consent authorities.

### ***Consideration of discharges***

[2205] Having had regard to the nature of the discharges, the sensitivity of the receiving environments, Transpower's reasons, and any possible alternatives including the possibility of discharge into other receiving environments, the Board finds that, if the proposed discharges are carried out in full compliance with the proposed conditions of consent, any adverse effects on the environment would be insignificant.

### **Summary of findings on environmental effects of resource consents**

[2206] In summary, the Board finds that the activities that would be authorised by the resource consents sought would or could have these effects on the environment:

- a) positive effects of making up a predicted deficiency in reliable supply of electrical energy at Auckland at times of peak demand, largely using an existing transmission corridor, replacing older assets of smaller capacity with new assets of

higher capacity and greater reliability, and promoting renewable generation by facilitating transmission of electrical energy from renewable sources to the major market

- b) adverse effects on terrestrial ecology in clearances of native vegetation, even after allowing for proposed mitigation and remedial measures
- c) adverse social effects that may be significant in personal terms, although not more than moderate.

## Planning instruments

[2207] Having considered the actual or potential effects on the environment of allowing the activities that would be authorised by the resource consents, the Board has to have regard to any relevant provisions of planning instruments in the classes listed in section 104(1)(b): a National Policy Statement; a New Zealand Coastal Policy Statement; a regional policy statement or proposed regional policy statement; and a plan or proposed plan.

## Hauraki Gulf Marine Park Act

[2208] As stated in paragraph [1969] of this chapter, the Hauraki Gulf Marine Park Act (HGMPA) is, for the purpose of resource consent applications, to be treated as a New Zealand Coastal Policy Statement. It seeks, among other things, to protect the quality of the water in the Gulf.

[2209] Ms McGovern gave evidence that the works for the Brownhill-Pakuranga underground cable are within the greater Hauraki Gulf marine catchment as defined in the HGMPA.

[2210] That witness stated that the construction activities are confined in area and are to be managed in a way that would avoid the potential for contaminants in surface runoff to affect nearby waterways. Also, the earthworks for the construction of Brownhill Substation are a significant distance from the marine zone, and the various mitigation methods proposed would ensure there would be no adverse effect on that zone or the coastal waters of the Hauraki Gulf.

[2211] Further consents may be needed for activities within the zone covered by the HGMPA, particularly for the upgrade of the Pakuranga Substation. Ms McGovern stated her opinion that there would not be any effect relevant to the HGMPA, as any earthworks would be of relatively small scale, and sediment mitigation measures will be implemented.

[2212] There being no dispute, the Board accepts those opinions, and finds that the activities proposed to be authorised by the resource consents, if carried out in compliance with the proposed conditions, would not contravene any provision of the HGMPA.

### **National Policy Statement for Electricity Transmission**

[2213] In paragraph [2001] of this chapter, the Board stated its finding that in facilitating the establishment of new transmission resources to meet the needs of present and future generations, Transpower has also managed the adverse environmental effects of the network (even though some would not be fully eliminated); and in so doing, the proposal does not conflict with the NPS.

[2214] The proposed resource consents are needed for works required for the Grid Upgrade Project, and are incidental to it. As found in paragraphs [2138] and [2184] of this chapter, the only adverse effects on the environment of exercising the resource consents would be adverse effects on terrestrial ecology in clearances of native vegetation, and adverse social effects that would be no more than moderate. Transpower proposes mitigation and remedial measures in respect of both classes of effect.

[2215] So the Board finds that exercising the resource consents in compliance with the proposed conditions would not conflict with any relevant provision of the NPS on Electricity Transmission.

### ***New Zealand Coastal Policy Statement***

[2216] In paragraph [2007] of this chapter, the Board stated its finding that to whatever extent the Otahuhu and Pakuranga Substations and routes for the underground cables to them are within the coastal environment to which the New Zealand Coastal Policy Statement applies, the existing development of the substations and the parts of Manukau City affected by the cable routes are such that the NZCPS would not influence the decision on the proposed designations in respect of them.

[2217] The activities within the coastal environment that would be authorised by the resource consent would mostly be within the established urban area of Manukau City, or (like the works in the headwaters of the Mangemangeroa Stream and Turanga Creek) some distance from the coast.

[2218] In the event, neither Transpower, nor any submitter, contended that the NZCPS should influence the decision of any of the resource consent applications; and no witness gave evidence tending to show that it should.

[2219] The Board finds that the activities within the coastal environment that would be authorised by the resource consent would all be minor and subject to proposed conditions, compliance with which would ensure those activities would not significantly hinder achievement of the objectives, or implementation of the policies, of the NZCPS.

### **Auckland Regional Policy Statement**

[2220] In paragraphs [239]–[249] of Chapter 4, the Board identified relevant provisions of the ARPS. In paragraph [2024] of the present chapter, the Board stated its finding that the proposed Grid Upgrade Project is not in conflict with the policy statement, read as a whole.

[2221] The activities that would be authorised by the resource consents sought from the Auckland Regional Council are incidental to the Grid

Upgrade Project, and mostly involve earthworks, and works in watercourses. Conditions to be attached to the consents have been agreed on by Transpower and the Auckland Regional Council.

[2222] A number of the policies seek to protect the quality of water in watercourses. Ms Allan gave her opinion that any effect on water bodies would be minor and localised, and would not threaten the values set out in objective 8.3 of the regional policy statement. The proposed conditions and intended construction management plans are designed to ensure adverse effects on water quality are to be avoided or mitigated in accordance with the proposed construction management plans, so that implementation of the regional policies would not be impeded.

[2223] Following consultation with iwi, the conditions also provide for protocols to be followed in the event of evidence of earlier Māori occupation being uncovered by the work.

[2224] The works, including removal of vegetation and earthworks for the underground cables, are to be done so as to avoid impinging on natural and cultural heritage values, and where required, approval by the New Zealand Historic Places Trust is to be obtained. The unchallenged evidence of Ms Allan and Ms McGovern was that the mitigation measures required by the proposed conditions would ensure consistency with the regional policies in those respects.

[2225] Although construction of the tower foundations for the overhead line would involve soil disturbance, the effects would be localised; and risk of erosion would be avoided by site management and replanting.

[2226] In short, the Board finds that the activities in the Auckland region to be carried on under resource consents would not significantly hinder achievement of the objectives, or implementation of the relevant policies, of the regional policy statement.

### **Waikato Regional Policy Statement**

[2227] In paragraphs [254]–[259] of Chapter 4, the Board identified relevant provisions of the WRPS.

[2228] Chapter 3.3 relates to objectives and policies concerning land and soil. In her evidence, Ms Allan stated that the foundation and tracking works would be undertaken in a way that would avoid inducing erosion; and that the approach to construction is consistent with the policy of avoiding, remedying or mitigating accelerated erosion. On an objective concerning moisture management it was Ms Allan's evidence that the proposed site and vegetation management would avoid net loss of productive soils. That witness also stated that the structures associated with the proposed consents would avoid effects on the banks and beds of water bodies.

[2229] Ms Allan also gave her opinion that water quality would not be compromised by the work; and that the mitigation planned at the construction stage would avoid adverse effects on water bodies: no

contaminant discharges are intended. During construction, stormwater from sites would be treated and discharged to land.

[2230] On plants and animals (biodiversity), Ms Allan gave evidence that the proposed mitigation would ensure that the exercise of the resource consents would not compromise those objectives; and that although a small number of areas of significant vegetation would be affected, those effects would be minimised by mitigation proposals and enhancement where possible.

[2231] Ms Allan's evidence on those topics was not challenged. Relying on it, the Board finds that the activities in the Waikato region to be carried on under resource consents would not significantly hinder achievement of the objectives, or implementation of the relevant policies of the regional policy statement.

### ***Proposed Auckland Regional Air, Land and Water Plan***

[2232] The Board summarised relevant general provisions of the proposed plan in paragraphs [250] and [251] of Chapter 4.

[2233] Objectives 4.3.1 and 4.3.2 relate to discharges to air, and are relevant to the consent applications due to the potential for dust to be released from earthworks.

[2234] Ms Allan gave evidence that those air quality objectives would not be compromised by activities associated with the Grid Upgrade Project, as any temporary effects on air quality associated with construction sites would be minor and localized; and provisions in the various management plans would avoid or mitigate any effect on amenity in the general rural area, while proposed mitigation measures would serve Policy 4.4.3.

[2235] On discharges to land, and land and water management, Ms Allan gave her opinion that the objectives would be met in that foundation works would have a less than minor effect, and any drilling undertaken would comply with conditions for permitted activities.

[2236] Chapter 7 of the proposed plan relates to beds of lakes and rivers. Objective 7.3.3 relates to activities in, on or under urban streams, of which Ms Allan claimed none would be affected by the proposed overhead line. In her evidence Ms Allan asserted that the relevant policies were not compromised by the proposed activities.

[2237] Land-use consents for earthworks within the designated areas could generate discharge of contaminants to air and, as such, are governed by Rule 4.5.1. Ms McGovern explained that emission of dust would be managed through a construction management plan, so the activity would be classed as permitted under this rule.

[2238] Application 34712 seeks consent for discharge of contaminants to land, an activity governed by Rule 5.5.68, by which this activity would be discretionary. Any potential effects would be avoided, remedied or mitigated through a construction management plan.

[2239] Application 34712 seeks consent for the drilling of holes, which by Rule 6.5.18 is classed as a permitted activity.

[2240] In summary, the Board finds that none of the activities in the Auckland region for which resource consents are sought would contravene the proposed Auckland Regional Air, Land and Water Plan; and that those that require resource consent are eligible for it.

### ***Auckland Regional Plan: Sediment Control***

[2241] In paragraphs [252] and [253] of Chapter 4, the Board summarised relevant provisions of this plan.

[2242] Objective 5.5.1 concerns maintaining or enhancing water quality in the region. In her evidence, Ms Allan explained that the proposed tower foundations and earthworks would be undertaken in a manner consistent with these goals.

[2243] Objective 5.1.2 relates to the mauri of water in the region. Ms Allan reported that consultation with tāngata whenua had not identified any concerns regarding the mauri of water, and as such Ms Allan considered that the proposed activities would not impair the achieving of that objective.

[2244] Policies 5.2.1 and 5.2.2 of this plan relate to land disturbance activities resulting in elevated discharge of sediment. Ms Allan gave her opinion that mitigation in accordance with construction management plans would result in any adverse effects being minor or less.

[2245] By Rule 5.4.2.1 of this plan, roading/tracking and earthworks in areas between 1.0 and 5.0 hectares are classed as controlled activities. Site works associated with construction have the potential for sediment laden runoff from the site, and are the subject of Application 34711.

[2246] Details were given in evidence of measures by which potential effects would be avoided, remedied and mitigated in accordance with a construction management plan.

[2247] Rule 5.4.3.1 classifies as restricted discretionary activities: those in areas greater than or equal to 0.25 hectare (including the construction of roading/tracking over 100 metres length). Again the potential effects of the proposed activities are to be avoided, remedied and mitigated by measures described in a construction management plan.

[2248] The discharge of any sediment-laden runoff resulting from activities authorised by grant of Application 34711 would be controlled by Rule 5.5.1 (iii), and classed as permitted activities.

[2249] In summary, the Board finds that none of the activities in the Auckland region for which resource consents are sought would contravene the proposed Auckland Regional Plan – Sediment Control; and that those that require resource consent, are eligible for it.

### ***Waikato Regional Plan***

[2250] The Board summarised the general provisions of the Waikato Regional Plan (WRP) in paragraphs [260]–[264] of Chapter 4.

[2251] Section 3.2 of the WRP concerns the management of water resources. In her evidence, Ms Allan stated that water bodies would not be directly affected by any of the activities for which consents are sought, and therefore Policy 1 would not be compromised.

[2252] Policy 2 of that section of the WRP concerns the management of degraded water bodies. Ms Allan stated in evidence that temporary construction activities where consents were not required would be managed in a way that achieved the detailed criteria.

[2253] In respect of Policy 3 (concerning natural character) and Policy 4, (concerning Waikato region surface water class), Ms Allan gave her opinion that the natural characteristics of lakes, rivers and their margins would not be affected and as such there would be no effect on the characteristics listed in Policy 3; so consents are not required under Policy 4.

[2254] Section 3.5 of the WRP governs discharges. Policy 1 enables discharges to water that will have only minor adverse effects. Ms Allan gave her opinion that that any incidental discharges to water would comply with permitted activity requirements, and would not require consents. Policy 3 of this section elucidates alternatives to direct discharge to water. Ms Allan commented that discharge to land (and land treatment if necessary) would be employed in association with tower foundation works.

[2255] In regard to discharges to land (Policy 4), Ms Allan stated that where water from construction activities is discharged to land, no added nutrients would be involved. In regard to the preservation of groundwater quality (Policy 5), the witness explained that discharges to land would be minor and localised, so the objectives of Policies 4 and 5 would be achieved. Policy 7 relates to stormwater discharges, in particular their management. Ms Allan stated that treatment of stormwater to avoid adverse effects on receiving waters would be achieved through construction and site management plans.

[2256] Land-use consent Application 116904 applies to the drilling of tower platforms, in respect of which Section 3.8: Drilling is relevant. Ms Allan gave evidence that the objectives of Policies 1 and 2 of this section, regarding the effects of drilling and the enabling of drilling activities respectively, would be covered by planned geotechnical investigations and foundation works.

[2257] Application 116904 seeks consent for drilling below the water table, an activity governed and classified by Rules 3.8.4.6, 3.8.4.7, 3.8.4.8 and 3.8.4.9. Although Transpower maintained that Rules 3.8.4.8 and 3.8.4.9 were unlikely to apply at most tower sites, site-specific consents would be applied for at a later date if required. Rule 3.8.4.6 would classify the activity as permitted if reinstatement of holes takes place within two days. As this may not occur, consent is required under Rule 3.8.4.7, in which case the drilling would be conducted in accordance with the conditions stipulated in Rule 3.8.4.7.

[2258] The discharge of drilling fluids under Application 116905 is controlled and classified by Rules 3.8.4.3 and 3.8.4.4. Transpower proposes, in accordance with those rules, that all water and drilling fluids would be controlled and treated in accordance with a construction management plan to ensure compliance with the rules.



[2259] Rules 3.5.11.4 and 3.5.11.5 class as permitted activities the discharge of stormwater to water or land in compliance with specified conditions. Application 116905 seeks consent for such discharge in case it is required.

[2260] Application 116902 entails earthworks, to which Section 5.1: Accelerated Erosion applies. Objective 5.1.2 of this section is a net reduction of accelerated erosion across the region. Ms Allan stated in her evidence that earthworks relating to the site would be undertaken in a manner that does not contribute to accelerated erosion, corresponding with the objective. Policy 1 relates to managing activities that may cause accelerated erosion. Ms Allan explained that land disturbance activities would be carried out in a way that would avoid accelerated erosion or any of the listed associated effects. Policy 2 and Policy 3 of that section relate to regulatory measures and the promotion of good practice. Ms Allan stated that earthworks and associated activities would accord with them.

[2261] The activities under Application 116902, when not in a high-risk erosion area, are by Rule 5.1.4.11 classed as permitted activities. Transpower maintained that those activities would be conducted in accordance with a construction management plan, complying with the conditions stipulated in this rule.

[2262] Activities under Application 116902 that are in a high-risk erosion zone would be classified by Rules 5.1.4.14 and 5.1.4.15 as controlled or discretionary activities. The implementation of a construction management plan would ensure compliance with those rules. If compliance with Rule 5.1.4.14 could not be achieved, a site-specific land-use consent would be applied for under Rule 5.1.4.15.

[2263] Application 116903 for the composting of vegetation is governed by Rules 5.2.8.1 and 5.2.8.4. The first of these applies to small-scale composting of less than 20 cubic metres per site. However, as the application is for a greater amount, Rule 5.2.8.4 applies, by which the composting would be a discretionary activity. Transpower maintained that the activity would be conducted in accordance with a vegetation management plan to ensure compliance with conditions imposed by the Waikato Regional Council.

[2264] Section 5.2 of the WRP relates to discharges onto and into land, and as such is relevant to the consents required for the Grid Upgrade Project. Objective 5.2.2 of this section pertains to the manner in which discharges of wastes and hazardous substances to land are undertaken.

[2265] In her evidence, Ms Allan explained her opinion that the various discharges involved would be in accordance with this objective. Policy 1 of this section (regarding low-risk discharges onto or into land) relates to a number of consents, most of which generally meet the requirements of the policy. Ms Allan also stated that those with adverse effects that would not comply would be the subject of mitigation or avoidance measures.

[2266] Policy 2 relates to other discharges onto or into land, of which those consents that do not comply also have mitigation planned.

[2267] Ms Allan's evidence about the application of the WRP was not challenged, and the Board accepts it. The granting of the resource consents was not opposed.

[2268] The Board finds that none of the activities in the Waikato region for which resource consents are sought would contravene the WRP; and that those that require resource consent are eligible for it.

### ***Proposed Auckland Regional Air, Land and Water Plan and the underground cable***

[2269] Chapter 5 of this proposed plan is directly relevant to the proposed underground cable. Objective 5.3.13 of this chapter is to maintain the health, versatility and productive potential of regional soils. Ms McGovern gave her opinion that discharges associated with the underground cable would be of a minor nature and would not undermine the nature of soils in the area. She added that the construction management plan would include measures to avoid or mitigate any discharges.

[2270] Chapter 7 of the proposed plan is relevant to the three stream crossings necessary for the underground cable proposal. Ms McGovern gave her opinion that the development would be consistent with Objectives 7.3.1–7.3.3 due to the construction methodologies to be used, and the implementation of the construction management plan. Ms McGovern's evidence also provided consideration of policies 7.4.8, 7.4.15, 7.4.16, 7.4.17, 7.4.20 and 7.4.21. After analysing each policy, she concluded that through appropriate design, mitigation and the use of construction management plans the proposed development would be consistent with the policy.

[2271] Transpower submitted that the use of a construction management plan will result in any potential discharge of contaminants to air (a result of exercising the consent sought by Application 34102) being classed as a permitted activity under Rule 4.5.1.

[2272] Application 34370 concerns the discharge of contaminants to land classified by Rule 5.5.68 as a discretionary activity. Ms Allan asserted that the adverse effects of these activities would be adequately mitigated through a construction management and a site management plan, and would comply with the rule.

[2273] The activity for which Application 34370 is made is classified as a discretionary activity by Rule 5.5.68. This rule applies to any discharge not otherwise provided for in any other rule in Chapter 5 of the proposed plan. It is possible that there may be discharges from ancillary activities such as vehicle or equipment washing, dust suppression or other activities associated with the installation of the underground cable that may not meet all the permitted activity conditions. In particular, activities would be located immediately adjacent to some watercourses. However, Ms Allan asserted that the effects could be adequately mitigated through the implementation of a site management plan.

[2274] Application 34373 is for consent to the diversion of surface water, which is governed by Rule 6.5.18 relating to the drilling of holes for

geotechnical investigations. Provided this activity complies with conditions placed upon it, it would be classed as a permitted activity. The diversion of groundwater, a component of Application 34373, falls under Rule 6.6.69. This activity is classified as a restricted discretionary activity.

[2275] Application 34372 seeks consent for a variety of works in the bed of a watercourse. These activities are governed by Rule 7.5.6 and classified as restricted discretionary activities. This discretion is restricted to the actual and potential adverse effects arising from specified matters.

[2276] Having considered the potential effects of the applications (none of which was opposed) and the relevant rules in relation to the objectives and policies of the proposed plan, the Board finds that none of the activities for the underground cables for which resource consents are sought would contravene the proposed plan; and that those that require resource consent are eligible for it.

### ***Auckland Regional Plan: Sediment Control and the underground cable***

[2277] Objectives 5.5.1 and 5.1.2 of the Auckland Regional Plan: Sediment Control (ARPS) relate to enhancing or maintaining the quality of water bodies, and sustaining their mauri and wāhi tapu.

[2278] Ms McGovern gave evidence that the three watercourse crossings for the underground cable are to be undertaken in a manner to ensure the maintenance of water quality. She also stated that operation of the underground cable would not affect the watercourses.

[2279] Policy 5.2.1 of the ARPS relates to land disturbance activities that may result in the generation and discharge of elevated sediment levels. The policy states that the employment of methods to avoid, remedy or mitigate these will be required. Ms McGovern stated that such measure would be undertaken and implemented through a construction management plan. In addition she advised that other land disturbance activities would be carefully managed to ensure consistency with Policy 5.2.1.

[2280] Application 34102 falls under Rule 5.4.3.1, by which it is classified as a discretionary activity. The excavation would have the potential for sediment-laden runoff during rain events, and the area and slope of the land in this instance determines activity status.

[2281] Application 34102 also falls under Rule 5.5.1, by which it is a permitted activity, so long as the conditions of the granted land-use consent are adhered to.

[2282] Ms McGovern's evidence was not challenged, nor was the granting of the resource consents opposed.

[2283] Having considered the potential effects of the applications and the relevant rules in relation to the objectives and policies of the Auckland Regional Plan: Sediment Control, the Board finds that none of the activities for the underground cables for which resource consents are sought

would contravene the plan; and that those that require resource consent are eligible for it.

### **Summary of findings on planning instruments**

[2284] Having had regard to the relevant provisions of the planning instruments applicable to the resource consent applications, the Board finds that the several activities that would be authorised by them, if carried on in compliance with the conditions proposed to be imposed on them, would not contravene the Hauraki Gulf Marine Park Act; would not conflict with any relevant provision of the NPS; would not significantly hinder achievement of the objectives, or implementation of the policies, of the New Zealand Coastal Policy Statement, the ARPS, nor the WRPS; would not contravene the proposed Auckland Regional Air, Land and Water Plan, nor the Auckland Regional Plan: Sediment Control or the Waikato Regional Plan; and that those activities that require resource consent under them are eligible for it.

### **Other necessary matters**

[2285] By section 104(1)(c), a consent authority may have regard to any other matter it considers relevant and reasonably necessary to determine the application.

[2286] Submitters (including but not exclusively Orini Downs Ltd and Perry Aggregates) expressed concerns that the consents sought are too generalized. In addition they asserted that there was not enough information given for the authority to assess the effects of the proposed activities. These concerns appear to the Board to be unfounded.

[2287] The Board does not find in the submission by one of the consenting authorities, Auckland Regional Council, that it considered the application to have a significant lack of relevant information. In addition, Mr Rasul reasoned that as access was not granted to all properties that would be affected, further investigation would be required to address some matters. This would enable the development of site-specific responses to effects, as well as the consideration of issues raised by individual landowners.

[2288] No submission was made by the second consenting authority, Waikato Regional Council. However, in a joint memorandum with Transpower, presented to the Board on 29 October 2008, the Council proposed various conditions for the resource consent applications.

[2289] The Board considers that, in the overall context of its Inquiry, there is no other matter that it considers relevant and necessary to determine the resource consent applications.

### **Conditions of consents**

[2290] The distinction between the conditions to be imposed on the designations and those to be imposed on specific resource consents was explained by Ms Allan in cross-examination.<sup>7</sup>

[2291] A designation applies to a corridor for an overhead line or underground cables, or to substation sites; and the conditions restrict the activities that may be carried on in those corridors or sites for the designated purpose, including operational and maintenance activities.

[2292] A resource consent authorises a specific and defined activity on an identified site; and the conditions restrict the carrying on of the specified activity and in terms of section 108.

### **Resource consents from Auckland Regional Council**

[2293] A set of conditions for the resource consents for activities within the Auckland region was proposed by Transpower and the Auckland Regional Council.

#### ***Conditions for Application 34102***

[2294] The suggested conditions for land-use consents for earthworks would require preparation of a construction management plan. The plan is to ensure that the activities identified by consent numbers 34102, 34370, 34372 and 34373 are managed in an integrated and effective manner. The proposed conditions also provide details regarding the content of the construction management plan.

[2295] In addition, the proposed conditions require the consent-holder to submit an erosion and sediment control plan. That plan is to be consistent with the construction management plan and with *Auckland Regional Council Technical Publication No. 90*.

[2296] The proposed conditions contain other requirements regarding both known and unknown archaeological sites and wāhi tapu.

[2297] The consent period proposed is 35 years from the date of commencement of the consent under section 116 of the RMA. However, Transpower expects that the works will be completed by December 2013.

#### ***Conditions for Application 34711 and 34712***

[2298] Conditions were also proposed for the land-use consent for earthworks/roading and tracking and the discharge of contaminants permit.

[2299] Those conditions also require a construction management plan; and in respect of control of earthworks, erosion and sediment control, they require the consent-holder to submit an erosion and sediment control plan, consistent with the required construction management plan. There is the particular provision that erosion and sediment control measures are to be constructed and maintained in general accordance with Auckland Regional Council Technical Publication No. 90.

[2300] The suggested conditions for these consents also contain provisions regarding contaminant management. In particular they require that no disturbed soil or debris or other material is to be deposited where it may enter any water body, or cause damage to any waterway.

[2301] Site-specific conditions are included, requiring that any bulk earthworks in the vicinity of Towers 9, 14, 16A and 16B are not to be undertaken during the period of 1 May to 30 September inclusive of any year.

[2302] The expiry date of these consents is proposed to be 35 years from the date of commencement, although it is expected that works will be completed by December 2013.

### ***Conditions for Application 34370***

[2303] The proposed conditions for the discharge of contaminants on this application also require preparation of a construction management plan. The details of these conditions are similar to those for the preceding applications.

[2304] Again the consent period sought for this consent application is 35 years from commencement.

### ***Conditions for Applications 34372 and 34373***

[2305] These applications relate to works in the bed of watercourses and the diversion of surface water.

[2306] A number of pre-works requirements are given in the suggested conditions. These relate to the provision of designs of the specific structures for the size, location and likely effects to be determined. If works affecting the beds of watercourses are not completed, or substantially completed, within 5 years of commencement, then the consent-holder is to resubmit the designs of the structures for further comment and approval.

[2307] Similar to the suggested conditions for other ARC consents, the necessary contents of the required construction management plan are specified.

[2308] The proposed conditions also contain qualifications regarding stream work, archaeological sites, wāhi tapu and the cessation of works. Finally, in agreement with the other consents, the time period sought for this consent is 35 years.

### **Resource consents from Waikato Regional Council**

[2309] The Waikato Regional Council and Transpower jointly proposed conditions for the resource consents in the Waikato region.

### ***Conditions for Application 116904***

[2310] The proposed conditions for the discharge permit for the composting/mulching of vegetation would stipulate that the consent-holder advise the Council of the specific parts of the Grid Upgrade Project that are not permitted activities, and so subject to this consent.

[2311] In regard to management of the discharge permit, the proposed condition would require that the consent-holder provide the Regional Council

with a construction management plan, containing details of the procedures to be implemented in accordance with the conditions of the consent.

[2312] The proposed conditions prohibit any contaminants entering any water body, or disturbed or cut vegetation soil or debris being able to enter any water body or damaging any waterway.

[2313] The expiry date of this consent is proposed to be set at 35 years from the date of commencement. It is expected the works will be completed by December 2013.

### ***Conditions for Applications 116904, 116902 and 116905***

[2314] Proposed general conditions for the two land-use consents and discharge permit include requirements for submission for approval of a construction management plan to manage in “an integrated and effective manner” the three consents.

[2315] In addition the consent-holder would be required to submit an erosion and sediment control plan consistent with the construction management plan. Further conditions are proposed regarding construction activities, stabilisation and contaminant management.

[2316] The consent-holder would be required to ensure discharges would not result in erosion or scour. In addition, direct discharge to surface waters would be prohibited, with any discharge management structures to be located at least 10 metres from any surface water.

[2317] The proposed conditions would also impose a duty on the consent-holder to protect and manage any known and unknown archaeological sites.

[2318] The consent period sought is 35 years from the date of commencement. In agreement with the other consents, works are expected to be completed by December 2013.

### ***Relevant submissions***

[2319] Regis Park Stage 2 Ltd requested that landscaping be undertaken on Brownhill Road subsequent to underground installation of the cable. Ms McGovern addressed this submission in her evidence, and stated that the evidence of Mr Lister noted that such rehabilitation would be undertaken.

[2320] Vector requested that conditions be placed on the resource consents to the effect that the underground cable route would not adversely affect its infrastructure. Ms McGovern stated in her evidence that she understood Transpower had already commenced discussion with Vector on these concerns.

[2321] The Board finds that the proposed conditions presented to it would be appropriate; and considers whether the resource consents applied for should be granted or refused on the basis that if they are granted, the proposed conditions would be imposed.

## Summary on resource consents

[2322] In summary, in considering the effects and making decisions on the resource consents sought, the Board will, subject to Part 2:

- a) consider the positive effects on the environment of allowing the resource consents
- b) consider the adverse effects on the environment of allowing the resource consents, being significant ecological effects, following the clearance of native vegetation; potential archaeological effects; potential construction effects, including both noise and traffic disturbance generated by the proposed activities; effects on both surface and groundwater; social as well as cultural effects; and the extents to which they are avoided or would be remedied or mitigated by compliance with proposed conditions
- c) consider the nature of any discharge and sensitivity of the receiving environment, and the use of any possible alternatives
- d) have regard to its findings that the proposal would not conflict with the Hauraki Gulf Marine Park Act; the NPS; the New Zealand Coastal Policy Statement; the Auckland and WRPSs; generally conforms with the proposed Auckland Region Air, Land and Water: Sediment Control, and with the Auckland and Waikato Regional Plans
- e) have regard to its findings about the imposition of proposed conditions referred to in paragraphs [2294]–[2318] of the present chapter.

## Endnotes

<sup>1</sup> Transcript 7/10/08, p4.

<sup>2</sup> Transcript 17/07/08, p37.

<sup>3</sup> Transcript 26/06/08, pp2f.

<sup>4</sup> Transcript 9/07/08, p32.

<sup>5</sup> Transcript 9/07/08, p33.

<sup>6</sup> *Stalker v Queenstown Lakes District Council* (Environment Court Decision C040/04), para 14.

<sup>7</sup> Transcript 26/06/08, p52.



## CHAPTER 18: ULTIMATE JUDGEMENTS

[2323] The Board has now to come to its judgements on whether to confirm, modify or withdraw the requirements for designations for the Grid Upgrade Project, and whether to grant or refuse the resource consent applications for ancillary activities.

[2324] In the first section of this chapter, the Board applies sections 6, 7 and 8 of Part 2 of the RMA to the Grid Upgrade proposal, and makes its findings. In the second section, the Board proceeds to make the ultimate judgements on whether the confirming or withdrawing of the requirements for designations, and the granting or refusing of the resource consent applications, would better serve the purpose of the Act described in its section 5.

### Application of Part 2

[2325] A territorial authority's duties to consider the effects on the environment of allowing a requirement, and to have particular regard to the matters in the classes listed in section 171(1); and a consent authority's duty to have regard to the matters in the classes listed in section 104(1), are both subject to Part 2 of the Act. The Board summarised the principles of Part 2 in paragraphs [137]–[141] in Chapter 4 of this report.

[2326] Because the resource consents sought by Transpower are incidental to the Grid Upgrade Project that is the subject of the designation requirements, the Board is able to apply the principles of Part 2 to both the activities that would be permitted by the designations, and to those that would be authorised by the resource consents, as elements of the one proposal.

[2327] In the event of conflict, the directions in sections 6, 7 and 8 override the directions in section 171.<sup>1</sup> They inform and assist the purpose of the Act set out in section 5, being factors in the overall balancing, and not for obscuring the purpose.<sup>2</sup>

### Section 6: Matters of national importance

[2328] Section 6 is titled 'Matters of national importance'. It directs that, in achieving the purpose of the Act, all persons exercising functions and powers under it in relation to managing the use, development, and protection of natural and physical resources, are to recognise and provide for certain specified aims, as matters of national importance.

[2329] As the purpose of the Board's Inquiry is exercising functions and powers related to managing the use, development and protection of natural and physical resources for achieving the purpose of the Act, the Board holds that those duties apply to its functions and powers of deciding the designation requirements and resource consent applications.

[2330] Each of the aims listed in the several paragraphs of section 6 deserves separate consideration.

## **Section 6(a)**

[2331] By section 6(a), decision-makers are to recognise and provide for the preservation of the natural character of (among other things) lakes and rivers and their margins, and the protection of them from inappropriate development.

[2332] Section 6(a) does not have the effect of excluding every use or development that impacts on the natural character of such areas. Whether development is inappropriate is to be judged from the point of view of preserving matters identified as being of national importance.<sup>3</sup>

## **Submissions**

[2333] The South Waikato District Council submitted that the natural character of the Waikato River at Arapuni would be adversely affected by being crossed by the transmission line, with towers on either side and suites of lines draped across, detracting and distracting from the natural character of the river corridor experience.

[2334] Transpower submitted that, in the wider context of the Upgrade Project as a whole, the relevant constituent parts of the project are not inappropriate use and development; and that the Board should take into account the level of the effect (after mitigation), the general suitability of the route for the purpose proposed, and the linear nature and extent of the project as a whole.

## **Evidence**

[2335] Ms Buckland identified that part of the Waikato River as being part of Lake Karapiro. She described the land on the western (true left) bank as having indigenous vegetation and having high natural-character values.

[2336] Ms Buckland presented a photomontage showing a representation of the proposed transmission line; and gave her opinion that the introduction of the transmission line would not preserve the natural character of the lake and its margins and so would be inappropriate.

[2337] It was the evidence of Ms Lucas, consultant landscape architect, that the transmission line route would cross a length of naturally flowing river, with important natural character, above the calm lake waters; and she gave her opinion that the towers and lines at the crossing would detract and distract from, and adversely affect the natural character of the river corridor, and would be inappropriate.

[2338] Mr Collier cited Ms Lucas's evidence and concurred with her opinion that the vicinity of the proposed crossing is an area of high natural character, and that the presence of towers on either side along with suites of lines draped across the river would constitute inappropriate development from which the river deserves protection under section 6(a).

[2339] Mr Lister described the river at the crossing point adjacent to Arapuni as having moderately high degree of natural character; and stated that the natural appearance is influenced by the mixed land-use pattern and the presence of Arapuni township. He considered that Tower 321 would be a

prominent feature near the edge of the escarpment on the south bank, where it would be prominent from the river below and visible in the longer distance views from the north along Lake Karapiro. Mr Lister gave his opinion that the tower on the northern bank (Tower 320) would be less prominent, located at a lower level and further back from the river bank on a terrace, beyond a small plantation and amongst shelterbelts.

[2340] In his evidence, Dr Steven gave his opinions that the natural character of the landscape is already significantly modified by agricultural development; and although natural elements are prominent in the landscape (predominantly exotic trees and pasture grasses), natural patterns, and particularly natural processes, have been modified considerably. He acknowledged that the proposed line would add further unnatural elements in the forms of towers and conductors, and would introduce another linear element in the landscape; but stated that such natural processes as operate in the landscape would not be affected by the proposed line. The witness concluded that overall, some further reduction in natural character would occur.

[2341] Ms Allan gave her opinion that, given the extent of modification of the areas to be affected, the alignment is acceptable, citing the large, regular shelterbelts towards the river. As the tower structures would be set well back from the banks, and the area crossed does not have high natural-character values, she considered the crossing would not be inappropriate.

### ***Consideration***

[2342] Whether the stretch of water that would be crossed by the transmission line some 800 metres north of Arapuni is naturally flowing river or the upper reach of Lake Karapiro, it and its margins have a natural character (although modified) to which section 6(a) applies.

[2343] Although the transmission line towers would be set back from the margins of the river/lake, they would be visible in views of the river/lake; Tower 321, being elevated, would be prominent. The six triplex conductors (and smaller earth and communications lines) would of course pass over the river/lake. The Board finds that the total effect of the line crossing would be to further reduce the natural character of the river/lake and its margins.

[2344] The wording of section 6(a) indicates that not all development in lakes, rivers and their margins that affects their natural character is inappropriate.

[2345] An analysis of what constitutes appropriate development has to take into account section 7 matters.<sup>4</sup> They include the benefits from the use and development of renewable energy,<sup>5</sup> which can only be realised if the energy is transmitted to markets where it is required.

[2346] The extent to which the proposed transmission line crossing would be inappropriate would be reduced somewhat by the towers being set back from the banks, and Tower 320 sited in a more secluded position. Even so, the line crossing would be development that is not related to river/lake; it would further diminish (but not destroy) its natural character and that of its margins; and although it would be part of transmission of renewable energy to market, the Board finds it would be inappropriate development.

**Section 6(b)**

[2347] By section 6(b), decision-makers are to recognise and provide for the protection of outstanding natural features and landscapes from inappropriate development.

**Submissions**

[2348] Federated Farmers submitted that there is an obligation to apply section 6(b) on a national, regional or district basis according to the context, and to identify outstanding natural landscapes accordingly; and that outstanding natural landscapes are not limited to those natural landscapes which are nationally outstanding.

[2349] Transpower submitted that in deciding whether development in outstanding natural landscapes is inappropriate, the level of effect and mitigation proposed should be considered, as well as the suitability of the site and route, and whether the development would result in the values for which the landscape is recognised being irreparably harmed.

**Evidence**

[2350] Ms Allan gave her opinion that the proposal is consistent with section 6(b), in that the alignment avoids traversing outstanding natural features and landscapes in the central part of the North Island and South Auckland; and also given the modified character of the areas that would be affected and the ability of the landscape to absorb the effects.

**Consideration**

[2351] The Board considered the evidence bearing on outstanding natural features and landscapes in Chapter 10, in which it gave its findings that Lake Karapiro and the upper, forested, slopes of Maungatautari are outstanding natural landscapes, and that the proposed overhead line would have considerable adverse effects on those landscape values.

[2352] In accordance with Transpower's submissions, the Board takes into account that the extent of those effects would be reduced by the choice of the route; and possibly also by using monopoles at the Karapiro crossing; and the linear and other requirements for electricity lines considered in selecting the corridor and route; and that its purpose is the transmission of renewable energy to market. Even so, it judges that the development would result in the values for which those landscapes are recognised (particularly Karapiro) being diminished, though not destroyed.

[2353] In summary, the Board finds that in those respects the development would be inappropriate.

**Section 6(c)**

[2354] By section 6(c), decision-makers are to recognise and provide for the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.

**Submissions**

[2355] Transpower acknowledged that this provision focuses on protection,<sup>6</sup> although that is not an absolute concept, and that a reasonable rather than a strict assessment is called for.<sup>7</sup>

[2356] Transpower contended that there are seven areas of locally significant indigenous vegetation and habitat of indigenous fauna along the route of the overhead line; and that although it had not been possible to avoid all such areas, the route avoids ecologically sensitive areas such as wetlands and extensive areas of indigenous forest; and that effects on that vegetation and those habitats would be short-term, and reduced by mitigation measures and natural regenerative processes.

**Evidence**

[2357] In his evidence Mr Beale identified the seven areas that would be affected, and that none is nationally or regionally significant. He also gave his opinion that the project would avoid virtually all areas which are ecologically significant at a local level, and would avoid areas that are recognised as being of ecological significance at a national or regional level.

[2358] Ms Allan gave her opinion that the proposal would be consistent with section 6(c) for generally similar reasons.

**Consideration**

[2359] Accepting the evidence of those expert witnesses, the Board judges that the relatively few areas of significant vegetation and habitat that would be affected in proportion to the length of the route; the need for a linear route; and the proposed mitigation measures; render acceptable, though disappointing, the failure to protect the seven areas and habitats.

**Section 6(d)**

[2360] By section 6(d), decision-makers are to recognise and provide for the maintenance and enhancement of public access to and along lakes and rivers.

**Submissions**

[2361] Transpower submitted that the three crossings of the Waikato River, and the crossing of Lake Maraetai, would not prevent public access to and along their banks; and that the same position would prevail in respect of other creeks and streams that would be crossed by the overhead line, including the Waipa Stream; and by the underground cables, including the Otara Creek.

[2362] No submitter presented any contrary contention.

**Evidence**

[2363] Ms Allan gave evidence that although rivers would be crossed by the overhead line, particularly the Waikato River and the Waipa Stream, those crossings would not reduce existing access to and along those waterways.

### **Consideration**

[2364] There being no contention or evidence to the contrary, the Board finds that the proposed Grid Upgrade Project would not impair public access to and along lakes and rivers.

### **Section 6(e)**

[2365] By section 6(e), decision-makers are to recognise and provide for the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taonga.

### **Consideration**

[2366] The Board addressed this topic in the section of Chapter 13 titled Tāngata whenua issues. Here it addressed the evidence and stated its finding that in the processes of consultation and selecting the proposed routes for the transmission line and underground cables, Transpower had recognised and provided for the relationships of Māori and their culture and traditions with their ancestral lands, waters, sites, wāhi tapu and other taonga.

[2367] The Board finds that the values described in section 6(e) have been appropriately recognised and provided for.

### **Section 6(f)**

[2368] By section 6(f), decision-makers are to recognise and provide for the protection of historic heritage from inappropriate development.

### **Submissions**

[2369] In its submission, the New Zealand Historic Places Trust (NZHPT) raised issues regarding the need to address historic heritage matters.

[2370] At the hearing, the NZHPT joined with Transpower in proposing revised conditions to be imposed on the designations and resource consents involving further study of sites of significance; a protocol for dealing with kōiwi or taonga, sites of significance, wāhi tapu, heritage sites and archaeological sites.

[2371] The NZHPT informed the Board that the concerns it had raised in its submission were addressed by the revised conditions, and it no longer wished to adduce evidence.

[2372] The revised conditions are incorporated in the proposed conditions in the appendixes to this report.

### **Evidence**

[2373] Ms Lucas and Mr Collier both gave evidence asserting that the overhead line route would pass through heritage landscapes.

[2374] In cross-examination, Mr Collier accepted that the landscapes had not been assessed for the purpose of section 6(f), and that he is not a heritage expert.<sup>8</sup> Ms Lucas also agreed in cross-examination that a more in-depth study would be required, and she was not prepared to classify parts of South Waikato as landscapes of national importance.<sup>9</sup>

### **Consideration**

[2375] The Board considers that the testimony of those witnesses does not amount to probative evidence that the proposed route of the overhead line would imperil any historic heritage; and that there is no probative evidence that it would do so.

[2376] The Board considers that if the requirements are confirmed and the resource consents granted on conditions that incorporate those presented by the NZHPT and Transpower, that would appropriately recognise and provide for the protection of historic heritage from inappropriate development.

### **Section 6(g)**

[2377] By section 6(g), decision-makers are to recognise and provide for the protection of recognised customary activities.

[2378] Transpower submitted that there is no recognised customary activity that would be affected by the Grid Upgrade Project.

[2379] No submitter contended otherwise; nor called evidence to the contrary.

[2380] The Board finds that section 6(g) is not applicable in the circumstances.

### **Section 7: Other matters**

[2381] Section 7 directs that, in achieving the purpose of the Act, all persons exercising functions and powers under it in relation to managing the use, development, and protection of natural and physical resources, are to have particular regard to certain specified values.

[2382] Although some of the values listed in the several paragraphs of section 7 may overlap with others to some extent, each deserves separate consideration.

### **Section 7(a): kaitiakitanga**

[2383] By section 7(a), decision-makers are to have particular regard to kaitiakitanga.

### **Submissions**

[2384] Transpower submitted that it had consulted extensively with kaitiaki, and had sought to engage in ongoing relationships with them; and that their views had been taken into account in determining proposed

alignments, and tower placements to avoid marae; and conditions had been proposed to kaitiaki groups to deal with discoveries of kōiwi and taonga.

### **Evidence**

[2385] Ms Allan asserted that the proposed archaeological protocol ensures consistency with section 7(a).

[2386] Mr Mikaere concurred with the assertions of Ms Allan. He considered that the avoidance and mitigation strategies employed by Transpower demonstrated an acceptance of the need for regard to be taken of the kaitiaki obligation.

### **Consideration**

[2387] The Board considered kaitiakitanga in the section of Chapter 13 dealing with tāngata whenua issues.

[2388] Without repeating the contents of that section, the Board finds that Transpower had given particular regard to kaitiakitanga in selecting the corridor and route, and in developing proposed conditions to deal with discoveries of kōiwi and taonga.

### **Section 7(aa): the ethic of stewardship**

[2389] By section 7(aa), decision-makers are to have particular regard to the ethic of stewardship.

### **Submissions**

[2390] Transpower submitted that the Grid Upgrade Project does not raise any significant issue about the ethic of stewardship; and that to allow the project to proceed would be appropriate in terms of that provision.

[2391] No submitter contended otherwise.

### **Evidence**

[2392] Ms Allan asserted that the proposed archaeological protocol ensures consistency with section 7(aa).

[2393] That was not disputed by any submitter, nor contradicted by any witness.

### **Consideration**

[2394] The Board follows the Environment Court decision in *Outstanding Landscape Protection Society v Hastings District Council*.<sup>10</sup> It considers that, comparing the positive and adverse effects of the proposal and having regard to the provisions of the Act and instruments made under it, represents a giving effect to the ethic of stewardship.



**Section 7(b): efficient use and development of resources**

[2395] By section 7(b), decision-makers are to have particular regard to the efficient use and development of natural resources.

***Submissions***

[2396] New Era Energy South Waikato, Drummond Dairy and Scenic Dairies, and the South Waikato District Council submitted that the proposed transmission line would be inconsistent with the efficient use of the soil resources of the Waikato region for farming; and that use of existing infrastructure would combine effects to existing environment already characterised by electricity transmission.

[2397] Transpower submitted that the project provides for efficient use of the land resource by extensively re-using the ARI-PAK corridor, and by seeking to minimise, in the longer term, the total number of lines and corridors. It remarked that there is no existing transmission corridor through much of the South Waikato District that could be used more efficiently; and disputed the contentions that the proposal is inconsistent with efficient use of the soil resources.

***Evidence***

[2398] Mr Collier (who confined his evidence to the South Waikato District) gave evidence that interference with normal farming activities as a result of the construction and presence of the towers would be inconsistent with the efficient use of the land resource; and gave his opinion that, if existing infrastructure is used that would contain effects on the existing environment already characterised by electricity transmission.

[2399] In cross-examination, Mr Collier explained that, from having visited two airstrips, he just had some concerns about how fertiliser is to be applied;<sup>11</sup> and he conceded that for a large part of the district there is no other option but the greenfields route.<sup>12</sup>

***Consideration***

[2400] In Chapter 12 of this report, the Board addressed potential effects of the overhead line on farming activities; and found that although there could be substantial adverse effects, Transpower proposes to avoid, remedy and mitigate those effects in business-like ways; and landowners would have opportunities to propose ways in which adverse affects could be avoided, remedied or mitigated.

[2401] In Chapter 7, the Board stated its finding that adequate consideration had been given to alternative routes (among other things), and that the proposal would conform with section 7 about having particular regard to the efficient use of natural and physical resources.<sup>13</sup>

[2402] In the light of those findings, the limited scope of Mr Collier's knowledge of aerial application of fertiliser, and his acceptance that for a large part of the route through the South Waikato District there is no option of using an existing transmission corridor, the Board does not accept the

submissions that the proposed transmission line would be inconsistent with the efficient use of soil resources for farming, or with the efficient use of existing transmission corridors.

### **Section 7(ba): efficiency of end-use of energy**

[2403] By section 7(ba), decision-makers are to have particular regard to the efficiency of the end-use of energy.

#### ***Submissions***

[2404] Transpower submitted that the efficiency of the end-use of energy is facilitated by the Grid Upgrade Project, which minimises transmission losses.

#### ***Consideration***

[2405] The Board is not persuaded that this submission quite addresses the point of efficient end-use of energy: rather it considers that the end-use of energy is outside the scope of a transmission grid, and is beyond being influenced by however robust and resilient the grid might be. This topic is simply irrelevant to the circumstances of the proposed designations and resource consents.

### **Section 7(c): maintenance and enhancement of amenity values**

[2406] By section 7(c), decision-makers are to have particular regard to the maintenance and enhancement of amenity values.

#### ***Submissions***

[2407] The South Waikato District Council submitted that, particularly in proximity to the line, visual amenity values would not be maintained or enhanced.

[2408] New Era Energy South Waikato submitted that the proposed transmission line would not maintain or enhance amenity values of the South Waikato District; and would adversely affect those values; and that the effects on the environment would not be able to be avoided, remedied or mitigated.

[2409] Drummond Dairy and Scenic Dairies made similar submissions; as did Mr P and Mrs D Dombroski.

[2410] Transpower accepted that the overhead line would have visual impacts; in that sense, amenity values would in some instances not be maintained or enhanced. It submitted the requirement to maintain does not require prevention or prohibition, nor prevent there being some detraction from amenity;<sup>14</sup> and that positive effects or benefits and proposed mitigation are to be taken into account.<sup>15</sup>

**Evidence**

[2411] Ms Lucas gave her opinion that for those living, working, belonging and recreating in this landscape, the sight of large structures would significantly degrade the amenity values of this place.

[2412] Mr Collier gave his opinion that people living next to the line or able to see the line would have reduced amenity values based on the sheer scale of the proposal. He agreed with Ms Lucas that the route traverses a working environment, and that the impact would be greater than and not restricted to those who are able to see the line.

[2413] Ms Allan gave her opinion that visual amenity values would not be maintained and, although attention paid to visual and other environmental impacts in selecting the route and planning mitigation planting ensured that adverse effects would have minimal impact, section 7(c) would not be able to be achieved.

**Consideration**

[2414] In Chapter 10 of this report, the Board stated its findings that there would be significant adverse landscape and visual effects on the environment, in some parts cumulative on effects of existing transmission lines. Those effects would not fully maintain amenity values and the quality of the environment.

[2415] Transpower has had particular regard to those effects, and in the route selection and in its planting proposals, has sought to minimise the adverse effects of the line on landscape and visual amenity values. Although (as Transpower conceded) considerable adverse effects would remain, they cannot be eliminated except by doing without the transmission line. That is a possible outcome of the ultimate judgements the Board has to make.

**Section 7(d): intrinsic values of ecosystems**

[2416] By section 7(d), decision-makers are to have particular regard to the intrinsic values of ecosystems.

**Submissions**

[2417] Transpower submitted that, with the mitigation measures proposed, the Grid Upgrade Project would have little impact on the intrinsic values of ecosystems, and that impacts on indigenous vegetation would be mitigated as described in Mr Beale's evidence.

**Evidence**

[2418] As reported in paragraph [2357] of this chapter, Mr Beale stated that none of the seven areas of indigenous vegetation that would be affected is nationally or regionally significant; and that the project would avoid virtually all areas that are ecologically significant at a local level, and would avoid areas that are recognised as being of ecological significance at a national or regional level. He detailed the mitigation measures proposed.

[2419] Ms Allan addressed this topic and stated that the intrinsic values of ecosystems had been addressed by avoiding valued areas of indigenous bush and wetlands; and that where vegetation has to be removed, mitigation or remedial planting is proposed.

### **Consideration**

[2420] The land-use consent application to Environment Waikato for vegetation clearance and earthworks rendered section 7(d) relevant in regards to the intrinsic value of ecosystems.

[2421] The Board accepts Transpower's submissions, and finds that it has had particular regard to the intrinsic values of ecosystems.

### **Section 7(f): quality of the environment**

[2422] By section 7(f), decision-makers are to have particular regard to the maintenance and enhancement of the quality of the environment.

### **Submissions**

[2423] The South Waikato District Council submitted that the route had been determined by Transpower in a manner that had not paid regard to the maintenance and enhancement of the quality of the environment, but had been driven by the imperative of having the route coincide with the preferred route in the Waipa District. The Council submitted that constructing the line on the proposed route would have demonstrably and unarguably greater adverse effects on the environment in landscape and visual effects than an alternative eastern route.

[2424] New Era Energy South Waikato submitted that the proposed transmission line would not provide for the maintenance or enhancement of the quality of the environment, but would create adverse effects that could not be avoided, remedied or mitigated. Similar submissions were made by Drummond Dairy and Scenic Dairies, and by Mr P and Mrs D Dombroski.

[2425] Transpower accepted that in some respects the quality of the environment would not be maintained by the overhead line, and contended that the choosing of the proposed route had been the result of rigorous application of corridor and route selection processes, by which adverse environmental effects had been avoided and would be mitigated.

### **Evidence**

[2426] Mr Collier stated that the sheer scale of the proposal would result in quality of the receiving environment being significantly reduced.

[2427] In her evidence Ms Allan accepted that in proximity to the line, the visual quality of the environment would be reduced; and remarked that the attention paid to visual impacts in identifying and refining the alignment ensured that it would have minimum impact; and alluded to proposed mitigation planting that, in time, would assist in remedying adverse amenity effects.

**Consideration**

[2428] The Board has found that the proposed overhead line would have significant landscape and visual effects.<sup>16</sup>

[2429] It also finds that Transpower has had particular regard to those effects, and in the route selection and in its planting proposals, has sought to minimise the adverse effects of the line on landscape and visual amenity values; but that the quality of the environment would not be fully maintained. That could not be attained other than by doing without the transmission line, an outcome that would deprive people and communities of significant opportunities to provide for their well-being health, and safety.

**Section 7(g): finite characteristics of resources**

[2430] By section 7(g), decision-makers are to have particular regard to any finite characteristics of natural and physical resources.

**Submissions**

[2431] Transpower submitted that the alignment proposed avoids or mitigates effects on areas with special finite characteristics. It referred in particular to the coal resource that lies under part of the line, in respect of which submissions and evidence had been adduced on behalf of Glencoal Energy and the Stirling family, negotiations with whom had led to presentation to the Board of modifications to the locations of two towers, and on proposed conditions to facilitate open-pit mining of the coal resource.

[2432] Transpower also referred in general to other natural and physical resources having finite characteristics: quarry rock and high-quality soils; and contended that any adverse effects on them would be minor.

**Consideration**

[2433] There being no submissions or evidence to the contrary, the Board accepts that any effect of the Grid Upgrade Project on quarry rock or on high-quality soils would be minor.

[2434] It considers that if the relevant requirement is confirmed, the modifications and conditions proposed by Transpower, Glencoal and the Stirling family would be appropriate. They are incorporated in the proposed conditions in Appendix K.

[2435] The Board's attention was not drawn to any other finite characteristic of natural and physical resources that might be affected by the proposed transmission line.

[2436] The Board finds that Transpower has had particular regard to the only natural or physical resource having finite characteristics of which it is aware.

**Section 7(h): protection of habitat of trout and salmon**

[2437] By section 7(h), decision-makers are to have particular regard to the protection of the habitat of trout and salmon.

[2438] Transpower submitted that where the proposed line would cross waterways, effects on the habitat of trout have been avoided. That was not disputed by any submitter.

[2439] The Board is not aware that there is any habitat of salmon that could be affected by the proposed Grid Upgrade.

[2440] In short, the Board finds that Transpower has had particular regard to the protection of the habitat of trout; and that there is no relevant habitat of salmon.

**Section 7(i): effects of climate change**

[2441] By section 7(i), decision-makers are to have particular regard to the effects of climate change.

[2442] Transpower submitted that the effects of climate change have been integrated into the design of the Grid Upgrade as appropriate, including consideration of potential increases in ambient temperatures and storminess.

[2443] No submitter contested those submissions; nor presented any other argument about other effects of climate change to which regard could or should be had.

[2444] The Board finds that Transpower has had particular regard to the effects of climate change.

**Section 7(j): benefits of renewable energy**

[2445] By section 7(j), decision-makers are to have particular regard to the benefits to be derived from the use and development of renewable energy.

[2446] Transpower submitted that the Grid Upgrade would facilitate the transmission of renewable energy, and in that way maximise the potential benefits to be derived from use and development of it.

[2447] Those submissions were not disputed by any submitter.

[2448] In her evidence Ms Allan gave her opinion that the Grid Upgrade would provide for the efficient transmission of renewable energy, and would support new renewable generation in remote areas, thereby contributing to the benefits to be derived from its use and development.

[2449] The Board finds that, in conformity with section 7(j), Transpower had particular regard to the benefits to be derived from the use and development of renewable energy.

## Section 8: Treaty of Waitangi

[2450] By section 8, all persons exercising functions and powers under the RMA are to take into account the principles of the Treaty of Waitangi.

### **Submissions**

[2451] Transpower submitted that:

- a) it is not a Treaty partner, and section 8 does not impose on it the Treaty obligations of the Crown<sup>17</sup>
- b) section 8 is to be approached broadly, and a detailed articulation of the principles is not necessary nor appropriate<sup>18</sup>
- c) to take a matter into account is to consider it (as far as it is relevant) in making a decision, to weigh it up with the other relevant factors, and give it whatever weight is appropriate in all the circumstances<sup>19</sup>
- d) the section does not elevate that factor above other factors which those responsible for exercising function and powers under the Act are required to consider.<sup>20</sup>

[2452] Transpower contended that although consultation with Māori is not a principle of the Treaty,<sup>21</sup> extensive consultation with tāngata whenua may provide a good indication that decision-makers have taken into account the principles of the Treaty.

[2453] Transpower also contended that the principle of active protection of Māori interests and rangatiratanga may be represented by enabling practical implementation of kaitiakitanga; including its having put in place procedures that would enable active protection of tāngata whenua interests, including protocols and conditions in relation to sites, wāhi tapu and taonga, and discovery of kōiwi. It submitted that nothing in the Grid Upgrade Project is contrary to the principles of the Treaty.

### **Evidence**

[2454] Mr Mikaere gave his opinion that principles of partnership, active protection of rangatiratanga, and mutual benefit apply. As a result of the extensive consultation employed, the witness considered that the principle of partnership had been upheld. In addition he considered that consultation had also been instrumental in the active protection of rangatiratanga, in that by seeking out and identifying the affected tāngata whenua, Transpower had protected the rangatiratanga of the Māori parties involved.

[2455] Ms Allan gave her opinion that the requirements of that section had been met in that:

- a) Transpower had engaged in extensive consultation with tāngata whenua
- b) in selecting the route and alignment, land owned by Māori under statutory or traditional arrangements, and known sites of significance to Māori had, by careful identification, been avoided

- c) protocols for disturbance of sites, and for accidental discovery of new sites, kōiwi and taonga are proposed.

[2456] No submitter disputed those submissions.

### **Consideration**

[2457] The Board accepts that Transpower's submissions, summarised in paragraphs [2451]–[2453], correctly state the law on the application of section 8.

[2458] The Board accepts the evidence of Mr Mikaere and Ms Allan summarised in paragraphs [2454] and [2455], and finds that in the ways described, the relevant principles of the Treaty have been respected in the Grid Upgrade Project.

### **Summary of application of sections 6, 7 and 8**

[2459] In summary, having applied the provisions of sections 6, 7 and 8, the Board has found that the proposed overhead line would not fully provide for the protection from inappropriate development of the natural character of the lake/river and its margins at the crossing site north of Arapuni; nor of the outstanding natural landscapes at the crossing of Lake Karapiro and Maungatautari; and that more generally the landscape and visual effects would not fully maintain amenity values and the quality of the environment along the route.

### **Ultimate judgements**

[2460] Sections 6, 7 and 8 are ancillary to section 5 in the sense of assisting in making judgements whether allowing a plan or proposal would more fully promote sustainable management (as described in section 5(2)) of natural and physical resources, rather than disallowing it. Having applied sections 6, 7 and 8, the Board has now to make such judgements in respect of the Grid Upgrade that would be authorised by the designation requirements and resource consents.

[2461] As mentioned in Chapter 4,<sup>22</sup> application of section 5 involves a broad judgement on whether a proposal promotes sustainable management of natural and physical resources, allowing a comparison of conflicting considerations, their scale or degree, and their relative significance or proportion in the final outcome.

[2462] The preservation of natural character and other aims of sections 6, 7 and 8 are not to be achieved at all costs. Questions of national importance, national value and benefit, and national needs, must all play their part in the overall consideration and decision.<sup>23</sup>

### **Submissions**

[2463] The South Waikato District Council contended that the proposal would not achieve the sole purpose of the RMA as it will result in adverse



effects which cannot be avoided, remedied or mitigated. In particular the Council asserted that the proposal would not enable the people and community of South Waikato to provide for their social, economic and cultural well-being (citing landscape, visual and amenity effects); and that it would not be possible to adequately avoid, remedy or mitigate the adverse effects on the environment.

[2464] The Hunua and Paparimu Valley Residents Association accepted that the sustainable management of resources includes provision of a robust and adequate electricity supply. The Association also noted that the natural and physical resources to be managed include the landscape of the Hunua and Paparimu Valley, and that section 5(2)(c) requires the avoidance, remedying or mitigating of any adverse effects of activities on the environment, including that landscape.

[2465] The Association contended that the intensity of adverse effects that would be experienced in the Hunua and Paparimu Valley is a function of the number of people who live there, and the extent to which the transmission line would cause additional adverse effects that would accumulate with those of existing lines there.

[2466] The Association also contended that the Grid Upgrade involves development at an inappropriate rate, as the 400-kV capability would not be needed for 25 years, if at all.

[2467] New Era Energy South Waikato contended that the requirement is contrary to the promotion of sustainable management of natural and physical resources because it would create adverse effects that cannot be avoided, remedied or mitigated; it would not enable the local community to provide for their social, economic and cultural well-being (citing landscape, visual and amenity effects, potential liability, and constraints on use of land); it would not sustain the potential to meet reasonably foreseeable needs of future generations, in that the lines would permanently occupy productive farm land; and would not sufficiently avoid, remedy or mitigate adverse environmental effects on rural and residential amenity values, asserting that visual impacts would not be able to be mitigated, and there would be adverse farming effects.

[2468] The Hunua and Paparimu Valley Residents Association submitted that the requirement conflicts with Part 2, as it would allow adverse effects that cannot be avoided, remedied or mitigated; and as the merits of the requirement cannot override Part 2 matters, and are fundamental to the RMA, the requirement should be cancelled, and the resource consents declined.

[2469] Mr P and Mrs D Dombroski, Mr E J Mackay, Drummond Dairy and Scenic Dairies made similar submissions.

[2470] Orini Downs Station contended that allowing the requirement would have adverse economic impacts from disruption to operation of the farm and quarry, including future operation and expansion, impacts that would not necessarily be fully met by a one-off payment of compensation.

[2471] Transpower disputed the submissions that the proposal would not achieve the purpose of the Act because it would result in adverse effects that

cannot be avoided, remedied or mitigated. It contended that the fact that a project would have adverse effects that cannot be avoided, remedied or mitigated does not mean that the sustainable management purpose would not be met. Rather, those effects are to be included in making the broad judgement whether the proposal, considered overall, would promote sustainable management as defined.

[2472] Transpower also contested Orini Downs Station's claims of economic effects, observing that there was no evidence that any liability or economic effect would not be recompensed.

[2473] Transpower submitted that when all matters are weighed, the Grid Upgrade Project is consistent with Part 2 and in accordance with the purpose of promoting sustainable management of natural and physical resources. In particular, it contended that the Upgrade Project would enable it to provide for national, regional and local well-being, health and safety, and for the economic and cultural well-being of the community, while avoiding, remedying and mitigating adverse effects on the environment, and meeting the other requirements of section 5(2).

[2474] Transpower contended that the Upgrade Project would sustain the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; that it would not offend the life-supporting capacity of air and other ecosystems; and that adverse effects would be avoided, remedied and mitigated appropriately to the extent practical in the circumstances.

[2475] It submitted that matters of national importance have to be weighed alongside the fact that the Upgrade Project has been identified by the call-in process as being a matter of national significance: not to override the sustainable management purpose of the Act, but indicative that matters identified in section 6 as being of national importance may be balanced with a particular project that is of national significance.

### **Consideration**

[2476] The Board first addresses the dispute over whether the proposal would conflict with Part 2 and would not achieve the purpose stated in section 5 because it would have adverse environmental effects that would not be able to be avoided, remedied or mitigated. Two questions arise: Are the submitters' contentions based on the correct interpretation of section 5? And: Would the adverse effects in fact be avoided, remedied or mitigated?

[2477] On the question of interpretation, the Board accepts Transpower's submission. The Board holds that section 5 does not require that all adverse effects on the environment be fully avoided, remedied or mitigated. Rather, as Transpower submitted, the extent to which adverse effects would not be avoided, remedied or mitigated is to be included in making the judgement whether allowing the proposal would more fully promote sustainable management of natural and physical resources rather than disallowing it.

[2478] On the question of fact, the Board's findings on the evidence are that, although there would be: significant adverse landscape and visual effects;

disappointing clearance of vegetation and habitat; potential adverse social effects; potential disruption to land management and farming activities, and potential effects on free use of public roads – those effects would be avoided, remedied and mitigated to some extent, even though not to the extent that they would be fully eliminated.

[2479] It is what may be described as the residual effects, those that would not be eliminated by avoidance, remediation or mitigation, that are to be brought into the judgement process.

[2480] The Board now addresses the submissions to the effect that the proposal would not enable people or communities to provide for their social, economic and cultural well-being. The reasons given for those submissions are the landscape, visual and amenity effects; potential liability; and constraints on use of land.

[2481] The Board does not accept that the environmental effects listed should be taken into account in support of the proposition. Those effects (to the extent that they are not avoided, remedied or mitigated) are to be brought into the judgement process directly as such. It is not necessary to count them again as indirect grounds for the disenabling submissions.

[2482] The constraints on land use and potential liability arguments are matters that the Board has concluded are outside the scope of its Inquiry.<sup>24</sup>

[2483] Next, the Board addresses the contention that the Grid Upgrade Project involves development at an inappropriate rate.

[2484] As noted in Chapter 4, the Board has a duty to apply the NPS. The objective of that instrument includes the establishment of new transmission resources to meet the needs of present and future generations. Policy 13 includes recognising that the designation process can facilitate long-term planning for the development of electricity transmission infrastructure.

[2485] In the same chapter, the Board reported that Transpower is obliged to comply with the Government Policy Statement, clause 71 of which mandates grid reliability and resilience.

[2486] The Board also referred in Chapter 4 to Section III of Part F of the Electricity Governance Rules 2003, Rule 4.3 of which prescribes that grid reliability standards are to take into account that transmission investments are long-lived assets and require a long-term planning perspective; and should reflect the public interest in reasonable stability in planning having regard to the long-term nature of investment in transmission assets.

[2487] Those instruments informed the opinions given in evidence by Mr Boyle who (as noted in Chapter 3) considered it likely that the Huntly coal-fired plant would no longer be used for baseload generation; and consequently that the proposed transmission line would be changed to operate at 400 kV earlier than forecast, and in any event by 2039.

[2488] Bearing in mind the life of transmission assets, and the themes of the applicable instruments of long-term planning and reliability of the grid, it is the Board's judgement that developing the transmission line so it is capable

of being converted to operate at 400 kV in future does not represent development at an inappropriate rate.

[2489] The argument that needs of future generations would not be sustained due to the line permanently occupying farm land is fragile. The Board addressed the effects of the transmission line on farming in Chapter 12. Although some farming activities would be restricted within the designation boundaries (such as trees and buildings), livestock de-pasturing would be permitted even under the towers; and although cropping would not be, the Board accepts Mr Hall's opinion that the extent of land excluded from cropping under the towers would be minor.

[2490] In so far as Orini Downs Station identifies that it would be disenabled from providing for its economic well-being (and that of people dependent on it), that might be a component in negotiating a price for granting Transpower entry on, or an easement over, its land. The Board has given its reasons in Chapter 16 for holding that the adequacy of compensation is beyond the scope of its Inquiry.

[2491] On Transpower's submission on matters of national importance, the Board accepts that where relevant, questions of national importance, national value and benefit, and national needs, are to be considered; as are the reasons given by the Minister for calling in the Grid Upgrade proposal.<sup>25</sup>

### ***Judgements for statutory purpose***

[2492] The Board has now to come to the evaluative judgement on whether the single purpose of the RMA, promoting the sustainable management of natural and physical resources, would be more fully achieved by confirming the requirements and granting the resource consents, or by withdrawing (that is, cancelling) the requirements and refusing the resource consents. That judgement is to be made by applying the findings made in Chapter 17 on the relevant considerations to the explanation in section 5(2) of the term sustainable management.

### ***Positive effects and benefits***

[2493] The Grid Upgrade Project would provide, instead of the 7-decade-old ARI-PAK A line operating at 110 kV, a new transmission line to operate at 220 kV having capability of operating at 400 kV with a design capacity of 2700 MVA per circuit. Its positive effects and benefits would be to:

- a) facilitate efficient transmission of energy, minimising transmission losses, from Whakamaru to south Auckland
- b) facilitate transmission of electrical energy from renewable sources in the central North Island to the major market
- c) make up a predicted deficiency of reliable supply of electrical energy to Auckland at times of peak demand
- d) support reliability and resilience of the grid so that it would be capable of supplying projected needs for more than three decades
- e) maximise the use of the line corridor, avoiding proliferation of lines and corridors.

[2494] In general, the proposal would be consistent with the NPS. It would contribute to achieving the objective by establishing new transmission resources to meet the needs of present and future generations. It would give effect to Policy 1 of providing for the national, regional and local benefits of sustainable, secure and efficient electricity transmission, and provide benefits of improved security of supply of electricity with reduced transmission losses; and facilitate development of renewable generation. It would also give effect to Policy 2 by providing for upgrading and development of the electricity transmission network.

[2495] However, although the proposal would manage adverse environmental effects, significant adverse landscape and visual effects (in particular on outstanding landscapes and areas of high natural character), and in some parts cumulative on those of existing lines, would not be fully avoided, remedied or mitigated.

[2496] In general the proposal would serve the relevant provisions of the Auckland and Waikato regional policy statements, being supportive of ensuring a reliable and secure supply of electricity with sufficient capacity to meet current and future demand, and efficient in transmission of energy. However, adverse landscape and visual effects, including cumulative effects, would not be fully avoided.

[2497] Most of the district plans contain important objectives and policies about protection of landscape and amenity values, to which the proposal would not fully give effect or support. The proposal would not meet the policies of the Waikato District Plan about underground cabling either. In other respects, the proposal would generally conform with the district plans.

[2498] In Chapter 8, the Board found that the proposed work is reasonably necessary for achieving Transpower's objectives. The Board considers that a reliable and resilient national grid is a national need, and benefit; and so the proposed upgrading of the grid is a project of national, as well as regional, significance. It finds that the Grid Upgrade Project, and in particular the new transmission line, would:

- a) represent managing the use and development for natural and physical resources in a way, and at a rate that would enable people and communities to provide for their social, economic and cultural well-being and for their health and safety
- b) sustain the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations living and working in Auckland for a sufficient and reliable electricity supply
- c) in many respects avoid, remedy and mitigate adverse effects on the environment
- d) avoid adverse effects and disbenefits.

#### *Adverse Effects*

[2499] The proposal would have actual and potential adverse effects on the environment.

[2500] The actual effects would be the considerable landscape and visual effects on amenity values (including natural character) that (even after avoidance, remediation and mitigation) would result from the scale and shape of the steel lattice towers and the triplex conductors. In particular, there are outstanding landscape areas and areas of high natural character that would be affected to some extent, and which to that extent would not be entirely protected from inappropriate development. In some parts of the line, those considerable effects would be cumulative on similar effects of existing transmission lines.

[2501] To the extent to which the proposal would not fully protect the natural character of lakes and rivers and their margins, and outstanding natural landscapes, from inappropriate development, it would fail to meet the directions of section 6(a) and (b). Those are directions of national importance.

[2502] To the extent that it would have significant residual adverse landscape and visual effects, including cumulative effects, the proposal would fail to meet directions of the ARPS, and most of the district plans.

[2503] There would be disappointing clearances of indigenous vegetation and habitat of indigenous fauna, even though none is nationally or regionally significant.

[2504] There would also be potential social effects. These would be variable in severity, and may abate over time; but they may be significant effects, and the potential for them occurring is to be considered.

[2505] There could also be substantial adverse effects on management of land for farming and other business activities; and that potential has also to be considered. There is a potential, too, for free use of public roads to be interrupted.

#### *Conflicting considerations*

[2506] The positive effects and benefits mentioned in paragraphs [2493]–[2498] are respects in which the Grid Upgrade Project would promote the sustainable management of natural and physical resources; and the residual adverse effects mentioned in paragraphs [2499]–[2505] are respects in which it would not. These are conflicting considerations, and the Board has to compare them according to their scale or degree and their relative significance or proportion in the final outcome.

[2507] There is uncertainty about the level of the potential social effects, and also about the level of potential effects on land management and on use of public roads. The degree of them may vary according to circumstances, and may abate over time. In any event, those effects are not categorised as being of national importance. The Board has concluded that the clearances of indigenous vegetation and habitats of indigenous fauna are acceptable, although disappointing. So in coming to a judgement whether the proposal, being itself of national importance, would promote sustainable management even though it could have those effects, the Board judges that the potential for those adverse effects would not have significance or importance in the

final outcome equivalent to the significance of the national and regional need for, and benefit of, the Grid being upgraded as proposed.

[2508] Protection from inappropriate development of the natural character of the lake/river and its margins at the crossing site north of Arapuni, and of the outstanding natural landscapes at the crossing at Lake Karapiro and of Maungatautari, are qualified as being of national importance. Yet even though the protection of them from inappropriate development is to be recognised and provided for, that is not an absolute goal to be achieved at all costs.

[2509] The extent to which the proposal would not provide for protection of them is regrettable. In comparing those deficiencies with the positive effects of the proposal, the Board takes notice of the extent to which, by systematic and professional route selection, and by use of monopoles near the Lake Karapiro crossing, Transpower has done what it could to avoid greater potential effects, to mitigate the effects, and to remedy them. The Board recognises that in practice, transmission lines having the capacity required need to be of such a scale that they cannot be hidden. Adverse landscape and visual effects are unavoidable.

[2510] The Board has applied the statutory test to the consideration given to alternative methods and routes, and found that they were adequately considered. So the crossings of the lake and river (which are to be protected from inappropriate development) are also unavoidable, although regrettable.

[2511] Therefore, the Board judges that the national importance of protecting the natural character of the lake/river and its margins, and the outstanding natural landscapes, from inappropriate development, does not have such significance in the final outcome as to be equivalent to the national and regional need for, and benefit of, the Grid Upgrade Project.

[2512] The adverse landscape and visual effects on the environment along the route of the overhead line would be considerable, by no means insignificant, and in some parts cumulative. Amenity values, and the quality of the environment, along the route would not be fully maintained. The Board does not abase the value of the environments that would be adversely affected.

[2513] However, when compared in proportion to the national need and benefit of the Grid Upgrade Project, the Board judges that the significance of those considerable adverse effects on the environment would not be equivalent to the national and regional need for, and benefit of, the Grid Upgrade Project.

[2514] The Board has considered each class of adverse effect separately. They should also be considered collectively in comparison with the positive effects and benefit of the Grid Upgrade Project.

[2515] That involves evaluating together the inappropriate development at the lake/river crossings and Maungatautari, from which they are to be protected as matters of national importance; the considerable adverse landscape and visual effects (some cumulative), along the route of the overhead line; the potential social effects; the clearance of indigenous

vegetation and habitat; the potential adverse effects on land management; and potential interruptions to free use of public roads.

[2516] The Board has to compare the significance of those adverse effects, taken together, with the significance of the national and regional need for, and benefit of, the Grid Upgrade Project. In evaluating the Grid Upgrade, the Board gives effect to the way and rate in which the proposal would enable people and communities to provide for their social, economic and cultural well-being and for their health and safety; to the meeting of reasonably foreseeable needs of future generations; and to the many respects in which the project has been designed to avoid, remedy and mitigate adverse effects on the environment (although, in the result, not all adverse effects have been eliminated).

[2517] The ultimate criterion is whether allowing or declining the designation requirements and resource consents for the Grid Upgrade Project would more fully achieve the sustainable management purpose of the Act. On that criterion, the Board judges that allowing the Grid Upgrade Project, even with its failures of full protection from inappropriate development, and its considerable actual and potential adverse effects, would more fully achieve the sustainable management purpose described in section 5 than would declining it. It follows that the requirements should be confirmed, and the resource consents granted, in each case subject to the proposed conditions.

## Endnotes

- <sup>1</sup> *McGuire v Hastings District Council*, [2002] 2 NZLR 577; [2001] NZRMA 557; 8 ELRNZ 14 (PC), para 22.
- <sup>2</sup> *Ngati Rangī Trust v Manawatu-Wanganui Regional Council* (Environment Court Decision A067/04), para [67].
- <sup>3</sup> *NZ Rail v Marlborough District Council* [1994] NZRMA 70 HC pp [85f.]
- <sup>4</sup> *Genesis Power v Franklin District Council* [2005] NZRMA 541, paras [219]f
- <sup>5</sup> RMA s7(j).
- <sup>6</sup> *Minister of Conservation v Hutt City Council* (Environment Court Decision W013/03).
- <sup>7</sup> *Environmental Defence Society v Mangonui County Council* [1989] 3 NZLR 257 (CA) 260.
- <sup>8</sup> Transcript 7/10/08, pp5f.
- <sup>9</sup> Transcript 6/10/08, pp24f.
- <sup>10</sup> [2008] NZRMA, 8 para [88].
- <sup>11</sup> Transcript 7/10/08, p4.
- <sup>12</sup> Transcript 7/10/08, p6.
- <sup>13</sup> Chap 7, para [655].
- <sup>14</sup> *Port Otāgo v Dunedin City Council* (Environment Court Decision C004/02) paras 41f
- <sup>15</sup> *Elderslie Park v Timaru District Council* [1995] NZRMA 433 (HC) p444.
- <sup>16</sup> Chapter 10 para [1218].
- <sup>17</sup> *Hanton v Auckland City Council* [1994] NZRMA 289, 301.
- <sup>18</sup> *Waikanae Christian Holiday Camp v Kapiti Coast District Council* (HC Wellington CIV-2003-485-1764 27/10/04 MacKenzie J) para [110].
- <sup>19</sup> *Bleakley v Environmental Risk Management Authority* [2001] 3 NZLR 213, para [72].



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- <sup>20</sup> *Carter Holt Harvey v Te Runanga o Tuwharetoa ki Kawerau* [2003] 2 NZLR 349; 9 ELRNZ 182; para [25].
- <sup>21</sup> *New Zealand Māori Council v Attorney-General* [1987] 1 NZLR 642, 665 line 5.
- <sup>22</sup> Chapter 4, paragraphs [136] and [162].
- <sup>23</sup> *New Zealand Rail v Marlborough District Council* [1994] NZRMA 70 (HC) 86.
- <sup>24</sup> Chap 16, paras [1830] – [1832]; and [1821] – [1823] and [1886] – [1888] respectively.
- <sup>25</sup> RMA, s147(4)(b)(ii).

## **Chapter 19: Determinations**

[2518] The Board, having made the judgement that allowing the Grid Upgrade Project would more fully achieve the promotion of sustainable management of natural and physical resources than would declining it, makes the following determinations confirming the requirements (with certain modifications), granting resource consents, and imposing conditions.

### **Decisions on Requirements for Designations**

[2519] The decision on each requirement is set out on the following pages.

## Pakuranga Substation

[2520] The requirement for a designation for the Pakuranga Substation in the Manukau City District Plan is confirmed on the terms and subject to the conditions set out below.

### Description of works

[2521] The designation is for the ongoing use, maintenance and operation of the Pakuranga Substation, the development of the substation site as part of the upper North Island Grid Upgrade Project, involving the replacement, operation and maintenance of the existing substation and the construction of a new 220-kV substation, installation of 220-kV underground cable circuits and associated works, and works associated with other upgrade projects, and ancillary activities.

[2522] The nature of the works is described more particularly in Part III (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### Land subject to the designation

[2523] The designation applies to the land shown in “Figure 1 Pakuranga Substation Designation” being page 3 of Part III of the Notices of Requirement Documentation (dated April 2007) and listed in table 1.

**Table 1: Legal description of land parcels for Pakuranga Substation**

Parcel ID	Legal Description	Title	Local Authority
4989690	Pt Lot 1 DP 143331	NA102B/365 (Part Cancelled)	Manukau City
5065543	Lot 2 DP 167430	NA102B/365	Manukau City
4829154	Lot 146 DP 168165	NA102B/365	Manukau City
4999945	Lot 77 DP 168324	NA102B/738	Manukau City
4789305	Lot 81 DP 168324	NA102B/742	Manukau City
4787645	Lot 82 DP 168324	NA102B/743	Manukau City

### Lapse

[2524] The designation shall not lapse for a period of 15 years after incorporation in the Manukau City District Plan.

### Conditions

[2525] The designation is subject to the conditions set out in Appendix C.

## Otahuhu Substation

[2526] The requirement for a designation for the Otahuhu Substation in the Manukau City District Plan is confirmed on the terms and subject to the conditions set out below.

### Description of works

[2527] The designation is for the operation, maintenance and upgrade of the existing Otahuhu Substation, the construction of a new 200-kV substation, installation of 220-kV underground cable circuits, and associated works as part of the upper North Island Grid Upgrade Project, works associated with other upgrade projects, and ancillary activities.

[2528] The nature of the works is described more particularly in Part IV (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### Land subject to the designation

[2529] The designation applies to the land shown in “Figure 1 Otahuhu Substation Designation” being page 3 of Part IV of the Notices of Requirement Documentation (dated April 2007) and listed in table 2.

**Table 2: Legal description of land parcels for Otahuhu Substation**

Parcel ID	Legal Description	Title	Local Authority
4813915	Lot 1 DP 201385	NA130A/437	Manukau City Council
5074739	Lot 1 DP 204791	NA133B/131	Manukau City Council

### Lapse

[2530] The designation shall not lapse for a period of 15 years after incorporation in the Manukau City District Plan.

### Conditions

[2531] The designation is subject to the conditions set out in Appendix D.

## Brownhill Substation

[2532] The requirement for a designation for the Brownhill Substation in the Manukau City District Plan is confirmed on the terms and subject to the conditions set out below.

### Description of works

[2533] The designation is for the construction, operation and maintenance of a transition station to connect the underground cable and overhead lines section of the upper North Island Grid Upgrade Project, including Tower 5 of the overhead line and additional support structures, and parts of the underground cables connecting with Pakuranga and Otahuhu Substations. Other works included in the designation on a staged basis are a 220-kV Gas-Insulated Switchgear (GIS) switching station and a 400-kV GIS substation and associated works as part of the upper North Island Grid Upgrade Project, and ancillary activities.

[2534] The nature of the works is described more particularly in Part V (excluding section 13 in relation to suggested conditions), and also in Parts II and X, of the Notices of Requirement Documentation (dated April 2007).

### Land subject to the designation

[2535] The designation applies to the land shown in “Figure 1: Brownhill Substation Location and Area Included in Notice of Requirement” being page 2 of Part V of the Notices of Requirement Documentation (dated April 2007) and listed in table 3.

**Table 3: Legal description of land parcels for Brownhill Substation**

Parcel ID	Legal Description	Title	Local Authority
6652025	Lot 3 DP 325254	101698	Manukau City Council
6653637	Lot 1 DP 209513	NA 137B/806	Manukau City Council

### Lapse

[2536] The designation shall not lapse for a period of 15 years after incorporation in the Manukau City District Plan.

### Conditions

[2537] The designation is subject to the conditions set out in Appendix E.

## Whakamaru and Whakamaru North Substation

[2538] The requirement for a designation for the Whakamaru and Whakamaru North Substation in the Taupo District Plan is confirmed on the terms and subject to the conditions set out below.

### Description of works

[2539] The designation is for the construction, operation and maintenance of a new 220-kV substation and other components at the existing Whakamaru Substation and a new 400-kV substation, on a staged basis as part of the upper North Island Grid Upgrade Project, including Tower 429 of the overhead line and additional support structures, works associated with other upgrade projects, and overhead line connections within the designated area, and ancillary activities, and the operation, maintenance and upgrade of the existing 220-kV lines which traverse the site and the existing substation infrastructure at the existing site.

[2540] The nature of the work is described more particularly in Part IX (excluding section 13 in relation to suggested conditions), and also in Parts II and X, of the Notices of Requirement Documentation (dated April 2007).

### Land subject to the designation

[2541] The designation applies to the land shown in “Figure 1: Whakamaru and Whakamaru North Substation Location and Area included in the Notice of Requirement” being page 2 of Part IX of the Notices of Requirement Documentation (dated April 2007) and listed in table 4.

**Table 4: Legal descriptions of land parcels for Whakamaru and Whakamaru North Substations**

Parcel ID	Legal Description	Title	Local Authority
4258518	Pt Sec 81 Blk X Whakamaru SD	SA49D/197	Taupo District Council
4497328	Lot 3 DP 42222	SA49D/197	Taupo District Council
4556493	Sec 96 Blk X Whakamaru SD	SA40B/482	Taupo District Council
4412557	Lot 2 DPS 42222	SA38A/898	Taupo District Council
4343101	Lot 1 DPS 42222	SA38A/897	Taupo District Council
4432468	Sec 83 Blk X Whakamaru SD	SA48C/485	Taupo District Council
4484426	Pt Pouakani 1 Blk	SA51A/452 (Part Cancelled)	Taupo District Council
4468920	Sec 1 SO 59577	SA 53A/111	Taupo District Council

### Lapse

[2542] The designation shall not lapse for a period of 15 years after incorporation in the Taupo District Plan.

### Conditions

[2543] The designation is subject to the conditions set out in Appendix F.

## **Pakuranga to Brownhill Underground Cable Route**

[2544] The requirement for a designation for the Pakuranga to Brownhill underground cable route in the Manukau City District Plan is confirmed on the terms and subject to the conditions set out below.

### **Description of works**

[2545] The designation is for the construction, operation and maintenance of a double-circuit underground 220-kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Pakuranga Substation and the substation site at Brownhill Road, and ancillary activities.

[2546] The nature of the work is described more particularly in Part VI (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### **Land subject to the designation**

[2547] The designation applies to the land shown in Maps 8–12 in Appendix V and listed in table 5.

### **Lapse**

[2548] The designation shall not lapse for a period of 15 years after incorporation in the Manukau City District Plan.

### **Conditions**

[2549] The designation is subject to the conditions set out in Appendix G.

**Table 5: Legal descriptions of land parcels for Pakuranga to Brownhill Underground Cable route**

Parcel ID	Legal Description	Title	Local Authority
4733188	Sec 1 SO 68292	439205	Manukau City Council
4945249	Pt Lot 12 DP 169911	NA103C/752 (Part Cancelled)	Manukau City Council
5219998	Ti Rakau Drive	Legal Road	Manukau City Council
5181948	Lot 2 DP 189283	NA119B/178	Manukau City Council
6597271	Lot 1 DP 312445 DP 316651 (Unit Titles)	82580 (Supplementary Record Sheet)	Manukau City Council
5050439	Lot 182 DP 180655	NA111D/377	Manukau City Council
4919112	Lot 182 DP 180654	NA111D/356	Manukau City Council
5260962	Guys Road	Legal Road	Manukau City Council
5045088	Lot 3 DP 192219	NA 121D/425	Manukau City Council
5261289	Te Koha Road	Legal Road	Manukau City Council
5261291, 5264569	5264087, 5264572, 6720378, Ti Irirangi Drive	Legal Road	Manukau City Council
5260907	Franco Lane	Legal Road	Manukau City Council
5260911, 5260676, 5260678	Aclare Place	Legal Road	Manukau City Council
5260676, 5260681, 5260683, 5260687	Armoy Drive	Legal Road	Manukau City Council
5261005	Drive/Chapel Road	Legal Road	Manukau City Council
5233051, 5251023,	5236295, 5236298, 5248198, 5260181, 5260292	Maghera Drive	Legal Road
5236292	Macnean Drive	Legal Road	Manukau City Council
5260304, 5260397	Mulroy Place	Legal Road	Manukau City Council
4937811	Lot 1001 DP 192648	NAI22C/21	Manukau City Council



Parcel ID	Legal Description	Title	Local Authority
5260832	Kilkenny Drive	Legal Road	Manukau City Council
5260575, 5260679, 5260590	5260581, 5261354, 5260593, 5263074, 5260594, 5263077	Moyrus Crescent Legal Road	Manukau City Council
5263075, 4940693	6603043 Lot 1 DP 197985	Dunvegan Rise NA127A/222	Legal Road Manukau City Council
6911204	Lot 29 DP 374495	300505	Manukau City Council
4921894	Lot 471 DP 207703	NA136B/30	Manukau City Council
5086035	Lot 472 DP 207703	331764	Manukau City Council
4818127	Lot 2 DP 97587	NA 53B/48	Manukau City Council
4818130	Lot 6 DP 179398	NA110C/751	Manukau City Council
4956506	Lot 2 DP 203233	NA 131A/419	Manukau City Council
5065892	Pt Lot 1 DP 64803	NA52B/1019	Manukau City Council
5252243, 5215085, 5247732,	5237375 5222800, 5252256,	Point View Drive Caldwells Road	Legal Road Manukau City Council
5215085	5226902, 5257232 5227265	Mangemangeroa Stream	Manukau City Council
5260198, 5237201	5220420, Whitford Park Road	5259600 Sandstone Road	Legal Road Manukau City Council
5217143, 5217143	5258742 Turanga Creek	Brownhill Road	Legal Road Manukau City Council
			Manukau City Council

## **Brownhill to Otahuhu Underground Cable Route**

[2550] The requirement for a designation for the Brownhill to Otahuhu underground cable route in the Manukau City District Plan is confirmed on the terms and subject to the conditions set out below.

### **Description of works**

[2551] The designation is for the construction, operation and maintenance of a double-circuit underground 220-kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the substation site at Brownhill Road, and ancillary activities.

[2552] The nature of the work is described more particularly in Part VII (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### **Land that is subject to the designation**

[2553] The designation applies to the land shown in Maps 24–30 in Appendix V and listed in table 6.

### **Lapse**

[2554] The designation shall not lapse for a period of 15 years after incorporation in the Manukau City District Plan.

### **Conditions**

[2555] The designation is subject to the conditions set out in Appendix H.

**Table 6: Legal descriptions of land parcels for Brownhill to Otahuhu Underground Cable route**

Parcel ID	Legal Description	Title	Local Authority
5074724	Lot 38 DP 122457	NA71B/162	Manukau City Council
4817570	Lot 39 DP 122457	NA71B/163	Manukau City Council
5213395	Kaitawa Street	Legal Road	Manukau City Council
5168529	Lot 44 DP 122457	NA71B/168	Manukau City Council
4701869	Lot 45 DP 122457	NA71B/169	Manukau City Council
5220406, 5229707, 5234114, 5234115, 5242071, 5245483, 5247685	Gilbert Road	Legal Road	Manukau City Council
5253250	Intersection Gilbert/Otara Road	Legal Road	Manukau City Council
5211477, 5253250, 5243048	Alexander Crescent	Legal Road	Manukau City Council
5209287, 5217576, 5235744, 5245975, 5259209	Franklyne Road	Legal Road	Manukau City Council
5166299	Lot 185 DP 50993	NA2110/99 (Part Cancelled)	Manukau City Council
4755221	Allot 355 Parish of Manurewa	NA14B/273	Manukau City Council
5099005	Part Old Bed Otara Creek	NZG 1972/774	Manukau City Council
5267324	Otara Creek		Manukau City Council
4808525	Lot 279 DP 50344	NZG 1965/1016	Manukau City Council
5206109, 5215068, 5248339, 5228620, 5237621, 5250436, 5256686, 5208934, 5245707, 5210416, 5247445, 5213926, 5247449, 5214856, 5247453	Johnstones Road	Legal Road	Manukau City Council
5214767 5258386	East Tamaki Road	Legal Road	Manukau City Council
4722804	Lot 1 DP 205294	NA132C/358	Manukau City Council
5226343	Paper Road	Legal Road	Manukau City Council
5086497	Lot 26 DP 615	NA47C/774	Manukau City Council

Parcel ID	Legal Description	Title	Local Authority
6637360	Lot 28 DP 317068	67024	Manukau City Council
6576300	Sec 3 SO 70224	47991	Manukau City Council
5212610, 5218779, 5263414 6755102 6868736 6868737	Stancombe Road	Legal Road	Manukau City Council
6576299	Sec 2 SO 70224	47991	Manukau City Council
5263413 6576298	Intersection Stancombe/Te Irirangi Drive	Legal Road	Manukau City Council
6755107	Lot 2 DP 348822	209513	Manukau City Council
6755110	Lot 5 DP 348822	200393	Manukau City Council
6755102	Accent Drive	Legal Road	Manukau City Council
5247056 5237233 5218750	Intersection Chapel Road/Stancombe Road	Legal Road	Manukau City Council
6910678	Lot 1 DP 370733	286612	Manukau City Council
5263064	Intersection Stancombe/Murphys Road	Legal Road	Manukau City Council
5208695, 5225858, 5244805	Jeffs Road	Legal Road	Manukau City Council
4843013	Sec 1 SO 68877	NA115D/873	Manukau City Council
5088794	Sec 2 SO 68877	NA115D/800	Manukau City Council
4860015	Lot 1 DP 168092	NA115D/873	Manukau City Council
5208692 5208693 5216198 5257455, 5257462, 5259600 7060314	Ormiston Road	Legal Road	Manukau City Council
4903717	Lot 2 DP 182255	NA113B/938	Manukau City Council
5263387	Regis Lane	Legal Road	Manukau City Council
6841781	Redoubt Road	Legal Road	Manukau City Council
6841785	Lot 81 DP 353601	219067	Manukau City Council

## **Overhead Line in Manukau City**

[2556] The requirement for a designation for the Overhead Line in the Manukau City District Plan comprising Route Sections 1–3, Towers 6–33 is confirmed on the terms and subject to the conditions set out below.

### **Description of works**

[2557] The designation is for the construction, operation and maintenance of that part of a 400-kV-capable transmission line which is within the Manukau City, to convey electricity between the Brownhill Substation site and the Whakamaru and Whakamaru North Substations site in Taupo District, and ancillary activities.

[2558] The nature of the work is described more particularly in Part VIII (excluding section 24 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### **Land subject to the designation**

[2559] The designation applies to the land shown on Maps 40–44 in Appendix V and listed in table 7.

### **Lapse**

[2560] The designation shall not lapse for a period of 15 years after incorporation in the Manukau City District Plan.

### **Conditions**

[2561] The designation is subject to the conditions set out in Appendix I.

**Table 7: Legal descriptions of land parcels for the Overhead Line within Manukau City**

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
5-6	77.36		6653637	Lot 1 DP 209513	NA137B/806(Live)	Standard	Manukau City Council
5-6	77.36	5	6652025	Lot 3 DP 325254	101698 (Live)	Standard	Manukau City Council
5-6	77.36		6652024	Lot 2 DP 325254	101697 (Live)	Standard	Manukau City Council
5-6	77.36	6	5102734	Lot 2 DP 209513	NA137B/807 (Live)	Standard	Manukau City Council
6-7	65.00	6	5102734	Lot 2 DP 209513	NA137B/807 (Live)	Standard	Manukau City Council
7-7A	65.00	7	5102734	Lot 2 DP 209513	NA137B/807 (Live)	Standard	Manukau City Council
7-7A	65.00	7A	5191154	Lot 1 DP 176537	NA137B/807 (Live)	Standard	Manukau City Council
7A-8	65.00	7A	5191154	Lot 1 DP 176537	NA137B/807 (Live)	Standard	Manukau City Council
7A-8	65.00	8	5195879	Lot 1 DP 195884	NA 125A/19 (Live)	Standard	Manukau City Council
8-9	65.00	8	5195879	Lot 1 DP 195884	NA 125A/19 (Live)	Standard	Manukau City Council
9-10	65.00	9	5195879	Lot 1 DP 195884	NA 125A/19 (Live)	Standard	Manukau City Council
10-11	65.68	10	5195879	Lot 1 DP 195884	NA 125A/19 (Live)	Standard	Manukau City Council
11-12	80.66	11	5195879	Lot 1 DP 195884	NA 125A/19 (Live)	Standard	Manukau City Council
11-12	80.66		5195893	Lot 1 DP 146072	NA86C/593 (Live)	Standard	Manukau City Council
11-12	80.66	12	4739837	Pt Lot 2 DP 10040	NA55A/1158 (Live)	Standard	Manukau City Council
11-12	80.66		4938154	Lot 1 DP 111461	NA62D/271 (Live)	Standard	Manukau City Council
11-12	80.66		4938162	Lot 3 DP 146072	NA 125A/19 (Live), NA86C/593 (Live)	Standard	Manukau City Council
11-12	80.66		6666211	Lot 2 DP 328163	114752 (Live)	Standard	Manukau City Council
11-12	80.66		5217146	Brookby Road	Legal Road by AP 394396/19	Road/Rail	Manukau City Council
12-13	65.00	12	4739837	Pt Lot 2 DP 10040	NA55A/1158 (Live)	Standard	Manukau City Council
12-13	65.00	13	4938134	Lot 1 DP 103034	NA56D/585 (Live)	Standard	Manukau City Council
13-13A	70.38		4739837	Pt Lot 2 DP 10040	NA55A/1158 (Live)	Standard	Manukau City Council
13-13A	70.38	13	4938134	Lot 1 DP 103034	NA56D/585 (Live)	Standard	Manukau City Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
13–13A	70.38		4991912	Pt Lot 1 Deeds Plan 218	NA752/225 (Live)	Standard	Manukau City Council
13–13A	70.38		5216214	Twilight Road	Legal Road by A394396/19	Road/Rail	Manukau City Council
13–13A	70.38		4799544	Lot 4 DP 169254	NA103A/888 (Live)	Standard	Manukau City Council
13–13A	70.38	13A	5056266	Lot 3 DP 169254	NA103A/887 (Live)	Standard	Manukau City Council
13A–14	73.54	13A	5056266	Lot 3 DP 169254	NA103A/887 (Live)	Standard	Manukau City Council
13A–14	73.54	14	5143646	Lot 2 DP 153991	NA92A/375 (Live)	Standard	Manukau City Council
14–15	65.00	14	5143646	Lot 2 DP 153991	NA92A/375 (Live)	Standard	Manukau City Council
15–16AB	112.46	15	5143646	Lot 2 DP 153991	NA92A/375 (Live)	Standard	Manukau City Council
16AB–17	124.56	16A	4744364	Pt Lot 1 DP 73462	NA29C/180 (Part Cancelled)	Standard	Manukau City Council
16AB–17	124.56		4760999	Lot 1 DP 153991	NA92A/374 (Live)	Standard	Manukau City Council
15–16AB	112.46	16B	4744364	Pt Lot 1 DP 73462	NA29C/180 (Part Cancelled)	Standard	Manukau City Council
15–16AB	112.46		4760999	Lot 1 DP 153991	NA92A/374 (Live)	Standard	Manukau City Council
16AB–17	124.56	17	5200628	Pt Allot 24 Parish of Wairoa	NA768/78 (Part Cancelled)	Standard	Manukau City Council
17–18	65.00	17	5200628	Pt Allot 24 Parish of Wairoa	NA768/78 (Part Cancelled)	Standard	Manukau City Council
17–18	65.00	18	5071700	Lot 4 DP 142829	372708	Standard	Manukau City Council
17–18	65.00		5064832	Lot 3 DP 149875	NA89B/123 (Live)	Standard	Manukau City Council
18–19	67.00	18	5071700	Lot 4 DP 142829	372708	Standard	Manukau City Council
18–19	67.00		5213853	Section 1 SO 68169	3727708	Standard	Manukau City Council
18–19	67.00	19	4726881	Lot 4 DP 149875	NA89B/124 (Live)	Standard	Manukau City Council
18–19	67.00		4814568	Lot 5 DP 142829	372708	Standard	Manukau City Council
19–20	68.70	19	4726881	Lot 4 DP 149875	NA89B/124 (Live)	Standard	Manukau City Council
19–20	68.70	20	4789484	Lot 3 DP 203599	NA132B/63 (Live)	Standard	Manukau City Council
19–20	68.70		4814252	Lot 2 DP 153296	NA91C/55 (Live)	Standard	Manukau City Council
20–21	67.52	20	4789484	Lot 3 DP 203599	NA132B/63 (Live)	Standard	Manukau City Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
20-21	67.52	21	4814253	Lot 2 DP 203599	NA132B/62 (Live)	Standard	Manukau City Council
20-21	67.52		5071381	Lot 1 DP 203599	NA132B/61 (Live)	Standard	Manukau City Council
21-22	65.00		4995096	Lot 2 DP 33575	NA871/254 (Live)	Standard	Manukau City Council
21-22	65.00	21	4814253	Lot 2 DP 203599	NA132B/62 (Live)	Standard	Manukau City Council
21-22	65.00		5071381	Lot 1 DP 203599	NA132B/61 (Live)	Standard	Manukau City Council
21-22	65.00		6809304	Lot 1 DP 142829	NA84C/802(Live)	Standard	Manukau City Council
21-22	65.00		5217346	West Road	Legal Road	Road/Rail	Manukau City Council
21-22	65.00	22	4870472	Pt Allot 2 Parish of Wairoa	NA579/265 (Part Cancelled)	Standard	Manukau City Council
21-22	65.00		4756637	Lot 2 DP 10437	NA871/254 (Live)	Standard	Manukau City Council
22-23	65.00	22	4870472	Pt Allot 2 Parish of Wairoa	NA579/265 (Part Cancelled)	Standard	Manukau City Council
22-23	65.00		5239649	Papakura-Clevedon Road	Legal Road	Road/Rail	Manukau City Council
22-23	65.00		5201869	Lot 3 DP 142381	NA116C/615 (Live)	Standard	Manukau City Council
22-23	65.00	23	5203387	Lot 1 DP 142381	NA84B/870 (Live)	Standard	Manukau City Council
22-23	65.00		5265199	Pt Bed Taitaia Stream DI 10A/325		Hydro	Manukau City Council
23-23A	65.00	23	5203387	Lot 1 DP 142381	NA84B/870 (Live)	Standard	Manukau City Council
23-23A	65.00		5265199	Pt Bed Taitaia Stream DI 10A/325		Hydro	Manukau City Council
23-23A	65.00	23A	5201869	Lot 3 DP 142381	NA116C/615 (Live)	Standard	Manukau City Council
23A-24	65.00	23A	5201869	Lot 3 DP 142381	NA116C/615 (Live)	Standard	Manukau City Council
23A-24	65.00	24	5003195	Pt Allot 21 Parish of Wairoa	NA48C/657 (Live)	Standard	Manukau City Council
24-25	65.00	24	5003195	Pt Allot 21 Parish of Wairoa	NA48C/657 (Live)	Standard	Manukau City Council
25-26	65.00	25	5003195	Pt Allot 21 Parish of Wairoa	NA48C/657 (Live)	Standard	Manukau City Council
25-26	65.00	26	5022068	Lot 2 DP 390056	361421	Standard	Manukau City Council
26-27	66.44	26	5022068	Lot 3 DP 390056	361422	Standard	Manukau City Council



Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
26–27	66.44	27	6635230	Lot 2 DP 322443	89574 (Live)	Standard	Manukau City Council
26–27	66.44		4833386	Lot 1 DP 154672	NA92B/764 (Live)	Standard	Manukau City Council
26–27	66.44		5212735	Tourist Road	Legal Road	Road/Rail	Manukau City Council
27–28	67.10	27	6635230	Lot 2 DP 322443	89574 (Live)	Standard	Manukau City Council
28–29	71.46		4833256	Lot 2 DP 182505	NA113C/715 (Live)	Standard	Manukau City Council
28–29	71.46	28	6635230	Lot 2 DP 322443	89574 (Live)	Standard	Manukau City Council
29–30	69.92		4827852	Pt Allot 145 Parish of Hunua	NA578/161 (Live)	Standard	Manukau City Council
29–30	69.92	29	6635230	Lot 2 DP 322443	89574 (Live)	Standard	Manukau City Council
29–30	69.92		4898738	Pt Lot 1 DP 60835	NA45A1/150 (Live)	Standard	Manukau City Council
29–30	69.92		4961220	Lot 1 DP 62602	NA19C/1234 (Live)	Standard	Manukau City Council
29–30	69.92	30	4997375	Lot 1 DP 157726	124285 (Live)	Standard	Manukau City Council
29–30	69.92		5215293	Monument Road	Legal Road A394396/43	Road/Rail	Manukau City Council
30–31	94.56	30	4997375	Lot 1 DP 157726	124285 (Live)	Standard	Manukau City Council
30–31	94.56	31	6694703	Lot 1 DP 330262	124285 (Live)	Standard	Manukau City Council
31–32	65.00	31	6694703	Lot 1 DP 330262	124285 (Live)	Standard	Manukau City Council
31–32	65.00	32	5018258	Allot 147 Parish of Hunua	NA105D/121 (Live)	Standard	Manukau City Council
32–33	72.40	32	5018258	Allot 147 Parish of Hunua	NA105D/121 (Live)	Standard	Manukau City Council
32–33	72.40	33	4798141	Lot 1 DP 157302	NA94C/87 (Live)	Standard	Manukau City Council
33–33A	65.00	33	4798141	Lot 1 DP 157302	NA94C/87 (Live)	Standard	Manukau City Council
33–33A	65.00		5213437	Highridge Road	Legal Road	Road/Rail	Manukau City (border)

## **Overhead Line in Franklin District**

[2562] The requirement for a designation for the Overhead Line in the Franklin District Plan comprising Route Sections 4–6, Towers 33A–81 is confirmed on the terms and subject to the conditions set out below.

### **Description of works**

[2563] The designation is for the construction, operation and maintenance of that part of a 400-kV-capable transmission line which is within the Franklin District, to convey electricity between the Brownhill Substation site at 149 Brownhill Road in Manukau City and the Whakamaru and Whakamaru North Substations in Taupo District, as part of the upper North Island Grid Upgrade Project, and ancillary activities.

[2564] The nature of the work is described more particularly in Part VII (excluding section 24 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### **Land subject to the designation**

[2565] The designation applies to the land shown on Maps 44–52 in Appendix V and listed in table 8.

### **Lapse**

[2566] The designation shall not lapse for a period of 15 years after incorporation in the Franklin District Plan.

### **Conditions**

[2567] The designation is subject to the conditions set out in Appendix J.

**Table 8: Legal descriptions of land parcels for the Overhead Line within Franklin District**

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
33–33A	65.00		5213437	Highridge Road	Legal Road	Road/Rail	Manukau City border
33–33A	65.00		5151463	Lot 2 DP 90235	NA47B/919 (Live)	Standard	Franklin District Council
33–33A	65.0	33A	4747274	Lot 2 DP 192322	NA122A/543 (Live)	Standard	Franklin District Council
33–33A	65.0		5158118	Lot 2 DP 155447	NA92D/524 (Live)	Standard	Franklin District Council
33–33A	65.0		5227558	Sky High Road	Legal Road	Road/Rail	Franklin District Council
33A–34	65.0	33A	4747274	Lot 2 DP 192322	NA 122N543 (Live)	Standard	Franklin District Council
33A–34	65.0		5158118	Lot 2 DP 155447	NA92D/524 (Live)	Standard	Franklin District Council
33A–34	65.0		5227558	Sky High Road	Legal Road	Road/Rail	Franklin District Council
33A–34	65.00	34	6913890	Lot 9 DP 375298	303056 (Live)	Standard	Franklin District Council
34–35	81.30	34	6913890	Lot 9 DP 375298	303056 (Live)	Standard	Franklin District Council
34–35	81.30		5140104	Pt Allot 155 Parish of Hunua	NA578/170 (Live)	Standard	Franklin District Council
34–35	81.30	35	4892145	Pt Allot 156 Parish of Hunua	NA35A/1389	Standard	Franklin District Council
34–35	81.30	35	4762181	Pt Allot 156 Parish of Hunua	NA578/170 (Live)	Standard	Franklin District Council
34–35	81.30		4756397	Pt Allot 155 Parish of Hunua	NA35A/1388 (Live)	Standard	Franklin District Council
35–36	65.00	35	4892145	Pt Allot 156 Parish of Hunua	NA35A/1389	Standard	Franklin District Council
35–36	65.00	36	4756397	Pt Allot 155 Parish of Hunua	NA35A/1388 (Live)	Standard	Franklin District Council
36–37	90.66	36	4892145	Pt Allot 156 Parish of Hunua	NA35A/1389	Standard	Franklin District Council
36–37	90.66	36	4756397	Pt Allot 155 Parish of Hunua	NA35A/1388 (Live)	Standard	Franklin District Council
36–37	90.66		5265327	Hunua Stream	AMF to NA35A/1388 and 334939	Hydro	Franklin District Council
36–37	90.66	37	4909332	Lot 1 DP 98276	NA53C/389 (Live)	Standard	Franklin District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
36-37	90.66		4765343	Lot 2 DP 383851	334939	Standard	Franklin District Council
36-37	90.66		4764166	Lot 1 DP 120924	NA70B/110 (Live)	Standard	Franklin District Council
36-37	90.66		4760951	Lot 2 DP 383851	334949	Standard	Franklin District Council
36-37	90.66		5236508	Sky High Road	Legal Road	Road/Rail	Franklin District Council
37-38	86.02		5181355	Lot 2 DP 120924	NA70B/111 (Live)	Standard	Franklin District Council
37-38	86.02		5155131	Lot 2 DP 98276	NA53C/390 (Live)	Standard	Franklin District Council
37-38	86.02	37	4909332	Lot 1 DP 98276	NA53C/389 (Live)	Standard	Franklin District Council
37-38	86.02		4764166	Lot 1 DP 120924	NA70B/110 (Live)	Standard	Franklin District Council
37-38	86.02	38	5192382	Part DP 13436	NA334/106 (Part Cancelled)	Standard	Franklin District Council
37-38	86.02		5232658	Jollie Road	Legal Road	Road/Rail	Franklin District Council
38-39	65.70	38	5192382	Part DP 13436	NA334/106 (Part Cancelled)	Standard	Franklin District Council
39-39A	65.00		4794052	Parish of Hunua	NA350/233 (Live)	Standard	Franklin District Council
39-39A	65.00		5110641	Part DP 13436	NA334/106 (Part Cancelled)	Standard	Franklin District Council
39-39A	65.00		5039654	Part DP 13436	NA334/106 (Part Cancelled)	Standard	Franklin District Council
39-39A	65.00		5214773	Falls Road	Legal Road	Road/Rail	Franklin District Council
39-39A	65.00	39	5192382	Part DP 13436	NA334/106 (Part Cancelled)	Standard	Franklin District Council
39-39A	65.00		6870066	Lot 2 DP 370403	285288 (Live)	Standard	Franklin District Council
39-39A	65.00	39A	6870065	Lot 1 DP 370403	285287 (Live)	Standard	Franklin District Council
39A-40	66.64		6870066	Lot 2 DP 370403	285288 (Live)	Standard	Franklin District Council
39A-40	66.64	39A	6870065	Lot 1 DP 370403	285287 (Live)	Standard	Franklin District Council
39A-40	66.64	40	4859395	Lot 6 DP 120523	NA69D/326 (Live)	Standard	Franklin District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
40-41	65.00	40	4859395	Lot 6 DP 120523	NA69D/326 (Live)	Standard	Franklin District Council
40-41	65.00		5185681	Lot 7 DP 120523	NA69D/324 (Live), NA69D/323 (Live), NA69D/325 (Live), NA69D/326 (Live)	Standard	Franklin District Council
40-41	65.00	41	4747882	Lot 4 DP 120523	NA69D/324 (Live)	Standard	Franklin District Council
40-41	65.00	41	4791902	Lot 3 DP 120523	NA69D/323 (Live)	Standard	Franklin District Council
41-42	65.00	41	4747882	Lot 4 DP 120523	NA69D/324 (Live)	Standard	Franklin District Council
41-42	65.00	41	4791902	Lot 3 DP 120523	NA69D/323 (Live)	Standard	Franklin District Council
41-42	65.00		5037939	Lot 1 DP 181600	NA112A/66 (Live)	Standard	Franklin District Council
41-42	65.00		6749963	Lot 3 DP 347436	194952 (Live)	Standard	Franklin District Council
41-42	65.00	42	4914430	Lot 2 DP 135571	NA79D/981 (Live)	Standard	Franklin District Council
41-42	65.00		5062340	Lot 2 DP 137723	NA81C/522 (Live)	Standard	Franklin District Council
42-43	99.54		6749963	Lot 3 DP 347436	194952 (Live)	Standard	Franklin District Council
42-43	99.54	42	4914430	Lot 2 DP 135571	NA79D/981 (Live)	Standard	Franklin District Council
42-43	99.54		4726690	Lot 6 DP 135571	NA79D/980 (Live)	Standard	Franklin District Council
42-43	99.54		4821911	Pt Allot 52 Parish of Hunua	NA372/31 (Part Cancelled)	Standard	Franklin District Council
42-43	99.54	43	4811801	Lot 2 DP 182315	NA113C/188 (Live)	Standard	Franklin District Council
42-43	99.54		5128535	Pt Lot 1 DP 14602	NA372/31	Standard	Franklin District Council
42-43	99.54		4803110	Lot 5 DP 135571	NA79D/980 (Live), NA79D/981 (Live), NA79D/982 (Live)	Standard	Franklin District Council
42-43	99.54		4801232	Lot 1 DP 135571	NA79D/980 (Live)	Standard	Franklin District Council
42-43	99.54		5235233	Hunua Road	Legal Road	Road/Rail	Franklin District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
43-44	76.80	43	4811801	Lot 2 DP 182315	NA1130C/188 (Live)	Standard	Franklin District Council
43-44	76.80	44	5198088	Lot 8 DP 200484	NA133C/642 (Live)	Standard	Franklin District Council
43-44	76.80		5068800	Lot 4 DP 105171	NA58A/172 (Live)	Standard	Franklin District Council
43-44	76.80	44	5068796	Allot 50D Parish of Hunua	NA90D/3	Standard	Franklin District Council
44-45	99.12	44	5198088	Lot 8 DP 200484	NA133C/642 (Live)	Standard	Franklin District Council
44-45	99.12		5069100	Lot 11 DP 200484	NA133C/642 (Live)	Standard	Franklin District Council
44-45	99.12	44	5068796	Allot 50D Parish of Hunua	NA90D/3	Standard	Franklin District Council
44-45	99.12	45	4940054	Lot 7 DP 197582	NAI26D/370 (Live)	Standard	Franklin District Council
45-46	65.00		4811766	Lot 1 DP 84999	NA41B/486 (Live)	Standard	Franklin District Council
45-46	65.00	45	4940054	Lot 7 DP 197582	NA126D/370 (Live)	Standard	Franklin District Council
45-46	65.00	46	4692558	Lot 1 DP 204853	NA133C/420 (Live)	Standard	Franklin District Council
46-47	101.70	46	4692558	Lot 1 DP 204853	NA133C/420 (Live)	Standard	Franklin District Council
46-47	101.70		4746598	Sec 1 SO 64526	NA86D/673 (Live)	Standard	Franklin District Council
46-47	101.70	47	5193205	Pt Allot 96 Parish of Opaheke	NA78D/527(Live)	Standard	Franklin District Council
46-47	101.70		5132105	Pt Allot 96 Parish of Opaheke	NA78D/527(Live)	Standard	Franklin District Council
46-47	101.70		5213027	Road	Legal road	Road/Rail	Franklin District Council
46-47	101.70		5266523	Mangawheau Stream	AMF to NA133C/420 7 NA78D/527	Hydro	Franklin District Council
47-48	67.82	47	5193205	Pt Allot 96 Parish of Opaheke	NA78D/527(Live)	Standard	Franklin District Council
47-48	67.82		5047815	Lot 2 DP 140864	NA83C/636 (Live)	Standard	Franklin District Council
47-48	67.82		4759028	Lot 3 DP 140864	NA83C/637 (Live)	Standard	Franklin District Council
48-49	72.38	48	5193205	Pt Allot 96 Parish of Opaheke	NA78D/527(Live)	Standard	Franklin District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
48–49	72.38		5207236	Gelling Road	Legal Road	Road/Rail	Franklin District Council
48–49	72.38		5058974	Pt Allot 96 Parish of Opaheke	NA78D/527(Live)	Standard	Franklin District Council
48–49	72.38		5208904	Nairn Road	Legal Road	Road/Rail	Franklin District Council
48–49	72.38	49	4744541	Lot 1 DP 127133	NA74A/910 (Live)	Standard	Franklin District Council
48–49	72.38		4712216	Lot 2 DP 127133	NA74A/911 (Live)	Standard	Franklin District Council
49–50	69.44	49	4744541	Lot 1 DP 127133	NA74A/910 (Live)	Standard	Franklin District Council
49–50	69.44		4969236	Lot 3 DP 127133	NA74A/912 (Live)	Standard	Franklin District Council
49–50	69.44		4712216	Lot 2 DP 127133	NA74A/911 (Live)	Standard	Franklin District Council
49–50	69.44		4769751	Lot 6 DP 127134	NA74A/917 (Live)	Standard	Franklin District Council
49–50	69.44	50	4712217	Lot 5 DP 127133	NA74A/914 (Live)	Standard	Franklin District Council
49–50	69.44		5098134	Lot 4 DP 127133	NA74A/913 (Live)	Standard	Franklin District Council
50–51	84.62		4769751	Lot 6 DP 127134	NA74A/917 (Live)	Standard	Franklin District Council
50–51	84.62	50	4712217	Lot 5 DP 127133	NA74A/914 (Live)	Standard	Franklin District Council
50–51	84.62	51	5020073	Lot 2 DP 141886	NA84A/853 (Live)	Standard	Franklin District Council
51–52	65.00	51	5020073	Lot 2 DP 141886	NA84A/853 (Live)	Standard	Franklin District Council
51–52	65.00		4946679	Pt Allot 126 Parish of Opaheke	NA21B/1131 (Live)	Standard	Franklin District Council
51–52	65.00	52	4760624	Lot 9 DP 138548	NA82A/426 (Live)	Standard	Franklin District Council
51–52	65.00		5217037	Road	Legal road	Road/Rail	Franklin District Council
52–53	74.26	52	4760624	Lot 9 DP 138548	NA82A/426 (Live)	Standard	Franklin District Council
52–53	74.26		5217037	Road	Legal road	Road/Rail	Franklin District Council
52–53	74.26		5061621	Lot 8 DP 163302	NA98C/52 (Live)	Standard	Franklin District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
52-53	74.26	53	4785175	Pt Allot 203 Parish of Opaheke	NA1029/145 (Live)	Standard	Franklin District Council
53-54	65.00	53	4785175	Pt Allot 203 Parish of Opaheke	NA1029/145 (Live)	Standard	Franklin District Council
54-54A	65.94	54	4785175	Pt Allot 203 Parish of Opaheke	NA1029/145 (Live)	Standard	Franklin District Council
54-54A	65.94	54A	5068182	Pt Allot 93 Parish of Opaheke	NA88C/329 (Live)	Standard	Franklin District Council
54-54A	65.94		5215321	Road	Legal Road	Road/Rail	Franklin District Council
54A-55	68.10	54A	5068182	Pt Allot 93 Parish of Opaheke	NA88C/329 (Live)	Standard	Franklin District Council
54A-55	68.10	55	5135254	Lot 1 DP 10319	NA26B/993 (Part-Cancelled)	Standard	Franklin District Council
54A-55	68.10		4926532	Pt Allot 93 Parish of Opaheke	NA88C/329 (Live)	Standard	Franklin District Council
55-56	68.10	55	5135254	Lot 1 DP 10319	NA26B/993 (Part-Cancelled)	Standard	Franklin District Council
55-56	68.10		5186153	Lot 2 DP 127091	NA74A/767 (Live)	Standard	Franklin District Council
55-56	68.10	56	4918171	Lot 1 DP 127091	NA74A/766 (Live)	Standard	Franklin District Council
55-56	68.10		5212061	Ararimu Road	Legal Road - formed	Road/Rail	Franklin District Council
56-57	97.54		5186153	Lot 2 DP 127091	NA74A/767 (Live)	Standard	Franklin District Council
56-57	97.54	56	4918171	Lot 1 DP 127091	NA74A/766 (Live)	Standard	Franklin District Council
56-57	97.54	57	4805783	Part Lot 2 DP 77813	NA89C/580 (Live)	Standard	Franklin District Council
57-58	65.00	57	4805783	Part Lot 2 DP 77813	NA89C/580 (Live)	Standard	Franklin District Council
57-58	65.00		5228134	Road	Legal Road - unformed	Road/Rail	Franklin District Council
57-58	65.00		4755097	Lot 8 DP 7824	NA51C/159 (Live)	Standard	Franklin District Council
57-58	65.00	58	5174554	Lot 2 DP 391823	368355	Standard	Franklin District Council
58-59	99.86		4755097	Lot 8 DP 7824	NA51C/159 (Live)	Standard	Franklin District Council
58-59	99.86	58	5174554	Lot 2 DP 391823	368355	Standard	Franklin District Council



Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
58–59	99.86	59	5004212	Lot 9 DP 7824	NA51C/159 (Live)	Standard	Franklin District Council
59–60	65.64	59	5004212	Lot 9 DP 7824	NA51C/159 (Live)	Standard	Franklin District Council
59–60	65.64	60	4771739	Lot 10 DP 7824	NA51C/159 (Live)	Standard	Franklin District Council
60–61	68.56	60	4771739	Lot 10 DP 7824	NA51C/159 (Live)	Standard	Franklin District Council
60–61	68.56		6613340	Lot 4 DP 314889	58790 (Live)	Standard	Franklin District Council
60–61	68.56		5225789	Paparimu Road	Legal Road by Proc 3097?	Road/Rail	Franklin District Council
60–61	68.56	61	4928333	Pt Lot 1 DP 11430	NA1623/2 (Live)	Standard	Franklin District Council
61–62	65.00	61	4928333	Pt Lot 1 DP 11430	NA1623/2 (Live)	Standard	Franklin District Council
61–62	65.00	62	5077504	Lot 3 DP 11430	NA1623/2 (Live)	Standard	Franklin District Council
62–63	65.58	62	5077504	Lot 3 DP 11430	NA1623/2 (Live)	Standard	Franklin District Council
62–63	65.58	63	5156794	Lot 11 DP 7824	NA307/121 (Live)	Standard	Franklin District Council
63–63A	65.00		5048875	Lot 1 DP 17702	NA49C/313 (Live)	Standard	Franklin District Council
63–63A	65.00	63	5156794	Lot 11 DP 7824	NA307/121 (Live)	Standard	Franklin District Council
63–63A	65.00		5239030	Matheson Road	Legal Road by Crown Grant	Road/Rail	Franklin District Council
63–63A	65.00	63A	5090227	Allot 114 Parish of Otau	NA683/66 (Live)	Standard	Franklin District Council
63A–64	65.64	63A	5090227	Allot 114 Parish of Otau	NA683/66 (Live)	Standard	Franklin District Council
63A–64	65.64	64	4741701	Pt Allot 138 Otau Parish	NA51B/529 (Live)	Standard	Franklin District Council
63A–64	65.64		4919989	Allot 135 Otau Parish	NA942/68 (Live)	Standard	Franklin District Council
64–65	65.00	64	4741701	Pt Allot 138 Parish of Otau	NA51B/529 (Live)	Standard	Franklin District Council
65–66	96.36	65	4741701	Pt Allot 138 Parish of Otau	NA51B/529 (Live)	Standard	Franklin District Council
65–66	96.36		5086410	Lot 2 DP 189967	NA119C/787 (Live)	Standard	Franklin District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
65–66	96.36	66	4701590	Allot 106 Parish of Otau	NA245/249 (Live)	Standard	Franklin District Council
66–67	69.56	66	4701590	Allot 106 Parish of Otau	NA245/249 (Live)	Standard	Franklin District Council
67–68	74.98	67	4701590	Allot 106 Parish of Otau	NA245/249 (Live)	Standard	Franklin District Council
67–68	74.98		4855899	Allot 65 Parish of Otau	NA47/121 (Live)	Standard	Franklin District Council
67–68	74.98		5107672	Lot 1 DP 52908	NA5A/1105 (Live)	Standard	Franklin District Council
67–68	74.98	69	4976671	Pt Allot 1 Parish of Otau	NA47C/1449 (Live)	Standard	Franklin District Council
69–70	110.72	69	4976671	Pt Allot 1 Parish of Otau	NA47C/1449 (Live)	Standard	Franklin District Council
69–70	110.72		5143044	Pt Allot 36 Parish of Otau	NA47C/1449 (Live)	Standard	Franklin District Council
69–70	110.72		5264987	Mangatawhiri Stream	AMF to NA47C/1449	Hydro	Franklin District Council
69–70	110.72	70	4730148	Section 51 Parish of Otau	NA2D/866 (Live)	Standard Franklin District	Franklin District Council
69–70	110.72		6695233	Pt Allot 36 Parish of Otau	NA760/32 (Live)	Standard Franklin District	Franklin District Council
69–70	110.72		6695234	Pt Allot 36 Parish of Otau	NA35A/56 (Live)	Standard Franklin District	Franklin District Council
69–70	110.72		5206483	Lyons Road	Legal Road by Crown Grant	Road/Rail	Franklin District Council
70–71	65.00	70	4730148	Section 51 Parish of Otau	NA2D/866 (Live)	Standard	Franklin District Council
70–71	65.00		5206483	Lyons Road	Legal Road by Crown Grant	Road/Rail	Franklin District Council
70–71	65.00	71	4715653	Allot 73 Parish of Otau	NA75C/693 (Live)	Standard Franklin District	Franklin District Council
71–72	65.00	71	4715653	Allot 73 Parish of Otau	NA75C/693 (Live)	Standard Franklin District	Franklin District Council
71–72	65.00	72	4763790	Pt Lot 1 DP 40497	NA64D/879 (Live)	Standard	Franklin District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
72-73	65.00	72	4763790	Pt Lot 1 DP 40497	NA64D/879 (Live)	Standard	Franklin District Council
73-74	123.44	73	4763790	Pt Lot 1 DP 40497	NA64D/879 (Live)	Standard	Franklin District Council
73-74	123.44		5148372	Pt Lot 2 DP 40497	NA5C/1351 (Live)	Standard	Franklin District Council
73-74	123.44	74	4753948	Lot 3 DP 40497	NA1079/134 (Live)	Standard	Franklin District Council
74-75	65.00	74	4753948	Lot 3 DP 40497	NA1079/134 (Live)	Standard	Franklin District Council
74-75	65.00		4697689	Pt Allot 186 Parish of Koheroa	NA82C/965 (Live)	Standard	Franklin District Council
75-76	65.00		4697689	Pt Allot 186 Parish of Koheroa	NA82C/965 (Live)	Standard	Franklin District Council
75-76	65.00	75	4753948	Lot 3 DP 40497	NA1079/134 (Live)	Standard	Franklin District Council
75-76	65.00	76	5155441	Lot 6 DP 138071	NA81D/321 (Live)	Standard	Franklin District Council
75-76	65.00	76	4820239	Lot 5 DP 138071	NA81D/320 (Live)	Standard	Franklin District Council
76-77	65.00	76	4820239	Lot 5 DP 138071	NA81D/320 (Live)	Standard	Franklin District Council
76-77	65.00	77	5155441	Lot 6 DP 138071	NA81D/321 (Live)	Standard	Franklin District Council
77-78	72.74	77	5155441	Lot 6 DP 138071	NA81D/321 (Live)	Standard	Franklin District Council
77-78	72.74		4952350	Lot 1 DP 157579	NA94C/672 (Live)	Standard	Franklin District Council
77-78	72.74		4955857	Part Lot 18 DP 10636	NA94C/193 (Live)	Standard	Franklin District Council
77-78	72.74		4828678	Part Lot 18 DP 10636	NA94C/193 (Live)	Standard	Franklin District Council
77-78	72.74		5236355	Mangatangi Road	Legal Road by Crown Grant	Road/Rail	Franklin District Council
77-78	72.74	78	4952029	Lot 16 DP 10636	NA91D/696 (Live)	Standard	Franklin District Council
78-79	65.00	78	4952029	Lot 16 DP 10636	NA910/696 (Live)	Standard	Franklin District Council
78-79	65.00		4912326	Lot 1 DP 388392	357314	Standard	Franklin District Council
78-79	65.00	79	4771184	Lot 2 DP 404411	415268	Standard	Franklin District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
79–80	65.00		4912326	Lot 1 DP 388392	357314	Standard	Franklin District Council
79–80	65.00	79	4771184	Lot 2 DP 404411	415268	Standard	Franklin District Council
80–81	65.00	80	4771184	Lot 2 DP 404411	415268	Standard	Franklin District Council
80–81	65.00	81	4766505	Lot 5 DP 63776	NA81A1787 (Live)	Standard	Franklin District Council
81–82	65.00	81	4766505	Lot 5 DP 63776	NA81A/787 (Live)	Standard	Franklin District Council
81–82	65.00		5266636	Mangatangi Stream	Part Cancelled NA1642/49 & NA1650/75	Hydro	Waikato District (border)

## **Overhead Line in Waikato District**

[2568] The requirement for a designation for the Overhead Line in the Waikato District Plan comprising Route Sections 6–9, Towers 82–193 is confirmed on the terms and subject to the conditions set out below.

### **Description of works**

[2569] The designation is for the construction, operation and maintenance of that part of a 400-kV-capable transmission line which is within the Waikato District, to convey electricity between the Brownhill Substation site at 149 Brownhill Road in Manukau City and the Whakamaru and Whakamaru North Substations site in Taupo District, as part of the upper North Island Grid Upgrade Project, and ancillary activities.

[2570] The nature of the work is described more particularly in Part VII (excluding section 24 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### **Land that is subject to the designation**

[2571] The designation applies to the land shown on Maps 52–68 in Appendix V and listed in table 9.

### **Lapse**

[2572] The designation shall not lapse for a period of 15 years after incorporation in the Waikato District Plan.

### **Conditions**

[2573] The designation is subject to the conditions set out in Appendix K.

**Table 9: Legal descriptions of land parcels for the Overhead Line within Waikato District**

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
81–82	65.00		5266636	Mangatangi Stream	Part Cancelled NA1642/49 & NA1650/75		Waikato District (border)
81–82	65.00	82	4310860	Lot 1 DPS 51231	CFR 287371	Standard	Waikato District Council
81–82	65.00		4511711	Lot 1 DPS 9993	CFR 287371	Standard	Waikato District Council
82–83	65.00	82	4310860	Lot 1 DPS 51231	CFR 287371	Standard	Waikato District Council
83–84	65.00	83	4310860	Lot 1 DPS 51231	CFR 287371	Standard	Waikato District Council
83–84	65.00		4292564	Auckland 51231	Crown Land Deposited Plan South Crown - Marginal strip	Standard	Waikato District Council
83–84	65.00	84	4410307	Lot 1 DPS 23254	SA21D/302 (Live)	Standard	Waikato District Council
83–84	65.00		4606690	Ruaotehuia Stream	Part Crown and Part AMF in SA21D/302	Hydro	Waikato District Council
84–85	65.00	84	4410307	Lot 1 DPS 23254	SA21D/302 (Live)	Standard	Waikato District Council
84–85	65.00	85	4352734	Lot 4 DPS 23254	SA21D/305 (Live)	Standard	Waikato District Council
84–85	65.00	85	6867141	Lot 1 DP 368595	278698 (Live)	Standard	Waikato District Council
85–86	65.00	85	4352734	Lot 4 DPS 23254	SA21D/305 (Live)	Standard	Waikato District Council
85–86	65.00	85	6867141	Lot 1 DP 368595	278698 (Live)	Standard	Waikato District Council
85–86	65.00	86	4505962	Pt Lot 8 DP 15482	SA362/281 (Part Cancelled)	Standard	Waikato District Council
85–86	65.00		4585843	Road	Legal Road by Crown Warrant	Road/Rail	Waikato District Council
86–87	65.00	86	4505962	Pt Lot 8 DP 15482	SA362/281 (Part Cancelled)	Standard	Waikato District Council
86–87	65.00		4585843	Road	Legal Road by Crown Warrant	Road/Rail	Waikato District Council
87–88	70.50	87	4505962	Pt Lot 8 DP 15482	SA362/281 (Part Cancelled)	Standard	Waikato District Council
87–88	70.50		4503132	Pt Allot Parish of Maramarua	Gazette H260594	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
87-88	70.50	88	4354135	Pt Allot 57 Maramarua PARISH	SA58C/221 (Live)	Standard	Waikato District Council
87-88	70.50		6541621	Lot 4 DPS 86339	SA68B/672 (Live)	Standard	Waikato District Council
87-88	70.50		4584960	SH 2	Legal road - State Highway GN 126462 - Limited Access Road	Road/Rail	Waikato District Council
88-89	71.78	88	4354135	Pt Allot 57 Maramarua PARISH	SA58C/221 (Live)	Standard	Waikato District Council
89-90	65.00		4290507	Lot 3 DPS 1453	SA58C/221 (Live), SA5A/133 (Part Cancelled)	Standard	Waikato District Council
89-90	65.00		4570354	Coalfields Road	Legal Road by Proc 7960	Road/Rail	Waikato District Council
89-90	65.00	89	4354135	Lot 3 DPS 1453 & Pt Allot 57 Maramarua PARISH	SA5A/133 (Part Cancelled) & SA58C/221 (Live)	Standard	Waikato District Council
89-90	65.00	90	4484990	Lot 1 DPS 3347	SA 1210/45 (Live)	Standard	Waikato District Council
90-91	65.00	90	4484990	Lot 1 DPS 3347	SA 1210/45 (Live)	Standard	Waikato District Council
90-91	65.00	91	4563582	Lot 1 DP 32767	SA860/296 (Live)	Standard	Waikato District Council
91-92	94.60	91	4563582	Lot 1 DP 32767	SA860/296 (Live)	Standard	Waikato District Council
91-92	94.60		4301391	Lot 2 DP 32767	SA860/297 (Live)	Standard	Waikato District Council
92-93	66.34	92	4563582	Lot 1 DP 32767	SA860/296 (Live)	Standard	Waikato District Council
92-93	66.34	93	4457987	Lot 3 DP 32767	SA860/298 (Live)	Standard	Waikato District Council
93-94	65.00	93	4457987	Lot 3 DP 32767	SA860/298 (Live)	Standard	Waikato District Council
93-94	65.00	94	4536421	Lot 4 DP 32767	SA860/299 (Live)	Standard	Waikato District Council
94-95	79.18	94	4536421	Lot 4 DP 32767	SA860/299 (Live)	Standard	Waikato District Council
94-95	79.18	95	4301333	Pt Lot 1 DP 22291	SA29B/341 (Live)	Standard	Waikato District Council
95-96	65.64	95	4301333	Pt Lot 1 DP 22291	SA29B/341 (Live)	Standard	Waikato District Council
95-96	65.64	96	4457959	Lot 2 DP 22291	SA629/246 (Live)	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
96-97	88.72	96	4457959	Lot 2 DP 22291	SA629/246 (Live)	Standard	Waikato District Council
96-97	88.72		4330139	Lot 3 DP 22291	SA629/246 (Live)	Standard	Waikato District Council
96-97	88.72		4330140	Lot 3 DPS 74265	419734	Standard	Waikato District Council
96-97	88.72	97	6866319	Lot 4 DP 369411	281966 (Live)	Standard	Waikato District Council
96-97	88.72	97	4330141	Pt Allot 6 Maramarua Parish	SA583/311 (Live)	Standard	Waikato District Council
97-98	84.08		4330139	Lot 3 DP 22291	SA629/246 (Live)	Standard	Waikato District Council
97-98	84.08	97	4330141	Pt Allot 6 Maramarua Parish	SA583/311 (Live)	Standard	Waikato District Council
97-98	84.08	98	6866319	Lot 4 DP 369411	281966 (Live)	Standard	Waikato District Council
98-99	82.60	98	6866319	Lot 4 DP 369411	281966 (Live)	Standard	Waikato District Council
98-99	82.60		6866318	Lot 3 DP 369411	281966 (Live)	Standard	Waikato District Council
98-99	82.60		4263810	Lot 1 DPS 81308	SA63D/327 (Live)	Standard	Waikato District Council
98-99	82.60		4549507	Road	Legal Road	Road/Rail	Waikato District Council
98-99	82.60		4405589	Lot 3 DPS 81308	SA63D/329 (Live)	Standard	Waikato District Council
98-99	82.60	99	4419640	Lot 2 DPS 81308	SA63D/328 (Live)	Standard	Waikato District Council
99-100	75.46		4405589	Lot 3 DPS 81308	SA63D/329 (Live)	Standard	Waikato District Council
99-100	75.46	99	4419640	Lot 2 DPS 81308	SA63D/328 (Live)	Standard	Waikato District Council
100-101	65.00	100	4337991	Lot 2 DPS 19705	SA54A/685 (Live)	Standard	Waikato District Council
99-100	75.46	100	4337991	Lot 2 DPS 19705	SA54A/685 (Live)	Standard	Waikato District Council
99-100	75.46		4423613	Lot 4 DPS 81308	55735 (Live)	Standard	Waikato District Council
99-100	75.46		4583041	Kopuku Road	Crown Grant	Road/Rail	Waikato District Council
101-102	65.00	101	4337991	Lot 2 DPS 19705	SA54A/685 (Live)	Standard	Waikato District Council
101-102	65.00		4581612	Symes Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council



Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
101–102	65.00	102	4368942	Lot 3 DP 378206	314202	Standard	Waikato District Council
102–103	65.00	102	4368942	Lot 3 DP 378206	314202	Standard	Waikato District Council
103–104	65.00	103	4368942	Lot 3 DP 378206	314202	Standard	Waikato District Council
104–105	65.00	104	4368942	Lot 3 DP 378206	314202	Standard	Waikato District Council
105–106	66.16	105	4368942	Lot 3 DP 378206	314202	Standard	Waikato District Council
105–106	66.16	106	4303859	Part Allot 31 Maramarua Parish	SA56B/6 (Live)	Standard	Waikato District Council
106–107	69.92	106	4303859	Part Allot 31 Maramarua Parish	SA56B/6 (Live)	Standard	Waikato District Council
106–107	69.92	107	6709364	Lot 2 DP 330958	127127 (Live)	Standard	Waikato District Council
106–107	69.92		4566121	Lot 1 DPS 56868	SA50D/150 (Live)	Standard	Waikato District Council
106–107	69.92		4490787	Sec 17 Blk V Piako SD	SA650/219 (Live)	Standard	Waikato District Council
107–108	65.00	107	6709364	Lot 2 DP 330958	127127 (Live)	Standard	Waikato District Council
108–109	65.00	108	6709364	Lot 2 DP 330958	127127 (Live)	Standard	Waikato District Council
108–109	65.00		4287212	Lot 3 DPS 68851	SA55B/122 (Live)	Standard	Waikato District Council
108–109	65.00	109	4355654	Sec 4 Mangakura Settlement	SA55B/122 (Live)	Standard	Waikato District Council
109–110	65.00	109	4355654	Sec 4 Mangakura Settlement	SA55B/122 (Live)	Standard	Waikato District Council
109–110	65.00		4491992	Pt Sec 5 Mangakura Settlement	SA51C/643 (Live)	Standard	Waikato District Council
109–110	65.00	110	4551143	Lot 1 DPS 63912	SA51C/643 (Live)	Standard	Waikato District Council
110–111	65.00	110	4551143	Lot 1 DPS 63912	SA51C/643 (Live)	Standard	Waikato District Council
111–112	73.26	111	4551143	Lot 1 DPS 63912	SA51C/643 (Live)	Standard	Waikato District Council
111–112	73.26		4412947	Lot 3 DP 36580	SA944/96 (Live)	Standard	Waikato District Council
111–112	73.26		4586103	Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
111–112	73.26	112	4504309	Sec 13 Mangakura Settlement	SA67D/608 (Live)	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
112-113	66.10	112	4504309	Sec 13 Mangakura Settlement	SA67D/608 (Live)	Standard	Waikato District Council
112-113	66.10	113	4494186	Lot 1 DPS 90141	SA67B/955 (Live)	Standard	Waikato District Council
113-114	65.00	113	4494186	Lot 1 DPS 90141	SA67B/955 (Live)	Standard	Waikato District Council
113-114	65.00	114	4270554	Lot 2 DPS 6630	SA1773/25 (Live)	Standard	Waikato District Council
114-115	65.00	114	4270554	Lot 2 DPS 6630	SA1773/25 (Live)	Standard	Waikato District Council
114-115	65.00	115	4551922	Allot 377 Whangamarino Parish	SA860/155 (Live)	Standard	Waikato District Council
114-115	65.00		4572563	Awariki Road (Unformed)	Legal Road by Crown Grant	Road/Rail	Waikato District Council
115-116	71.60	115	4551922	Allot 377 Whangamarino Parish	SA860/155 (Live)	Standard	Waikato District Council
116-117	69.08	116	4551922	Allot 377 Whangamarino Parish	SA860/155 (Live)	Standard	Waikato District Council
116-117	69.08		4279509	Lot 7 DP 33199	SA859/231 (Live)	Standard	Waikato District Council
116-117	69.08	117	4322789	Lot 1 DPS 73791	SA59B/601 (Live)	Standard	Waikato District Council
116-117	69.08		4322790	Lot 2 DPS 73791	SA59B/602 (Live)	Standard	Waikato District Council
116-117	69.08		4605396	Junction Stream	SA859/231 & SA100/75 (Cancelled)	Hydro	Waikato District Council
117-118	69.50	117	4322789	Lot 1 DPS 73791	SA59B/601 (Live)	Standard	Waikato District Council
117-118	69.50		4322790	Lot 2 DPS 73791	SA59B/602 (Live)	Standard	Waikato District Council
117-118	69.50	118	4256307	Lot 2 DPS 1097	SA59B/602 (Live)	Standard	Waikato District Council
117-118	69.50		4586093	Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
118-119	69.00	118	4256307	Lot 2 DPS 1097	SA59B/602 (Live)	Standard	Waikato District Council
119-120	68.22	119	4256307	Lot 2 DPS 1097	SA59B/602 (Live)	Standard	Waikato District Council
119-120	68.22	120	4491274	Lot 1 DP 11238	SA859/189 (Live)	Standard	Waikato District Council
120-121	67.54	120	4491274	Lot 1 DP 11238	SA859/189 (Live)	Standard	Waikato District Council
120-121	67.54	120	4256307	Lot 2 DPS 1097	SA59B/602 (Live)	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
120-121	67.54		4572451	Waerenga Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
120-121	67.54	121	6867456	Lot 3 DP 363753	259406 (Live)	Standard	Waikato District Council
121-122	65.00	121	6867456	Lot 3 DP 363753	259406 (Live)	Standard	Waikato District Council
122-123	67.16		4464006	Lot 1 DPS 3501	SA3A/1296 (Live)	Standard	Waikato District Council
122-123	67.16	122	6867456	Lot 3 DP 363753	259406 (Live)	Standard	Waikato District Council
122-123	67.16	123	4435948	Allot 164 Whangamarino Parish	SA28/28 (Live)	Standard	Waikato District Council
122-123	67.16		4274197	Pt Allot 162 Whangamarino Parish	SA31/69 (Live)	Standard	Waikato District Council
123-124	65.00	123	4435948	Allot 164 Whangamarino Parish	SA28/28 (Live)	Standard	Waikato District Council
123-124	65.00	124	4279975	Pt Allot 163 Whangamarino Parish	SA1B/169 (Live)	Standard	Waikato District Council
124-125	65.00	124	4279975	Pt Allot 163 Whangamarino Parish	SA1B/169 (Live)	Standard	Waikato District Council
124-125	65.00		4541088	Lot 2 DPS 78377	SA62B/195 (Live)	Standard	Waikato District Council
124-125	65.00		4568373	Taniwha Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
124-125	65.00		4279592	Lot 1 DPS 78377	SA62B/194 (Live)	Standard	Waikato District Council
124-125	65.00	125	4356204	Pt Sec 12 Taniwha Settlement	SA991/298 (Part Cancelled)	Standard	Waikato District Council
125-126	67.02	125	4356204	Pt Sec 12 Taniwha Settlement	SA991/298 (Part Cancelled)	Standard	Waikato District Council
125-126	67.02		4515534	Sec 2 Taniwha Settlement	SA1A/878 (Live)	Standard	Waikato District Council
125-126	67.02	126	4434106	Sec 3 Taniwha Settlement	SA935/187 (Live)	Standard	Waikato District Council
126-127	65.56	126	4434106	Sec 3 Taniwha Settlement	SA935/187 (Live)	Standard	Waikato District Council
126-127	65.56	127	4435455	Sec 5 Taniwha Settlement	SA1051/228 (Live)	Standard	Waikato District Council
126-127	65.56		4434646	Sec 4 Taniwha Settlement	SA683/285 (Live)	Standard	Waikato District Council
127-128	66.94	127	4435455	Sec 5 Taniwha Settlement	SA1051/228 (Live)	Standard	Waikato District Council
127-128	66.94		4272114	Sec 6 Taniwha Settlement	SA372/7 (Live)	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
127-128	66.94	128	4329210	Lot 2 DPS 87813	SA69A/97 (Live)	Standard	Waikato District Council
127-128	66.94	128	4606809	Waerenga Stream	AMF in SA372/7 & SA69A/97	Hydro	Waikato District Council
128-129	65.00		4272114	Sec 6 Taniwha Settlement	SA372/7 (Live)	Standard	Waikato District Council
128-129	65.00	128	4329210	Lot 2 DPS 87813	SA69A197 (Live)	Standard	Waikato District Council
128-129	65.00	128	4606809	Waerenga Stream	AMF in SA372/7 & SA69A/97	Hydro	Waikato District Council
129-130	65.00	129	4329210	Lot 2 DPS 87813	SA69A/97 (Live)	Standard	Waikato District Council
129-130	65.00	130	4328973	Lot 1 DPS 6244	SA1735/16 (Live)	Standard	Waikato District Council
129-130	65.00		4573434	Riddell Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
130-131	65.54	130	4328973	Lot 1 DPS 6244	SA1735/16 (Live)	Standard	Waikato District Council
131-132	66.66	131	4328973	Lot 1 DPS 6244	SA1735/16 (Live)	Standard	Waikato District Council
131-132	66.66	132	4397866	Pt Lot 1 DP 16646	SA41C/217 (Live)	Standard	Waikato District Council
132-133	66.98	132	4397866	Pt Lot 1 DP 16646	SA41C/217 (Live)	Standard	Waikato District Council
133-134	65.00	133	4397866	Pt Lot 1 DP 16646	SA41C/217 (Live)	Standard	Waikato District Council
133-134	65.00	134	4477465	Lot 1 DPS 10847	SA7B/1435 (Live)	Standard	Waikato District Council
134-135	65.00	134	4477465	Lot 1 DPS 10847	SA7B/1435 (Live)	Standard	Waikato District Council
135-136	65.72	135	4477465	Lot 1 DPS 10847	SA7B/1435 (Live)	Standard	Waikato District Council
135-136	65.72		4394478	Pt Lot 3 DP 16646	SA7B/1436 (Live)	Standard	Waikato District Council
135-136	65.72	136	4558608	Pt Lot 1 DP 21817	SA28D/809 (Live)	Standard	Waikato District Council
136-137	65.00	136	4558608	Pt Lot 1 DP 21817	SA28D/809 (Live)	Standard	Waikato District Council
136-137	65.00	137	4516282	Section 1S Tangeo Settlement	SA946/41 (Live)	Standard	Waikato District Council
137-138	65.00	137	4516282	Section 1S Tangeo Settlement	SA946/41 (Live)	Standard	Waikato District Council
137-138	65.00	138	4356595	Lot 1 DPS 83406	SA66A/396 (Live)	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
138-139	65.00	138	4356595	Lot 1 DPS 83406	SA66A/396 (Live)	Standard	Waikato District Council
138-139	65.00		4588068	Taniwha Road	Legal Road	Road/Rail	Waikato District Council
138-139	65.00	139	6691661	Lot 4 DP 332466	132983 (Live)	Standard	Waikato District Council
139-140AB	99.00	139	6691661	Lot 4 DP 332466	132983 (Live)	Standard	Waikato District Council
140AB-141	92.10	140B	6691661	Lot 4 DP 332466	132983 (Live)	Standard	Waikato District Council
140AB-141	92.10	141	4323744	Allot 663 Whangamarino Parish	SA67A/873 (Live)	Standard	Waikato District Council
141-142	67.34		4395096	Crown Land Survey Office Plan 34936	Crown - Marginal Strip	Standard	Waikato District Council
141-142	67.34	141	4323744	Lot 1 DP 85600	SA67A/873 (Live)	Standard	Waikato District Council
141-142	67.34		4357302	Allot 663 Whangamarino Parish	SA67A/873 (Live)	Standard	Waikato District Council
141-142	67.34		4321060	Crown Land Survey Office Plan 34936	Crown - Marginal Strip	Standard	Waikato District Council
141-142	67.34		4606892	Matahuru Stream	Crown Land - LINZ - Land Act 1948	Hydro	Waikato District Council
141-142	67.34	142	4457425	Lot 1 DPS 44792	SA38C/584 (Live)	Standard	Waikato District Council
142-143	70.04	142	4457425	Lot 1 DPS 44792	SA38C/584 (Live)	Standard	Waikato District Council
142-143	70.04		4577782	Matahuru Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
142-143	70.04	143	4350168	Pt Allot 270 Taupiri Parish	SA628/274 (Part Cancelled)	Standard	Waikato District Council
142-143	70.04		4363195	Allot 267 Taupiri Parish	SA567/80 (Live)	Standard	Waikato District Council
143-144	65.00	143	4350168	Pt Allot 270 Taupiri Parish	SA628/274 (Part Cancelled)	Standard	Waikato District Council
144-145	71.82	144	4350168	Pt Allot 270 Taupiri Parish	SA628/274 (Part Cancelled)	Standard	Waikato District Council
144-145	71.82	145	4504341	Lot 1 DPS 91554	SA71A/310 (Live)	Standard	Waikato District Council
145-146	65.00	145	4504341	Lot 1 DPS 91554	SA71A/310 (Live)	Standard	Waikato District Council
145-146	65.00	146	4397274	Allot 277 Taupiri Parish	SA771/259 (Part Cancelled)	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
145-146	65.00		4552150	Pt Allot 272 Taupiri Parish	SA771/259 (Part Cancelled)	Standard	Waikato District Council
146-147	65.00	146	4397274	Allot 277 Taupiri Parish	SA771/259 (Part Cancelled)	Standard	Waikato District Council
147-148	65.00		4520326	Allot 287 Taupiri Parish	SA567/84 (Live)	Standard	Waikato District Council
147-148	65.00	147	4397274	Allot 277 Taupiri Parish	SA771/259 (Part Cancelled)	Standard	Waikato District Council
147-148	65.00		4578425	Magee Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
147-148	65.00	148	4381021	Allot 286 Taupiri Parish	SA176/135 (Live)	Standard	Waikato District Council
147-148	65.00		4589698	Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
148-149	68.92	148	4381021	Allot 286 Taupiri Parish	SA176/135 (Live)	Standard	Waikato District Council
148-149	68.92		4606610	Mangapiko Stream	SA176/135 (Live)	Hydro	Waikato District Council
148-149	68.92		4589698	Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
148-149	68.92	149	4419991	Allot 291 Taupiri Parish	SA176/135 (Live)	Standard	Waikato District Council
149-150	68.66	149	4419991	Allot 291 Taupiri Parish	SA176/135 (Live)	Standard	Waikato District Council
150-151	73.56	150	4419991	Allot 291 Taupiri Parish	SA176/135 (Live)	Standard	Waikato District Council
150-151	73.56		4569007	Mangapiko Valley Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
150-151	73.56	151	4319028	Allot 300 Taupiri Parish	SA614/38 (Live)	Standard	Waikato District Council
151-152	78.42	151	4319028	Allot 300 Taupiri Parish	SA614/38 (Live)	Standard	Waikato District Council
151-152	78.42		4264999	Allot 301 Taupiri Parish	SA614/38 (Live)	Standard	Waikato District Council
151-152	78.42	152	4539713	Allot 695 Taupiri Parish	SA1700/26 (Live)	Standard	Waikato District Council
151-152	78.42		4292593	Allot 694 Taupiri Parish	SA1700/94 (Live)	Standard	Waikato District Council
152-153	65.00	152	4539713	Allot 695 Taupiri Parish	SA1700/26 (Live)	Standard	Waikato District Council
152-153	65.00		4292593	Allot 694 Taupiri Parish	SA1700/94 (Live)	Standard	Waikato District Council
153-154	75.52	153	4539713	Allot 695 Taupiri Parish	SA1700/26 (Live)	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
153–154	75.52	154	4302726	Allot 573 Taupiri Parish	SA1103/14 (Live)	Standard	Waikato District Council
153–154	75.52		4537857	Lot 1 DP 29065	SA719/7 (Live)	Standard	Waikato District Council
153–154	75.52	154	4587156	Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
154–155	77.12	154	4302726	Allot 573 Taupiri Parish	SA1103/14 (Live)	Standard	Waikato District Council
154–155	77.12	154	4587156	Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
154–155	77.12	155	4537857	Lot 1 DP 29065	SA719/7 (Live)	Standard	Waikato District Council
155–156	65.00	155	4537857	Lot 1 DP 29065	SA719/7 (Live)	Standard	Waikato District Council
155–156	65.00	156	4322896	Lot 2 DP 29664	SA51B/119 (Live)	Standard	Waikato District Council
156–157	76.48	156	4322896	Lot 2 DP 29664	SA51B/119 (Live)	Standard	Waikato District Council
156–157	76.48		4537857	Lot 1 DP 29065	SA719/7 (Live)	Standard	Waikato District Council
156–157	76.48	157	4474318	Lot 2 DP 27671	SA742/78 (Live)	Standard	Waikato District Council
157–158	83.86	157	4474318	Lot 2 DP 27671	SA742/78 (Live)	Standard	Waikato District Council
158–159	85.06	158	4474318	Lot 2 DP 27671	SA742/78 (Live)	Standard	Waikato District Council
158–159	85.06	159	4367534	Lot 2 DPS 724	SA1036/79 (Live)	Standard	Waikato District Council
159–160	72.64	159	4367534	Lot 2 DPS 724	SA1036/79 (Live)	Standard	Waikato District Council
159–160	72.64		4582881	Mangatea Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
159–160	72.64		4281533	Lot 1 DP 32851	SA869/196 (Live)	Standard	Waikato District Council
159–160	72.64	160	4404811	Lot 1 DPS 67106	SA54A/257 (Live)	Standard	Waikato District Council
160–161	73.86		4281533	Lot 1 DP 32851	SA869/196 (Live)	Standard	Waikato District Council
160–161	73.86	160	4404811	Lot 1 DPS 67106	SA54A/257 (Live)	Standard	Waikato District Council
160–161	73.86		4326154	Lot 2 DPS 67106	SA54A/258 (Live)	Standard	Waikato District Council
160–161	73.86	161	6633975	Lot 2 DP 322420	89461 (Live)	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
161-162	75.08	161	6633975	Lot 2 DP 322420	89461 (Live)	Standard	Waikato District Council
161-162	75.08	162	4347115	Lot 3 DP23291	SA616/183 (Part Cancelled)	Standard	Waikato District Council
161-162	75.08		4582715	Tahuna Road	Legal Road by Proc 2343	Road/Rail	Waikato District Council
162-163	68.54		4502897	Pt Lot 4 DP 23291	SA973/10 (Live)	Standard	Waikato District Council
162-163	68.54	162	4347115	Lot 3 DP 23291	SA616/183 (Part Cancelled)	Standard	Waikato District Council
162-163	68.54	163	4389781	Lot 1 DPS 2283	SA1099/47 (Live)	Standard	Waikato District Council
163-164	65.92	163	4389781	Lot 1 DPS 2283	SA1099/47 (Live)	Standard	Waikato District Council
163-164	65.92	164	4359508	Lot 2 DPS 2283	SA1099/48 (Live)	Standard	Waikato District Council
164-165	65.00		4570321	Proctor Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
164-165	65.00		4267159	Lot 1 DPS 89880	SA70B/970 (Live)	Standard	Waikato District Council
164-165	65.00	164	4359508	Lot 2 DPS 2283	SA1099/48 (Live)	Standard	Waikato District Council
164-165	65.00	165	4346611	Lot 2 DPS 89880	SA70B/971 (Live)	Standard	Waikato District Council
165-166	66.28	165	4346611	Lot 2 DPS 89880	SA70B/971 (Live)	Standard	Waikato District Council
165-166	66.28		4586105	Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
165-166	66.28	166	4484709	Lot 4 DPS 89880	SA70B/973 (Live)	Standard	Waikato District Council
166-167	65.00		4470858	Allot 748 Taupiri Parish	Crown - Provisional Assessment - Administered by Environment Waikato	Standard	Waikato District Council
166-167	65.00	166	4484709	Lot 4 DPS 89880	SA70B/973 (Live)	Standard	Waikato District Council
166-167	65.00	167	4471814	Pt Land on DP 3101	SA27C/803 (Live)	Standard	Waikato District Council
167-168	66.50	167	4471814	Pt Land on DP 3101	SA27C/803 (Live)	Standard	Waikato District Council
168-169	67.20	168	4471814	Pt Land on DP 3101	SA27C/803 (Live)	Standard	Waikato District Council
169-170	66.98	169	4471814	Pt Land on DP 3101	SA27C/803 (Live)	Standard	Waikato District Council
170-171	65.00	170	4471814	Pt Land on DP 3101	SA27C/803 (Live)	Standard	Waikato District Council



Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
170-171	65.00	172	4378761	Pt Land on DP 7851	SA27C/803 (Live)	Standard	Waikato District Council
172-173	65.00	172	4378761	Pt Land on DP 7851	SA27C1803 (Live)	Standard	Waikato District Council
172-173	65.00	173	4279676	Lot 1 DPS 83570	SA65D/644 (Live)	Standard	Waikato District Council
172-173	65.00		4570321	Proctor Road	Legal Road by Crown Grant	Road/Rail	Waikato District Council
173-174	65.00	173	4279676	Lot 1 DPS 83570	SA65D/644 (Live)	Standard	Waikato District Council
173-174	65.00	174	4540028	Lot 2 DP 29348	SA725/147 (Live)	Standard	Waikato District Council
173-174	65.00		4300262	Lot 1 DP 29348	SA731/109 (Live)	Standard	Waikato District Council
173-174	65.00		4586640	Flaxmill Road	Legal Road by T316706	Road/Rail	Waikato District Council
174-175	65.00	174	4540028	Lot 2 DP 29348	SA725/147 (Live)	Standard	Waikato District Council
174-175	65.00		4300262	Lot 1 DP 29348	SA731/109 (Live)	Standard	Waikato District Council
175-176	65.00	175	4540028	Lot 2 DP 29348	SA725/147 (Live)	Standard	Waikato District Council
176-177	65.00	176	4540028	Lot 2 DP 29348	SA725/147 (Live)	Standard	Waikato District Council
176-177	65.00		4382547	Lot 3 DP 29348	SA729/26 (Live)	Standard	Waikato District Council
176-177	65.00	177	4534516	Lot 1 DP 36561	SA937/70 (Live)	Standard	Waikato District Council
177-178	65.00	177	4534516	Lot 1 DP 36561	SA937/70 (Live)	Standard	Waikato District Council
178-179	74.52	178	4534516	Lot 1 DP 36561	SA937/70 (Live)	Standard	Waikato District Council
178-179	74.52	179	4390103	Lot 2 Dp 417722	468407	Standard	Waikato District Council
179-180	65.00	179	4390103	Lot 2 DP 417722	468407	Standard	Waikato District Council
179-180	65.00	180	4325866	Lot 2 DP 417722	468407	Standard	Waikato District Council
180-181	65.00	180	4325866	Lot 2 DP 417722	468407	Standard	Waikato District Council
181-182	68.90	181	4325866	Lot 2 DP 417722	468407	Standard	Waikato District Council
182-183	65.00	182	4325866	Lot 2 DP 417722	468407	Standard	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
183–184	65.00	183	4325866	Lot 2 DP 417722	468407	Standard	Waikato District Council
184–185	68.16		4324898	Lot 1 DP 24572	SA677/224 (Live)	Standard	Waikato District Council
184–185	68.16	184	4325866	Lot 2 DP 417722	468407	Standard	Waikato District Council
184–185	68.16	185	4510038	Tauhei 7 A5 B2 C1 Block	SA5D/779 (Live)	Standard	Waikato District Council
184–185	68.16	185	4533409	Tauhei 7 A5 B2 C3 Block	454061	Standard	Waikato District Council
185–186	65.92	185	4510038	Tauhei 7 A5 B2 C1 Block	SA5D/779 (Live)	Standard	Waikato District Council
185–186	65.92		4364373	Tauhei 7 A6 A2 Block	SAI2B/350 (Live)	Standard	Waikato District Council
185–186	65.92	186	4533409	Tauhei 7 A5 B2 C3 Block	454061	Standard	Waikato District Council
186–187	67.48		4364373	Tauhei 7 A6 A2 Block	SAI2B/350 (Live)	Standard	Waikato District Council
186–187	67.48	186	4533409	Tauhei 7 A5 B2 C3 Block	454061	Standard	Waikato District Council
186–187	67.48	187	4454604	Pt Lot 1 DP 26041	SA966/293	Standard	Waikato District Council
186–187	67.48		4451137	Pt Tauhei 7 A6 B2 Block	SA966/293	Standard	Waikato District Council
186–187	67.48		4580667	Tainui Road	Legal Road by Proc 2314	Road/Rail	Waikato District Council
187–188	65.00	187	4454604	Pt Lot 1 DP 26041	SA966/293	Standard	Waikato District Council
187–188	65.00		4451137	Pt Tauhei 7A6B2	SA966/293	Standard	Waikato District Council
188–189	68.90	188	4454604	Pt Lot 1 DP 26041	SA966/293	Standard	Waikato District Council
188–189	68.90	189	4298816	Lot 1 DP 18570	SA1049/57 (Live)	Standard	Waikato District Council
189–190	65.00		4376845	Lot 2 DP 18570 (Tauhei 4B1 Block)	SA1049/57 (Live)	Standard	Waikato District Council
189–190	65.00	189	4298816	Lot 1 DP 18570	SA1049/57 (Live)	Standard	Waikato District Council
189–190	65.00	190	4553166	Pt Lot 1 DP 32840	SA855/187 (Part Cancelled)	Standard	Waikato District Council
189–190	65.00		4585225	Manuel Road	Legal Road by T300131 Confirms as Public Road	Road/Rail	Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
190–191	65.00	190	4553166	Pt Lot 1 DP 32840	SA855/187 (Part Cancelled)	Standard	Waikato District Council
191–192	66.08	191	4553166	Pt Lot 1 DP 32840	SA855/187 (Part Cancelled)	Standard	Waikato District Council
191–192	66.08	192	4452865	Lot 2 DPS 17834	SA16C/190 (Live)	Standard	Waikato District Council
192–193	80.48	192	4452865	Lot 2 DPS 17834	SA16C/190 (Live)	Standard	Waikato District Council
193–194	82.46	193	4452865	Lot 2 DPS 17834	SA16C/190 (Live)	Standard	Waikato District Council
193–194	82.46		4453154	Lot 3 DP 386510	346280	Standard	Waikato District Council
193–194	82.46	194	4453156	Lot 1 DP 8138	SA34A/558 (Live)	Standard	Matamata-Piako District (border)

## Overhead Line in Matamata-Piako District

[2574] The requirement for a designation for the Overhead Line in the Matamata-Piako District Plan comprising Route Sections 9–10, Towers 194–246 is confirmed on the terms and subject to the conditions set out below.

### Description of works

[2575] The designation is for the construction, operation and maintenance of that part of a 400-kV-capable transmission line which is within the Matamata–Piako District, to convey electricity between the Brownhill Substation site at 149 Brownhill Road in Manukau City and the Whakamaru and Whakamaru North Substations site in Taupo District, as part of the upper North Island Grid Upgrade Project, and ancillary activities, including modification of the Hamilton-Waihou A line.

[2576] The nature of the work is described more particularly in Part VII (excluding section 24 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### Land that is subject to the designation

[2577] The designation applies to the land shown on Maps 68–76 in Appendix V and Map 10 (*Transpower North Island Grid Upgrade Project Notice of Requirement for Designation/ Matamata-Paiko District Plan Map 10 – Motumaoho-Tahuroa*) being page 137 of Part 1A of the Notices of Requirement Documentation (dated April 2007).

### Lapse

[2578] The designation shall not lapse for a period of 15 years after incorporation in the Matamata-Piako District Plan.

### Conditions

[2579] The designation is subject to the conditions set out in Appendix L.

**Table 10: Legal descriptions of land parcels for the Overhead Line within Matamata Piako District Council**

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
193–194	82.46	194	4453156	Lot 1 DP 8138	SA34A/558 (Live)	Standard	Matamata-Piako District (border)
194–195	65.00	194	4453156	Lot 1 DP 8138	SA34A/558 (Live)	Standard	Matamata-Piako District
194–195	65.00		6627303	Card Road	Legal Road Noted as Road to Vest in DP 307564	Road/Rail	Matamata-Piako District
194–195	65.00	195	4296536	Lot 2 DPS 15208	SA13B/1264 (Live)	Standard	Matamata-Piako District
194–195	65.00		6627294	Lot 3 DP 307564	29372 (Live)	Standard	Matamata-Piako District
194–195	65.00		6627293	Lot 2 DP 307564	29371 (Live)	Standard	Matamata-Piako District
194–195	65.00		6627301	Lot 11 DP 307564	29379 (Live)	Standard	Matamata-Piako District
194–195	65.00		6627292	Lot 1 DP 307564	29370 (Live)	Standard	Matamata-Piako District
195–196	77.54	195	4296536	Lot 2 DPS 15208	SA13B/1264 (Live)	Standard	Matamata-Piako District
195–196	77.54		6627293	Lot 2 DP 307564	29371 (Live)	Standard	Matamata-Piako District
195–196	77.54		6627301	Lot 11 DP 307564	29379 (Live)	Standard	Matamata-Piako District
195–196	77.54	196	4531205	Lot 4 DPS 79637	SA63C/393 (Live)	Standard	Matamata-Piako District
196–197	93.16	196	4531205	Lot 5 DP 407570	426573	Standard	Matamata-Piako District
196–197	93.16	197	4531481	Lot 5 DP 407570	426573	Standard	Matamata-Piako District
197–198	65.00	197	4531481	Pt Lot 4 DP 8138	SA1200/15 (Live)	Standard	Matamata-Piako District
197–198	65.00	198	6737346	Lot 2 DP 333284	136518 (Live)	Standard	Matamata-Piako District
198–199	65.00	198	6737346	Lot 2 DP 333284	136518 (Live)	Standard	Matamata-Piako District
198–199	65.00	199	4504647	Lot 6 DP 8138	SA247/218 (Live)	Standard	Matamata-Piako District

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
199–200	65.00	199	4504647	Lot 6 DP 8138	SA247/218 (Live)	Standard	Matamata-Piako District
200–201	65.00	200	4504647	Lot 6 DP 8138	SA247/218 (Live)	Standard	Matamata-Piako District
200–201	65.00		4525928	Lot 1 DPS 3919	SA1268/79 (Live)	Standard	Matamata-Piako District
200–201	65.00	201	4526944	Lot 1 DP 33419	SA46A/362 (Live)	Standard	Matamata-Piako District
200–201	65.00		4588174	Tauhei Road	Legal Road by Warrant 8 of 23/10/1883	Road/Rail	Matamata-Piako District
201–202	65.00	201	4526944	Lot 1 DP 33419	SA46A1362 (Live)	Standard	Matamata-Piako District
201–202	65.00	202	4525928	Lot 1 DPS 3919	SA1268/79 (Live)	Standard	Matamata-Piako District
202–203	65.00	202	4525928	Lot 1 DPS 3919	SA1268/79 (Live)	Standard	Matamata-Piako District
203–204	91.82	203	4525928	Lot 1 DPS 3919	SA1268/79 (Live)	Standard	Matamata-Piako District
203–204	91.82	204	4266512	Lot 2 DPS 67319	SA54A/232 (Live)	Standard	Matamata-Piako District
204–205	75.38	204	4266512	Lot 2 DPS 67319	SA54A/232 (Live)	Standard	Matamata-Piako District
204–205	75.38	205	4432962	Pt Lot 1 DP 8137	SA1015/190 (Live)	Standard	Matamata-Piako District
205–206	75.04	205	4432962	Pt Lot 1 DP 8137	SA1015/190 (Live)	Standard	Matamata-Piako District
205–206	75.04		4517091	Sec 4 Blk I Maungakawa SD	SA5B/1254 (Live)	Standard	Matamata-Piako District
205–206	75.04		4607427	Tauhei Stream	SA198/144 (Not Yet Converted)	Hydro	Matamata-Piako District
206–207	65.00	206	4432962	Pt Lot 1 DP 8137	SA1015/190 (Live)	Standard	Matamata-Piako District
206–207	65.00		4607427	Tauhei Stream	SA198/144 (Not Yet Converted)	Hydro	Matamata-Piako District
206–207	65.00		4378138	Lot 4 DP 35343	SA912/99 (Live)	Standard	Matamata-Piako District
206–207	65.00	207	4517091	Sec 4 Blk I Maungakawa SD	SA5B/1254 (Live)	Standard	Matamata-Piako District
207–208	71.64		4378138	Lot 4 DP 35343	SA912/99 (Live)	Standard	Matamata-Piako District

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
207–208	71.64		4441609	Sec 4 Blk I Maungakawa SD	SA5B/1254 (Live)	Standard	Matamata-Piako District
207–208	71.64		4607429	Part Outlet Reserve DP 2463	SA927/228 (Live)	Hydro	Matamata-Piako District
207–208	71.64	207	4517091	Sec 4 Blk I Maungakawa SD	SA5B/1254 (Live)	Standard	Matamata-Piako District
207–208	71.64	208	4455551	Lot 1 DP 35343	SA912/99 (Live)	Standard	Matamata-Piako District
208–209	76.12	208	4455551	Lot 1 DP 35343	SA912/99 (Live)	Standard	Matamata-Piako District
208–209	76.12	209	4534925	Lot 4 DP 399922	398486	Standard	Matamata-Piako District
209–210	65.00	209	4534925	Lot 4 DP 399922	398486	Standard	Matamata-Piako District
209–210	65.00	210	4534426	Lot 4 DP 399922	398486	Standard	Matamata-Piako District
210–211	65.00	210	4534426	Lot 4 DP 399922	398486	Standard	Matamata-Piako District
210–211	65.00		4499215	Pt Lot 3 DP 35343	SA912/98 (Part Cancelled)	Standard	Matamata-Piako District
210–211	65.00	211	4475278	Lot 9 DP 16038 (Pt Te Mimi 9)	SA363/81 (Part Cancelled)	Standard	Matamata-Piako District
210–211	65.00		4459183	Sec 11 Blk I Maungakawa SD	SA49B/929 (Live)	Standard	Matamata-Piako District
211–212	65.00	212	4475278	Lot 9 DP 16038 (Pt Te Mimi 9)	SA363/81 (Part Cancelled)	Standard	Matamata-Piako District
212–213	65.00		4475278	Lot 9 DP 16038 (Pt Te Mimi 9)	SA363/81 (Part Cancelled)	Standard	Matamata-Piako District
213–214	65.00	213	4456112	Lot 1 DP 22804	77577 (Live)	Standard	Matamata-Piako District
213–214	65.00		4475278	Lot 9 DP 16038 (Pt Te Mimi 9)	SA363/81 (Part Cancelled)	Standard	Matamata-Piako District
213–214	65.00	213	4456112	Lot 1 DP 22804	77577 (Live)	Standard	Matamata-Piako District
213–214	65.00		4587801	Hangawera Road	Legal Road by T 47890	Road/Rail	Matamata-Piako District
213–214	65.00		4465152	Pt Lot 1 DP 2465	SA4A/684 (Live)	Standard	Matamata-Piako District
213–214	65.00	214	4484150	Pt Lot 1 DP 36758	SA27C/932 (Live)	Standard	Matamata-Piako District
214–215	72.44	214	4484150	Pt Lot 1 DP 36758	SA27C/932 (Live)	Standard	Matamata-Piako District

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
214–215	72.44	215	4465152	Pt Lot 1 DP 2465	SA4A/684 (Live)	Standard	Matamata-Piako District
215–216	65.00	215	4465152	Pt Lot 1 DP 2465	SA4A/684 (Live)	Standard	Matamata-Piako District
215–216	65.00	216	4393485	Lot 4 DPS 72768	SA58C/324 (Live)	Standard	Matamata-Piako District
216–217	65.00		4405901	Lot 1 DPS 73990	98692 (Live)	Standard	Matamata-Piako District
216–217	65.00	216	4393485	Lot 4 DPS 72768	SA58C/324 (Live)	Standard	Matamata-Piako District
216–217	65.00	217	4265068	Lot 1 DPS 76633	98692 (Live)	Standard	Matamata-Piako District
217–218	65.00	217	4265068	Lot 1 DPS 76633	98692 (Live)	Standard	Matamata-Piako District
217–218	65.00	218	6643433	Lot 1 DP 324424	98692 (Live)	Standard	Matamata-Piako District
218–219	65.72	218	6643433	Lot 1 DP 324424	98692 (Live)	Standard	Matamata-Piako District
218–219	65.72	219	6643434	Lot 2 DP 324424	98693 (Live)	Standard	Matamata-Piako District
219–220	71.42	219	6643434	Lot 2 DP 324424	98693 (Live)	Standard	Matamata-Piako District
219–220	71.42	220	4538189	Lot 1 DPS 73346	SA59A/855 (Live)	Standard	Matamata-Piako District
220–221	65.00	220	4538189	Lot 1 DPS 73346	SA59A/855 (Live)	Standard	Matamata-Piako District
220–221	65.00	221	4381467	Lot 2 DPS 73346	SA59A/856 (Live)	Standard	Matamata-Piako District
221–222	68.16	221	4381467	Lot 2 DPS 73346	SA59A/856 (Live)	Standard	Matamata-Piako District
221–222	68.16		4548544	Lot 11 DP 8633	SA6C/1023 (Live)	Standard	Matamata-Piako District
221–222	68.16		4568216	East Coast Main Trunk Railway	Proc 815	Railway	Matamata-Piako District
221–222	68.16		4572659	Sh 26	Legal Road as State Highway by GN H393017 Limited Access Road	Road/Rail	Matamata-Piako District
221–222	68.16	222	4364217	Lot 4 DPS 64533	SA52B/230 (Live)	Standard	Matamata-Piako District
221–222	68.16		4442802	Lot 3 DPS 64533	SA52B/229 (Live)	Standard	Matamata-Piako District



Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
221–222	68.16		4545244	Lot 9 DPS 64533	Crown - Vested in Matamata-Piako District Council as Local Purpose (Esplanade) Reserve	Standard	Matamata-Piako District
221–222	68.16		4607847	Waitakaruru Stream	SA6C/1023 & Esplanade Reserve	Hydro	Matamata-Piako District
222–223	65.00	222	4364217	Lot 4 DPS 64533	SA52B/230 (Live)	Standard	Matamata-Piako District
222–223	65.00		4442804	Lot 5 DPS 64533	SA52B/231 (Live)	Standard	Matamata-Piako District
222–223	65.00	223	4340476	Lot 2 DPS 91674	SA72C/184 (Live)	Standard	Matamata-Piako District
222–223	65.00		4604596	Kuranui Road	Legal Road by T46660	Road/Rail	Matamata-Piako District
223–224	69.72	223	4340476	Lot 2 DPS 91674	SA72C/184 (Live)	Standard	Matamata-Piako District
223–224	69.72	224	4502884	Lot 2 UPS 40672	SA36B/478 (Live)	Standard	Matamata-Piako District
224–225	65.00	224	4502884	Lot 2 DPS 40672	SA36B/478 (Live)	Standard	Matamata-Piako District
225–226	91.08	225	4502884	Lot 2 DPS 40672	SA36B/478 (Live)	Standard	Matamata-Piako District
225–226	91.08		4269591	Lot 2 DP 25237	SA657/88 (Live)	Standard	Matamata-Piako District
225–226	91.08	226	4538239	Lot 1 DPS 7873	SA1C/761 (Live)	Standard	Matamata-Piako District
226–227	65.00	226	4538239	Lot 1 DPS 7873	SA1C/761 (Live)	Standard	Matamata-Piako District
226–227	65.00		4347781	Lot 3 DP 8884	SA269/184 (Live)	Standard	Matamata-Piako District
226–227	65.00	227	4353839	Pt Sec 3 Blk V Maungakawa SD	SA46B/846 (Live)	Standard	Matamata-Piako District
227–228	66.82		4347781	Lot 3 DP 8884	SA269/184 (Live)	Standard	Matamata-Piako District
227–228	66.82	227	4353839	Pt Sec 3 Blk V Maungakawa SD	SA46B/846 (Live)	Standard	Matamata-Piako District
227–228	66.82	228	4286329	Lot 1 DP 26134	SA673/268 (Live)	Standard	Matamata-Piako District
228–229	109.10	228	4286329	Lot 1 DP 26134	SA673/268 (Live)	Standard	Matamata-Piako District

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
228-229 (Ham-Whu A)	98.00		4291763	Pt Lot 2 DP 8884	SA316/59	Standard	Matamata-Piako District
228-229 (Ham-Whu A)	100.00		4286329	Lot 1 DP 26134	SA673/268	Standard	Matamata-Piako District
229-230	68.48	229	4286329	Lot 1 DP 26134	SA673/268 (Live)	Standard	Matamata-Piako District
229-230	68.48	230	4489456	Lot 1 DPS 14286	SAI2A/932 (Live)	Standard	Matamata-Piako District
230-231	73.40	230	4489456	Lot 1 DPS 14286	SA2A/932 (Live)	Standard	Matamata-Piako District
230-231	73.40	231	4552635	Pt Lot 14 DP 11745	SA50D/763 (Live)	Standard	Matamata-Piako District
230-231	73.40		4414466	Lot 1 DP 13342	SA23B/699 (Live)	Standard	Matamata-Piako District
231-232	65.00	231	4552635	Pt Lot 14 DP 11745	SA50D/763 (Live)	Standard	Matamata-Piako District
232-232A	65.00	232	4552635	Pt Lot 14 DP 11745	SA50D/763 (Live)	Standard	Matamata-Piako District
232A-233	65.00	232A	4552635	Pt Lot 14 DP 11745	SA50D/763 (Live)	Standard	Matamata-Piako District
232A-233	65.00	233	4503381	Lot 1 DPS 62936	SA50D/762 (Live)	Standard	Matamata-Piako District
233-234	105.48	233	4503381	Lot 1 DPS 62936	SA50D/762 (Live)	Standard	Matamata-Piako District
233-234	105.48		4336331	Lot 12 DP 9810	SA470/262 (Live)	Standard	Matamata-Piako District
233-234	105.48		4414466	Lot 1 DP 13342	SA23B/699 (Live)	Standard	Matamata-Piako District
233-234	105.48		4366128	Lot 2 DPS 966	SA1062/141 (Live)	Standard	Matamata-Piako District
233-234	105.48	234	4375974	Pt Lot 2 DPS 35119	SA46D/906 (Live)	Standard	Matamata-Piako District
233-234	105.48		4584718	Tahuroa Road	Legal Road by Proc 2490	Road/Rail	Matamata-Piako District
234-235	65.00	234	4375974	Pt Lot 2 DPS 35119	SA46D/906(Live)	Standard	Matamata-Piako District
235-236	73.62	235	4375974	Pt Lot 2 DPS 35119	SA46D/906(Live)	Standard	Matamata-Piako District
235-236	73.62	236	4496171	Lot 2 DPS 87977	SA69A/472 (Live)	Standard	Matamata-Piako District

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
236–237	82.80		6848266	Lot 1 DP 366563	269661 (Live)	Standard	Matamata-Piako District
236–237	82.80	236	4496171	Lot 2 DPS 87977	SA69A/472 (Live)	Standard	Matamata-Piako District
236–237	82.80		4575907	Starky Road	Legal Road	Road/Rail	Matamata-Piako District
236–237	82.80	237	6848268	Lot 3 DP 366563	269663 (Live)	Standard	Matamata-Piako District
236–237	82.80		6848267	Lot 2 DP 366563	269662 (Live)	Standard	Matamata-Piako District
237–238	65.66	237	6848268	Lot 3 DP 366563	269663 (Live)	Standard	Matamata-Piako District
237–238	65.66		4486536	Lot 1 DPS 88170	SA69D/573 (Live)	Standard	Matamata-Piako District
237–238	65.66	238	4329550	Lot 2 DPS 88170	SA69D/574 (Live)	Standard	Matamata-Piako District
237–238	65.66		6848269	Lot 4 DP 366563	269664 (Live)	Standard	Matamata-Piako District
238–239	65.00	238	4329550	Lot 2 DPS 88170	SA69D/574 (Live)	Standard	Matamata-Piako District
238–239	65.00	239	4565113	Lot 10 DP 11745	SA403/107 (Live)	Standard	Matamata-Piako District
239–240	66.34	239	4565113	Lot 10 DP 11745	SA403/107 (Live)	Standard	Matamata-Piako District
240–241		65.00	4278415	Lot 1 DPS 75850	SA58C/282 (Live)	Standard	Matamata-Piako District
240–241	65.00	240	4565113	Lot 10 DP 11745	SA403/107 (Live)	Standard	Matamata-Piako District
240–241	65.00	241	4513341	Lot 2 DP 9810	SA302/125 (Live)	Standard	Matamata-Piako District
240–241	65.00		4589594	Bell Road	Legal Road by SO 4537M Notes Road Taken with Consent of Owners	Road/Rail	Matamata-Piako District
241–242	65.00	241	4513341	Lot 2 DP 9810	SA302/125 (Live)	Standard	Matamata-Piako District
242–243	65.00	242	4513341	Lot 2 DP 9810	SA302/125 (Live)	Standard	Matamata-Piako District
242–243	65.00	243	4300249	Lot 1 DP 15442	SA403/106 (Live)	Standard	Matamata-Piako District
243–244	72.52	243	4300249	Lot 1 DP 15442	SA403/106 (Live)	Standard	Matamata-Piako District

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
243–244	72.52	244	4444206	Sec 6 Blk XIV Maungakawa SD	SA51A/375 (Live)	Standard	Matamata-Piako District
244–245	71.62	244	4444206	Sec 6 Blk XIV Maungakawa SD	SA51A/375 (Live)	Standard	Matamata-Piako District
244–245	71.62	245	4339056	Lot 1 DPS 67187	SA53D/614 (Live)	Standard	Matamata-Piako District
244–245	71.62		6537463	Lot 2 DPS 92243	SA72D/867 (Live)	Standard	Matamata-Piako District
245–246	102.96	245	4339056	Lot 1 DPS 67187	SA530/614 (Live)	Standard	Matamata-Piako District
245–246	102.96	246	6537463	Lot 2 DPS 92243	SA72D/867 (Live)	Standard	Matamata-Piako District
245–246	102.96	246	6537464	Lot 3 DPS 92243	SA72D/868 (Live)	Standard	Matamata-Piako District
246–247	87.98	246	6537463	Lot 2 DPS 92243	SA72D/867 (Live)	Standard	Matamata-Piako District
246–247	87.98	246	6537464	Lot 3 DPS 92243	SA72D/868 (Live)	Standard	Matamata-Piako District
246–247	87.98	247	4328033	Lot 1 DPS 86372	SA67B/938 (Live)	Standard	Waipa District (border)

## **Overhead Line in Waipa District**

[2580] The requirement for a designation for the Overhead Line in the Waipa District Plan comprising Route Sections 11–13, Towers 247–320 is confirmed on the terms and subject to the conditions set out below.

### **Description of works**

[2581] The designation is for the construction, operation and maintenance of that part of a 400-kV-capable transmission line which is within the Waipa District, to convey electricity between the Brownhill Substation site at 149 Brownhill Road in Manukau City and the Whakamaru and Whakamaru North Substations site in Taupo District, as part of the upper North Island Grid Upgrade Project, and ancillary activities.

[2582] The nature of the work is described more particularly in Part VII (excluding section 24 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### **Land that is subject to the designation**

[2583] The designation applies to the land shown on Maps 76–88 in Appendix V and listed in table 11.

### **Lapse**

[2584] The designation shall not lapse for a period of 15 years after incorporation in the Waipa District Plan.

### **Conditions**

[2585] The designation is subject to the conditions set out in Appendix M.

**Table 11: Legal descriptions of land parcels for the Overhead Line within Waipa District**

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
246–247	87.98	247	4328033	Lot 1 DPS 86372	SA67B/938 (Live)	Standard	Waipa District (border)
247–248	82.12	247	4328033	Lot 1 DPS 86372	SA67B/938 (Live)	Standard	Waipa District Council
248–249	65.00	248	4328033	Lot 1 DPS 86372	SA67B/938 (Live)	Standard	Waipa District Council
248–249	65.00	249	4290099	Lot 2 DPS 86372	SA67B/938 (Live)	Standard	Waipa District Council
249–250	65.00	249	4290099	Lot 2 DPS 86372	SA67B/938 (Live)	Standard	Waipa District Council
249–250	65.00		4328033	Lot 1 DPS 86372	SA67B/938 (Live)	Standard	Waipa District Council
249–250	65.00		4406443	Lot 2 DPS 50184	SA67B/938 (Live)	Standard	Waipa District Council
250–251	69.44	250	4290099	Lot 2 DPS 86372	SA67B/938 (Live)	Standard	Waipa District Council
250–251	69.44		4509455	Lot 3 DPS 84989	SA67B/938 (Live)	Standard	Waipa District Council
250–251	69.44		4406443	Lot 2 DPS 50184	SA67B/938 (Live)	Standard	Waipa District Council
250–251	69.44		4463717	Lot 2 DPS 84989	SA72B/696 (Live)	Standard	Waipa District Council
251–252	76.36	251	4290099	Lot 2 DPS 86372	SA67B/938 (Live)	Standard	Waipa District Council
251–252	76.36		4463717	Lot 2 DPS 84989	SA72B/696 (Live)	Standard	Waipa District Council
251–252	76.36		6551635	Lot 2 DPS 91502	SA72B/696 (Live)	Standard	Waipa District Council
251–252	76.36		4492153	Sec 77 Te Miro Settlement	SA44C/983 (Live)	Standard	Waipa District Council
251–252	76.36	252	4477692	Lot 1 DPS 86000	SA68A/897 (Live)	Standard	Waipa District Council
251–252	76.36		4279165	Lot 2 DPS 52057	SA44C/983 (Live)	Standard	Waipa District Council
251–252	76.36		4584174	Gray Road	Legal Road by Crown Grant	Road/Rail	Waipa District Council
252–253	65.00	252	4477692	Lot 1 DPS 86000	SA68A/897 (Live)	Standard	Waipa District Council
253–254	110.14	253	4477692	Lot 1 DPS 86000	SA68A/897 (Live)	Standard	Waipa District Council
253–254	110.14	254	4327511	Lot 2 DPS 86000	SA68A/898 (Live)	Standard	Waipa District Council
253–254	110.14		4325460	Sec 21 Te Miro Settlement	SA1210/194 (Live)	Standard	Waipa District Council
254–255	89.12	254	4327511	Lot 2 DPS 86000	SA68A/898 (Live)	Standard	Waipa District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
254–255	89.12	255	4325460	Sec 21 Te Miro Settlement	SA1210/194 (Live)	Standard	Waipa District Council
255–256	71.40		4424595	Lot 1 DPS 76519	SA60A/753 (Live)	Standard	Waipa District Council
255–256	71.40	255	4325460	Sec 21 Te Miro Settlement	SA1210/194 (Live)	Standard	Waipa District Council
255–256	71.40		4584187	Te Miro Road	Legal Road	Road/Rail	Waipa District Council
255–256	71.40	256	6570630	Lot 4 DP 309274	36123 (Live)	Standard	Waipa District Council
256–257	65.00	256	6570630	Lot 4 DP 309274	36123 (Live)	Standard	Waipa District Council
257–258	65.00	257	6570630	Lot 4 DP 309274	36123 (Live)	Standard	Waipa District Council
258–259	73.20		4565100	Whareraureka C3A	SA51C/656 (Live)	Standard	Waipa District Council
258–259	73.20	258	6570630	Lot 4 DP 309274	36123 (Live)	Standard	Waipa District Council
258–259	73.20		4582486	Te Miro Road	Legal Road - Public Road by Warrant 4437	Road/Rail	Waipa District Council
258–259	73.20	259	4329889	Lot 2 DPS 89953	SA71A/762 (Live)	Standard	Waipa District Council
259–260	65.00	259	4329889	Lot 2 DPS 89953	SA71A/762 (Live)	Standard	Waipa District Council
260–261	65.00	260	4329889	Lot 2 DPS 89953	SA71A/762 (Live)	Standard	Waipa District Council
260–261	65.00	261	4331101	Sec 4 Bk III Cambridge SD	SA71A/762 (Live)	Standard	Waipa District Council
261–262	65.00	261	4331101	Sec 4 Bk III Cambridge SD	SA71A/762 (Live)	Standard	Waipa District Council
261–262	65.00		4603817	Brunskill Road	Legal Road	Road/Rail	Waipa District Council
261–262	65.00	262	6759247	Lot 2 DP 345041	184706 (Live)	Standard	Waipa District Council
262–263	66.04	262	6759247	Lot 2 DP 345041	184706 (Live)	Standard	Waipa District Council
263–264	73.58	263	6759247	Lot 2 DP 345041	184706 (Live)	Standard	Waipa District Council
263–264	73.58	264	4256148	Pt Sec 6 Te Miro Settlement	SA33B/231 (Live)	Standard	Waipa District Council
264–265	67.68	264	4256148	Pt Sec 6 Te Miro Settlement	SA33B/231 (Live)	Standard	Waipa District Council
264–265	67.68	265	4543708	Pt Lot 2 DP 22079	27335 (Live)	Standard	Waipa District Council
265–266	65.00	265	4543708	Pt Lot 2 DP 22079	27335 (Live)	Standard	Waipa District Council
266–267	65.00	266	4543708	Pt Lot 2 DP 22079	27335 (Live)	Standard	Waipa District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
266-267	65.00	267	6570907	Lot 4 DP 307026	27338 (Live)	Standard	Waipa District Council
266-267	65.00		6570904	Lot 1 DP 307026	27335 (Live)	Standard	Waipa District Council
267-267A	65.00	267	6570907	Lot 4 DP 307026	27338 (Live)	Standard	Waipa District Council
267A-268	65.00	267A	6570907	Lot 4 DP 307026	27338 (Live)	Standard	Waipa District Council
267A-268	65.00	268	4440912	Lot 2 DP 22739	27338 (Live)	Standard	Waipa District Council
268-269	88.18	268	4440912	Lot 2 DP 22739	27338 (Live)	Standard	Waipa District Council
269-270	65.00	269	4440912	Lot 2 DP 22739	27338 (Live)	Standard	Waipa District Council
269-270	65.00	270	4517085	Lot 2 DPS 9597	SA5B/254 (Live)	Standard	Waipa District Council
270-271	68.12	270	4517085	Lot 2 DPS 9597	SA5B/254 (Live)	Standard	Waipa District Council
271-272	65.00	271	4517085	Lot 2 DPS 9597	SA5B/254 (Live)	Standard	Waipa District Council
272-273	65.00	272	4517085	Lot 2 DPS 9597	SA5B/254 (Live)	Standard	Waipa District Council
273-274	65.00	273	4517085	Lot 2 DPS 9597	SA5B/254 (Live)	Standard	Waipa District Council
273-274	65.00	274	4544913	Sec 8 Blk XI Cambridge SD	SA891/99 (Live)	Standard	Waipa District Council
273-274	65.00		4581178	Brunskill Road	Legal Road - Public Road by Crown Grant - (Tarsealed)	Road/Rail	Waipa District Council
274-275	79.52	274	4544913	Sec 8 Blk XI Cambridge SD	SA891/99 (Live)	Standard	Waipa District Council
275-276	111.56	275	4544913	Sec 8 Blk XI Cambridge SD	SA891/99 (Live)	Standard	Waipa District Council
275-276	111.56		6570519	Wairamea Stream	17586 AMF Rights to Halfway	Hydro	Waipa District Council
275-276	111.56	276	6569843	Lot 6 DP 304349	17586 (Live)	Standard	Waipa District Council
276-277	81.78	276	6569843	Lot 6 DP 304349	17586 (Live)	Standard	Waipa District Council
276-277	81.78	277	4309844	Pt Lot 2 DPS 1620	SA12B/484 (Part Cancelled)	Standard	Waipa District Council
277-278	73.12	277	4309844	Pt Lot 2 DPS 1620	SA12B/484 (Part Cancelled)	Standard	Waipa District Council
278-279	65.00	278	4309844	Pt Lot 2 DPS 1620	SA12B/484 (Part Cancelled)	Standard	Waipa District Council
278-279	65.00	279	6583229	Sec 1 SO 310663	SA70D/559(Live)	Standard	Waipa District Council
279-280	65.00	279	6583229	Sec 1 SO 310663	SA70D/559(Live)	Standard	Waipa District Council



Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
279–280	65.00	280	4415192	Sec 5 Blk XI Cambridge SD	SA650/288 (Live)	Standard	Waipa District Council
280–281	65.00	280	4415192	Sec 5 Blk XI Cambridge SD	SA650/288 (Live)	Standard	Waipa District Council
280–281	65.00	281	4269026	Lot 1 DPS 86374	SA68B/382 (Live)	Standard	Waipa District Council
281–282	115.64	281	4269026	Lot 1 DPS 86374	SA68B/382 (Live)	Standard	Waipa District Council
281–282	115.64		4431441	Sec 4 Bik XI Cambridge SD	SA269/250 (Live)	Standard	Waipa District Council
281–282	115.64	282	4260035	Sec 7 Blk XI Cambridge SD	SA4B/660 (Live)	Standard	Waipa District Council
281–282	115.64	282	4542259	Pt Lot 16 Deeds Plan C 36	SA767/265 (Live)	Standard	Waipa District Council
281–282	115.64		4583743	Buckland Road	Legal road by Proc 3899A	Road/Rail	Waipa District Council
282–283	85.12		4369244	Lot 2 DPS 76676	SA656/182 (Live)	Standard	Waipa District Council
282–283	85.12		4574429	Taotaoroa Road	Legal road - Public Road by CG (Crown Grant) and Refers to Appn 507	Road/Rail	Waipa District Council
282–283	85.12	282	4260035	Sec 7 Blk XI Cambridge SD	SA4B/660 (Live)	Standard	Waipa District Council
282–283	85.12	282	4542259	Pt Lot 16 Deeds Plan C 36	SA767/265 (Live)	Standard	Waipa District Council
282–283	85.12		4487347	Lot 1 DPS 82829	SA656/182 (Live)	Standard	Waipa District Council
282–283	85.12	283	4328885	Lot 1 DPS 62514	SA51A/19 (Live)	Standard	Waipa District Council
283–284	81.34	283	4328885	Lot 1 DPS 62514	SA51A/19 (Live)	Standard	Waipa District Council
283–284	81.34	284	4487347	Lot 1 DPS 82829	SA65B/182 (Live)	Standard	Waipa District Council
284–285	65.00	284	4487347	Lot 1 DPS 82829	SA65B/182 (Live)	Standard	Waipa District Council
284–285	65.00	284	4328885	Lot 1 DPS 62514	SA51A/19 (Live)	Standard	Waipa District Council
284–285	65.00	285	4333819	Lot 2 DPS 87486	SA716/98 (Live)	Standard	Waipa District Council
285–286AB	108.00	285	4333819	Lot 2 DPS 87486	SA716/98 (Live)	Standard	Waipa District Council
286A6287	105.74	286B	4333819	Lot 2 DPS 87486	SA716/98 (Live)	Standard	Waipa District Council
287–288	65.00	287	4333819	Lot 2 DPS 87486	SA716/98 (Live)	Standard	Waipa District Council
287–288	65.00	288	6629863	Lot 8 DP 312838	50429 (Live)	Standard	Waipa District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
288-289	116.42	288	6629863	Lot 8 DP 312838	50429 (Live)	Standard	Waipa District Council
288-289	116.42	289	4386089	Pt Lot VIA DP 3300	SA737/164 (Live)	Standard	Waipa District Council
289-290	83.14	289	4386089	Pt Lot VIA DP 3300	SA737/164 (Live)	Standard	Waipa District Council
289-290	83.14		4468111	Pt Lot 2 DP 36274	SA1210/109 (Live)	Standard	Waipa District Council
289-290	83.14	290	4274283	Sec 10 Blk XV Cambridge SD	SA49C/894 (Live)	Standard	Waipa District Council
289-290	83.14		4539386	Sec 9 Blk XV Cambridge SD	SA25B/893 (Live)	Standard	Waipa District Council
289-290	83.14		4583911	Kentucky Road	Legal Road - Public Road by NZG 1991 p 1456	Road/Rail	Waipa District Council
290-291	65.00	290	4274283	Sec 10 Blk XV Cambridge SD	SA49C/894 (Live)	Standard	Waipa District Council
291-291A	119.62	291	4274283	Sec 10 Blk XV Cambridge SD	SA49C/894 (Live)	Standard	Waipa District Council
291-291A	119.62		4437044	Pt Lot XI DP 3300	GN H076149	Standard	Waipa District Council
291-291A	119.62		4387071	Pt Lot XI DP 3300	GN 5729950.1	Standard	Waipa District Council
291-291A	119.62		4415578	Pt Lot XI DP 3300	GN H076149	Standard	Waipa District Council
291-291A	119.62		4602807	Tirau Road	Legal road - State Highway by GN H950355 Limited Access Road and GN H076149 Land taken for Road	Road/Rail	Waipa District Council
291-291A	119.62		4607793	Lake Karapiro		Hydro	Waipa District Council
291-291A	119.62		4335418	Pt Lot 5 DP 7038	GN 5729973.1	Standard	Waipa District Council
291-291A	119.62	291A	4559824	Pt Lot 5 DP 7038	SA295/156 (Part Cancelled)	Standard	Waipa District Council
291-291A	119.62		4395139	Pt Lot 5 DP 7038	GN 5729973.1	Standard	Waipa District Council
291A-292	65.00	291A	4559824	Pt Lot 5 DP 7038	SA295/156 (Part Cancelled)	Standard	Waipa District Council
292-293	65.00	292	4559824	Pt Lot 5 DP 7038	SA295/156 (Part Cancelled)	Standard	Waipa District Council
292-293	65.00		4395139	Pt Lot 5 DP 7038	GN 5729973.1	Standard	Waipa District Council
293-294	88.76	293	4559824	Pt Lot 5 DP 7038	SA295/156 (Part Cancelled)	Standard	Waipa District Council
293-294	88.76	296	4430163	Lot 6 DP 7038	SA196/261 (Live)	Standard	Waipa District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
296-297	65.00	296	4430163	Lot 6 DP 7038	SA196/261 (Live)	Standard	Waipa District Council
296-297	65.00	297	6741946	Lot 1 DP 342158	173322 (Live)	Standard	Waipa District Council
297-298	97.64	297	6741946	Lot 1 DP 342158	173322 (Live)	Standard	Waipa District Council
297-298	97.64	298	6717728	Lot 1 DP 338604	158955 (Live)	Standard	Waipa District Council
297-298	97.64	298	4468546	Pt Lot 7 DP 12360	SA40A/86 (Live)	Standard	Waipa District Council
298-299	66.56	298	6717728	Lot 1 DP 338604	158955 (Live)	Standard	Waipa District Council
298-299	66.56	298	4468546	Pt Lot 7 DP 12360	SA40A/86 (Live)	Standard	Waipa District Council
298-299	66.56	299	4483899	Pt Lot 1 DP 14813	SA39D/429 (Part Cancelled)	Standard	Waipa District Council
298-299	66.56		4577508	Maungatautari Road	Legal Road - Public Road by T67048	Road/Rail	Waipa District Council
299-300	65.00	299	4483899	Pt Lot 1 DP 14813	SA39D/429 (Part Cancelled)	Standard	Waipa District Council
300-301	70.78	300	4483899	Pt Lot 1 DP 14813	SA39D/429 (Part Cancelled)	Standard	Waipa District Council
300-301	70.78	301	6983999	Lot 1 DP 369418	281962	Standard	Waipa District Council
301-302	91.06		4594714	Oreipunga Road	Legal Road - Public Road by Procs 3294 & 3307	Road/Rail	Waipa District Council
301-302	91.06		4568507	Oreipunga Road	Legal Road - Public Road by Procs 3294 & 3307	Road/Rail	Waipa District Council
301-302	91.06	301	6984000	Lot 2 DP 369418	281963	Standard	Waipa District Council
301-302	91.06		4586754	Oreipunga Road	Legal Road - Public Road by Procs 3294 & 3307	Road/Rail	Waipa District Council
301-302	91.06		4440989	Lot 2 DP 8335	SA625/285 (Live)	Standard	Waipa District Council
301-302	91.06		4585734	Roberts Road	Legal Road - Public Road by Procs 3294 & 3307	Road/Rail	Waipa District Council
301-302	91,06	302	4409975	Pt Lot 1 DP 27020	SA1001/172 (Part Cancelled)	Standard	Waipa District Council
302-303	79.16	302	4409975	Pt Lot 1 DP 27020	SA1001/172 (Part Cancelled)	Standard	Waipa District Council
302-303	79.16		4409985	Lot 2 DPS 88316	SA69D/865 (Live)	Standard	Waipa District Council
302-303	79.16	303	6740200	Lot 1 DP 343365	177916 (Live)	Standard	Waipa District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
303-304	65.00	303	6740200	Lot 1 DP 343365	177916 (Live)	Standard	Waipa District Council
304-305	75.70	304	6740200	Lot 1 DP 343365	177916 (Live)	Standard	Waipa District Council
304-305	75.70		4414925	Lot 1 DP 9774	SA402/102 (Live)	Standard	Waipa District Council
304-305	75.70	305	6651887	Lot 2 DP 320685	81973 (Live)	Standard	Waipa District Council
305-306	74.42	305	6651887	Lot 2 DP 320685	81973 (Live)	Standard	Waipa District Council
306-307	65.00	306	6651887	Lot 2 DP 320685	81973 (Live)	Standard	Waipa District Council
307-308	78.40	307	6651887	Lot 2 DP 320685	81973 (Live)	Standard	Waipa District Council
307-308	78.40	308	4409703	Pt Horahora Block	SA190/113 (Live)	Standard	Waipa District Council
308-309	79.08	308	4409703	Pt Horahora Block	SA190/113 (Live)	Standard	Waipa District Council
308-309	79.08	309	4487954	Pt Horahora Block	SA36C/390 (Live)	Standard	Waipa District Council
309-310	65.00	309	4487954	Pt Horahora Block	SA36C/390 (Live)	Standard	Waipa District Council
310-311	89.50	310	4487954	Pt Horahora Block	SA36C/390 (Live)	Standard	Waipa District Council
310-311	89.50	311	4499394	Lot 1 DPS 75777	SA59D/337 (Live)	Standard	Waipa District Council
310-311	89.50		4411176	Lot 10 DP 24577	SA59D/337 (Live)	Standard	Waipa District Council
310-311	89.50		4589489	Makgill Road	Legal Road - Public Road by T265067	Road/Rail	Waipa District Council
311-312	87.84	311	4499394	Lot 1 DPS 75777	SA59D/337 (Live)	Standard	Waipa District Council
311-312	87.84		4258179	Lot 6 DP 24577	SA1D/612 (Live)	Standard	Waipa District Council
311-312	87.84	312	4384594	Pt Lot 2 DPS 32264	SA29D/856 (Part Cancelled)	Standard	Waipa District Council
312-313	73.74	312	4384594	Pt Lot 2 DPS 32264	SA29D/856 (Part Cancelled)	Standard	Waipa District Council
312-313	73.74	313	4306359	Lot 1 DP 25057	SA727/126 (Live)	Standard	Waipa District Council
313-314	65.00	313	4306359	Lot 1 DP 25057	SA727/126 (Live)	Standard	Waipa District Council
313-314	65.00		4575121	Oreipunga Road	Legal Road - Public Road by Warrant 30/7/1885	Road/Rail	Waipa District Council
313-314	65.00	314	6543206	Lot 2 DPS 91952	SA72D/109 (Live)	Standard	Waipa District Council
314-315	65.00	314	6543206	Lot 2 DPS 91952	SA72D/109 (Live)	Standard	Waipa District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
314–315	65.00	315	4306070	Pt Lot 3 DP 10556	SA72D/108 (Live)	Standard	Waipa District Council
315–316	65.00	315	4306070	Pt Lot 3 DP 10556	SA72D/108 (Live)	Standard	Waipa District Council
316–317	65.00	316	4306070	Pt Lot 3 DP 10556	SA72D/108 (Live)	Standard	Waipa District Council
317–318	65.00	317	4306070	Pt Lot 3 DP 10556	SA72D/108 (Live)	Standard	Waipa District Council
317–318	65.00	318	4319326	Lot 1 DPS 28108	SA26A/687 (Live)	Standard	Waipa District Council
317–318	65.00		4397852	Lot 1 DPS 11290	SA720/108 (Live)	Standard	Waipa District Council
318–319	65.00	318	4319326	Lot 1 DPS 28108	SA26A/687 (Live)	Standard	Waipa District Council
318–319	65.00		4397852	Lot 1 DPS 11290	SA72D/108 (Live)	Standard	Waipa District Council
318–319	65.00	319	4474783	Lot 2 DPS 28108	SA53B/595 (Live)	Standard	Waipa District Council
319–320	65.00	319	4474783	Lot 2 DPS 28108	SA53B/595 (Live)	Standard	Waipa District Council
320–321	107.44	320	4474783	Lot 2 DPS 28108	SA53B/595 (Live)	Standard	Waipa District Council
320–321	107.44		4605685	Waiteti Stream	SA53B/595 (Live) + Proc 6070 AMF rights	Hydro	Waipa District (border)

## **Overhead Line in South Waikato District**

[2586] The requirement for a designation for the Overhead Line in the South Waikato District Plan comprising Route Sections 14–15, Towers 321–427 is confirmed on the terms and subject to the conditions set out below.

### **Description of works**

[2587] The designation is for the construction, operation and maintenance of that part of a 400-kV-capable transmission line which is within the South Waikato District, to convey electricity between the Brownhill Substation site at 149 Brownhill Road in Manukau City and the Whakamaru and Whakamaru North Substations site in Taupo District, as part of the upper North Island Grid Upgrade Project, and ancillary activities.

[2588] The nature of the work is described more particularly in Part VII (excluding section 24 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### **Land that is subject to the designation**

[2589] The designation applies to the land shown on Maps 88–112 in Appendix V and listed in table 12.

### **Lapse**

[2590] The designation shall not lapse for a period of 15 years after incorporation in the South Waikato District Plan.

### **Conditions**

[2591] The designation is subject to the conditions set out in Appendix N.

**Table 12: Legal descriptions of land parcels for the Overhead Line within South Waikato District**

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
320–321	107.44		4605685	Waiteti Stream	SA53B/595 (Live) + Proc 6070 AMF rights	Hydro	Waipa District (border)
320–321	107.44		4366896	Pt Sec 27A Blk XII Maungatautari SD	Proc 6070	Standard	South Waikato District Council
320–321	107.44		4355024	Sec 3 SO 40682	Crown Land Held under Land Act 1948 - no Land Transfer Reference as per NZG 2003 p1336	Standard	South Waikato District Council
320–321	107.44		4475414	Pt Sec 2 SO 40682	Proc 5240268	Standard	South Waikato District Council
320–321	107.44	321	6722372	Lot 2 DP 341642	171365 (Live)	Standard	South Waikato District Council
320–321	107.44		4564835	Pt Huihuitaha	Crown Land Held under Land Act 1948 - no Land Transfer Reference as per NZG 2003 p1336	Standard	South Waikato District Council
320–321	107.44		4607794	Waikato River		Hydro	South Waikato District Council
321–322	70.96	321	6722372	Lot 2 DP 341642	171365 (Live)	Standard	South Waikato District Council
321–322	70.96		4279108	Sec 74 Blk XII Maungatautari SD	SA23C/134 (Live)	Standard	South Waikato District Council
321–322	70.96	322	4376293	Lot 4 DP 18442	171366 (Live)	Standard	South Waikato District Council
321–322	70.96		4586720	Arapuni Road	Legal Road - Public Road by NZG 1924 p 2859	Road/Rail	South Waikato District Council
322–323	65.00	322	4376293	Lot 4 DP 18442	171366 (Live)	Standard	South Waikato District Council
322–323	65.00	323	4298207	Sec 42 Blk XII Maungatautari SD	SA72B/766 (Live)	Standard	South Waikato District Council
323–324	65.00	323	4298207	Sec 42 Blk XII Maungatautari SD	SA72B/766 (Live)	Standard	South Waikato District Council
323–324	65.00		4410793	Lot 1 DPS 1252	SA72B/766 (Live)	Standard	South Waikato District Council
324–325	70.44		4410793	Lot 1 DPS 1252	SA72B/766 (Live)	Standard	South Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
324–325	70.44	324	4298207	Sec 42 Blk XII Maungatautari SD	SA72B/766 (Live)	Standard	South Waikato District Council
324–325	70.44	325	4488977	Lot 2 DPS 1252	SA72B/766 (Live)	Standard	South Waikato District Council
324–325	70.44		4488976	Lot 2 DPS 91524	SA72B/767 (Live)	Standard	South Waikato District Council
325–326	65.00	325	4488977	Lot 2 DPS 1252	SA72B/766 (Live)	Standard	South Waikato District Council
325–326	65.00		4488976	Lot 2 DPS 91524	SA72B/767 (Live)	Standard	South Waikato District Council
325–326	65.00	326	4284721	Sec 67 Blk XII Maungatautari SD	SA45A/447 (Live)	Standard	South Waikato District Council
325–326	65.00		4585455	Lake Arapuni Road	Legal Road - Public Road by Crown Grant	Road/Rail	South Waikato District Council
326–327	65.00	326	4284721	Sec 67 Blk XII Maungatautari SD	SA45A/447 (Live)	Standard	South Waikato District Council
327–328	65.00	327	4284721	Sec 67 Blk XII Maungatautari SD	SA45A/447 (Live)	Standard	South Waikato District Council
328–329	65.00		4560308	Lot 1 DPS 31548	SA28A/203 (Live)	Standard	South Waikato District Council
328–329	65.00		4422569	Sec 14 Blk XII Maungatautari SD	SA45A/358 (Live)	Standard	South Waikato District Council
328–329	65.00	328	4284721	Sec 67 Blk XII Maungatautari SD	SA45A/447 (Live)	Standard	South Waikato District Council
328–329	65.00	329	4375888	Lot 2 DPS 31548	SA28A/204 (Live)	Standard	South Waikato District Council
329–330	65.00	329	4375888	Lot 2 DPS 31548	SA28A/204 (Live)	Standard	South Waikato District Council
330–331	65.00	330	4375888	Lot 2 DPS 31548	SA28A/204 (Live)	Standard	South Waikato District Council
331–332	66.96		4259953	Pt Sec 24 Blk IX Patetere North SD	SA1039/20 (Live)	Standard	South Waikato District Council
331–332	66.96		4454563	Sec 62 Blk IX Patetere North SD	SA1039/20 (Live)	Standard	South Waikato District Council
331–332	66.96	331	4375888	Lot 2 DPS 31548	SA28A/204 (Live)	Standard	South Waikato District Council
331–332	66.96		4573591	Huihuitaha Road	Legal Road - Public Road by Crown Grant	Road/Rail	South Waikato District Council



Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
331–332	66.96		4581916	Road	Legal Road by NZG 1899 p 110	Road/Rail	South Waikato District Council
331–332	66.96		6637471	Road		Road/Rail	South Waikato District Council
331–332	66.96	332	4376069	Lot 2 DPS 33944	41273 (Live)	Standard	South Waikato District Council
332–333	65.00	332	4376069	Lot 2 DPS 33944	41273 (Live)	Standard	South Waikato District Council
332–333	65.00	333	4324988	Huihuitaha 2A2	SA327/249 (Live)	Standard	South Waikato District Council
333–334	65.00	333	4324988	Huihuitaha 2A2	SA327/249 (Live)	Standard	South Waikato District Council
333–334	65.00		4376069	Lot 2 DPS 33944	41273 (Live)	Standard	South Waikato District Council
334–335	65.00	334	4324988	Huihuitaha 2A2	SA327/249 (Live)	Standard	South Waikato District Council
334–335	65.00	335	4533670	Lot 2 DP 24181	SA639/65 (Live)	Standard	South Waikato District Council
335–336	72.48		4567765	Lot 3 DP 24181	SA639/66 (Live)	Standard	South Waikato District Council
335–336	72.48	335	4533670	Lot 2 DP 24181	SA639/65 (Live)	Standard	South Waikato District Council
335–336	72.48	336	4410855	Pt Lot 1 DP 24496	SA1409/27 (Live)	Standard	South Waikato District Council
336–337	65.00	336	4410855	Pt Lot 1 DP 24496	SA1409/27 (Live)	Standard	South Waikato District Council
336–337	65.00	337	4567626	Lot 2 DPS 91758	SA72C/618 (Live)	Standard	South Waikato District Council
337–338	65.00	337	4567626	Lot 2 DPS 91758	SA72C/618 (Live)	Standard	South Waikato District Council
337–338	65.00		4271410	Lot 1 DPS 91758	SA72C/617 (Live)	Standard	South Waikato District Council
338–339	65.00	338	4567626	Lot 2 DPS 91758	SA72C/618 (Live)	Standard	South Waikato District Council
338–339	65.00	339	6749945	Lot 2 DP 345190	185211 (Live)	Standard	South Waikato District Council
339–340	65.00	339	6749945	Lot 2 DP 345190	185211 (Live)	Standard	South Waikato District Council
339–340	65.00		4567763	Lot 2 DPS 2952	SA1461/68 (Live)	Standard	South Waikato District Council
340–341	65.00	340	6749945	Lot 2 DP 345190	185211 (Live)	Standard	South Waikato District Council
340–341	65.00	341	4567763	Lot 2 DPS 2952	SA1461/68 (Live)	Standard	South Waikato District Council
341–342	65.00	341	4567763	Lot 2 DPS 2952	SA1461/68 (Live)	Standard	South Waikato District Council
341–342	65.00	341	6749945	Lot 2 DP 345190	185211 (Live)	Standard	South Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
341–342	65.00		4460382	Waotu North No 3D No 2B Block	SA321/101 (Live)	Standard	South Waikato District Council
342–343	69.60		4303949	Pt Lot 10 DP 24181	SA653/291 (Part Cancelled)	Standard	South Waikato District Council
342–343	69.60		4460382	Waotu North No 3D No 2B Block	SA321/101 (Live)	Standard	South Waikato District Council
342–343	69.60	342	6749945	Lot 2 DP 345190	185211 (Live)	Standard	South Waikato District Council
342–343	69.60	343	4538310	Lot 1 DP 23973	SA960/136 (Part Cancelled)	Standard	South Waikato District Council
342–343	69.60		4569429	Waotu Road	Legal Road by NZG 1899 p 110	Road/Rail	South Waikato District Council
343–344	67.00	343	4538310	Lot 1 DP 23973	SA960/136 (Part Cancelled)	Standard	South Waikato District Council
343–344	67.00	344	4460000	Lot 1 DP 23662	SA960/136 (Part Cancelled)	Standard	South Waikato District Council
344–345	71.28	344	4460000	Lot 1 DP 23662	SA960/136 (Part Cancelled)	Standard	South Waikato District Council
345–346	65.00	345	4460000	Lot 1 DP 23662	SA960/136 (Part Cancelled)	Standard	South Waikato District Council
346–347	80.74	346	4460000	Lot 1 DP 23662	SA960/136 (Part Cancelled)	Standard	South Waikato District Council
346–347	80.74	347	4426518	Lot 2 DPS 2947	SA1409/99 (Part Cancelled)	Standard	South Waikato District Council
347–348	89.14	347	4426518	Lot 2 DPS 2947	SA1409/99 (Part Cancelled)	Standard	South Waikato District Council
347–348	89.14	348	6777011	Lot 1 DP 352553	215543 (Live)	Standard	South Waikato District Council
348–349	70.90	348	6777011	Lot 1 DP 352553	215543 (Live)	Standard	South Waikato District Council
349–350	65.00	349	6777011	Lot 1 DP 352553	215543 (Live)	Standard	South Waikato District Council
350–351	65.00	350	6777011	Lot 1 DP 352553	215543 (Live)	Standard	South Waikato District Council
350–351	65.00	351	4305026	Lot 2 DPS 23922	215544 (Live)	Standard	South Waikato District Council
351–352	65.00	351	4305026	Lot 2 DPS 23922	215544 (Live)	Standard	South Waikato District Council
351–352	65.00	352	4463480	Waotu South 17 Block	125578 (Live)	Standard	South Waikato District Council
352–353	65.00	352	4463480	Waotu South 17 Block	125578 (Live)	Standard	South Waikato District Council
352–353	65.00	353	4304820	Part Waotu South 10 ABC 3 Block	SA260/91 (Live)	Standard	South Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
353–354	69.88	353	4304820	Part Waotu South 10 ABC 3 Block	SA260/91 (Live)	Standard	South Waikato District Council
353–354	69.88		4463480	Waotu South 17 Block	125578 (Live)	Standard	South Waikato District Council
353–354	69.88		4541916	Waotu South 17 Block	125578 (Live)	Standard	South Waikato District Council
353–354	69.88		4584391	Wiltsdown Road	Legal Road - Public Road NZG 1912 p 3301	Road/Rail	South Waikato District Council
353–354	69.88	354	4292673	Waotu South 14 Block	SA297/132 (Live)	Standard	South Waikato District Council
354–355	65.00	354	4292673	Waotu South 14 Block	SA297/132 (Live)	Standard	South Waikato District Council
355–356	67.54	355	4292673	Waotu South 14 Block	SA297/132 (Live)	Standard	South Waikato District Council
355–356	67.54	356	7021620	Lot 1 DP 396966	386616	Standard	South Waikato District Council
356–357	65.00	356	7021620	Lot 1 DP 396966	386616	Standard	South Waikato District Council
357–358	69.10	357	7021620	Lot 1 DP 396966	386616	Standard	South Waikato District Council
358–359	65.00	358	7021620	Lot 1 DP 396966	386616	Standard	South Waikato District Council
359–360	67.54	359	7021620	Lot 1 DP 396966	386616	Standard	South Waikato District Council
360–361	65.00	360	7021620	Lot 1 DP 396966	386616	Standard	South Waikato District Council
360–361	65.00	361	7021620	Lot 1 DP 396966	386616	Standard	South Waikato District Council
361–362	65.00	361	7021622	Lot 3 DP 396966	386618	Standard	South Waikato District Council
362–363	83.72	362	7021622	Lot 3 DP 396966	386618	Standard	South Waikato District Council
364–365	69.24	364	7021622	Lot 3 DP 396966	386618	Standard	South Waikato District Council
364–365	69.24		4516907	Lot 1 DP 354784	365566	Standard	South Waikato District Council
365–366	65.00	365	7021622	Lot 1 DP 354784	365566	Standard	South Waikato District Council
365–366	65.00	366	4516907	Lot 1 DP 354784	365566	Standard	South Waikato District Council
366–367	65.00	366	4516907	Lot 1 DP 354784	365566	Standard	South Waikato District Council
367–368	65.00	367	4516907	Lot 1 DP 354784	365566	Standard	South Waikato District Council
368–369	65.00	368	4516907	Lot 1 DP 354784	365566	Standard	South Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
369–370	78.06	369	4516907	Lot 1 DP 354784	365566	Standard	South Waikato District Council
370–371	71.00	370	4516907	Lot 1 DP 354784	365566	Standard	South Waikato District Council
372–373	100.00	372	4516907	Lot 1 DP 354784	365566	Standard	South Waikato District Council
372–373	100.00		6837624	Jack Henry Road	Legal by DP 354784 (Lot 7 to Vest as Road)	Road/Rail	South Waikato District Council
372–373	100.00	373	4516907	Lot 5 DP 354784	413764	Standard	South Waikato District Council
373–374	100.00	373	4516907	Lot 5 DP 354784	413764	Standard	South Waikato District Council
374–375	100.00	374	4516907	Lot 5 DP 354784	413764	Standard	South Waikato District Council
375–376	100.00	375	4516907	Lot 5 DP 354784	413764	Standard	South Waikato District Council
377–378	100.00	377	4516907	Lot 5 DP 354784	413764	Standard	South Waikato District Council
378–379	100.00	378	4516907	Lot 5 DP 354784	413764	Standard	South Waikato District Council
379–380	100.00	379	4516907	Lot 5 DP 354784	413764	Standard	South Waikato District Council
379–380	100.00	380	4459993	Lot 2 DPS 1405	SA1070/42 (Live)	Standard	South Waikato District Council
379–380	at least 130.00		4571720	Maraetai Road	Legal Road - Public Road by 1172754	Road/Rail	South Waikato District Council
380–381	at least 130.00	380	4459993	Lot 2 DPS 1405	SA1070/42 (Live)	Standard	South Waikato District Council
381–382	at least 130.00	381	4459993	Lot 2 DPS 1405	SA1070/42 (Live)	Standard	South Waikato District Council
381–382	at least 130.00		4538305	Lot 4 DPS 1405	SA1429/4 (Live)	Standard	South Waikato District Council
381–382	at least 130.00	383	4461986	Lot 3 DPS 1405	SA1070/42 (Live)	Standard	South Waikato District Council
383–384	at least 130.00	383	4461986	Lot 3 DPS 1405	SA1070/42 (Live)	Standard	South Waikato District Council
384–385	at least 130.00	384	4461986	Lot 3 DPS 1405	SA1070/42 (Live)	Standard	South Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
385–386	at least 130.00	385	4461986	Lot 3 DPS 1405	SA1070142 (Live)	Standard	South Waikato District Council
385–386	at least 130.00		4583829	Peach Road	Legal Road - Public Road by T172754	Road/Rail	South Waikato District Council
385–386	at least 130.00	386	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
386–387	at least 130.00	386	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
387–388	at least 130.00	387	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
388–389	at least 130.00	388	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
389–390	at least 130.00	389	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
390–391	at least 130.00	390	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
392–393	at least 130.00	392	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
393–394	at least 130.00	393	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
394–395	at least 130.00	394	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
395–396	at least 130.00	395	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
396–397	at least 130.00	396	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
397–398	at least 130.00	397	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
399–400	at least 130.00	399	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
400–401	at least 130.00	400	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
401–402	at least 130.00	401	4469690	Lot 2 DPS 90122	150269 (Live)	Standard	South Waikato District Council
401–402	at least 130.00	402	4449880	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
402–403	at least 130.00	402	4449880	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
402–403	at least 130.00	403	4404164	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
402–403	at least 130.00		4560906	Sec 1 Blk III Whakamaru SD	150230	Standard	South Waikato District Council
403–404	at least 130.00	403	4404164	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
404–405	at least 130.00	404	4404164	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
404–405	at least 130.00		4603881	Whakamaru Road	Legal Road by Proc S 87258 Land Taken for Road	Road/Rail	South Waikato District Council
404–405	at least 130.00	405	4310916	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
405–406	at least 130.00	405	4310916	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
406–407	at least 130.00	406	4310916	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
407–408	at least 130.00	407	4310916	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
407–408	at least 130.00	408	4325522	Pt Lot 1 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
408–409	at least 130.00	408	4325522	Pt Lot 1 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
409–410	at least 130.00	409	4325522	Pt Lot 1 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
410–411	at least 130.00	410	4325522	Pt Lot 1 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
410–411	at least 130.00	411	4310916	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
411–412	at least 130.00	411	4310916	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
411–412	at least 130.00	413	4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
413–414	at least 130.00	413	4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
414–415	at least 130.00	414	4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
415–416	at least 130.00	415	_ 4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
415–416	at least 130.00		4331681	Pt Lot 2 DP 20269	Crown Land Held Under Land Act 1948 - no Land Transfer Reference as per NZG 1996 p57 GN5724553.1	Standard	South Waikato District Council
416–417	at least 130.00	416	4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
416–417	at least 130.00		4331681	Pt Lot 2 DP 20269	Crown Land Held under Land Act 1948 - no Land Transfer Reference as per NZG 1996 p57 GN5724553.1	Standard	South Waikato District Council
416–417	at least 130.00		4606717	Lake Maraetai	Crown Land Held under Land Act 1948 - no Land Transfer Reference as per NZG 1996 p57 GN5724553.1	Hydro	South Waikato District Council
418–419	at least 130.00	418	4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
418–419	at least 130.00		4331681	Pt Lot 2 DP 20269	Crown Land Held under Land Act 1948 - no Land Transfer Reference as per NZG 1996 p57 GN5724553.1	Standard	South Waikato District Council
418–419	at least 130.00		4606717	Lake Maraetai	Crown Land Held under Land Act 1948 - no Land Transfer Reference as per NZG 1996 p57 GN5724553.1	Hydro	South Waikato District Council
419–420	at least 130.00	419	4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
420–421	at least 130.00	420	4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
421–422	at least 130.00	421	4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
422–423	at least 130.00	422	4512013	Pt Lot 2 DP 20269	SA885/38 (Part Cancelled)	Standard	South Waikato District Council
422–423	at least 130.00	423	4310916	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
423–424	at least 130.00	423	4310916	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
424–425	at least 130.00	424	4310916	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
424–425	at least 130.00	425	4437774	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
424–425	at least 130.00		4254605	Sec 32 Blk VI Whakamaru SD	150230	Standard	South Waikato District Council
424–425	at least 130.00		4603732	Whakamaru Road	Legal Road by Proc S 87258 Land Taken for Road	Road/Rail	South Waikato District Council
425–426	at least 130.00	425	4437774	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
426–427	at least 130.00	426	4437774	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council



Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
427–428	at least 130.00		4424734	Pt Whakamaru Maungaiti		Standard	South Waikato District Council
427–428	at least 130.00	427	4437774	DP 19831	SA885/37 (Part Cancelled)	Standard	South Waikato District Council
427–428	100.00		4606569	Lake Maraetai		Hydro	Taupo District (border)

## **Overhead Line in Taupo District**

[2592] The requirement for a designation for the Overhead Line in the Taupo District Plan comprising Route Section 15, Towers 428–429 is confirmed on the terms and subject to the conditions set out below.

### **Description of works**

[2593] The designation is for the construction, operation and maintenance of that part of a 400-kV-capable transmission line which is within the Taupo District, to convey electricity between the Brownhill Substation site at 149 Brownhill Road in Manukau City and the Whakamaru and Whakamaru North Substations site in Taupo District, as part of the proposed Upper North Island Grid Upgrade Project, and ancillary activities.

[2594] The nature of the work is described more particularly in Part VII (excluding section 24 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007).

### **Land that is subject to the designation**

[2595] The designation applies to the land shown on Map 101A in Appendix V and listed in table 13.

### **Lapse**

[2596] The designation shall not lapse for a period of 15 years after incorporation in the Taupo District Plan.

### **Conditions**

[2597] The designation is subject to the conditions set out in Appendix O.

**Table 13: Legal descriptions of land parcels for the Overhead Line within Taupo District Council**

Span	Designation Width (m)	First Tower	Parcel ID	Parcel (Legal) Description	CT or CFR Reference	Parcel Type	Local Authority
427-428	100.00		4606569	Lake Maraetai		Hydro	Taupo District (border)
427-428	100.00		4347246	Crown Land Survey Office Plan 36206		Standard	Taupo District Council
427-428	100.00	428	4333515	Sec 2 B1k X Whakamaru SD	SA47C/963 (Live)	Standard	Taupo District Council
428-429	65.00	428	4333515	Sec 2 B1k VI Whakamaru SD	SA47C/963 (Live)	Standard	Taupo District Council

## **Decision on Resource Consent Applications**

[2598] The decision on each resource consent application is set out on the following pages.

### **Auckland Regional Council**

#### **Works in the bed of watercourses and diversion of surface water – consent numbers 34372 and 34373**

[2599] The resource consent applications 34372 and 34373 to the Auckland Regional Council are granted on the terms and subject to compliance with the conditions referred to below.

##### **Description of consents**

[2600] Consent numbers 34372 and 34373 authorise the works in the bed of watercourses and diversion of surface water described in the document entitled “North Island Grid Upgrade Project – Underground Transmission Cable between Pakuranga Substation and Brownhill Road”, June 2007, to be carried out in general accordance with the description in that document, except as otherwise identified in the resource consent conditions contained in Appendix P.

##### **Term**

[2601] The term of the consents is 35 years from the date of commencement of the consents under section 116 of the RMA.

##### **Lapse**

[2602] Each resource consent will lapse on the expiry of 10 years after the date of commencement of the consents unless before then the consents are given effect to or another condition prescribed by section 125 is complied with.

#### **Discharge of contaminants to land – consent number 34370**

[2603] The resource consent application 34370 to the Auckland Regional Council is granted on the terms and subject to compliance with the conditions referred to below.

##### **Description of consent**

[2604] Consent number 34370 authorises the discharge of contaminants to land described in the document entitled “North Island Grid Upgrade Project – Underground Transmission Cable between Pakuranga Substation and Brownhill Road”, June 2007, to be carried out in general accordance with the description in that document, except as otherwise identified in the resource consent conditions contained in Appendix Q.

**Term**

[2605] The term of this consent is 35 years from the date of commencement of consent under section 116 of the RMA.

**Lapse**

[2606] The resource consent lapses on the expiry of 10 years after the date of commencement of the consent unless before then the consent is given effect to or another condition prescribed by section 125 is complied with.

**Land-use consent for earthworks – consent number 34102**

[2607] The resource consent application 34102 to the Auckland Regional Council is granted on the terms and subject to compliance with the conditions referred to below.

**Description of consent**

[2608] Consent number 34102 authorises the earthworks described in the document entitled “North Island Grid Upgrade Project – Underground Transmission Cable between Pakuranga Substation and Brownhill Road”, June 2007, to be carried out in general accordance with the description in that document, except as otherwise identified in the resource consent conditions contained in Appendix R.

**Term**

[2609] The term of the consent is 35 years from the date of commencement of consent under section 116 of the RMA.

**Lapse**

[2610] The resource consent lapses on the expiry of 10 years after the date of commencement of the consent unless before then the consent is given effect to or another condition prescribed by section 125 is complied with.

**Land-use consent for earthworks/roading and tracking – consent number 34711 and discharge of contaminants permit – consent number 34712**

[2611] The resource consent applications 34711 and 34712 to the Auckland Regional Council are granted on the terms and subject to compliance with the conditions referred to below.

**Description of consents**

[2612] Consent numbers 34711 and 34712 authorise the earthworks/roading and tracking and discharge of contaminants described in the document entitled described in the document entitled “North Island Grid Upgrade

Project – Auckland Regional Council Resource Consent Applications within the Designated Area”, July 2007, to be carried out in general accordance with the description in that document, except as otherwise identified in the resource consent conditions contained in Appendix S.

**Term**

[2613] The term of the consents is 35 years from the date of commencement of the consents under section 116 of the RMA.

**Lapse**

[2614] Each resource consent will lapse on the expiry of 10 years after the date of commencement of the consents unless before then the consent is given effect to or another condition prescribed by section 125 is complied with.

## Waikato Regional Council

### **Discharge permit for composting/mulching of vegetation – consent number 116903**

[2615] The resource consent application 116903 to the Waikato Regional Council is granted on the terms and subject to compliance with the conditions referred to below.

#### **Description of consent**

[2616] Consent number 116903 authorises the discharge for composting/mulching of vegetation described in the application entitled “North Island Grid Upgrade Project, Waikato Regional Council, Resource Consent Applications within the Designated Area, July 2007”, to be carried out in general accordance with the description in that application, except as otherwise identified in the resource consent conditions contained in Appendix T.

#### **Term**

[2617] The term of this consent is 35 years from the date of commencement of consent under section 116 of the RMA.

#### **Lapse**

[2618] The resource consent lapses on the expiry of 10 years after the date of commencement of the consent unless before then the consent is given effect to or another condition prescribed by section 125 is complied with.

### **Land-use consent for tower foundation drilling below the water table – consent number 116904; land-use consent for vegetation clearance and earthworks in a high-risk erosion area – consent number 116902; and a discharge permit for site water and drilling fluids – consent number 116905**

[2619] The resource consent applications 116904, 116902 and 116905 to the Waikato Regional Council are granted on the terms and subject to compliance with the conditions referred to below.

#### **Description of consents**

[2620] Consent numbers 116904, 116902 and 116905 authorise the tower foundation drilling below the water table, the vegetation clearance and earthworks in a high-risk erosion area and the discharge of site water and drilling fluids described in the document entitled “North Island Grid Upgrade Project – Waikato Regional Council Resource Consent Applications within the Designated Area”, July 2007, to be carried out in general accordance with the description in that document, except as otherwise identified in the resource consent conditions contained in Appendix U.

**Term**

[2621] The term of the consents is 35 years from the date of commencement of the consents under section 116 of the RMA.

**Lapse**

[2622] Each resource consent will lapse on the expiry of 10 years after the date of commencement of the consents unless before then the consent is given effect to or another condition prescribed by section 125 is complied with.

Dated at Wellington 18 September 2009



David Sheppard (Judge) – Chairperson



Dr Deborah Read – Member



Mr Kevin Prime – Member



Mr John Rutherford – Member



## APPENDIX A

### Dates and venues of hearings

Hearing Location	Hearing Dates (2008)
Hamilton – Claudelands Event Centre	25–27 March; 1–4 April; 7–11 April; 21–24 April; 5–9 May; 12–16 May; 16–20 June; 24–26 June; 7–9 July; 17–18 July; 21–25 July; 4–6 August; 27–28 August
Takanini – Bruce Pulman Park	19–23 May; 3–6 June; 8–12 September; 23–25 September
Tokoroa – Te Wananga o Aotearoa	6–8 October
Hamilton – Alcamo Hotel	29–31 October

## APPENDIX B

### Appearances

Name and representation	Date
J S Kós for Transpower New Zealand Limited	25 March–31 October 2008
DJS Laing for Transpower New Zealand Limited	25 March–31 October 2008
J Winchester for Transpower New Zealand Limited	25 March–31 October 2008
J Mooar for Transpower New Zealand Limited	25 March–31 October 2008
BIJ Cowper for Mighty River Power Ltd	7 July 2008
L Muldowney for Waikato District Council	7 July 2008
N McIndoe for Meridian Energy Limited	7 July 2008
DA Kirkpatrick for Waipa District Council; Underground in Manukau; and R McKenzie and M Spring	8 & 9 July; 12 September; 24 September 2008
P Lang for Matamata-Piako District Council	17 July 2008
S Janissen for Glencoal Energy Limited and the Stirling family	21 July 2008
Dr J Forret for New Era Energy (South Waikato) Inc; Orini Downs Station Farm Limited; E J Mackay; and Drummond Dairy Ltd and Scenic Dairies Ltd	21 July; 22 July; 4 August; 7 October 2008
G Baumann for New Zealand Historic Places Trust	23 July 2008
J Bright for P and D Dombroski	25 July 2008
L Delamare for Vector Limited	8 September 2008
J Burns for Auckland Regional Council	8 September 2008
M Dickey and N Wright for Manukau City Council	9–11 September 2008
D Allan for Hunua and Paparimu Valley Ratepayers	11 September 2008
K G Parker for South Waikato District Council	6 October 2008
R Simpson for Carter Holt Harvey Ltd and Hancock Forest Management (NZ) Ltd	7 & 8 October 2008
R G Wilson for Ministry of Economic Development	7 July 2008
S Selwood for New Zealand Council for Infrastructure Development	7 July 2008
Hon W R Storey in person	8 July 2008
L Storey in person	8 July 2008
H M Seales in person	9 July 2008
C Richards for NG Richards Farms Limited	18 & 21 July 2008
C Tylden in person	21 July 2008
C Baldwin in person	21 July 2008
A McQueen in person	21 July 2008
Dr R J McQueen in person	21 & 22 July 2008
GH Vercoe in person	22 July 2008
A Sutton in person	22 July 2008
J Self in person	22 July 2008
J Cotman in person	22 July 2008

<b>Name and representation</b>	<b>Date</b>
M Oliver in person	23 July 2008
G Athy in person	23 July 2008
S Jones in person	23 July 2008
V Jones in person	23 July 2008
J Parry in person	23 July 2008
J Carter in person	23 July 2008
C Tonks in person	23 July 2008
S and C Riddell in person	23 July 2008
C Brennan in person	24 July 2008
G Copstick in person	24 July 2008
A Pencavel in person	24 July 2008
S Pencavel in person	24 July 2008
C White in person	25 July 2008
V Risi in person	25 July 2008
P Hexter in person	25 July 2008
A Melis in person	25 July 2008
D Allen in person	25 July 2008
C Silvester in person	25 July 2008
B Silvester in person	25 July 2008
A Silvester in person	25 July 2008
P Kravtsov in person	25 July 2008
F Aldridge in person	4 August 2008
E Smith for Glenhaven Farms Ltd and E and K Smith	4 August 2008
J Maclarn in person	4 August 2008
J Thurlow in person	4 August 2008
R Sellers and T Shergold in person	4 August 2008
C Brennan for L Wood	5 August 2008
C Brennan for L Wheatley	5 August 2008
C Brennan for R Firth	5 August 2008
S Jefferis for Te Hoe Holdings Ltd	5 August 2008
M Sweetman in person	5 August 2008
M Sweetman for N Sweetman	5 August 2008
C and L Keyte in person	5 August 2008
D and M Bodle in person	5 August 2008
P and J Bodle in person	5 August 2008
D Bodle in person	5 August 2008
P Bodle for C Bodle	5 August 2008
G Gasnier in person	6 August 2008
J Gasnier in person	6 August 2008
J Kerr in person	6 August 2008

<b>Name and representation</b>	<b>Date</b>
M Hewitt in person	6 August 2008
J Williams for Waikato Raupatu Trustees Company Ltd	6 August 2008
C Holmes in person	6 August 2008
G McCulloch in person	27 August 2008
G Smith in person	27 August 2008
J Gibson in person	27 August 2008
W Parker in person	27 August 2008
L Bilby and R Stewart in person	27 August 2008
D Bilby in person	27 August 2008
A Loveridge in person	28 August 2008
B Cameron in person	28 August 2008
A and P Jones in person	28 August 2008
C and J Rombouts in person	28 August 2008
T Burton in person	28 August 2008
K McQueen in person	28 August 2008
W and S Hall in person	28 August 2008
J Maplesdon for Camperdown Holdings Limited	8 September 2008
M Gledhill for Ministry of Health	8 September 2008
L Albertyn for Franklin District Council	9 September 2008
R Gardner for Federated Farmers of NZ	9 September 2008
R Smart in person	11 September 2008
A Kinsler in person	12 September 2008
L Bennett in person	12 September 2008
P Robinson in person	23 September 2008
N Auld in person	23 September 2008
B N Davidson in person	23 September 2008
M Mason for Regis Park Stage 2 Ltd	23 September 2008
J Rennie in person	23 September 2008
S Jefferis in person	23 September 2008
H Polley in person	23 September 2008
N and S Fuller in person	23 September 2008
A Kilfoyle in person	23 September 2008
J Corse-Scott in person	23 September 2008
C Halford in person	23 September 2008
W Jolly in person	23 September 2008
A McCreadie for Ardmore Airfield Tenants and Users Committee	23 September 2008
G Sutton in person	24 September 2008
J Scott in person	24 September 2008
J Sexton for Paparimu Residents and Ratepayers Association and Sexton Farms	24 September 2008
M Chitty for Haunui Farm Ltd	24 September 2008

<b>Name and representation</b>	<b>Date</b>
J and M van het Bolscher	24 September 2008
D Levesque in person	25 September 2008
D J Scott in person	25 September 2008
S Forbes-Brown in person	25 September 2008
J Lyons in person	25 September 2008
A Riley in person	25 September 2008
J Shears in person	25 September 2008
R Merlo for B and F Peart	25 September 2008
C Burton in person	25 September 2008
L Mountford in person	25 September 2008
M Hunt in person	25 September 2008
S Wilson for Pohara Marae Committee	7 October 2008
J van Loon in person	8 October 2008
K Meredith and A Vaag for Ashley Rocks Farms Ltd	8 October 2008
J Colliar in person	8 October 2008
R Burke in person	8 October 2008
B and I McAlley in person	8 October 2008
A Rose in person	8 October 2008
M and G Ranger in person	8 October 2008
C Baldwin in person	8 October 2008
A and D Riley in person	8 October 2008
B and J Burwell in person	8 October 2008

## GLOSSARY

ACCR	Aluminium Conductor Composite Reinforced
ACRE	Area, Corridor, Route, Easement (methodology)
AIL	Agricultural Investments Limited
AIS	Air-Insulated Switchgear. A high-voltage substation using atmospheric air as the main source of insulation
Alzheimer's disease	a disease of the brain, which is the most common form of dementia
amyotrophic lateral sclerosis (Lou Gehrig's disease)	a degenerative disease of the motor neurons, the nerve cells that control voluntary muscle movement
ARI-PAK A line	Arapuni-Pakuranga A double-circuit 110-kV line
ARPS	Auckland Regional Policy Statement
AS/NZS	Australian Standard / New Zealand Standard
bias	any trend in the collection, analysis, interpretation, publication or review of data that can lead to false conclusions
CAA	Civil Aviation Authority of New Zealand
carcinogen	a cancer-causing agent
case control study	an observational study which compares past exposure to factors of interest of people with a particular disease (cases) to generally similar people who do not have the disease (controls)
CHHL	Carter Holt Harvey Limited
CHL	Camperdown Holdings Limited
CMA	Coastal Marine Area (section 2 RMA)
CMP	Construction Management Plan
cohort study	an observational study which compares health outcomes in two or more similar groups with different exposure to a factor of interest
confounding	distortion in the estimate of effect due to the effect of an extraneous factor. For example, two occupational groups may have different lung cancer death rates because the proportion of cigarette smokers is much higher in one group than the other.

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COPTTM	Code of Practice for Temporary Traffic Management
corona (corona discharge)	a low-energy plasma produced by the ionisation of nitrogen and oxygen in the air by the electric field at the surface of conductors of a high-voltage transmission line. It can produce audible noise and radio interference, and results in a small loss of the energy being transported by the transmission line
DDL	Drummond Dairy Limited
duplex	two conductors per phase bundle in an overhead transmission line or underground cable
duplexing	the replacement of a single conductor with two conductors per phase bundle
earthwire	a wire to bond all the structures together and protect the conductors from lightning strikes
EHV	Extra High Voltage
electric field (EF)	is present in proximity of charged conductors. It occurs whether or not there is current flowing in the conductors
ELF EMF	extremely low-frequency electric and magnetic fields
EMF	electric and magnetic fields. These are intrinsic attributes of any physical electrical system comprising conductors with voltages and currents. Sometimes known as electromagnetic fields
epidemiology	the study of the distribution and determinants of disease in populations
GIT	Grid Investment Test
GIS	gas-insulated switchgear. Metal-enclosed switchgear in which the insulation and arc extinction is obtained by an insulating gas, usually sulphur hexafluoride (SF <sub>6</sub> ). GIS has no electrical conductors exposed to the atmosphere, except at the points where overhead transmission lines are connected to it. (The usual meaning of the acronym: Geographic Information System does not apply in this report.)
GPS	Government Policy Statement (The usual meaning of the acronym: Global Positioning System does not apply in this report.)
GRS	Grid Reliability Standards

haematological	relating to haematology, the branch of medicine which studies blood and blood-forming tissues
HFML	Hancock Forest Management (NZ) Limited
HGMPA	Hauraki Gulf Marine Park Act 2000
HPVRA	Hunua and Paparimu Valley Residents' Association
HVAC	High-voltage, alternating-current (line)
HVDC	High-voltage, direct-current (line)
IARC	International Agency for Research on Cancer
ICAO	International Civil Aviation Organisation
ICNIRP	International Commission on Non-Ionising Radiation Protection
IEEE	Institute of Electrical and Electronic Engineers
<i>in vitro</i>	studies undertaken in a controlled environment outside of a living organism or cell
kV	kilovolt: one thousand volts
LFL	Lichfield Farms Limited
leukaemia	cancers of the blood or bone marrow characterised by an abnormal proliferation of typically white blood cells. In children the most common type is acute lymphoblastic leukaemia
melanoma	a malignant tumour most commonly arising in the skin
meta-analysis	a structured systematic integration of data or results from different epidemiological studies of the same problem
MF	magnetic field. The force experienced in a region of space around a current carrying conductor. It is measured in amperes per metre (A/m). The density of this field is often expressed in the unit microtesla ( $\mu\text{T}$ )
MRP	Mighty River Power Limited
MVA	Megavolt-ampere. A measure of the capacity of electrical equipment, or the level of power that is being generated, transmitted or used by the equipment



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MVAr	megavolt-ampere reactive. A measure of the reactive capacity of electrical equipment, or the level of reactive power that is being generated, transmitted or used by the equipment
MW	megawatt. A measure of the useful capacity of electrical equipment, or the level of useful power that is being generated, transmitted or used by the equipment
NPS	National Policy Statement
NZCPS	New Zealand Coastal Policy Statement
NZEECS	New Zealand Energy Efficiency and Conservation Strategy
NZES	New Zealand Energy Strategy
NZHPT	New Zealand Historic Places Trust
NZS	New Zealand Standard
NZTA	New Zealand Transport Agency
OLS	Obstacle Limitation Surfaces
ONL 62	Outstanding Natural Landscape no. 62
osteosarcoma	a malignant tumour of bone
OTA-WKM A, B and C lines	Otahuhu-Whakamaru A, B and C double-circuit 110-kV lines
pooled analysis	analysis of combined original data from different epidemiological studies of the same problem; a type of meta-analysis
RMA	Resource Management Act 1991
RPS	Regional Policy Statement
SDL	Scenic Dairy Limited
simplex	a phase consisting of a single conductor per phase
SLCA	Special Landscape Character Areas
SOO	Statement of Opportunities

stray voltage	unwanted voltage occurring in equipment. In a domestic, commercial or industrial situation this is usually due to inadequate main switchboard earthing, poor earth and neutral connections, electrical leakage from equipment (eg, hot-water cylinder heaters, and lack of equipotential bonding in facilities (eg, dairy sheds)
SWP	Site Works Plan
thermal uprating	a process to increase the maximum operating temperature of a transmission line. This may involve undertaking remedial works in spans that would not otherwise meet statutory clearance requirements under the increased conductor temperature
TMP	Traffic Management Plan
transmission losses	the energy or power losses on a transmission circuit that are caused by the resistance of the conductor material. This energy/power is converted to heat and dissipates to the air (or ground in the case of underground power cables)
Transpower	Transpower New Zealand Limited
triplex	an arrangement of three conductors per phase on an overhead transmission line. Commonly called a 'triplex bundle'
WHO	World Health Organization
WRPS	Waikato Regional Policy Statement

This glossary is mainly derived from the 'Glossary of Terms' prepared by Transpower and provided to the Board on 25 March 2008.

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