

**IN THE MATTER** of the Resource Management Act  
1991

**AND**

**IN THE MATTER** of a notice of requirement issued by  
**WEL NETWORKS LIMITED**  
pursuant to section 168(2) of the  
Act for designations (3) to authorise  
the implementation of the Western  
Network Upgrade Project

## **STATEMENT OF EVIDENCE OF LAURENCE SHERRIFF**

### **1. INTRODUCTION**

#### **Qualifications and experience**

- 1.1 My name is Laurence Sherriff. I am the Managing Director and a Senior Planning Consultant for Environmental Challenge Limited based in Wellington. Environmental Challenge Limited currently employs 9 full time staff and 20 contractors.
- 1.2 I hold a Masters degree in Resource and Environmental Planning (Massey University, 2002), a Post Graduate Diploma of Rural Studies in Natural Resource Management (*Distinction*) (Massey University, 1997) and a Bachelor of Commerce in Economics (Otago University, 1991).
- 1.3 I am a full member of the New Zealand Planning Institute.
- 1.4 I have worked for Environmental Challenge Limited as a planning, property and project management consultant since 2001. Prior to this, I worked as an Environmental Planner for Transpower New Zealand Limited from 1998 to 2001.
- 1.5 I have been involved in at least 500 projects involving electricity infrastructure and have considerable experience in planning issues associated with various network utilities. Over the last 10 years, a large proportion of these projects have been located in the Waikato District and Waikato Region. I am currently involved in the consenting and acquisition phases of several large-scale electricity lines projects in other parts New Zealand.

- 1.6 I also have three years experience managing properties traversed by high voltage transmission lines and distribution lines<sup>1</sup>. As such, I have a practical knowledge of electricity lines in situations involving cropping, top-dressing (aerial and ground-based), spraying (aerial and ground-based), stock movement and to a lesser extent irrigation.

### **Involvement in project**

- 1.7 I have been involved in this project since 2005. Back then, the sole purpose of the project was to augment WEL Network's (WEL) western electricity distribution network.
- 1.8 In 2006, the proposed wind farm was announced. The upgrade project was reconsidered as a result so that the transmission line could not only augment WEL's western electricity distribution network, but also service the proposed wind farm (now the "Te Uku Wind Park").
- 1.9 My brief has been to manage the consenting and property phases of this project. On the consenting side, I have contracted and co-ordinated the various planning experts, mapping, consultation and technical inputs, and the management of documents. On the property side, I have contracted and co-ordinated the negotiators, technical experts, surveyors, valuers, property lawyers, Crown agent and other regulatory specialists.
- 1.10 Five of my employees were involved in the drafting of the NORs and supporting statutory assessment under my supervision.

### **Purpose and scope of evidence**

- 1.11 The purpose of my evidence is to assess the proposals against the requirements of the Resource Management Act, 1991 (RMA).
- 1.12 In summary, my evidence will:
- (a) Provide a brief description of the proposal, including the locations and key elements (Chapter 3);
  - (b) Summarise the issues raised in submissions and the pre-hearing meeting (Chapter 4);
  - (c) Outline the relevant statutory and planning matters (Chapter 5);

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<sup>1</sup> (A) Tutaenui Road, R.D.2., Marton; (B) Coombe Roads, R.D.2., Marton (C) State Highway 50, Onga Onga.

- (d) Consider the potential adverse effects on the environment arising from the requirements (Chapter 6);
- (e) Assess the proposal against relevant statutory and planning matters (Chapter 7);
- (f) Comment on the Planning Officer's report (Chapter 8);
- (g) Address the proposed conditions (Chapter 9); and
- (h) Provide an overall assessment of the proposal (Chapter 10).

### **Expert Witness Code of Conduct**

1.13 I have been provided with a copy of the Code of Conduct for Expert Witnesses contained in the Environment Court's Consolidated Practice Note 2006 [2006] NZRMA 357. I have read and agree to comply with that Code. This evidence is within my area of expertise, except where I state that I am relying upon the specified evidence of another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

## **2. DESCRIPTION OF PROPOSAL**

2.1 This section of my evidence provides brief descriptions of the line and the substations.

2.2 I also describe the associated works falling outside the scope of the notices of requirement. These works are important because they have some influence on potential environmental effects in certain locations.

### **Notices of requirement issued**

2.3 WEL has issued three separate NORs for the primary components of the project. Others have described those components in detail, but for completeness, the main components of the project are as follows:

- (a) A new substation interconnection at Te Kowhai, adjacent to the existing Transpower site, together with designation over a partial corridor to accommodate the necessary electricity lines (NOR 1). I note from Mr Mollekin's evidence that WEL is prepared to reduce the size of the designation once construction is complete.
- (b) A proposed corridor to enable the establishment of electricity lines and supporting structures between the new Te Kowhai substation (above) and a

proposed new substation at the wind park on the Wharaurua Plateau, near Te Uku (“Te Uku Wind Park”) (below) and to enable embedding of the 33 kV sub-transmission network to serve the western area (NOR 2).

- (c) A new substation at the Te Uku Wind Park together with designation over a partial corridor to accommodate the necessary electricity lines (NOR 3). I note from Mr. Mollekin's evidence that WEL proposes to reduce the extent of the designation to avoid a seepage area that was identified during the Wind Park consenting process.

### **Localities and surrounding environments**

#### ***Te Kowhai Substation***

- 2.4 The proposed substation site will be located on the southwestern side of the Transpower substation.
- 2.5 The legal description of the land parcel is Lot 2 Deposited Plan 343406 held in certificate of title 178070 (South Auckland Registry).
- 2.6 The proposed line route runs from the substation site towards the Waipa River in a western direction.
- 2.7 The proposed site is located in the rural zone as shown in the maps of both the Waikato District Plans (WDP and PWDP). It will also be located in areas designated as D412 (WDP) and K5 (PWDP) by Transpower New Zealand for electricity purposes.
- 2.8 The Transpower site covers a total area of 16 hectares of which one hectare will contain the proposed substation. The Transpower substation contains termination structures for incoming lines, lighting poles, oil containment facilities, a two-storey building and various pieces of electrical plant (e.g. buswork, disconnectors, circuit breakers and transformers). The site also contains existing WEL load control plant.<sup>2</sup>
- 2.9 The majority of the 16 hectare site is a buffer area for the existing substation. This area is a river flat and is used for pastoral farming. Shelterbelt planting obscures most views of the substation from the surrounding low lying areas.
- 2.10 The closest dwellings to the Transpower boundary are approximately 500 metres away in north-easterly and south-easterly directions.
- 2.11 The Waipa River borders the south-western side of the site.

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<sup>2</sup> Resource consent LUC170/05, 21 December 2004.

### ***Sub Transmission Line***

- 2.12 The proposed line route runs in a north-easterly direction from the consented Te Uku Wind Park to Transpower's Te Kowhai Substation.
- 2.13 The line route passes through the rural zone for its entire length, as shown in the maps of the WDP and the PWDP. It traverses the following policy areas in the district plans:
- (a) Ridgeline Protection Policy Area: 6511 (WDP maps);
  - (b) Ridgeline Policy Area (PWDP maps);
  - (c) Ridgeline Policy Area - Te Uku (WDP maps);
  - (d) Designations D412 (WDP) and K5 (PWDP), which are for the Transpower Te Kowhai Substation; and
  - (e) Designations D378 (WDP) and J8 (PWDP), which are for a NZTA State Highway widening.
- 2.14 The line route also runs along, crosses, or is near the following special areas or corridors:
- (a) The Waipa River (Crown property; one crossing);
  - (b) Karakariki Road, (Waikato District Council; runs along the road);
  - (c) Karakariki Stream (Crown property; one crossing);
  - (d) An archaeological site: Karakariki Flour mill site S14/98 (borders the line);
  - (e) The Huntly-Taumarunui A 220 kV double circuit transmission line (Transpower; one crossing);
  - (f) Three paper roads (Waikato District Council);
  - (g) Natural Conservation Area 89 on the WDP maps (*borders* the line route);
  - (h) An airstrip used by AgResearch (borders the airstrip on the Tainui land);
  - (i) State Highway 23 (New Zealand Transport Agency; three crossings);
  - (j) Cogswell Road (Waikato District Council; one crossing);

- (k) Notable tree number 131 on the PWDP maps (Rimu tree on the opposite side of SH 23);
  - (l) The Maungaokahu Stream (Crown property; four crossings);
  - (m) The Waitetuna River (Crown property; one crossing); and
  - (n) A Department of Conservation moveable marginal strip R14023 (one crossing).
- 2.15 The line route traverses a number of privately owned land parcels, public areas and corridors. These are shown in detail on the plan submitted in Mr Dawson's evidence and Appendix A.<sup>3</sup>
- 2.16 The proposed line route makes use of existing line routes or corridors that form parts of the distribution network owned by WEL. The use of these existing line routes and corridors occurs on:
- (a) Karakariki Road (existing 11 kV line);
  - (b) Over the 'deviation' on Vela Holdings property (existing 33 kV line);
  - (c) Williamson's property (existing 33/ 11 kV line);
  - (d) Gibbs' property (existing 33/ 11 kV line);
  - (e) Large's property (existing 33/ 11 kV line);
  - (f) Richards' property (existing 33/ 11 kV line); and
  - (g) Vanhoutte's property (existing 11 kV line).
- 2.17 The majority of the line route passes through pastoral farming, cropping, roading or plantation forestry land. These areas are scattered with remnants of native vegetation, scrub and gorse, shelterbelts; and patches of bush, exotic forestry and amenity plantings.
- 2.18 The line route passes within 500 metres of two main concentrations of dwellings and buildings. These are found along Karakariki Road and State Highway 23 (between Cogswell Road and the Van der Helm property). Many of the unoccupied buildings are milking, implement, hay, or wool sheds.

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<sup>3</sup> "Western Network Upgrade - Status of Landowner Negotiations and Submissions" Map.

2.19 The topography of the land traversed by the line route ranges from flat land to steep hill country consisting of a plateau, ridges, gullies, hills, valley floors, spurs, rivers and streams.

#### ***Te Uku Wind Park Substation***

2.20 The substation will adjoin the operations and maintenance building that will be constructed to service the Te Uku Wind Park. This building has already been granted resource consent as a part of the Wind Park.

2.21 The legal description of the land parcel is Pt Sec 1 Blk VII Karioi SD held in certificate of title 430/284.

2.22 The proposed site is located in the rural zone as shown on the maps of the WDP and the PWDP. The site also falls within a:

- (a) Ridgeline Protection Policy Area - Te Uku (WDP maps);
- (b) Ridgeline Policy Area (western area of 0027) (PWDP maps); and
- (c) The area granted resource consent for the Te Uku Wind Park.<sup>4</sup>

2.23 The proposed Wind Park Substation will be located on the Wharauroa Plateau. The site is located entirely within Mr Vanhoutte's property and sits near a woolshed and Turbine 14. The land surrounding the substation is currently used for pastoral farming. Farm tracks are present and a telecommunications mast sits to the northeast of the proposed site. Eventually the site will cater for the wind farm.

2.24 There are no rural dwellings near the proposed substation. The closest property boundary to the transformer is over 500 metres away.

#### **Key elements of the proposal**

##### ***Te Kowhai Substation.***

2.25 The key elements of the proposed substation *design* that form the basis of my assessment include:

- (a) A site boundary that is rectangular in shape, which covers an area of approximately 1,200 m<sup>2</sup> (i.e. approximately 60 metres by 20 metres);
- (b) 220 kV bus extensions;

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<sup>4</sup> LUC0271/05, Temporary Wind Monitoring Towers, 2 March 2005; and LUC0252/06, Te Uku Wind Park, October 2008.

- (c) An incineration toilet;
- (d) 110 kV / 220kV 84 MVA transformer;
- (e) Other 110 kV and 220 kV equipment, such as current transformers, voltage transformers and circuit breakers (switchgear and protection equipment);
- (f) A 110kV transformer entry gantry structure;
- (g) Incoming 110kV line conductors;
- (h) A termination support structure; and
- (i) Fencing.

2.26 The electricity facilities, plant, or equipment will not exceed 8.5 metres AGL in height.

2.27 A mast or antenna are not required at the Te Kowhai Substation to receive and transmit communication signals, as existing communication equipment is likely to provide the required signals at that substation.

2.28 WEL's drainage and oil containment systems will drain into Transpower's oil containment system and through their oil parallel plate separator.

2.29 The key *construction* and *operational* elements of the proposed substation that form the basis of my assessment include:

- (a) Excavation, backfilling and compaction of earth and other material;
- (b) Construction and installation of the foundations, bunds, oil containment facilities, access-ways and a sealed parking area;
- (c) Laying drains, pipes and cables;
- (d) Transportation (via an existing entranceway) and installation of electrical and non-electrical equipment, including transformers containing insulating oil;
- (e) Construction of the electrical equipment;
- (f) Installation of the fences around the perimeter of the substation sites;
- (g) Landscaping;

- (h) Operation, maintenance, replacement, repair and minor upgrading of the site, buildings, electricity equipment and other equipment;
- (i) Emission of transformer noise;
- (j) Night lighting;
- (k) Discharge of stormwater (via oil containment and interception systems); and
- (l) Discharge of grey water into a separate on-site soak hole (if required).

***Sub transmission line***

2.30 The key *design* elements of the proposed line that form the basis of my assessment are that:

- (a) The total length of the line route will be approximately 25 kilometres.
- (b) The conductors (wires) will be supported on steel or concrete poles and that the line will consist of approximately 240 poles.
- (c) The standard pole designs will vary depending on the number of circuits, angles of the line, topography, geology, the presence of any connections to underground cables; the need for pole mounted transformers and the proximity of property boundaries. Descriptions of the proposed pole designs are provided in Mr. Jackson's evidence and the NOR (Volume 1B Plans).
- (d) The *maximum* height of the poles will be 17 metres AGL.
- (e) The line will not include any towers or pylons.
- (f) The most common insulator arrangement will be the delta configuration, which forms a triangle when viewed as a cross-section;
- (g) The line will be either: a single circuit line (three conductors) with an earth and communications wire (equalling *four* 'wires' in total); or a double circuit line (six conductors) with an earth and communications wire (equalling wire *seven* 'wires' in total) normally having a crossarm further down the pole;
- (h) The line separation distances will meet the requirements of the New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP 34:2001); and
- (i) The line waterway crossings will meet the requirements of the Safety Management of Power Line Waterway Crossings guideline.

2.31 The key *operational* elements of the proposed line that form the basis of my assessment are that:

- (a) No circuit will operate at nominal line voltage of greater than 110 kV; and
- (b) No circuit have a capacity of greater than 84 MVA;

2.32 The line works will also involve:

- (a) Safety signage on the banks of the Waipa River in the vicinity of the line;
- (b) Installing two 11 kV/ 400 V ground mounted mini transformers at the base of pole structures within the proposed 110/ 11 kV route on the Gibbs property;
- (c) Erecting a stay pole on the northern side of State Highway 23 opposite the Van der Helm – Richards boundary and suspending a guy wire across SH 23 from the stay pole to Pole 65Ca; and
- (d) Installing a switching cabinet on the southern side of State Highway 23 at the northern end the Van der Helm and Richards' boundaries. The switching cabinet will connect the 33 kV circuit on this section of the proposed line into the existing electricity distribution network owned by WEL.<sup>5</sup>

#### ***Te Uku Wind Park Substation***

2.33 The key elements of the proposed substation *design* that form the basis of my assessment include:

- (a) A site boundary that is rectangular in shape, which covers an area of approximately 1,500 m<sup>2</sup> (i.e. approximately 50 metres by 30 metres), although part of that area will constitute the operations and maintenance building which has already been consented as part of the Te Uku Wind Park;
- (b) A 110 kV gantry structure;
- (c) 110 kV and 33 kV protection equipment;<sup>6</sup>
- (d) A 110 kV / 33 kV 84 MVA transformer;

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<sup>5</sup> The 33 kV circuit runs from Te Uku Wind Park Substation, strung on the proposed 110/33 kV line that crosses Clifford, Richards and Ven der Helm.

<sup>6</sup> Current transformers, voltage transformers and circuit breakers

- (e) Incoming conductors; and
  - (f) A termination support structure.
- 2.34 The electricity facilities, plant, or equipment will not exceed 8.5 metres AGL in height.
- 2.35 Telecommunications equipment may be installed at this substation. Alternatively, this equipment may be installed on the nearby Telecom tower, but this will not be known until the detailed design is complete.
- 2.36 As I previously mentioned, the substation will be integrated with the operation and maintenance building that will be constructed to service the Te Uku Wind Park and will share many of the same facilities. The operation and maintenance building forms part of the wind park and was consented as part of that process.
- 2.37 The key *construction* and *operational* elements of the proposed substation that form the basis of my assessment are similar to those listed for Te Kowhai Substation.
- 2.38 **Associated works and rationalisation of the existing network**
- 2.39 Associated works are proposed inside and outside of the designated corridor at several locations. The associated works will mitigate adverse effects on the environment and rationalise the design and operation of the existing network.
- 2.40 Existing sections of line will be removed, and the existing conductors will be strung as second circuits on the proposed 110 kV line, or other existing WEL lines, at the following locations (moving north to south):
- (a) Karakariki Road (11 kV conductors onto the proposed 110 kV line);
  - (b) Balme property, State Highway 23 and Tainui property (11 kV conductors onto the an existing 33 kV line known as the southern deviation line);
  - (c) Williamson's property (11 kV conductors onto the proposed 110 kV line but remaining on the same route);
  - (d) State Highway 23 (11 kV conductors onto the proposed 110 kV line but remaining on the same route – at two points);
  - (e) Large's property (11 kV conductors onto the proposed 110 kV line but remaining on the same route);

- (f) Gibb's property (11 kV conductors onto the proposed 110 kV line but remaining on the same route); and
  - (g) Richards' property (11 kV conductors onto the proposed 110 kV line but remaining on the same route).
- 2.41 New 11 kV conductors will be strung across Karakariki Road between existing pole 519679 and proposed pole 206F (see Volume 1B Plans – Other works description: Map 16).
- 2.42 Existing sections of line will be removed, and the existing conductors will be placed underground at the following locations (moving north to south):
- (a) Karakariki Road (400 V conductors taken from a 11 kV/ 400 V line and converted into a 400 V underground cables);
  - (b) Williamson's property and State Highway 23 (33 kV line removed from Williamson's and placed in SH 23 as a 33 kV underground cable);
  - (c) Gibbs property and State Highway 23 (33 kV line removed from Gibbs and placed in SH 23 as a 33 kV underground cable);
  - (d) Gibbs property (11 kV line removed and converted into a two 400 V underground cable sets);
  - (e) Richards' property and State Highway 23 (33 kV line removed from Richard's and placed in SH 23 as a 33 kV underground cable);
  - (f) Craven's property and State Highway 23 (33 kV line removed from Craven's and placed in SH 23 as a 33 kV underground cable);
  - (g) State Highway 23 (33 kV line removed from four SH 23 crossings and placed in SH 23 as a 33 kV underground cable); and
  - (h) Vanhoutte's property (11 kV line running from the woolshed to the 11 kV line junction removed and placed underground as an 11 kV cable).
- 2.43 Existing sections of line will be removed and will be replaced by the proposed 110 kV line or will no longer be required, at the following locations (moving north to south):
- (a) Tainui and Balme properties (33 kV line removed with no replacement);

- (b) Vela Holdings property (33 kV line removed and replaced with the 110 kV line);
- (c) Vela Holdings property (33 kV line removed with no replacement from between existing poles 504768 to 504766);
- (d) Hope A & D property (33 kV line removed with no replacement) and
- (e) Bullick, Moss, Cave and Hope (33 kV line removed with no replacement).

2.44 It is proposed that vegetation trimming or removal will occur at the following locations (moving north to south):

- (a) Transpower's property on the northeast side of the Waipa River (native trees and scrub - removal);
- (b) Cunningham's property on southwest side of the Waipa River (native trees - removal);
- (c) Cunningham's property near the north end of Karakariki Road (pine trees - removal);
- (d) Armstrong's eastern property on Karakariki Road (pine trees, native trees, scrub, willow trees - removal);
- (e) Karakariki Road (from pole 191E to 197F; pine trees and hedging - removal);
- (f) McCallum's property (vegetation unknown);
- (g) Kirkbride's property (willow trees - removal);
- (h) Balme's property (vegetation unknown);
- (i) Hammond and Clarke's property (scrub and poplar trees - removal);
- (j) State Highway 23, and Cogswell Road (poplar trees - removal);
- (k) Maungaokahu Stream and Williamson's property (poplar trees - removal);
- (l) Gibbs property (trimming only);
- (m) Richards' property near State Highway 23 (pine trees – removal);
- (n) Richards' property near the southern boundary in two locations (vegetation unknown); and

(o) Clifford's property (scrub, pongas and native trees – removal).

2.45 Landscaping is proposed at various locations in order to replace native bush and to screen elements of the proposal from dwellings or future developments (moving north to south):

(a) Cunningham's property and the Waipa River;

(b) Sutton's property (subject to agreement with the Suttons); and

(c) Fletcher property (subject to agreement with Ms Fletcher).

2.46 Access track construction or upgrade is proposed at the following locations:

(a) Richards' property, near the southern boundary (track upgrade and construction); and

(b) Clifford's property (existing track upgrade).

### 3. SUBMISSIONS AND PRE-HEARING MEETING

#### Submissions

3.1 The three NORs were served on 140 parties and an advertisement appeared in the Waikato Times (on 29 November 2008). In response, 16 submissions were received by the WDC. Copies of the submissions can be found in Appendix H of the planner's report. 1 Submission has been withdrawn.

3.2 I have analysed the submissions and presented statistics in Table 1 below. Note that many of the parties made submissions on more than one NOR.

**Table 1 – Submitter statistics**

Notice of Requirement Reference	Submitter Status	Count
NOR 1 (DES0005/09) – Te Kowhai Substation	Oppose	2
	Neutral	3
	Support	2
NOR 2 (DES0001/09) – Sub transmission Line	Oppose	9
	Neutral	4
	Support	0
NOR 3 (DES0006/09) – Te Uku Wind Park Substation	Oppose	1
	Neutral	3
	Support	0

- 3.3 The status and locations of the submitters' properties are shown in Mr Dawson's evidence.
- 3.4 I have also analysed all the submitter issues in relation to each NOR and have presented the statistics in Table 2 below.

**Table 1 – The issues raised in the supporting, neutral and opposing submissions**

<b>Notice of Requirement Reference</b>	<b>Submitter Issues</b>	<b>Count</b>
NOR 1 (DES0005/09) – Te Kowhai Substation	Earthworks	1
	Discharges of wastewater, grey water or stormwater	1
	Lack of notification by WDC	1
	Use of and damage to private entrance ways	1
	State of Transpower’s existing screen planting/ landscaping	1
	Landscape and visual effects from the substation	1
	Disturbance of farming operations during construction	1
	Inadequate consideration of alternative sites and methods	1
	Te Uku Wind Park resource consent and generation method	1
NOR 2 (DES0001/09) – Sub transmission Line	Line passing through areas of cultural significance ( <b>WITHDRAWN</b> )	1
	Vegetation clearance and operation of line in areas of indigenous vegetation that is habitat for native species	1
	Suspension of the line across the Waipa River ( <b>1 WITHDRAWN</b> )	2
	Effects on health caused by EMFs or radiation	5
	Landscape and visual effects from the line	5
	Property devaluation caused by environmental effects	3
	Earthworks, geotechnical hazards, land instability, erosion or sediment	3
	Restrictions on farming activities	1
	Limitation or devaluation of future subdivisions	3
	Location of line and siting of support structures	1
	Restriction on road upgrading and widening	1
	Inadequate consideration of alternative routes and methods	1
	Te Uku Wind Park resource consent and generation method	1
	Tribally owned land and property rights	1
	Traffic hazards from the line on the road	1
	Damage to trees, fences and the road in road reserve	1
	Bird and bat strike	1
Geotechnical hazards and earthworks	1	
NOR 3 (DES0006/09) – Te Uku Wind Park Substation	Earthworks	1
	Discharges of wastewater, grey water or stormwater	2
	Transformer noise emissions	1
	Landscape and visual effects from the substation	1

3.5 I discuss the issues raised in the submissions in the consideration of environmental effects and statutory assessment chapters.

**Pre-hearing meeting**

3.6 A pre-hearing meeting was held by the WDC on 13 February 2009 with eight of the submitters and WEL representatives.

3.7 The issues raised at the meeting by submitters were:

- (a) Route selection;
- (b) The reasons why overhead transmission lines, and not underground cables were proposed;
- (c) Effects on property values/compensation;
- (d) Signage;
- (e) Screen planting of the Te Kowhai Substation;
- (f) Human health issues;
- (g) Traffic effects; and
- (h) Land stability.

3.8 WEL undertook to:

- (a) Provide the submitters with a comparison of costs of overhead lines verses underground cables (see Mr Mollekin's evidence); and
- (b) Discuss with submitters how effects on individual properties could be addressed prior to the hearing.

3.9 Mr and Mrs Hodge confirmed that the screen planting issue at the Te Kowhai Substation was a Transpower responsibility and that they were satisfied that the signage could be addressed directly with WEL.

3.10 None of the other issues were resolved at the pre-hearing meeting.

**4. RELEVANT STATUTORY AND PLANNING MATTERS**

4.1 Section 171 provides the framework for considering a notice of requirement. It reads:

**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 requirement, 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).*

4.2 Under section 171(1), council must consider the requirement and any submissions received.

4.3 In accordance with section 171(2), council can make recommendations to the requiring authority and impose conditions on the requirement.

4.4 When performing these duties council must, subject to Part 2, consider the:

- (a) The effects on the environment of allowing the requirement, having particular regard to any relevant provisions outlined in section 171(1)(a); and
- (b) The matters set out under sections 171(1)(b) to (d).

## 5. CONSIDERATION OF THE ENVIRONMENTAL EFFECTS

5.1 In this chapter, I consider the potential environmental effects of allowing the requirement, having particular regard to the relevant provisions of the relevant planning instruments.

5.2 A full and detailed analysis of the relevant provisions can be found in Appendix B.

5.3 The components making up this project comprise a single overall capital project. However, the project consists of three distinct elements that are reflected by the three NORs. Although there is a single overriding rationale for the project, the effects of each element of the project can be distinguished from the rest. Therefore, I have considered the effects of these elements in three separate sections.

5.4 For the purpose of clarity, I have evaluated the environmental effects using a scale similar to that used for resource consent applications:<sup>7</sup>

- (a) Positive effects.
- (b) Nil effects - No effects at all.
- (c) *De minimis* effects - Minute level of effect that is unnoticeable over ordinary daily effects.
- (d) Minor adverse effects - Adverse effects that are noticeable but that will not cause any significant adverse impacts.
- (e) Significant adverse effects that could be remedied or mitigated - An effect that is noticeable and will have a serious adverse impact on the environment but could potentially be mitigated or remedied.
- (f) Unacceptable adverse effects - Significant adverse effects that cannot be avoided, remedied or mitigated.

### **Te Kowhai Substation**

5.5 I consider that the potential environmental effects relevant to the assessment of the proposed substation at Te Kowhai are as follows:

#### ***Construction (including construction traffic) effects***

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<sup>7</sup> Ministry for the Environment. Quality Planning website. <http://www.qp.org.nz/consents/assess-enviro-effects.php#extent>; extracted 05/01/08

- 5.6 The proposed construction activities, including the associated earthworks and vegetation removal, have the potential to generate surplus soil, dust, sediment run-off, noise and traffic. The earthworks also have the potential to affect unknown items or sites of archaeological or cultural heritage value.
- 5.7 Submissions were received from Mr and Mrs Samujh concerning disturbance to their farming operations, and from Mr And Mrs Hodge over the unauthorised use and damage of their private entranceway because of substation traffic.
- 5.8 Environment Waikato makes comments in their submission regarding earthworks and the need to have erosion and sediment control plans in place.
- 5.9 The WDC raised issues regarding the quality of the existing seal at the entrance to the substation site (198 Bedford Road) and the potential for further deterioration due to heavy traffic.
- 5.10 The conditions (3, 4.1, 6.1, 7.2, 7.4, 7.5, 7.6 and 9.1) recommended on NOR 1 in the planner's report requires that WEL:
- (a) Submit a Construction Management Plan (CMP) to the WDC for approval prior construction. The CMP will address earthworks, surplus soil, sediment run-off, vegetation, seeding, dust and noise;
  - (b) Comply with the construction and maintenance noise limits, and the measurement and assessment methods recommended in *NZS 6803:1999 (Acoustics – Construction Noise)*;
  - (c) Follow specified procedures should any urupa, traditional sites, taonga (significant artefacts), koiwi (human remains), or other archaeological sites be exposed;
  - (d) Submit a Traffic Management Plan (TMP) to the WDC for approval prior construction. The TMP will set out the methods for managing traffic effects on motorists, roads and access points;
  - (e) Erect signs on Bedford Road to ensure that vehicles do not enter the Hodges private entranceway;
  - (f) Remove vegetation from the berms of both sides of the entrance and to upgrade the existing pavement in front of the entrance prior to construction to the satisfaction of council (198 Bedford Road); and

- (g) Submit an Ecological Management Plan (EMP) to the WDC for approval prior construction. The EMP will address the clearance and trimming of indigenous vegetation.
- 5.11 Mr. Dawson states in his evidence that WEL has agreed to “make good” any damage to Mr and Mrs Samujh’s farming operation. Mr and Mrs Samujh have now confirmed in writing that their issues have been addressed.
- 5.12 Mr Hegley confirms in his evidence that any equipment used during construction for the substation will comply with the PWDP requirements<sup>8</sup> by a large safety factor assuming that no nighttime work is undertaken.
- 5.13 Dr. Campbell’s archaeological and heritage evidence, and Mr. Dawson’s evidence, detailing consultation with local Iwi, confirms that there are no known sites of archaeological or cultural heritage value within the vicinity of the proposed site. The proposed condition will address any impacts on unknown sites.
- 5.14 The issues raised by submitters are addressed by proposed conditions or agreements. The potential effects caused by earthworks, vegetation removal, construction and traffic are addressed by proposed conditions. In light of these measures and the expert evidence, I consider that any adverse effects relating to construction of the substation (including construction traffic effects) on the environment will be minor.

***Landscape and visual effects***

- 5.15 The proposed new substation will be located on the southwestern side of the existing Transpower substation.
- 5.16 In their submission, Mr and Mrs Hodge expressed concern in relation to the existing screen planting by Transpower; and Mr Wilson commented on the size and view of the existing substation and has questioned the size of the area for the proposed substation.
- 5.17 Mr Mansergh concludes in his evidence that the views of the Te Kowhai substation are restricted and that the proposed substation will be screened from view by the existing substation and existing mitigation planting. He also states that views of the proposed extension are unlikely to change the appearance of the existing substation from public view locations and that the visual effects will be inconsiderable.

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<sup>8</sup> Rule 25.18.1

- 5.18 It is stated in the planner's report that WDC monitoring staff will pursue the issue relating to the existing screen planting at the Transpower site, which will address the complaint by Mr and Mrs Hodge.
- 5.19 Given Mr Mansergh's expert opinion and the measures proposed by WEL, I consider that any adverse visual effects on the environment will be minor.

***Health effects from electric and magnetic fields***

- 5.20 The electrical equipment in substation will emit electric and magnetic fields ("EMF"). Some submissions have raised concerns that electric and magnetic fields have the potential to cause ill health.
- 5.21 The proposed substation site will be contained within a 16 hectare site and will not be publicly accessible. The designation will be approximately 60 metres from the closest boundary of the property and the closest dwelling to Transpower property is some 500 metres away.
- 5.22 EMFs are already present at the site due to the operation of Transpower's high voltage equipment and lines, and WELs load control plant.
- 5.23 Dr. Black confirms that there are no health concerns from EMFs at the proposed substation.
- 5.24 Condition 5.1 in the planner's report (NOR 1) requires WEL to comply with the exposure guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). These ICNIRP guidelines are endorsed by the New Zealand Ministry of Health.
- 5.25 Given the large distances from any dwellings, the public's inability to access the area, the proposed condition, and the evidence of Dr. Black, I consider that any health effects associated with EMFs from the proposed site will be nil.

***Transformer noise***

- 5.26 The proposed transformer will emit noise with a special tonal characteristic at a constant level. The existing Transpower and WEL equipment already emit noise. In his evidence, Mr Hegley has calculated that the highest level from the Transpower equipment at any boundary is 38 dBA L<sub>10</sub> (eastern boundary).

- 5.27 The most restrictive noise level for the Rural Zone in the WDP is 40 dBA L<sub>10</sub> *when measured at or within the notional boundary*. The most restrictive noise level for the Rural Zone in the PWDP is 40 dBA L<sub>10</sub> *when measured at any other site*.<sup>9</sup>
- 5.28 Mr. Hegley predicts that the new transformer will meet these restrictions if the noise levels from the proposed transformer are equal to or less than 60 dBA L<sub>10</sub> when measured at 5 metres (equates to a sound power level of 82 dBA). This prediction takes the 5 dBA tonal penalty prescribed in *NZS 6802: 1991 (Measurement of Environmental Sound)* and the noise levels from the existing equipment into account.
- 5.29 Condition 4.2 in the planners report (NOR 1) requires that the noise levels at the boundary of Transpower's designated site do not exceed 35 dBA L<sub>10</sub>, which includes the 5 dBA noise penalty (WEL has suggested that this level be changed to 40 dBA).<sup>10</sup> Condition 4.3 (NOR 1) requires that WEL confirm the power sound level (L<sub>w</sub>) of the transformer does not exceed 82 dBA prior to installation.
- 5.30 Assuming that WEL meets these conditions, which are similar to the requirements in both district plans, I consider that any adverse effects on the environment caused by transformer noise will be minor.

### ***Light and glare***

- 5.31 Additional lighting is proposed for the substation site. Lighting is used at substations in the event of emergencies at night.
- 5.32 It is also stated in the NOR that the lighting will be illuminated downwards and that it will shine away from the neighbouring properties.
- 5.33 As previously mentioned, Mr Mansergh explains that the views of the Te Kowhai substation are restricted and that the proposed substation will be screened from view by the existing substation. The closest dwellings to the Transpower boundary are approximately 500 metres away in northeasterly and southeasterly directions.
- 5.34 Condition 2.2 in the planners report (NOR 1) requires that the light levels do not exceed 5 lux (lumens per square metre) spill (horizontal or vertical) of light at any window of a dwelling located on adjacent properties.
- 5.35 Given the evidence of Mr Mansergh, the proposed mitigation and condition, the low frequency of nighttime lighting events, and the distances between the substations

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<sup>9</sup> Rule 25.17.1 in the PWDP is subject to four appeals [1183, 0035, 0051, 0080].

<sup>10</sup> Noise shall be measured in accordance with NZS 6801:1991 – Measurement of Sound. Noise shall be assessed in accordance with NZS 6802:1991 – Assessment of Environmental Sound.

and the closest dwellings, I consider that any adverse effects on the environment from lighting and glare will be *de minimis*.

***Hazardous substances, transformer malfunction and discharges***

- 5.36 The transformers will contain insulation oil of which the volumes are yet to be determined. Transformer oil is classed as a hazardous substance.
- 5.37 Transformer oil can leak from old transformers, or spill to the ground due to human error or transformer failure, resulting in soil contamination.
- 5.38 Environment Waikato makes comments in their submission regarding stormwater, wastewater and grey water discharges.
- 5.39 Stormwater and a small amount of grey water from the hand basin will be piped to a soak pit.
- 5.40 Mr Mollekin's evidence explains that the transformer will be bunded and that an oil containment system will be sized and installed to capture oil spills or leaks. The containment system will have the capacity to contain the total volume of oil held in the transformer. Mr Mollekin goes on to outline that WEL has procedures in place to deal with oil spills and to mitigate any effects.
- 5.41 In extreme events, transformer malfunction can lead to a fire or explosion.
- 5.42 Mr Mollekin's evidence explains that transformers are protected from overloading and faults by protection equipment (i.e. circuit breakers) and that the transformers are fitted with monitoring devices that would alert WEL to operating conditions that would lead to a fire or a spill (e.g. gas, oil level and temperature monitoring devices).
- 5.43 Conditions 8.1 and 8.2 in the planners report (NOR 1) require WEL to prepare a Stormwater Management Plan, a Transformer Bund Design Plan, and an Oil Spill Management and Contingency Plan for approval by the WDC prior to construction (and that the bund is constructed in accordance with the approved plan). Condition 8.3 (NOR 1) requires WEL to operate the substation in accordance with standards for the management of oil.
- 5.44 WEL have indicated via proposed advice notes to the conditions (NOR 1) that they will obtain the necessary discharge permits once the detailed design is available. I understand from Mr Dawson's evidence that Environment Waikato staff are satisfied with this measure.

- 5.45 The mitigation measures proposed by WEL address the risks from oil spills and transformer malfunction. The conditions placed on NOR 1 specify plans to deal with stormwater, transformer bunding and oil spill mitigation. WEL will obtain any necessary discharge permits once detailed design is available. In light of these measures, I consider that the risks posed by hazardous substances, transformer malfunction and discharges during normal or abnormal operation will be *de minimis*.

#### **Sub Transmission Line**

- 5.46 I consider that the potential environmental effects relevant to the assessment of the proposed sub transmission line are as follows:

#### ***Construction (including construction traffic) effects***

- 5.47 The proposed construction activities for the line will include vegetation removal, transportation of parts and equipment, and earthworks - on private and public property, road reserve and state highway. The transportation and construction activities will involve heavy vehicle and helicopter movements.
- 5.48 These activities have the potential to generate surplus soil, dust, sediment run-off, noise and traffic. They also have the potential to affect items or areas valued for ecological, archaeological or cultural heritage reasons.
- 5.49 Helicopters also have the potential to cause disruption to livestock particularly during lambing and calving.
- 5.50 The submissions on the line (NOR 2) relating to the construction effects covered:
- (a) Earthworks and the need to have erosion and sediment control plans in place (Environment Waikato);
  - (b) The stability of the bank on State Highway 23, abutting Mr A C Hopes boundary;
  - (c) Impacts on areas of cultural significance (Tainui – *submission withdrawn*);
  - (d) Impacts on areas of the Waipa River (Tainui – *submission withdrawn*);
  - (e) Impacts on areas of ecological significance (Department of Conservation);  
and
  - (f) Traffic hazards, loss of trees and damage to fences - in the road reserve (Mrs Fletcher).

- 5.51 The planner's report also raises further concerns regarding construction noise, helicopter noise, road pavement condition, access, traffic and road safety.
- 5.52 The conditions (2.2, 2.3, 2.4, 3.1, 3.2, 5.1, 6.2, 6.8, 6.9, 6.10, 6.11, 7.1 and 7.3) recommended on NOR 2 in the planner's report:
- (a) Submit a Construction Management Plan (CMP) to the WDC for approval prior construction. The CMP will address earthworks, surplus soil, sediment run-off, vegetation, seeding, dust and noise;
  - (b) Manages access track construction adjacent to waterways;
  - (c) Minimises stream crossings by vehicles;
  - (d) Install sediment control measures where earthworks or stockpiles are within 20 metres of a waterway;
  - (e) Comply with the construction and maintenance noise limits, and the measurement and assessment methods recommended in *NZS 6803:1999 (Acoustics – Construction Noise)*;
  - (f) Ensure the helicopter is flown in accordance with the noise abatement techniques specified in the *Fly Neighbourly Guide (2007)* produced by the Helicopter Association International (HAI);
  - (g) Follow specified procedures should any urupa, traditional sites, taonga (significant artefacts), koiwi (human remains), or other archaeological sites be exposed;
  - (h) Submit a Traffic Management Plan (TMP) to the WDC for approval prior construction. The TMP will set out: methods for managing construction traffic effects on motorists, roads and access points; and safety measures for vehicle entrance ways;
  - (i) Assess the condition of the road pavement before and after construction, and repair any damage caused by the construction;
  - (j) Replace or reinstate any fences in the road reserve damaged during vegetation removal; and
  - (k) Submit an Ecological Management Plan (EMP) to the WDC for approval prior construction. The EMP will address the clearance and trimming of indigenous vegetation during construction.

- 5.53 The above-mentioned conditions will avoid, mitigate, or remedy the effects described by Environment Waikato, the Department of Conservation, the WDC, Tainui and Mrs Fletcher.
- 5.54 In accordance with condition 6.5 (NOR 2), WEL must submit to the WDC for approval prior to construction, certified plans of poles in State Highway 23 (and the road reserve) that pose geotechnical risks. This condition will directly address the bank stability issues raised by Mr A C Hope.
- 5.55 The evidence of Mr Keyte indicates that traffic related effects will be very minor.
- 5.56 The evidence of Mr Hegley states that during the construction of the sub-transmission lines, the work will be well clear of any houses for most of the time so the work will comply with the construction noise rule. However, he identifies one instance where pole drilling and construction will occur within 30 metres of a house, but goes onto say that noise from this work will meet the Lmax levels specified in the Proposed District Plan.
- 5.57 Therefore, in light of the proposed conditions and the expert opinions, I consider that the potential adverse effects associated with the construction of the line will be minor.

***Road reserve management and road safety***

- 5.58 The operation of the line once along Karakariki Road and on State Highway 23 has the potential to affect the safety of road users and the successful management of these roads.
- 5.59 The submissions on the line (NOR 2) relating to design and location in road reserve pointed to:
- (a) Traffic hazards and the need to place the line underground (Mrs Fletcher); and
  - (b) Restrictions on future road upgrading or widening (Mr McGowan and McGowan Limited).
- 5.60 The WDC Traffic and Roading Report in Appendix C of the planner's report A also raise issues regarding the:
- (a) Location of the poles and the identification of poles likely to inhibit future road works;
  - (b) Future cost of relocating poles to accommodate future road works; and

- (c) Safety issues created by the presence of poles in high-risk areas (e.g. horizontal curves) and the need for Armco barriers in certain locations.
- 5.61 The conditions (6.3, 6.4, 6.6, 6.7 and 6.8) recommended for NOR 2 in the planner's report directly address these matters. I particularly note the conditions specifying pole location standards and the requirement for Armco safety barriers.
- 5.62 I also rely on the evidence and comments of Mr Keyte who states that all the poles will be located outside the clear zone, or will be protected by a guardrail style barrier.
- 5.63 Given the evidence of Mr. Keyte and the comprehensive suite of conditions for dealing with the design and location of the line in road reserve and the State Highway, I consider that any potential adverse effects will be minor.
- 5.64 I deal with Mrs Fletcher's question on the undergrounding the line later in my evidence.

***Landscape and visual effects***

- 5.65 New electricity lines have the potential to affect visual character, amenity values, ridgeline appearance, natural character, outstanding natural features, and landscapes – when viewed from public places or private properties.
- 5.66 The potential for landscape and visual effects is examined in detail in the evidence of Mr Mansergh. He lists key findings, which I have interpreted as follows:
- (a) The juxtaposition of landforms represents some memorable and recognisable landscapes, which contribute to amenity;
- (b) There is a high degree of modification to original land cover, with the predominant land use being pastoral grazing;
- (c) The introduction of the new line into the landscape will be noticeable in the short term, but in the long term will become an accepted part of the working rural landscape;
- (d) The visual absorption capability (VAC) ratings for view locations within the study corridor range from very poor (for close proximity views) to good, but that the net visual effects from close proximity locations are, in general, not considered to be unacceptable.
- (e) The visual effects are likely to be at their greatest within approximately 100 to 200 metres of the line, dropping away as distance increases. From

beyond 500 to 600 metres, the effect of the line on landscape, visual and amenity values is likely to be inconsiderable.

- (f) The undergrounding of existing lines and the use of existing transmission corridors will help reduce unacceptable cumulative effects by reducing visual clutter.
- (g) The line will not pass through any Outstanding Natural Landscapes or Natural Conservation Areas in the WDP or PWDP, but from certain locations in the Karakariki Road area, the line will intrude on views of Kokako Hills, which is an Outstanding Natural Landscape in the district plans.
- (h) The proposed line will cross two Ridgeline Protection Areas, as identified in the WDP and PWDP. The line will follow an existing transmission corridor over Raglan divide and is therefore unlikely to affect the existing visual amenity. The proposed line will also pass through a ridgeline protection area on the Wharaurua Plateau, but will have an inconsiderable visual effect because it will be seen within the context of the wind farm turbines.

5.67 Mr Mansergh goes onto conclude that:

- (a) The landscape visual and amenity values associated with the wider landscape will remain largely unaffected by the proposal;
- (b) The effects on the landscape and visual amenity from the White and Lyndon properties may be *considerable*;
- (c) On balance, the proposed line will not be highly manifest within this working rural landscape; and
- (d) Overall, the effects of the line on the landscape and amenity values will be acceptable.

5.68 Five of the submissions raise the issue of visual effects (Lisa Slade, Mr and Mrs Williamson, Mr and Mrs McGowan, Mr Wilson and Mrs Fletcher). Three submissions claim that there will be adverse effects on future subdivisions (Mr and Mrs Sutton, Mr and Mrs Williamson and Mr and Mrs McGowan).

5.69 Since the submissions were made, WEL has met with some of the submitters to discuss the visual effects of the line and in some cases how these might be mitigated. Mr Dawson's evidence explains the following in this regard:

- (a) Lisa Slade no longer has concerns with the line, as she is now aware that the line will not cross Otonga Valley Road;
- (b) Mr and Mrs Sutton have been provided with a visual simulation and have been offered landscaping in order to mitigate any adverse visual effects on their consented subdivision;
- (c) Mr McGowan has confirmed he will not see the line from his house, but remains concerned about the potential visual effects on an area he may wish to subdivide some time in the future.
- (d) Mr Wilson will not see the proposed line from either of his properties<sup>11</sup>, and would not elaborate on any of the matters raised in his submission;
- (e) Mrs Fletcher has been offered landscaping to screen any views of the line on Karakariki Road, which is outlined in Mr Mansergh's evidence; and

5.70 WEL is currently in negotiations with Mr and Mrs Williamson, as it is proposed that the line will cross their property. Mr Jackson's evidence explains that proposed line will follow the existing line route and that the existing 33/ 11 kV line will be replaced by a 110/ 11 kV line. The 33 kV circuit will be relocated off the existing line and placed in State Highway 23 as a cable.

5.71 Mr Mansergh has assessed the effects on Mr and Mrs Williamsons dwelling as low.

5.72 Mr and Mrs Williamson have previously claimed, and also state in their submission, that the line will limit the subdivision potential of their farm. In response to this concern, in 2007 WEL commissioned Mr Dawson, a planner with 12 years experience in subdivisions in the Waikato, to assess the potential of the site (see Volume 3 of the NOR documents). Mr Dawson's evidence is that the best location for a subdivision would be in the northeast corner of the property, some 500 metres away from the line. Mr Mansergh's findings indicate that where the line is beyond 500 metres, the effects on landscape, visual and amenity values are likely to be *low*.

5.73 Mr Mansergh states in his conclusions that the effects on the landscape and visual amenity from White and Lyndon properties may be *considerable*. However, Mr Dawson explains that Mr and Mrs Lyndon have signed an easement agreement and have given their written approval, and that Mr and Mrs White have provided their written approval.

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<sup>11</sup> A house at Whatawhata and a block of land on SH 23 near the top of the Raglan Deviation.

- 5.74 Mr Mollekin's evidence asserts that throughout the project WEL have made a deliberate effort to utilise existing line routes and to underground existing 33 and 11 kV lines and I have already outlined those efforts. In Mr Mansergh's opinion, the undergrounding of existing lines and the use of existing corridors will assist in reducing unacceptable cumulative effects by reducing visual clutter.
- 5.75 The planner's report includes a request that WEL indicates how it will give effect to the proposed landscaping measures and pole relocations in order to mitigate visual effects on individual properties or subdivisions<sup>12</sup>. WEL has made offers to submitters in relation to proposed mitigation measures. Details of the mitigation measures proposed will need to be finalised (and agreed with the parties) once the design is finalised and, for that reason, it is not proposed to include the proposed mitigation measures as conditions on the designation.
- 5.76 On the basis of Mr Mansergh's and Mr Dawson's evidence, WEL's commitment to the proposed mitigation measures and the written approvals obtained by WEL, I consider that on balance the potential adverse effects on the landscape or any visual effects will be minor.

***Health effects from electric and magnetic fields, and electrical hazards***

- 5.77 Electricity lines emit electric and magnetic fields ("EMF") when an electric current passes along the conductors. As such, dwellings and people can be exposed to EMFs extending from a line. Some of the dwellings on Karakariki Road will be near the line, with the closest dwelling being approximately 15 to 30 metres away.
- 5.78 Ms Slade, the Williamson's, the Gibb's, Mr Wilson and Ms Fletcher raise concerns over their health in relation to the line. While terms such "radiation" are used, I have assumed these parties are primarily concerned with EMFs.
- 5.79 WEL has relied on the advice of Mr Mitton and Dr Black to ensure that the design and location of the line meets the guideline published by the International Commission for Non-ionising Radiation Protection ("ICNIRP"). Dr Black points out that the ICNIRP Guideline has been adopted by the New Zealand Ministry of Health and is widely accepted as providing thresholds for public health protection. He also states that it is entirely relevant to this matter.
- 5.80 Further to this, Mr Mitton has calculated the levels for EMF, radio frequency interference (RFI) and audible noise (AN) for the proposed line. Dr. Black has reviewed the EMF levels and assessed the likelihood of any adverse health impacts.

- 5.81 Dr Black restates the worst case predicted levels for the electric field strengths (kV / m) and maximum magnetic flux density ( $\mu\text{T}$ ) from Mr Mitton's evidence in section 5 of his evidence. He demonstrates that these levels will fall well below the ruling levels specified in the ICNIRP Guideline by a wide margin of certainty and asserts that these levels are of no biological or public health concern.
- 5.82 Direct contact with electricity conductors is the greatest hazard posed by live electricity lines. This risk can arise with respect to moveable objects and people on land and water.
- 5.83 The evidence of Mr Mollekin states that the line will be designed in accordance with the *New Zealand Electrical Code of Practice for Electrical Safe Distances* (NZECP 34:2001). Dr Black states that provided these specifications be followed, there will be no risk to the general public in regards to electrical safety.
- 5.84 The line also crosses the Waipa River, which is classified as a "navigable waterway". In his evidence, Dr. Black recommends that WEL adjust the height of the transmission line to ensure safe passage for vessels on the river (in excess of the NZECP 34:2001 standards).
- 5.85 These issues were alluded to in the submissions made by Environment Waikato and Tainui (*submission now withdrawn*).
- 5.86 Dr Black states that the line crossing over the Waipa River should be designed in accordance with the *Safety Management of Power Line Waterway Crossings: A Guide (May 2006, (Maritime New Zealand and Electricity Engineers' Association of New Zealand))*. This guide supersedes previous publications including the information on power line crossing signage and safe clearances calculations contained in all versions of the New Zealand's System of Buoys & Beacons booklet, published prior to 2006. The aim of the Guide is to protect waterway users from electrical hazards, as well as protecting power lines and cables from contact by watercraft and the resultant damage.
- 5.87 Later in my evidence, I recommend that WEL accept a condition requiring compliance with this Guide.
- 5.88 Condition 4.1 (NOR 2) requires WEL to comply with the ICNIRP Guideline. The condition also requires WEL to prepare a report for approval by the WDC six months after commencing operation to prove compliance with the guideline.

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<sup>12</sup> Should these measures be required by condition on the NOR or by agreement between the parties?

5.89 Given WELs commitments, the comprehensive expert evidence, and the condition relating to EMFs, I am of the opinion that any potential adverse effects relating to health and electrical hazards will be nil.

***Ecological effects***

5.90 In order to construct the line and to meet the requirements of the Electricity *Hazards from Trees* Regulations (2003), WEL must remove small tracts of indigenous vegetation on both sides of the Waipa River.

5.91 Submissions were received from Mr and Mrs Hodge and the Department of Conservation (DoC). The submissions focused on consultation, bird strike, and significant ecological areas.

5.92 The Ecological Assessment by *Kessels and Associates* determined that (see Volume 2A accompanying the NORs):

- (a) Bird strike could occur with the line over the Waipa River and in the kahikatea forest on the western side of the Waipa River;
- (b) Static man-made structures, such as poles, did not appear to be a significant obstacle for the long-tailed bat;
- (c) No fish or macro-invertebrate habitats would be adversely affected assuming sediment control measures were in place;
- (d) Approximately 0.81 ha of indigenous bush/ scrubland would need to be removed and 0.05 ha of wetland would need to be removed or trimmed for the construction of the line; and
- (e) Overall, the line is well placed to avoid any significant adverse effects on sensitive ecological habitats.

5.93 The assessment recommends mitigation measures to avoid bird strike (at Waipa River and Cunningham's kahikatea forest), pest and weed control (at Cunningham's kahikatea forest) and low level planting under the transmission line in areas of cleared vegetation (Cunningham's kahikatea forest).

5.94 Condition 7.1 (NOR 2) requires WEL to implement these mitigation measures in the form of an approved Ecological Management Plan (EMP) prior to construction. Condition 7.2 places obligations on WEL to prevent the propagation of weed species.

5.95 Mr Dawson has indicated that Mr and Mrs Hodge are now satisfied with the layout and design of the line in relation to the river.

5.96 The report by Kessels and Associates indicates that the line will avoid any significant adverse effects on sensitive ecological habitats and that certain measures will mitigate effects around the Waipa River. The conditions place an obligation on WEL to implement these measures via an approved Ecological Management Plan (EMP). Therefore, I consider that any potential adverse effects on the ecology of the area will be minor.

#### **Noise effects**

5.97 The line operation has the potential to create sound. Mr Hegley identifies that corona discharge, surface discharging and wind as potential sources of noise.

5.98 I note that no submissions were received regarding noise from the line and the WDC Health Officer states he is satisfied that audible noise from the line is not of concern.<sup>13</sup>

5.99 Mr Hegley concludes that corona, surface discharge and wind-generated noise will all be within a reasonable limit for the few people who live adjacent to the line, and that ambient sound from the road will be higher due to passing traffic.

5.100 In light of the expert evidence and opinion of the WDC Health Officer, I conclude that any potential adverse effects from line noise will be *de minimis*.

#### **Aviation/ airstrips**

5.101 New line electricity lines can obstruct flight paths of planes or helicopters when taking off, banking, landing or performing works such as aerial top-dressing or aerial spraying.

5.102 No submissions were received regarding airstrips or flight paths, although there was mention of restrictions on farming operations by Mr and Mrs Williamson.

5.103 Mr Dawson's evidence states that consultation has occurred with SuperAir. I understand that SuperAir provide top-dressing services to the rural community in this area. SuperAir expressed concern about one airstrip, which is located on Tainui AgResearch land near the proposed line (poles 137 to 138). According to Mr Dawson, WEL has agreed to implement a number of mitigation measures at the Tainui airstrip for SuperAir (e.g. high viz discs on the line, pole painting, compliance with the NZECP34: 2001, earth wire height restrictions).

5.104 Mr Mollekin's evidence states that airstrips were considered during route selection and that efforts were made to avoid these areas. The location of the airstrips are shown in the NOR maps (see Figure 6.7 in Volume 1A – brown strips).

5.105 Taking into account that the line has been located away from airstrips and that mitigation measures will be implemented next to the Tainui AgResearch airstrip, I consider that potential adverse effects on any flight paths will be *de minimis*.

#### **Te Uku Wind Park Substation**

5.106 I consider that the potential environmental effects relevant to the assessment of the proposed substation at the Te Uku Wind Park are as follows:

##### ***Construction effects***

5.107 The proposed construction activities have the potential to generate a number of effects. I have already outlined these types of effects in the section dealing with Te Kowhai Substation. However, one major difference with the Te Uku Wind park site is that there are a number of sensitive seepage areas in the vicinity.

5.108 Environment Waikato makes comments in their submission regarding earthworks and the need to have erosion and sediment control plans in place.

5.109 The conditions recommended for NOR 3 in the planner's report require WEL to deal with construction effects (3.1, 4.1, 6.1, 7.1, 7.2, and 7.3) which are similar to those placed on NOR 1. These conditions require WEL to:

- (a) Submit a Construction Management Plan (CMP) to the WDC for approval prior construction. The CMP will address earthworks, surplus soil, sediment run-off, vegetation, seeding, dust and noise;
- (b) Comply with the construction and maintenance noise limits, and the measurement and assessment methods recommended in *NZS 6803:1999 (Acoustics – Construction Noise)*;
- (c) Follow specified procedures should any urupa, traditional sites, taonga (significant artefacts), koiwi (human remains), or other archaeological sites be exposed; and
- (d) Manage construction traffic and access.

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<sup>13</sup> See p. 7 of the WDC Environmental Health Report in Appendix B of the planner's report.

- 5.110 An advice note is also attached to NOR 3 (see advice note E.i) reminding WEL that ground conditions may require an engineering review as part of the building consent process.
- 5.111 Mr Mollekin's evidence demonstrates that the substation will not affect any of the seepage areas that were identified.
- 5.112 Mr Hegley states in his evidence that the substation is well over 2 kilometres from the closest house and that construction noise will comply with the PWDP requirements<sup>14</sup> by a large safety factor regardless of when work is undertaken.
- 5.113 Dr. Campbell's archaeological and heritage evidence, and Mr. Dawson's evidence, detailing consultation with local Iwi, confirms that there are no sites of archaeological or cultural heritage value within the vicinity of the proposed site.
- 5.114 The issues raised by Environment Waikato are addressed by proposed conditions. The potential effects caused by earthworks, vegetation removal, construction and traffic are addressed by proposed conditions and advice notes. In light of these measures and the expert evidence, I consider that any adverse effects on the environment will be minor.

***Landscape and visual effects***

- 5.115 The substation site will be located within a depression on the Wharauoa Plateau.
- 5.116 One submission was received from Mr Wilson who highlights the issues regarding the:
- (a) Size of the building;
  - (b) Need to enclose the substation in a building and to it screened with landscaping; and
  - (c) Ugly nature of the fence.
- 5.117 I note that Mr Wilson does not reside near the proposed site and will not see the substation from his house, which is located near Whatawhata. I also note Mr Mollekin's reasons for locating the substation equipment outdoors, which are to provide adequate ventilation, safety clearances, maintenance and to manage costs.

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<sup>14</sup> Rule 25.18.1

5.118 Mr Mansergh confirms in his evidence that the views of this substation will be restricted to partial, distant views from the upper flanks of Mount Karioi and that the visual effects will be inconsiderable due to the extreme distance.

5.119 Given Mr Mansergh's expert opinion and the remoteness of the substation, I consider that any adverse landscape or visual effects on the environment will be *de minimis*. On this basis, it is not considered necessary to enclose the substation in a building or to have it screened with landscaping, as is recommended by Mr Wilson.

***Health effects from electric and magnetic fields, and radio frequency***

5.120 The electrical equipment in substation will emit electric and magnetic fields ("EMF").

5.121 The site may also contain telecommunications equipment, but this matter will not be determined until the detailed design is complete.

5.122 The proposed substation site will be contained within the Vanhoutte property and will not be publicly accessible. The substation will be over 2 kilometres from the nearest dwelling.

5.123 Condition 5.1 in the planner's report (NOR 3) requires WEL to comply with the exposure guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).

5.124 Condition 5.2 (NOR 3) requires that WEL do not exceed the non-occupational limits in the *New Zealand Standard NZS 2772.1:1999 Radio Frequency Fields (Part 1: Maximum exposure levels 3 kHz – 300 GHz)*, when measured in accordance with *New Zealand Standard 6609.2:1990 Radio Frequency Radiation*.

5.125 Dr. Black confirms that there are no health concerns from EMFs at the proposed substation.

5.126 Given the significant distances from any dwellings, the public's inability to access the area, the proposed conditions, and the evidence of Dr. Black, I consider that any health effects associated with EMFs from the proposed site will be nil.

***Transformer noise***

5.127 The proposed transformer will *continually* emit noise with a special tonal characteristic at a *constant* level.

5.128 In his evidence, Mr Hegley predicts that the noise level will not exceed 5 dBA at the closest notional boundary and will not exceed 20 dBA at the site boundary.

- 5.129 As previously mentioned, the most restrictive noise level for the Rural Zone in the WDP is 40 dBA L<sub>10</sub> *when measured at or within the notional boundary*. The most restrictive noise level for the Rural Zone in the PWDP is 40 dBA L<sub>10</sub> *when measured at any other site*.<sup>15</sup>
- 5.130 Mr Wilson requests that a strict noise operating level be imposed and enforced.
- 5.131 Condition 4.1 in the planners report (NOR 3) requires that the noise levels when measured at or within the notional boundary do not exceed 35 dBA L<sub>10</sub>, which includes the 5 dBA noise penalty.<sup>16</sup>
- 5.132 Based on Mr Hegley's evidence WEL should easily meet this condition, which is a requirement of the WDP. Therefore, I consider that any adverse effects on the environment caused by transformer noise will be minor and that Mr Wilson's recommendations will be met.

### ***Light and glare***

- 5.133 Additional lighting is proposed for the substation site. Lighting is used at substations in the event of emergencies at night.
- 5.134 It is also stated in NOR that the lighting will be illuminated downwards and that it will shine away from the neighbouring properties.
- 5.135 As previously mentioned, Mr Mansergh states that the views of this substation will be restricted to partial, distant views from the upper flanks of Mount Karioi and that the visual effects will be inconsiderable due to the extreme distance.
- 5.136 Condition 2.2 in the planners report (NOR 3) requires that the light levels do not exceed 10 lux (lumens per square metre) spill (horizontal or vertical) of light at any window of a dwelling located on adjacent properties.
- 5.137 Given the evidence of Mr Mansergh, the proposed mitigation and condition, the low frequency of nighttime lighting events, and the distances between the substations and the closest dwellings, I consider that any adverse effects on the environment from lighting and glare will be *de minimis*.

### ***Hazardous substances, transformer malfunction and discharges***

- 5.138 The transformers will contain insulation oil of which the volumes are yet to be determined.

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<sup>15</sup> Rule 25.17.1 in the PWDP is subject to four appeals [1183, 0035, 0051, 0080].

<sup>16</sup> Noise shall be measured in accordance with NZS 6801:1991 – Measurement of Sound. Noise shall be assessed in accordance with NZS 6802:1991 – Assessment of Environmental Sound.

- 5.139 Environment Waikato makes comments in their submission regarding stormwater, wastewater and grey water discharges.
- 5.140 Stormwater and a small amount of grey water from the hand basin will be piped to a soak pit.
- 5.141 Mr Mollekin's evidence explains WEL's systems and procedures for managing oil spills and transformer malfunctions.
- 5.142 Conditions 8.1 and 8.2 in the planners report (NOR 3) require WEL to prepare a Stormwater Management Plan, a Transformer Bund Design Plan, and an Oil Spill Management and Contingency Plan for approval by the WDC prior to construction (and that the bund is constructed in accordance with the approved plan). Condition 8.3 (NOR 3) requires WEL to operate the substation in accordance with WEL's standard for the management of oil.
- 5.143 WEL has indicated via advice notes in the planner's report (NOR 3) that the necessary discharge permits will be obtained once the detailed design is available. I understand from Mr Dawson's evidence that Environment Waikato staff are satisfied with this measure.
- 5.144 In light of these measures, I considered that any risks posed by hazardous substances, transformer malfunction and discharges during normal or abnormal operation will be *de minimis*.

**Positive Effects (of the entire project)**

- 5.145 Mr Mollekin highlights that the line and substations as a whole will:
- (a) Increase the security of supply to Raglan up to the (N-1) standard;
  - (b) Support the current and projected Raglan and Hamilton west-end load growth; and
  - (c) Convey electricity generated from a renewable energy resource to the local distribution network and the National Grid.
- 5.146 On the grounds that a reliable electricity supply is essential to the economic and social well-being of society, it is my view that the matters Mr Mollekin covers will result in significant positive effects to people, communities and industry associated with the local distribution network and the National Grid.
- 5.147 Mr Jackson explains that some sections of existing lines will be placed underground. I consider that the undergrounding will result in positive localised

effects that will balance out any adverse effects from the proposed line (e.g. on the Gibbs and Williamson properties) or result in net benefits (e.g. Balme property).

## 6. **STATUTORY AND PLANNING ASSESSMENT**

6.1 This chapter of my evidence assesses the proposals against the matters set out in section 171. This assessment relies on the information discussed in the consideration of the effects.

### **Section 171(1)(a) – Consideration of the effects and relevant provisions**

6.2 Based on the consideration of effects above, my view is that any potential adverse effects will be minor, *de minimis*, or nil.

6.3 I have summarised the relevant provisions in the applicable planning instruments and have discussed these below in relation to the three proposals.

#### ***National policy statements (NPS)***

6.4 A NPS for electricity transmission was issued by notice in the Gazette on 13 March 2008. This NPS applies to the “National Grid” which is defined in the national policy statement as meaning, “the assets used or owned by Transpower NZ Limited”.

6.5 While the line will not be used or owned by Transpower, Policy 9 of the NPS provides relevant guidance on the consideration of electric and magnetic fields, which states:

*Provisions dealing with electric and magnetic fields associated with the electricity transmission network must 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) (Health Physics, 1998, 74(4): 494-522) and recommendations from the World Health Organisation monograph Environment Health Criteria (No 238, June 2007) or revisions thereof and any applicable New Zealand standards or national environmental standards.*

6.6 This policy signals that human exposure to electric and magnetic fields should be addressed and that the ICNIRP guidelines are the appropriate standard for assessing this matter.

6.7 According to the Dr Black’s evidence, the EMF levels from the line and the substations will fall well below the ruling levels specified in the ICNIRP Guideline by a wide margin of certainty.

#### ***Waikato Regional Policy Statement (RPS)***

- 6.8 The RPS became operative in October 2000.
- 6.9 The relevant provisions contained in the RPS are focused on the following matters. (see Appendix B for the relevant issues and policies).
- (a) Treaty of Waitangi and consultation and participation of tangata whenua; and the tangata whenua relationship with natural and physical resources and Maori culture and traditions;
  - (b) Accelerated erosion;
  - (c) Soil contamination;
  - (d) River and lakebeds management and structures; and water quality and aquatic habitats;
  - (e) Liquid wastes;
  - (f) Hazardous substances storage, transport, use and disposal;
  - (g) Natural hazards and new developments;
  - (h) Maintenance of biodiversity;
  - (i) Energy and the efficient energy use;
  - (j) Infrastructure; and
  - (k) Heritage and Maori heritage.
- 6.10 WEL has worked closely with tangata whenua throughout the project. A letter has been received from Nga Uri a Mahanga confirming this approach. Furthermore, Tainui have withdrawn their submission.
- 6.11 Mr Mollekin explains that a line designed for a voltage of 110 kV is an efficient way to convey energy in comparison to other voltages. These matters are discussed in his evidence and the consideration of alternative methods in the NORs.
- 6.12 The matters covered by the other relevant RPS provisions have been discussed in detail in my consideration of the effects above, and have been addressed in the expert evidence, consultation, side agreements, or mitigation.
- 6.13 Therefore, I consider that the proposals are either consistent or not inconsistent with the RPS objectives and policies.

### ***Waikato Regional Plan (WRP)***

- 6.14 The WRP became partly operative on Friday, 28 September 2007. The outstanding parts of the WRP that are not operative are concerned with the geothermal module and do not influence this project.
- 6.15 The discharge of grey water to land from the substation will be a discretionary activity. Based on the conceptual information, the line and other aspects of the substations are permitted activities. As stated in the advice notes, confirmation of the activity status will be sought from Environment Waikato once the detailed design is available.
- 6.16 The relevant provisions contained in the WRP are focused on the following matters (see Appendix B for a full analysis of the relevant provisions; i.e. the objectives, policies).
- (a) Tangata Whenua Relationship with Natural and Physical Resources;
  - (b) The management of water resources;
  - (c) Wetlands;
  - (d) Structures over river and lake beds;
  - (e) Accelerated erosion; and
  - (f) Discharges onto or into land.
- 6.17 The substation will avoid a seepage area on the Wharauoa Plateau. Therefore, the Te Uku Wind park substation will avoid any wetlands.
- 6.18 The matters covered by the other WRP provisions have been discussed in detail in my consideration of the effects above, and have been addressed in the expert evidence, consultation, side agreements, or mitigation.
- 6.19 Therefore, I consider that the proposals are either consistent or not inconsistent with the WRP objectives and policies.

### ***Waikato District Plan (WDP)***

- 6.20 The WDP became operative on 9 September 2002.
- 6.21 The three proposals would be discretionary activities in the rural zone of the WDP, in the absence of a designation.

6.22 The relevant provisions contained in the WRP are focused on the following matters (see Appendix B for a full analysis of the relevant objectives, policies, rules and the activity status):

- (a) Maori perspectives of natural and physical resource management;
- (b) Efficiently and effectively managing roading, land drainage, and rural water supplies;
- (c) Maintaining and enhancing rural visual character and amenity values;
- (d) Ensuring that the storage and disposal of waste does not create a public health risk;
- (e) Protecting public health and safety;
- (f) Preventing adverse effects on traffic safety and ensuring the convenient use of state highways;
- (g) Effectively and efficiently using existing infrastructure on sites previously designated or utilised;
- (h) Designing and constructing developments to address any costs or adverse effects associated with stormwater disposal, effluent disposal, and water supply;
- (i) Maintaining the natural appearance of significant ridgelines;
- (j) Remedying, mitigating, or avoiding the adverse environmental effects caused by the disposal of liquid waste and effluent;
- (k) Remedying, mitigating, or avoiding adverse environmental effects on land transport infrastructure;
- (l) Preventing any significant adverse effects caused by uncontrolled excavations or filling activities on the environment;
- (m) Minimising the risks presented by activities involving the use, storage, disposal and transport of hazardous substances;
- (n) Creating and maintaining an acceptable ambient noise level in the district;
- (o) Avoiding, remedying, or mitigating adverse effects caused by signs;

- (p) Protecting public works and utilities and their networks so that continuity of service is ensured now and in the future to enable the health, safety, and wellbeing of the community;
- (q) Ensuring that public works and utilities are provided in a manner which is sensitive to amenity values and which avoids and mitigates any adverse effects on the natural and physical environment;
- (r) Improving the appearance of proposed public works and utilities with landscaping;
- (s) Conserving and enhancing those qualities which contribute to the natural character and amenity values of rural areas; and
- (t) Protecting buildings, objects, items and areas that hold cultural heritage value.

6.23 Sections of the proposed line and proposed substation at Te Kowhai will effectively and efficiently use existing sites and routes currently utilised by infrastructure. These are WEL's existing line routes, Transpower's Te Kowhai substation, council roads and State Highway 23.

6.24 The three proposals will protect a public utility and the associated network so that continuity of electricity supply is ensured now and in the future to enable the health, safety, and wellbeing of the community. In particular, the proposals will augment WELs western network.

6.25 The matters covered by the other WDP provisions have been discussed in detail in my consideration of the effects above, and have been addressed in the expert evidence, consultation, side agreements, or mitigation.

6.26 Therefore, I consider that the proposals are either consistent or not inconsistent with the WDP objectives and policies.

***Proposed Waikato District Plan***

6.27 The PWDP was notified on 25 September 2004.

6.28 The three proposals would be discretionary activities in the rural zone of the PWDP in the absence of a designation.

6.29 Many of the relevant provisions in the PWDP are subject to appeals, particularly the rules (see the appeals version of the PWDP, with chapters dated January 2007, November 2007, April 2008 and August 2008).

6.30 The relevant provisions contained in the PWRP are focused on the following matters (see Appendix B for a full analysis of the relevant objectives, policies, rules and the activity status).

- (a) Maintaining indigenous biodiversity and the life-supporting capacity of indigenous ecosystems;
- (b) Protecting outstanding natural features and landscapes;
- (c) Retaining landscape and visual amenity values, as viewed from public places;
- (d) Preserving the natural character of rivers and their margins;
- (e) Protecting rivers from the adverse effects of land disturbance;
- (f) Providing network utilities in a manner that does not compromise qualities and characteristics of surrounding environments;
- (g) Strategically investing in nationally and regionally important utilities;
- (h) Generating and using of renewable energy resources;
- (i) Maintaining and protecting the function and safety of the land transport network;
- (j) Enabling people and communities to access natural and physical resources so that they can provide for their economic wellbeing;
- (k) Retaining historic and cultural heritage;
- (l) Containing the adverse effects from activities on amenity values within the site where they are generated;
- (m) Maintaining and enhancing amenity values of localities; and
- (n) Protecting the environment, people and property from the adverse effects of hazardous substances.

6.31 The proposals are a strategic investment in utilities in national and regional terms. The proposals will supply a large part of the Waikato Region and the National Grid and will help to maintain the security of supply.

6.32 The proposals will enable the generation and use of renewable energy resources. Furthermore, the proposals will enable people and communities to access the

inherent energy available in the region's wind resources, which will provide for their economic wellbeing.

- 6.33 The matters covered by the other PWDP provisions have been discussed in detail in my consideration of the effects above, and have been addressed in the expert evidence, consultation, side agreements, or mitigation.
- 6.34 Therefore, I consider that the proposals are either consistent or not inconsistent with the PWDP objectives and policies.

### **Section 171(1)(b) – Consideration of alternatives**

- 6.35 Under section 171(1)(b), council must consider whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work. WEL does not have an interest in the land sufficient for the proposed line. With respect to the substations, it may be that the caveat on the Te Uku Wind Park property and the license to occupy at the Transpower site are sufficient interests. I have however assumed that WELs decisions over these sites should still be examined to ascertain the robustness of their approach.
- 6.36 In his submission, Mr Cox submits that WEL has not considered alternative sites, routes, or methods for the line or Te Kowhai substation proposals. I disagree with Mr Cox's submission and give my reasons below.
- 6.37 The NOR documents and Mr Mollekin's evidence detail the philosophy and process for considering the various alternatives.

### ***Te Kowhai substation***

- 6.38 At Te Kowhai, the Transpower site and a 220 kV / 110 kV transformer were selected. The consideration was based on:
- (a) The technical efficiency and effectiveness of the connection into the National Grid;
  - (b) The area of 'green field' land required and the potential for duplication; and
  - (c) The cost of the transformer voltage and capacity.

### ***Sub transmission line***

6.39 WEL's approach towards route selection is well documented and includes the following points:

- (a) Several alternatives were created in accordance with technical and economic requirements;
- (b) The obvious sensitive environmental areas were identified by environmental experts and Iwi, and through a review of the district and regional plans. The NOR documents depict the sensitive environmental areas.<sup>17</sup>
- (c) The alternatives were adjusted where conflicts occurred with sensitive environmental areas at the start and throughout the project;
- (d) The alternatives were pursued over three years via parallel negotiations and consultation with stakeholders.
- (e) More alternatives were created over this period due to landowner preferences; and technical, economic, social and environmental constraints.
- (f) The final route gradually emerged as the route sections "were locked down and linked together".<sup>18</sup>
- (g) Since 2005 WEL has considered 56 alternative route options (at a macro and micro level) prior to issuing the NOR.

6.40 The NOR and Mr Mollekin's evidence explain the alternative *methods* for the proposed line<sup>19</sup>. Different line voltages have been considered taking into account the corresponding effect on the number of poles and diameter of the conductors necessary to carry the increased line capacity (MVA).

6.41 Overhead line and underground cable methods have also been considered. Mr Mollekin explains the technical, economic, security of supply and visual rationale for not undergrounding the 110 kV line. I note however that the undergrounding of 33 kV and 11 kV circuits are proposed.

#### ***Te Uku Wind Park substation***

6.42 At Te Uku Wind Park, the consideration of the site location was based on landowner preferences and the location of:

- (a) The Wind Park and the turbines;

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<sup>17</sup> WEL Networks, 2008. Volume 1A, NORs, Figure 6.7, p.53.

<sup>18</sup> WEL Networks, 2008. Volume 1A, NORs, p.45.

<sup>19</sup> Page 32

- (b) Access;
- (c) Seepage areas; and
- (d) The existing buildings and structures (i.e., woolshed and the telecom tower).

6.43 I take it from Mr Mollekin's evidence that the use of a 110 kV / 33 kV transformer is the only viable alternative, given the need to convey electricity from the generators at voltages suited to the proposed line and the western network.

6.44 In my opinion, WEL's consideration of the alternative routes, sites and methods for the proposed line has been robust and comprehensive in its scope, and that WEL have not acted arbitrarily or given cursory consideration to the routes and methods.

**Section 171(1)(c) - Whether the work and designation are "reasonably necessary"**

6.45 Under section 171(1)(c), council is required to consider whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority.

6.46 In his submission, Mr Cox claims that two of the designations are not necessary (NOR 1 and NOR 2).

***The work and WELs objectives***

6.47 The objectives of WEL are stated in the NOR as:

- (a) Transformation and conveyance of electricity to the local network and the National Grid; and
- (b) The distribution of safe and reliable electricity to people, local communities, and industry in the region.

6.48 I consider that this work is reasonably necessary to achieve the objectives of WEL. Mr Mollekin's evidence clearly demonstrates that the work will result in the transformation and conveyance of electricity to the western network and the National Grid. He explains that proposals will achieve an (N-1) security of supply standard for the Township of Raglan. Dr Black's evidence confirms that the electricity will be distributed in a safe manner assuming certain assumptions are met.

***The size of the designation***

6.49 In my view, the size and extent of the proposed designations is reasonably necessary to accommodate the line and substation sites. A minimum 20 metre wide corridor is required to accommodate the 15 metre wide easements and any minor line realignments should impediments arise. The current size of the substation designations will cater for any unexpected changes to the substation sites or the location of the incoming routes. I note that WEL are committed to reducing the size of the substation designations once certainty is established through detailed design. To ensure this occurs, I have suggested a condition in Chapter 9 of this document.

***Designations as a planning technique***

6.50 On the advice of WELs legal counsel, I have not considered designations as a planning technique.

**Section 171(1)(d) – Other matters**

6.51 There are other matters that the council may wish to consider in making recommendations on the requirements.

***Devaluation of property values and future subdivisions***

6.1 Mr Hope, Mr and Mrs Williamson, Mr and Mrs Sutton, Lisa Slade and Mr and Mrs McGowan raise or allude to issues regarding the devaluation of property and future subdivisions with respect to the proposed line.

6.2 Mr Dawson's evidence states that Lisa Slade has indicated that she has no further concerns in relation to the project.

6.3 Mr Dawson also explains that Mr and Mrs McGowan will not see the line from their house, but remain concerned about visual impacts on future subdivisions along their eastern boundary. Mr and Mrs McGowan do not hold a resource consent for a subdivision on their eastern boundary and therefore this concept does not form part of the environment.

6.4 Mr Keyte has visited Mr Hope to describe the foundation of the pole abutting his boundary on State Highway 23. I understand from Mr Keyte that Mr Hope is satisfied that the pole will not create a hazard.

6.5 It appears that Mr Hope's property does not have a dwelling or hold resource consent for a subdivision on this property. Mr Hope's own dwelling is located on another property several kilometres from the line. However, it is considered that he could construct a dwelling on his property as a permitted activity in accordance with the district plans, and this dwelling would form part of the environment for the

purposes of this assessment. Mr Mansergh considers the effects of the line from the intersection of Cogswell Road and State Highway 23 are “medium-high”.

- 6.6 WEL is currently in negotiations with Mr and Mrs Williamson. Both parties have received advice from registered valuers on compensation that should be paid for an electricity easement crossing the Williamson’s land. I am aware that these valuations have been carried out under the Public Works Act, 1981, but that WEL has initiated compulsory acquisition procedures in accordance with this Act. If a settlement is reached, or the easement is taken, the Williamson’s will be compensated for the line route under that legislation.
- 6.7 I note that Mr Mansergh establishes that the effects of the proposed line on landscape and visual amenity from the Williamson’s house or future subdivision sites will be “low”. As with the McGowans, the Williamsons do not hold a resource consent for a subdivision.
- 6.8 Mr Dawson states that Mr and Mrs Sutton have been provided with a visual simulation and an offer to screen (landscape) the proposed line from their consented subdivision.
- 6.9 There are no provisions in the relevant planning instruments that draw attention to property devaluation or compensation issues.
- 6.10 My reading of relevant case law (and legal submissions of counsel) indicate that the Courts focus mainly on primary physical effects, and see that secondary effects such as loss of property value are in the main a "derivative" effect. In that regard, there is a risk of “double counting”. I understand that this approach is consistent with the earlier case law.
- 6.11 Potential noise, visual effects, health issues and impact on amenity represent the physical effects relevant to this project. The evidence of the experts on these matters indicate that any such effects are either not a cause for concern or the effects are no more than minor. On that basis, it is reasonable to conclude that any “derivative” effects in terms of valuation effects will be minor (if they can indeed be regarded as effects).
- 6.12 It is also my opinion that the submissions specific to property values by Mr and Mrs Williamson and Mr and Mrs McGowan are concerned with concepts that do not form part of the “environment” and are therefore not a relevant consideration in determining whether a designation should be recommended.

### **Structure Plans**

- 6.13 I note that the council has released a discussion document as the first step in the process of developing a Structure Plan for Raglan. In my opinion, the discussion document should be taken into account as it signals the possibility of urban, business and industrial growth and increases in Raglan's electricity load.<sup>20</sup>
- 6.14 I am also aware that the Lorenzen Bay Structure Plan was merged with the PWDP in 2007.<sup>21</sup>

### **New Zealand Electrical Code for Practice for Electrical Safe Distances (2001)**

- 6.15 New Zealand Electrical Code for Practice for Electrical Safe Distances 2001 (NZECP 34:2001) sets minimum safe electrical distance requirements for overhead electric line installations and other works associated with the supply of electricity from generating stations to end users. The code is approved by the Minister of Energy.
- 6.16 Compliance with the Code is mandatory in accordance with the Electricity Regulations, 1997. This matter will be covered by the legal submission in reply.
- 6.17 Therefore, I am satisfied that the requirements of the Code will be met.

### **Safety Management of Power Line Waterway Crossings: A guide**

- 6.18 The Waipa River is a "navigable river" under the Coal Mines Act 1979. Therefore, WEL must assume that vessels will pass beneath the proposed line.<sup>22</sup>
- 6.19 This guide, produced by Electricity Engineers' Association of New Zealand (Inc) Maritime NZ (ex. MSA), establishes a safety management regime for power line crossings of waterways and slipways.
- 6.20 Consistent with Dr Black's evidence, WEL will need to ensure that this guide is met. In this regard, I have suggested that a condition be attached to NOR 2.

### **Electricity (Hazards from Trees) Regulations 2003**

- 6.21 These regulations prescribe distances from electrical conductors within which trees must not encroach; and set rules about who has responsibility for cutting or trimming trees that encroach on electrical conductors.

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<sup>20</sup> <http://www.waikatodistrict.govt.nz/Consultation/Raglan-Structure-Plan/> (extracted 05/03/09 from the WDC website).

<sup>21</sup> <http://www.waikatodistrict.govt.nz/Publications/District-Plan/Proposed-District-Plan/Variations/> (extracted 05/03/09 from the WDC website).

<sup>22</sup> "Navigable river" means a river of sufficient width and depth (whether at all times so or not) to be used for the purpose of navigation by boats, barges, punts, or rafts – see section 261 *Right of Crown to bed of navigable river*.

6.22 The only point I make is that landowners and authorities will be subject to these regulations if the line is constructed.

**Part 2 matters**

6.23 I consider that the relevant Part 2 matters are:

- (a) Section 5 – The purpose of the RMA;
- (b) Sections 6(e), 7(a) and 8, which deal with Maori culture and traditions, kaitiakitanga and the principles of the Treaty of Waitangi;
- (c) Section 7(b) - The efficient use and development of natural and physical resources;
- (d) Section 7(c) - The maintenance and enhancement of amenity values;
- (e) Section 7(d) – Intrinsic values of ecosystems;
- (f) Section 7(f) - Maintenance and enhancement of the quality of the environment; and
- (g) Section 7(j) - The benefits to be derived from the use and development of renewable energy.

6.24 In terms of section 5, I consider that:

- (a) The provision of electricity to the western network will clearly enable people and communities to provide for their social, economic, and cultural wellbeing and their health and safety in all areas of people lives (see section 5(2));
- (b) The conveyance of electricity generated from a renewable resource will help to sustain the potential of other natural and physical resources to meet the reasonably foreseeable needs of future generations. The proposals will also increase the potential of the existing western network (see section 5(2)(a));
- (c) The proposed Construction Management Plan, Ecological Management Plan and the Stormwater Management Plan and mitigation measures (e.g. oil spill containment, sediment prevention) will help to safeguard the life-supporting capacity of the affected waterways, ecosystems and soil (see section 5(2)(b)); and

(d) The expert evidence, proposed conditions and side-agreements ascertain that the work will be conducted in a manner that effectively avoids, remedies and mitigates any adverse effects on the environment (see section 5(2)(c)).

6.25 I am the view that WEL has given careful regard to Maori culture and traditions, kaitiakitanga and the principles of the Treaty of Waitangi (Sections 6(e), 7(a) and 8), as evidenced by WEL's planning and consultation efforts with local Iwi and the inclusion of suitable provisions to deal with any archaeological discoveries. This regard is demonstrated through the agreements with Nga Uri a Mahanga and the withdrawal of the Tainui submission.

6.26 I consider that the proposals will result in the efficient use and development of natural and physical resources. The proposals will allow the development of an existing distribution network and facilitate the development of a wind-generated energy (see section 7(b)).

6.27 Mr Mansergh's evidence states that the proposal "is consistent with the requirements of section 6". Based on his evidence, I consider that the proposals will meet the requirements of section 7(c) (*The maintenance and enhancement of amenity values*).

6.28 Measures are proposed to mitigate potential effects on the ecosystems, particularly in areas adjacent to the Waipa River. Mr Kessel's evidence concludes that any adverse effects associated with the operation and construction of the western network project will be no more than minor. On this basis, I consider that the proposals will meet the requirements of section 7(d) (*Intrinsic values of ecosystems*).

6.29 The proposals will enhance the western network; a "physical resource" forming part of the "environment"<sup>23</sup>. According to the experts, the proposals will not compromise the quality of the environment and the conditions and side-agreements will successfully avoid, remedy and mitigate any adverse effects on the environment. In certain locations, existing lines will be rationalised or placed underground. Therefore, I consider that the proposals will meet the requirements of section 7(f) (*Maintenance and enhancement of the quality of the environment*).

6.30 The substations and line will convey electricity from the Te Uku Wind Park to the western network and the National Grid. As such, it is clear the proposals will allow

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<sup>23</sup> Section 2 of the RMA.

people and communities to enjoy the benefits derived from the use and development of renewable energy (see section 7(j)).

## 7. **PLANNING OFFICER'S REPORT**

7.1 I concur with the content, conclusions and recommendations made in the planner's report with some exceptions regarding the proposed conditions, which are outlined below.

## 8. **PROPOSED CONDITIONS**

8.1 I have reviewed and considered the proposed conditions set out in the planner's report. I make the following suggestions in relation to those conditions. I suggest that the wording be discussed with the council planner later in the day.

8.2 Mr Mollekin's evidence requests that the lapsing period be set at 10 years to provide for flexibility. I see no issues with this period.

8.3 Conditions 2.2 on NOR 1 require lighting to be set at 5 lux. In my view, the condition should be consistent with the permitted activity standards in the district plan. Both district plans set the standard at 10 lux.

8.4 The noise levels specified in Condition 4.2 on NOR 1 and condition 4.2 on NOR 3 have deducted the tonal penalty required by NZS 6802:1991 – *Assessment of Environmental Sound*, but still require that sound be assessed in accordance with NZS 6802:1991. This could create a double counting of the tonal penalty and is inconsistent with the wording of the district plans. Therefore, I suggest that the 5 dBA tonal penalty is not deducted and that the wording of this condition is made consistent with the district plans.

8.5 Condition 2.4 on NOR 1 and condition 2.5 on NOR 3 should reflect the wording set out in section 181 (*Alteration of designations*) of the RMA.

8.6 Condition 3.2 on NOR 2 should incorporate a reference to the *Fly Neighborly Guide (2007)*.

8.7 That the designated areas described in NOR 2 on Richards (southern block) and Gibbs that will exceed WELs land area requirements after construction is complete, are reduced to 20 metres in width for the transmission line corridor.

8.8 That minor changes are made to the archaeology conditions (NOR 1, 2, and 3) with respect to the relevant tangata whenua and protection of the site. I understand these changes have already been discussed with the council planning officer.

- 8.9 That the Traffic Management Plan for the line (condition 6.2, NOR 2) should address access to the helicopter lay down areas to ensure safe egress and ingress of construction traffic.
- 8.10 Where poles are constructed in a “clear zone” in the road reserve, these should not require a safety barrier (condition 6.7 NOR 2).
- 8.11 That a condition be recommended for NOR 2 requiring WEL’s water crossing over Waipa River to comply with the requirements of *Safety Management of Power Line Waterway Crossings: A guide*.
- 8.12 Condition 2.1 on NOR 3 will need to accommodate the height of a telecommunications mast and antenna should these be constructed on the Te Uku substation site.
- 8.13 In the same vein, I suggest that conditions 5.2 (on NOR 1 and NOR 3) dealing with radio frequency fields are retained because telecommunication facilities could be installed in the future at these sites.
- 8.14 That the bird carcass monitoring requirement be removed from the advice notes.
- 8.15 Condition 6.11 on NOR 2 requires that WEL and WDC agree to a compensation amount. I suggest that this condition be changed and that WEL be required to return the pavement surface and unsealed surfaces to the state recorded prior to construction.

## 9. **OVERALL ASSESSMENT**

- 9.1 In this section of my evidence, I assess the proposals in terms of sections 171 and 5 of the Resource Management Act (1991).
- 9.2 Having regard to the expert evidence, proposed conditions, side-agreements, the consideration of effects and the statutory assessment, I consider that:
- (a) There are no potential adverse effects on the environment that will not be mitigated, remedied or avoided (section 171(1));
  - (b) The proposal is consistent or not inconsistent with the relevant provisions outlined in section 171(1)(a).
  - (c) Adequate consideration has been given to alternative routes, sites and methods for undertaking the works in terms of section 171(1)(b).

(d) The work and designations are necessary for achieving the objectives of the requiring authority in terms of section 171(1)(c).

9.3 I consider that the proposals will result in significant benefits to the local community, and that the general requirements of section 5(2) will be met. Furthermore, I am satisfied that the applicable matters in sections 6, 7 and 8 will be met and that there are no conflicting considerations amongst these sections.

9.4 Therefore, it is my overall judgement that the proposal will promote the sustainable management of natural and physical resources in accordance with section 5 of the Resource Management Act (1991).

9.5 In light of this assessment, it is my opinion that council has reasonable grounds to confirm the requirements and impose conditions.

**Laurence Sherriff**

**March 2009**

## **APPENDIX A**

**Schedule of land parcels, public areas and  
corridors traversed by the line**

Legal Name	Certificate of Title	Parcel Description
VANHOUTTE MAURICE JOHN CAMILLE, VANHOUTTE JOAN ELIZABETH, TAYLOR DOUGLAS MAURICE, TOMPKINS WAKE TRUSTEES LIMITED	SA324/221	Pt Sec 1 Blk VII Karioi SURVEY DISTRICT
CLIFFORD TIMOTHY ANDREW, ELLICE TANNER (WEST) TRUSTEES LIMITED	38984	Lot 3 DP 309860
RICHARDS GRAHAM NORMAN, RICHARDS BERNICE SHEREE	SA150/64	Allot 122 Whaingaroa PARISH
VAN DER HELM GREET, VAN DER HELM LAWRENCE, VAN DER HELM GREETJE	SA33C/961	Lot 3 DPS 37736
RICHARDS GRAHAM NORMAN, RICHARDS BERNICE SHEREE	SA150/64	Pt Allot 24 Whaingaroa PARISH
VAN DER HELM GREET, VAN DER HELM LAWRENCE, VAN DER HELM GREETJE	SA33C/962	Lot 4 DPS 37735
NEW ZEALAND TRANSPORT AUTHORITY		State Highway 23
RICHARDS GRAHAM NORMAN, RICHARDS BERNICE SHEREE	SA45C/914	Pt Allot 24 Whaingaroa PARISH
WAIKATO DISTRICT COUNCIL, ROADING DEPARTMENT		Paper Road
RICHARDS GRAHAM NORMAN, RICHARDS BERNICE SHEREE	SA45C/914	Pt Allot 24 Whaingaroa PARISH
CROWN		Waitetuna River
DEPARTMENT OF CONSERVATION		Marginal Strip R14023
LARGE GRAEME THOMAS	SA51B/69	Sec 1 SO 59266
NEW ZEALAND TRANSPORT AUTHORITY		State Highway 23
GIBBS ROGER GEORGE, GIBBS VICTORIA ANNE	SA304/88	Pt Allot 203 Karamu PARISH
GIBBS ROGER GEORGE, GIBBS VICTORIA ANNE	SA1253/42	Pt Allot 204 Karamu PARISH
NEW ZEALAND TRANSPORT AUTHORITY		State Highway 23
CROWN		Maungaokahu Stream
WILLIAMSON STEPHEN DAVID, WILLIAMSON BRENDA MARGARET	SA1C/34	Lot 1 DPS 7188
CROWN		Maungaokahu Stream
WILLIAMSON STEPHEN DAVID, WILLIAMSON BRENDA MARGARET	SA1C/34	Pt Allot 204 Karamu PARISH
CROWN		Maungaokahu Stream
WILLIAMSON STEPHEN DAVID, WILLIAMSON BRENDA MARGARET	SA1C/34	Lot 1 DPS 7188
CROWN		Maungaokahu Stream
WAIKATO DISTRICT COUNCIL, ROADING DEPARTMENT		Cogswell Road
NEW ZEALAND TRANSPORT AUTHORITY		State Highway 23 and the first 10 m of Cogswell Road.
HAMMOND JEAN ROBYN, CLARKE EDWARD DEAN	399884	Lot 1 DP 400334
HAMMOND JEAN ROBYN, CLARKE EDWARD DEAN	399884	Lot 3 DP 400334
HOPE ANDREW KARL MAURICE, HOPE DUNCAN REECE MICHAEL	89330	Lot 1 DPS 91350
VELA HOLDINGS LIMITED	SA52C/208	Lot 4 DPS 65272
BALME IAN DEANE, BALME RACHEL DAWN	SA63A/404	Pt Lot 3 DPS 65272
TAINUI DEVELOPMENT LIMITED	SA69B/654	Sec 2 SO 59624
WAIKATO DISTRICT COUNCIL, ROADING DEPARTMENT		Paper Road
TAINUI DEVELOPMENT LIMITED	SA69B/654	Sec 1 SO 59624
TAINUI MAORI TRUST BOARD	SA52D/614	Allot 45 Karamu PARISH

TAINUI MAORI TRUST BOARD	SA52D/614	Allot 44 Karamu PARISH
TAINUI MAORI TRUST BOARD	SA52D/614	Allot 43 Karamu PARISH
WAIKATO DISTRICT COUNCIL ROADING DEPARTMENT		Paper Road
MCCAULEY ROBYN FRANCES	SA617/285	Pt Lot 1 DP 23224
BARKER NOELINE FRANCES, THE NEW ZEALAND GUARDIAN TRUST COMPANY LIMITED	SA47B/397	Lot 2 DP 23224
MCCAULEY ROBYN FRANCES	SA617/285	Pt Lot 1 DP 23224
KIRKBRIDE STEPHEN CRAIG, KIRKBRIDE GLENYS ANN	SA1229/99	Allot 327 Waipa PARISH
CROWN		Karakariki Stream
MCCAULEY WINSTON, MCCAULEY ROBIN FRANCES	SA47B/396	Lot 2 DPS 53824
CROWN		Karakariki Stream
MCCALLUM ILA MARY	151748	Lot 2 DPS 30291
MCCALLUM ILA MARY	151748	Lot 2 DP 337077
LYNDON ROBERT SHANE, LYNDON PAULA FRANCES	SA68A/613	Lot 4 DPS 85856
WAIKATO DISTRICT COUNCIL ROADING DEPARTMENT		Karakariki Road
ARMSTRONG ANTHONY IAN, ARMSTRONG JANICE HILDA, OWSLEY MERVYN WILLIAM	SA29A/680	Pt Lot 1 DPS 31055
WAIKATO DISTRICT COUNCIL ROADING DEPARTMENT		Karakariki Road
CUNNINGHAM GLEN DUDLEY	SA58D/363	Lot 3 DPS 73023
CROWN		Waipa River
TRANSPower NEW ZEALAND LIMITED	178070	Lot 2 DP 343406

# **APPENDIX B**

## **Relevant provisions**

**Waikato Regional Policy Statement (October 2000)**

- (a) Issue 2.1.4 – Treaty of Waitangi - The principles of the Treaty of Waitangi have been defined by the Crown, the Waitangi Tribunal and the Courts, who have emphasised the evolving and fluid nature of Treaty interpretation. Tangata whenua and local authorities may differ in their interpretations of the principles of the Treaty which may result in conflict in the management of natural and physical resources.
  - (i) Policy Two: Consultation and Participation - Active participation of tangata whenua in the development of resource management policies and plans, and the resource consent process will be encouraged.
  
- (b) Issue - 2.1.5 – Tangata whenua Relationship with Natural and Physical Resources
  - (i) Policy One – Maori Culture and Traditions: Ensure that the relationship that tangata whenua have with their ancestral lands, water, sites, waahi tapu and other taonga is recognised and provided for in resource management decision making.
  
- (c) Issue - 3.3.7 – Accelerated Erosion - Accelerated erosion of soil resources is leading to: Loss of soil productivity, capability and/or versatility; Downstream sedimentation resulting in degradation of water quality, aquatic ecosystems and water supply systems, and increased flooding potential; Adverse effects on the aesthetic, scientific and cultural values associated with land.
  - (i) Policy One: Avoid, Remedy Or Mitigate Accelerated Erosion - Ensure that land users: avoid where practicable, practices that cause accelerated erosion; and remedy or mitigate the adverse effects of accelerated erosion if it occurs.
  
- (d) Issue - 3.3.8 – Soil Contamination - The discharge of contaminants onto or into land may adversely affect the physical, chemical or biological condition of the soil.
  - (i) Policy One – Soil contamination shall be avoided, remedied or mitigated – Discharges of contaminants into or onto land should be carried out in a manner designed to avoid any adverse effects on the soil resource.
  
- (e) Issue - 3.3.11 - River and Lake Beds Management - Some activities and natural processes can destabilise the beds and banks of rivers and lakes.
  - (i) Policy Two: Manage Extractions, Structures, Water Level Fluctuations and Surface Water Activities - ... placement of structures... so as to avoid,

remedy, or mitigate the adverse effects of the destabilisation of the beds and banks of lakes and rivers.

- (f) Issue - 3.4.5 – Water Quality - Issue: There is potential for the reduction of water quality from: The cumulative effects of point source and non-point source discharges of contaminants; Land uses which affect the margins and beds of water bodies...
  - (i) Policy Three – Ensure that the adverse effects of land use on water quality and aquatic habitats are avoided, remedied or mitigated.
- (g) Issue - 3.8.4 – Natural Hazards - Adverse Effects - A lack of public awareness of the causes and potential effects of natural hazard events increases the likelihood of adverse effects when these events occur.
  - (i) Policy Two - Ensure new... developments are built in a manner designed to avoid or mitigate the adverse effects of natural hazards.
- (h) Issue - 3.9.3 Liquid Wastes
- (i) Issue 3.10.3 - The release of hazardous substances from storage facilities or during their use, transport or disposal has the potential to cause significant adverse effects on the environment and human health.
  - (i) Policy One: Storage of Hazardous Substances - Hazardous substances are to be stored in a manner that is designed to avoid adverse effects from unintentional releases.
  - (ii) Policy Two: Transport of Hazardous Substances - Hazardous substances are to be transported in a manner that is designed to avoid unintentional releases occurring and avoids, remedies or mitigates the effects of releases when they do occur.
  - (iii) Policy Three: Use of Hazardous Substances - Hazardous substances are to be used in a manner that is designed to avoid adverse effects. Where these effects are unable to be completely avoided they will be remedied or mitigated.
  - (iv) Policy Four: Hazardous Substances Disposed of Safely - Hazardous substances are to be disposed of in ways that are designed to avoid adverse effects on human health and the environment.

- (j) Issue 3.11.4 Maintenance of Biodiversity - Biodiversity is important in maintaining ecosystem viability. Biodiversity tends to be lost when ecosystems are broken up or damaged by inappropriate use of land or water, invasion by exotic plants or animals or unsustainable use of species. There has been a reduction in the range, extent and health of indigenous vegetation and habitats of indigenous fauna and this trend is continuing.
  - (i) Policy One: Avoid, Remedy or Mitigate Adverse Effects on Biodiversity - Allow the use and development of natural and physical resources while avoiding, remedying or mitigating adverse effects on biodiversity in the Region.
- (k) Issue - 3.12.1 Energy
- (l) Issue 3.12.2 - Efficient Energy Use - Inefficient energy production and use uses natural resources at a greater rate than is needed and results in unnecessary adverse effects on natural and physical resources.
  - (i) Policy One: Energy Efficiency and Conservation - To promote efficiency and conservation in the production, transmission and consumption of energy.
- (m) Issue 3.13.2 - Infrastructure - Infrastructure (including network utilities) enable people and communities to meet their social, economic and cultural needs and is therefore important to the Region. Inappropriate subdivision, use and development of land can result in conflicts and incompatibilities between activities which may significantly compromise the operation of regionally significant infrastructure.
  - (i) Policy One: Maintenance of Infrastructure - Avoidance of significant adverse effects (including cumulative effects) on the safe and efficient operation of regionally significant infrastructure. Where significant adverse effects on regionally significant infrastructure cannot be avoided they shall be remedied or mitigated.
- (n) Issue 3.15.2 - The Region's Heritage - Natural and cultural heritage resources are integral parts of the Region's heritage. Subdivision, use and development have the potential to degrade and destroy natural and cultural heritage.
  - (i) Policy One: Protection of Heritage Resources - Ensure the protection of significant natural and cultural heritage resources.
  - (ii) Policy Two: Other Heritage Resources - Allow subdivision, use and development, while avoiding, remedying or mitigating any adverse effects on other natural and cultural heritage resources.

- (o) Issue - 3.15.3 Maori Heritage - Maori heritage resources are of significant spiritual and cultural value to tangata whenua, and are an integral part of the Region's heritage. Subdivision, use, development, and interference have the potential to degrade and destroy Maori heritage resources.
  - (i) Policy One: Protection of Maori Heritage - Seek to avoid accidental or intentional damage or interference to heritage resources of significance to Maori.

**Waikato Regional Plan**

(a) Relevant rules:

Plan Rule	Activity	Status	Comment
Rule 3.5.4.5	Discharges - General Rule	Discretionary	<ul style="list-style-type: none"> <li>Applies to grey water discharge from the hand basin at the Te Uku Wind Park Substation.</li> <li>There will be no hand basin discharge at Te Kowhai Substation.</li> </ul>
Rule 3.5.7.5	Discharge of Domestic Sewage from New On-Site Systems	Permitted	<ul style="list-style-type: none"> <li>Te Uku Wind Park Substation will use an incinerating toilet.</li> <li>Te Kowhai Substation will utilise the existing Transpower toilet.</li> </ul>
Rule 3.5.11.5	Discharge of Stormwater Onto or Into Land	Permitted	Stormwater from both substations will comply with conditions (a) to (e) of Rule 3.5.11.5.
Rule 3.8.4.5	Drilling Above the Water Table	Permitted	Foundations for sub-transmission poles are no more than 3 metres deep into the ground. Drilling will therefore comply. Pole foundations will be carried out in accordance with conditions (a) to (h) of Rule 3.8.4.7.
Rule 4.2.14.1	Lines, Cables, pipelines, Ropeways and Associated Structures	Permitted	The line will not have any part of the structure fixed on the bed of a lake or river, and will comply with conditions (a) to (m) of Rule 4.2.14.1.
Rule 4.3.9.2	Clearance of Vegetation In, On or Under the Beds of Rivers and Lakes	Permitted	Vegetation clearance adjacent to the Waipa River will comply with conditions (a) to (k) of Rule 4.3.9.2.
Rule 5.1.4.11	Soil Disturbance, Roding and Tracing and Vegetation Clearance	Permitted	Access will be carried out in compliance with conditions (a) to (b) of rule 5.1.4.11.

(b) Objective 2.3.2 - Tangata Whenua Relationship with Natural and Physical Resources:

- Uncertainty for all parties regarding the relationship between tangata whenua and resources for which they are Kaitiaki minimised; and
- Tangata whenua able to give effect to kaitiakitanga.

(c) Objective 3.1.2 - The management of water bodies in a way which ensures:

- that people are able to take and use water for their social, economic and cultural wellbeing
- net improvement of water quality across the Region
- the avoidance of significant adverse effects on aquatic ecosystems
- the characteristics of flow regimes are enhanced where practicable and justified by the ecological benefits
- the range of uses of water reliant on the characteristics of flow regimes are maintained or enhanced
- the range of reasonably foreseeable uses of ground water and surface water are protected
- inefficient use of the available ground surface water resources is minimised
- an increase in the extent and quality of the Region's wetlands
- that significant adverse effects on the relationship tangata whenua as Kaitiaki have with water and their identified taonga such as waahi tapu, and native flora and fauna that have customary and traditional uses in or on the margins of water bodies, are remedied or mitigated
- the cumulative adverse effects on the relationship tangata whenua as Kaitiaki have with water their identified taonga such as waahi tapu, and native flora and fauna that have customary and traditional uses that are in or on the margins of water bodies are remedied or mitigated
- the management of non-point source discharges of nutrients, faecal coliforms and sediment to levels that are consistent with the identified purpose and values for which the water body is being managed
- the natural character of the coastal environment, wetlands and lakes and rivers and their margins (including caves), is preserved and protected from inappropriate use and development
- ground water quality is maintained or enhanced and ground water takes managed to ensure sustainable yield
- shallow ground water takes do not adversely affect values for which any potentially affected surface water body is managed
- concentrations of contaminants leaching from land use activities and non-point source discharges to shallow ground water and surface waters do not reach levels that present significant risks to human health or aquatic ecosystems
- that the positive effects of water resource use activities and associated existing lawfully established infrastructure are recognised, whilst avoiding, remedying or mitigating adverse effects on the environment.

- (i) Policies 3.2.3 - Policy 1 - Management of Water Bodies - Manage all water bodies to enable a range of water use activities, whilst ensuring that a net improvement in water quality across the Region is achieved over time through:
- Classifying and mapping water bodies based on the characteristics for which they are valued and implementing the classification through a mixture of regulatory and non-regulatory methods.
  - Maintaining overall water quality in areas where it is high, and in other water bodies, avoiding, remedying or mitigating cumulative degradation of water quality from the effects of resource use activities.
  - Enhancing the quality of degraded waterbodies.
  - Providing for the mitigation and remediation of adverse effects in accordance with Section 1.3.3 of the Waikato Regional Policy Statement.
  - Recognising the positive benefits to people and communities arising from use or development of water resources and by taking account of existing uses of water and the associated lawfully established infrastructure.
- (d) Objective 3.7.2 – Wetlands - see Objective 3.1.2 - Water Resources - The management of water bodies in a way which ensures:
- the range of reasonably foreseeable uses of ground water and surface water are protected
  - an increase in the extent and quality of the Region’s wetlands
  - the natural character of the coastal environment, wetlands and lakes and rivers and their margins (including caves), is preserved and protected from inappropriate use and development
  - concentrations of contaminants leaching from land use activities and non-point source discharges to shallow ground water and surface waters do not reach levels that present significant risks to human health or aquatic ecosystems
- (e) Objective 4.2.2 - River and Lake Bed Structures - The use, erection, reconstruction, placement, alteration, extension, removal or demolition of structures in, on, under or over the beds of rivers and lakes managed in a manner that:

- The use, erection, reconstruction, placement, alteration, extension, removal or demolition of structures in, on, under or over the beds of rivers and lakes managed in a manner that:
  - produces a net reduction in the adverse effects of the destabilisation of river and lake beds
  - does not have adverse effects on water quality, flow regimes, aquatic ecosystems and wetlands that are inconsistent with Water Management Objective 3.1.2
  - does not obstruct fish passage for trout and indigenous fish to complete their life cycle
  - preserves the natural character of river and lake beds and their margins and protects them from inappropriate use and development
  - there is no increase in the adverse effects of flooding
  - provides for navigation of water bodies where appropriate
  - remedies or mitigates adverse effects of existing structures on the relationship tangata whenua as kaitiaki have with identified taonga, such as waahi tapu, native flora and fauna and access to their customary fisheries
  - avoids significant adverse effects of new structures on the relationship tangata whenua as kaitiaki have with identified taonga, such as waahi tapu, native flora and fauna and access to their customary fisheries
  - remedies or mitigates cumulative adverse effects on the relationship tangata whenua as kaitiaki have with their identified taonga, such as waahi tapu, native flora and fauna and access to their customary fisheries
  - maintains existing legal public access to and along river and lake beds and their margins.
- (i) Policies 4.2.3 - Policy 2 - Management of Structures - Control through resource consents the use, erection, reconstruction, placement, alteration, extension, removal and demolition of those structures in, on, under or over river and lake beds that:
- cause or accentuate the significant adverse effects of destabilisation of the beds and the banks of rivers and lakes, or
  - have the potential to cause significant adverse effects on water quality, flow regimes and aquatic ecosystems in a manner that is inconsistent with the policies in Section 3.2.3 of this Plan, or
  - occur in natural state areas as identified in the Water Management Class Maps of this Plan, or
  - obstruct fish passage for trout and indigenous fish, or

- may cause significant adverse effects on the natural character of river and lake beds (including caves), or
  - increase the adverse effects of flooding on neighbouring properties, or
  - cause obstruction to navigation, or
  - cause significant adverse effects on the relationship tangata whenua as kaitiaki have with river and lake beds, or
  - cause cumulative adverse effects
  - obstruct existing legal public access.
- (ii) Policies 4.2.3 - Policy 5 - Natural Character - Recognise and, where relevant, provide for the following characteristics when considering the preservation of the natural character of river and lake beds and their margins and the protection of them from the inappropriate use, erection, reconstruction, placement, extension, removal or demolition of structures in, on, under or over river and lake beds:
- Diversity and composition of aquatic and riparian habitat.
  - Topography and physical composition of river and lake beds and the course of the river.
  - The natural flow characteristics and hydraulic processes (such as sediment transport) of rivers and streams or the pattern and range of water level fluctuations that occur naturally in rivers and lakes.
  - Any significant natural features of the bed or banks.
- (f) Objective 5.1.2 - Accelerated Erosion - A net reduction of accelerated erosion across the Region so that:
- soil productivity, versatility and capability is maintained
  - there are no adverse effects on water quality, aquatic ecosystems and wetlands that are inconsistent with Water Management Objective 3.1.2
  - there is no increase in the adverse effects of flooding or land instability hazards
  - accelerated infilling of lakes, estuaries, rivers, wetlands and cave systems is avoided and the rate of infilling of artificial watercourses, excluding structures designed to trap sediment, is minimised
  - significant adverse effects on the relationship tangata whenua as Kaitiaki have with their identified ancestral taonga such as ancestral lands, water and waahi tapu are avoided

- cumulative adverse effects on the relationship tangata whenua as Kaitiaki have with their identified taonga such as ancestral lands, water, waahi tapu are remedied or mitigated.
  - significant adverse effects on natural character and ecological values associated with land and the coastal environment including dune systems is avoided
  - there are no adverse effects on air quality that are inconsistent with Air Quality Objective 6.1.2, Objectives 2 and 3
  - damage to property and infrastructure is avoided
  - in particular in High Risk Erosion Areas together with:
  - Catchments of estuaries that are areas of significant conservation value on the Coromandel Peninsula
  - Karst and cave systems.
- (i) 5.1.3 Policies (Policy 1) - Managing Activities that Cause or Have the Potential to Cause Accelerated Erosion and Encouraging Appropriate Land Management Practices
- Through permitted activities and non-regulatory methods manage activities that cause or have the potential to cause accelerated erosion, with particular regard to:
  - the potential for the activity to adversely affect the purpose of the water management classes as identified in the policies in Section 3.2.2, and the coastal marine area
  - the risk of downstream sedimentation leading to accelerated infilling of lakes, estuaries, artificial watercourses, rivers, wetlands and caves
  - the erosion potential of soil when it is disturbed or vegetation is cleared
  - the potential to increase the adverse effects of flooding
  - the potential to adversely affect waahi tapu and archaeological sites or other identified sites of importance to tangata whenua as Kaitiaki
  - the potential to adversely affect natural character of the coastal environment and the margins of rivers, lakes and wetlands and areas of significant indigenous vegetation and significant habitats of indigenous fauna
  - the potential to compromise air quality objectives as identified in Module 6 Air
  - the potential to damage property and infrastructure.

(g) Objective 5.2.2 - Discharges Onto or Into Land - Discharges of wastes and hazardous substances onto or into land undertaken in a manner that:

- does not contaminate soil to levels that present significant risks to human health or the wider environment
- does not have adverse effects on aquatic habitats, surface water quality or ground water quality that are inconsistent with the Water Management objectives in Section 3.1.2
- does not have adverse effects related to particulate matter, odour or hazardous substances that are inconsistent with the Air Quality objectives in Section 6.1.2
- is not inconsistent with the objectives in Section 5.1.2
- avoids significant adverse effects on the relationship that tangata whenua as Kaitiaki have with their taonga such as ancestral lands, water and waahi tapu
- remedies or mitigates cumulative adverse effects on the relationship that tangata whenua as Kaitiaki have with their identified taonga such as ancestral lands, water and waahi tapu.

(i) Policies 5.2.3 (Policy 1) - Low Risk Discharges Onto or Into Land - Enable, through permitted activity rules and non-regulatory methods, the discharge of contaminants onto or into land where:

- hazardous substances present in the discharge, or produced as a consequence of the breakdown of the contaminants from the discharge:
- are not environmentally persistent
- will not bioaccumulate to a level that has acute or chronic toxic (carcinogenic, teratogenic or mutagenic) effects on humans or other non-target species
- the discharge of these contaminants onto or into land will not result in pathogens accumulating in soil or pasture to levels that would render the soil unsafe for agricultural or domestic use
- the discharge is not inconsistent with policies in Section 5.1.3
- the discharge will not result in any effect on water quality or aquatic ecosystems that is inconsistent with the purpose of the Water Management Classes as identified by the policies in Section 3.2.3
- the discharge will not result in any effect on air quality that is inconsistent with policies in Section 6.1.3

- the discharge will not damage archaeological sites, waahi tapu or other identified sites of importance to tangata whenua as Kaitiaki.

**Waikato District Plan**

(a) Relevant rules:

<b>Plan Rule</b>	<b>Activity</b>	<b>Status</b>	<b>Comment</b>
Rule 9.5.10 (j)	Electromagnetic Effects	Not applicable	The activities will be conducted in a manner to avoid electromagnetic nuisance
Rule 51.5.1	Underground lines and necessary ancillary structures for conveying electricity at any voltage.	Permitted	11 kV and 33 kV lines will be placed underground as part of the associated works
Rule 51.5.1	Overhead lines and extensions to lines and necessary support structures for conveying electricity at a voltage up to 109 KV not serving new lot(s).	Permitted	11 and 33 kV lines will be placed underground as part of the associated works
Rule 51.5.1	Overhead lines and extensions to lines and necessary support structures for conveying electricity at a voltage of and over 110 KV. – Rural zone <b>and</b> the Ridgeline Protection Policy Area	Discretionary	The proposed line will convey electricity at a voltage of 110 kV
Rule 51.5.1	Substations	Discretionary	Two substations are proposed
Rule 51.5.1	Upgrading involving the addition of extra lines between existing support structures for conveying electricity at a voltage of or over 110 KV.	Discretionary	Existing lines will be upgraded to 110 kV
Rule 51.5.1	Underground pipes, drains and any incidental equipment for the conveyance or drainage of water and sewage.	Permitted	The two substations will include underground pipes, drains and equipment for the drainage of water
Rule 51.5.1	Water treatment facilities	Discretionary	Te Uku Wind Park Substation may include a water treatment facility
Rule 51.5.1	Sewage treatment facilities	Discretionary	Te Uku Wind Park Substation will include sewage treatment facilities
Rule 51.5.6 - Conditions for Permitted Activities	Disturbance of the ground and/or any vegetation	Permitted	<ul style="list-style-type: none"> <li>All land and vegetation disturbance will be reinstated to a standard at least comparable to how it was prior to commencement of works</li> <li>Council's consent will be obtained prior to commencement of work</li> </ul>
Rule 52.5 - Conditions for Permitted Activities	Landscaping	Permitted	Landscaping will be planted at the substations sites.
Rule 36.5.10	Parking, Loading Bays and Manoeuvring Space	Permitted	Parking spaces, loading bays and associated manoeuvring areas will be designed in accordance with district plan requirements

Plan Rule	Activity	Status	Comment
Rule 47.5.1	Hazardous substances	Permitted or Discretionary Activities	The oil in the transformers at both substations must comply with the HFSP procedures.
Rule 48.5.4 (c)	Noise in the Rural Zone	Permitted	<ul style="list-style-type: none"> <li>Noise levels at or within any notional boundary will not exceed 40 dBA (L10)</li> <li>Noise levels will be measured and assessed in accordance with New Zealand Standards: NZS 6801: 1991 Measurement of Sound and NZS 6802: 1991 Measurement of Environmental Sound</li> </ul>
Rule 48.5.4 (h)	Construction Noise	Permitted	Contractors will be required to meet the limits recommended in, and be measured and assessed in accordance with <i>New Zealand Standard NZS.6803P: 1984, The Measurement and Assessment of Noise from Construction, Maintenance and Demolition Work</i> , or any later versions of this standard.
Rule 49.5.5.6	Entrance sign	Permitted	The temporary sign at the entrance of Te Kowhai substation on Bedford Road. Prior approval of council will be obtained.
Rule 49.5.5.2	Warning sign on Waipa River	Permitted	A sign warning of a hazard or hazards, including power lines crossing navigable channels, is permitted notwithstanding all rules, if the activity complies with the current relevant statutory regulations.

- (b) Objective 6.1.1 - To take into account Maori perspectives of natural and physical resource management.
- (i) Policy 6.2.8 - To enhance and maintain the environmental quality of other rivers and lakes.
- (ii) Policy 6.2.12 - To promote respect for and, where considered appropriate by the tangata whenua, the protection and preservation of waahi tapu.
- (iii) Policy 6.2.14 - To recognise and respect the spiritual and cultural significance of particular landforms to tangata whenua.
- (c) Objective 9.1.4 - To ensure efficient and effective management of the District's physical resources of roading, land drainage, and rural water supplies.

- (i) Policy 9.2.12 Objective 9.1.4: To avoid, remedy, or mitigate the adverse effects of development causing a reduction in the quality of: Roading resources and the consequent greater risk to traffic safety.
  - (ii) Policy 9.2.14 - To avoid, remedy, or mitigate the effects of increased stormwater runoff from any activity.
- (d) Objective 9.1.6 - To ensure that the rural visual character and amenity values are maintained or enhanced.
  - (i) Policy 9.2.10 - To avoid the effects of light spillage and glare on neighbouring properties.
- (e) Objective 9.1.8 - To ensure storage and disposal of waste associated with any activity does not create a public health risk.
  - (i) Policy 9.2.11 - To avoid, remedy, or mitigate risks to public health from waste, storage, and disposal systems.
- (f) Objective 9.1.9 - To ensure that intensification of rural land use does not adversely affect public health and safety.
- (g) Objective 9.1.12 - To ensure that rural industries and commercial services do not adversely affect traffic safety and the convenient use of State Highways.
  - (i) Policy 9.2.7 - To avoid potential adverse effects on State Highways from commercial services and rural industries.
- (h) Objective 9.1.13 - To enable the effective and efficient use of existing buildings and infrastructure on sites previously designated or utilised for rural industries or commercial services.
- (i) Objective 9.1.15 - To ensure that all land and building development associated with the establishment of rural industries or commercial services is designed and constructed to address the adverse effects of stormwater disposal, effluent disposal, and water supply or to offset the full costs of reticulated servicing.
- (j) Objective 21.1.1 - To maintain the natural appearance of significant ridgelines.
  - (i) Policy 21.2.1 - To ensure that any development does not detract from the natural character of significant ridgelines.
  - (ii) Policy 21.2.2 - To ensure that development does not result in a major focal point on a significant ridgeline.

- (k) Objective 40.1.1 - To ensure all land uses dispose of liquid waste and effluent in a safe, efficient and effective manner to remedy, mitigate or avoid adverse environmental effects.
  - (i) Policy 40.2.1 - That treatment plants, ponds and effluent disposal systems be appropriately sited and designed to avoid adverse effects of odour on neighbours.
  - (ii) Policy 40.2.2 - That treatment plants, ponds and effluent disposal systems be operated and maintained in good working condition.
  - (iii) Policy 40.2.3 - Human waste is to be treated only in a system designed specifically for human waste treatment.
  
- (l) Objective 36.1.1 - Any adverse effects of activities on the sustainable management of the land transport infrastructure are avoided, remedied, or mitigated.
  - (i) Policy 36.2.10 - Ensure that subdivision and development of land adjacent to public roads does not compromise the safe or efficient flow of traffic along those roads through increased entranceways, kerb-side vehicle parking, or location of access points and intersections.
  - (ii) Policy 36.2.14 - Ensure that the location, design, and number of signs visible from roads do not compromise the safety of road users.
  - (iii) Policy 36.2.15 - Ensure that activities which generate a demand for vehicle parking, except in Town Centres, or which involve loading or unloading provide space within the activity site to accommodate manoeuvring, loading and unloading of vehicles as well as safe and convenient access onto roads.
  - (iv) Policy 36.2.17 - Require vehicle entrances from roads to be constructed and maintained to standards appropriate to the level of service provided by the road in terms of road geometry, traffic volume, pedestrian movement, and local traffic speed.
  
- (m) Objective 45.1.1 - To ensure that any uncontrolled excavations or filling activities do not cause significant adverse effects on the environment.
  - (i) Policy 45.2.1 - To avoid, remedy or mitigate any adverse effects on the environment arising from excavation and filling activities.

- (ii) Policy 45.2.2 - To avoid, remedy, or mitigate the adverse effects from noise generation and dust generation, and on roading, visual amenity values, public safety and land disturbance.
  - (iii) Policy 45.2.5 - Fill activities should not result in the creation of hazards arising from ground instability.
- (n) Objective 47.1.1 - To avoid adverse environmental effects and to minimise the risks presented by activities involving the use, storage, disposal and transport of hazardous substances in the District.
  - (i) Policy 47.1.1 - To avoid adverse environmental effects and to minimise the risks presented by activities involving the use, storage, disposal and transport of hazardous substances in the District.
  - (ii) Policy 47.2.3 - To ensure the environmentally safe disposal of hazardous wastes at suitable disposal facilities using suitable disposal techniques.
- (o) Objective 48.1 - To create or maintain an acceptable ambient noise level in the District.
  - (i) Policy 48.2.1 - To protect people, particularly those in dwellings, from the effect of noise arising from activities.
- (p) Objective 49.1.1 - Signs should provide information that communicates a message to the community while avoiding, remedying or mitigating adverse effects on communities and road safety, visual amenity of different areas within the Waikato District and the cultural values of people and communities within the Waikato District, or surrounding areas.
  - (i) Policy 49.2.1 - To provide for signs where they are an important factor in promoting the safety of the community and road users.
  - (ii) Policy 49.2.2 - To ensure the message of signs does not confuse road users or encourage them to make impulsive manoeuvres.
  - (iii) Policy 49.2.3 - To ensure that signs, other than traffic signs, are provided for in a manner that facilitates community and road safety.
  - (iv) Policy 49.2.7 - To ensure that signs are prominently visible, clear, concise and easily read and understood by road users.

- (q) Objective 51.1.1 - 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 future to enable the health, safety, and wellbeing of the community.
- (r) Objective 51.1.2 - To ensure that public works and utilities are provided in a manner which is sensitive to the amenity values of the District and avoids and/or mitigates any adverse effects on the natural and physical environment.
  - (i) Policy 51.2.1 - To balance the operational requirements of public works and utilities to ensure a continuity of service with the need to avoid, remedy or mitigate adverse effects on the environment.
  - (ii) Policy 51.2.2 - To ensure that, where practicable, public works and utilities are placed underground (“practicable” here means technically and economically feasible).
  - (iii) Policy 51.2.3 - To encourage co-siting or sharing of facilities where this is technically feasible and the operations of co-sited facilities are compatible.
- (s) Objective 52.1.1 – Landscaping
  - (i) Policy 52.2.3 - To improve the appearance of proposed public works and utilities where they abut Residential, Rural Residential or Pa Zones or are located opposite these Zones or alongside strategic routes.
- (t) Objective 53.1.1 - 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.
  - (i) Policy 53.2.1 - To ensure that natural conservation features under the jurisdiction of the Department of Conservation are protected.
  - (ii) Policy 53.2.2 - To protect ecologically sensitive wildlife habitats.
- (u) Objective 54.1.1 - To protect those buildings, objects, items and areas which are of cultural heritage value to the District.
  - (i) Policy 54.2.1 - To ensure that any modification or development does not adversely affect the historical integrity of those buildings, objects, items and areas which are of cultural heritage value to the District.

**Proposed Waikato District Plan**

(a) Relevant rules:

<b>Plan Rule</b>	<b>Activity</b>	<b>Status</b>	<b>Comment</b>
Rule 25.13.2 [0070]	Construction of an electricity line	Discretionary	<ul style="list-style-type: none"> <li>• The line voltage is 110 KV</li> <li>• The overhead pole height exceeds 12 m, and the height of a ridge in a Ridgeline Policy Area (exceedance of 3 to 5 metres).</li> </ul>
Rule 25.13A.1 [0010]	Removal, movement, undergrounding or double circuiting of existing 11 and 33 kV electricity lines	Permitted	<ul style="list-style-type: none"> <li>• Voltage will not be increased</li> <li>• The height of existing support structures will not be increased</li> <li>• Ground will be reinstated</li> </ul>
25.13.2 [0070]	Construction of two substations	Discretionary	Both substations will exceed 10 m <sup>2</sup> in area
25.13.1	Switching cabinet on SH 23	Permitted	The switching cabinet will not exceed 10 m <sup>2</sup> in area and 2.8 metres in height
Rule 25.15.1	Access, vehicle entrance, parking, loading and manoeuvring space at the substations	Permitted	Access, vehicle entrance crossing, parking, loading, queuing and manoeuvring space will be designed in accordance with Appendix A (Traffic).
Rule 25.16.1 [0070, 0080]	Vehicle movements for construction and maintenance of all activities	Permitted	Construction and operation of all elements of the proposal will not involve more than 200 vehicle movements per day.
Rule 25.17.1 [1183, 0035, 0051, 0080]	Transformer noise	Permitted	Transformers designed and operated so that noise measured at any other site does not exceed 40 dBA (L10)
Rule 25.18.1	Construction noise associated with all activities	Permitted	Constructions contractors will be required to comply with the levels specified in Appendix N (Construction Noise).
Rule 25.22.1 [0067]	Glare and lighting from the substations	Permitted	Light spill from artificial lighting, will not exceed 10 lux measured vertically at any other site.

Plan Rule	Activity	Status	Comment
Rule 25.23.1 [0067]	Dust, smoke, fumes, odour or ground level from all activities	Permitted	<ul style="list-style-type: none"> <li>• There will be no objectionable or offensive dust, smoke, fumes or odour having adverse effects at any other site</li> <li>• Stockpiles of loose material will be contained or maintained to prevent dispersal of material into the air</li> <li>• Earthworks undertaken within 20 metres of the centreline of an electricity transmission line with a voltage of 110kV or more will not generate adverse levels of dust on the transmission lines or raise the ground level.</li> </ul>
Rule 25.24.1	High-frequency electromagnetic fields from all electric lines, substations and telecommunication facilities	Permitted	Electromagnetic fields will not exceed the maximum exposure level in New Zealand Standard 2772.1:1999 Radiofrequency Fields Part 1: Maximum exposure levels 3kHz – 300GHz when measured in accordance with New Zealand Standard 6609.2:1990.
Rule 25.25.1 [0010, 0053]	Earthworks for the substations, line support structures, access tracks and other associated works	Permitted	All earthworks will meet conditions (a) to (j)
Rule 25.26.2	Earthworks for line support structures in any Ridgeline Policy Area	Discretionary	Earthworks may not be 20m vertically below the level of a ridge, measured at the nearest point of the ridgeline
Rule 25.28	Any activity in a Flood Risk Area or Land Stability Policy Area is a permitted activity	Not applicable	The proposed line and substations are not within a Any activity in a Flood Risk Area or Land Stability Policy Area
Rule 25.31.2 [0070]	Transformer oil contained in the substation transformers	Discretionary	Storage or use of hazardous substances may not comply with Appendix H (Hazardous Substances)
Rule 25.33.1	Wastewater Treatment at the substations	Permitted	All wastewater treatment will meet conditions (a) to (b)
Rules 25.35.1, 25.36.1 and 25.37.1	Notable trees and the proposed electricity line	Permitted	The proposed line will not fall within the drip line of any notable tree

Plan Rule	Activity	Status	Comment
Rule 25.40.1	Sign on Bedford Road at the entrance of Te Kowhai Substation	Permitted	The sign will meet conditions (a) to (f)
25.43A.2 [0051, 053]	Vegetation clearance of indigenous vegetation or habitat of indigenous fauna to make way for the proposed electricity line	Discretionary	Vegetation clearance may occur within 10 metres of a water body.
Rules 25.49.1, 25.51.1 [0061], 25.53.1 [0050], 25.54.1 and 25.61.1 [0022]	Substation buildings: height, setbacks, Flood Risk Areas and coverage	Permitted	<ul style="list-style-type: none"> <li>Any substation building will meet conditions (a) to (fa) of Rule 25.49.1</li> <li>Total building coverage does not exceed 2% of the site area, or 500m<sup>2</sup>, whichever is the larger</li> <li>No building is within the vicinity of any road or State Highway and are located on large allotments</li> <li>No building is located within a Flood Risk Area</li> </ul>
Rule 25.58A	Setbacks - high voltage electricity Transmission lines – Construction or alteration of a dwelling	Not applicable	<p>The work will not involve the construction of a dwelling (or a building)</p> <p><i>NB. A line is not a building in accordance with section 9(ab) of the Building Act 2004 – see definition of “building” in Appendix P of the PWDP</i></p>
Rule 25.61A.1	Aerial, dish or antenna for Te Uku Wind Park Substation	Discretionary	<ul style="list-style-type: none"> <li>The height of the aerial, dish or antenna may exceed 20 metres</li> </ul>
Rules 25.66.1 [0093] and 25.67.1	Alteration of heritage items	Permitted	There will not be any alterations to heritage items and the line will be greater than 10 metres away from the site
Rule 30.2	Effect of a designation	Section 177 written consent	Both Transpower and the NZTA and provided WEL with preliminary approvals

(b) Objective 2.2.1 - Indigenous biodiversity and the life-supporting capacity of indigenous ecosystems are maintained or enhanced.;

(i) Policy 2.2.7 [1183] – When avoiding, remedying or mitigating adverse effects on indigenous biodiversity, regard should be had to:

- the need for species to continue to have access to their required range of food sources and habitats during their life cycle
  - the need for species to have access to refuges from predators and disturbances
  - the maintenance of natural isolation
  - the need to prevent invasion by exotic species
  - the need to maintain vegetation structure, such as a continuous closed-forest canopy and under-storey, and the compactness of an area's shape to limit edge effects such as wind damage
  - the need to replace or restore habitats retaining and restoring the natural character and landscape values of the area **[0075]**
  - maintenance and enhancement of ecological corridors and buffer areas.
- (ii) Policy 2.2.8 **[0075]** The features and values that characterise areas of indigenous vegetation and habitats of indigenous fauna and that contribute to biodiversity should be protected from inappropriate subdivision, use and development.
- (c) Objective 3.2.1 - Outstanding natural features and landscapes are recognised and protected.
- (i) Policy 3.2.4 **[0021]** - Subdivision, use, development, roads and tracks should avoid adverse effects on outstanding natural features and landscapes, including prominent ridgelines.
- (ii) Policy 3.2.6 **[0023]** - Views of outstanding natural features and landscapes from public places should be protected from the adverse effects of inappropriate subdivision, use and development.
- (d) Objective 3.4.1 **[0010, 0067]** - Landscapes and visual amenity values, as viewed from public places, are retained and enhanced.
- (i) Policy 3.4.2 **[0067, 0010]** - Natural features and landscapes, including locally distinctive landforms and prominent ridgelines, and general visual amenity values should be protected from inappropriate subdivision, use and development.
- (e) Objective 3.6.1 - The natural character of the coastal environment, wetlands, and lakes and rivers and their margins is preserved...

- (i) Policy 3.6.2 - Subdivision, use and development should be of a density, scale, intensity and location that preserves the natural character of the coastal environment, wetlands, and lakes and rivers and their margins and should retain or enhance the relevant components of that character, including:
  - geology, landform, indigenous vegetation and wildlife, and
  - natural processes, elements and patterns, and
  - intrinsic values of ecosystems, and
  - restoration potential, including potential vegetation cover, and
  - aesthetic, visual, cultural and heritage values attached to places and features, and
  - unique or typical characteristics, and
  - the scale and context of modifications, including: the ratio of open space to areas covered by buildings and other development, land use, open space areas in pasture, trees, crops or indigenous vegetation, water quality and flows, views of natural features, the coast, indigenous vegetation and water bodies.
  
- (f) Objective 4.6.1 - Coastlines, wetlands, lakes and rivers are protected from the adverse effects of subdivision and land disturbance.
  - (i) Policy 4.6.2 - Margins of water bodies (including river banks) and the coast, significant indigenous vegetation and habitats, and other sensitive areas should be: protected from the adverse effects of soil removal and disturbance, earthworks, vegetation clearance, and disposal of waste to land, or if disturbed, reinstated to an equivalent or better condition than prior to disturbance.
  
- (g) Objective 6.4.1 [0010] - Network utilities are provided in a manner that does not compromise qualities and characteristics of surrounding environments.
  - (i) Policy 6.4.2 [0010] - Utilities should be designed and located to avoid, remedy or mitigate any adverse effects from their structures on the environment, community health and amenity.
  - (ii) Policy 6.4.3 - Compatible utilities should, where technically and practicably feasible, share locations or facilities where advantages are achieved in terms of visual, landscape or other positive effects.
  - (iii) Policy 6.4.4 - 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 impractical or undesirable, or
    - the utility must be placed above ground for practical, operational or technical reasons.
  - (iv) Policy 6.4.9 - Network utilities should make a positive contribution to community wellbeing including by being of a quality and standard appropriate to meet the needs of the community.
- (h) Objective 6.8.1 [0067, 0051] - Investments in strategic nationally and regionally important utilities, and industrial and research sites are protected.
- (i) Policy 6.8.2 [0045] - Strategic nationally and regionally important utilities, and industrial and research sites must be recognised for the important benefits they contribute to the community.
  - (ii) Policy 6.8.4 [1183, 0067] - Energy producing resources and infrastructure (including the Waikato coalfields and Huntly Power Station), and facilities integral to the agricultural sector (Te Rapa dairy factory, Horotiu meat processing plant and agricultural research centres and Waikato Innovation Park) must retain their opportunities for continued use and expansion.
- (i) Objective 7.4.1 - Generation and use of renewable energy resources is increased.
- (i) Policy 7.4.2 - Positive effects to the environment and the community of generating and using renewable energy resources should be recognised and provided for.
  - (ii) Policy 7.4.3 - The renewable energy resources of the district (including geothermal, biomass, solar and wind) should be recognised for their potential contribution to national energy production.
- (j) Objective 8.2.1 - An integrated, safe, responsive and sustainable land transport network is maintained, improved and protected.
- (i) Policy 8.2.2A - Subdivision, use and development should not compromise the road function as specified in the road hierarchy.
  - (ii) Policy 8.2.5A - Land use activities should provide adequate on-site parking.
  - (iii) Policy 8.2.6 - Buildings, structures, night lighting, glare, advertising signs, aerial distractions and vegetation should not compromise the safe and

efficient operation of the land transport network, or obscure RAPID numbers.

- (k) Objective 11.6.1 - Social, cultural and economic wellbeing - People and communities are able to access (natural and physical) resources so that they can provide for their economic wellbeing.
- (l) Objective 12.2.1 - Historic heritage is retained.
  - (i) Policy 12.2.3 [1183, 0093] - Buildings, sites, structures, places and areas having heritage value, including architectural, archaeological, cultural, technological, historical, scientific, intrinsic or amenity values, visual appeal or other special character, should be protected from inappropriate subdivision, use and development.
  - (ii) Policy 12.2.7 [1183] - Archaeological sites and areas, sites of significance to Maori (including waahi tapu sites and waahi tapu areas), and places of historic significance should be protected from adverse effects of development or activities on those sites.
- (m) Objective 13.2.1 [1183, 0067] - Adverse effects of activities on amenity values are contained within the site where they are generated.
  - (i) Policy 13.2.2 [0067] - Adverse effects associated with lighting, litter, electromagnetic radiation, vermin, traffic, spray drift, and noise should be contained within the site where they are generated.
  - (ii) Policy 13.2.3 [0067] - Adverse effects associated with offensive or objectionable dust, smoke and odour should be contained within the site where they are generated.
  - (iii) Policy 13.2.5 [0067] - Amenity values, health and safety should be protected from adverse traffic effects including:
    - o noise, vibration, dust, lighting and glare
    - o vehicle emissions
    - o accelerated or contaminated stormwater runoff
    - o visual effects of parking and loading areas
    - o traffic safety and congestion.
- (n) Objective 13.2.6 - Amenity values of localities are maintained and enhanced.

- (i) Policy 13.2.7 [0061, 0067] - Scale, intensity, timing and duration of effects of activities should be managed to be compatible with the amenity and character of the locality.
  - (ii) Policy 13.2.8 - Activities with similar effects or a similar expectation of amenity should be located together.
  - (iii) Policy 13.2.9 [0067] - Activities sensitive to noise, dust, smoke, odour, spray drift, lighting, litter, electromagnetic radiation, vermin or traffic should locate in areas where local amenity values are not already compromised by those effects.
- (o) Objective 13.4.1 - Amenity values of sites and localities maintained or enhanced by subdivision, building and development.
- (i) Policy 13.4.2 - Subdivision, building and development should be located and designed to:
    - o be sympathetic to and reflect the natural and physical qualities and characteristics of the area
    - o ensure buildings have bulk and location that is consistent with buildings in the neighbourhood and the locality [0024]
    - o avoid buildings and structures dominating adjoining land or public places, the coast, or water bodies
    - o retain private open space and access to public open space
    - o encourage retention and provision of trees, vegetation and landscaping
    - o arrange allotments and buildings in ways that allow for view sharing, where appropriate
    - o provide adequate vehicle manoeuvring and parking space on site
    - o provide vehicle, cycling and pedestrian connection to transport networks, including roads, cycleways and walkways, and facilitate public transport
    - o promote security and safety of public land and buildings, and places
    - o mitigate foreseeable effects (including reverse sensitivity effects) on, and from, nearby land use, particularly existing lawfully established activities
    - o mitigate foreseeable effects on water bodies
    - o maintain adequate daylight and direct sunlight to buildings, outdoor living areas and public places
    - o maintain privacy

- avoid glare and light spill.
- (p) 14.2.1 Environment, people and property are protected from the adverse effects of hazardous substances.
- (i) Policy 14.2.2 Activities that use, store, transport and dispose of hazardous substances should avoid risk to the environment, human health, safety and property by:
- being separated from sensitive natural environments, schools, recreational venues and residential areas
  - being located away from incompatible activities
  - being designed and constructed to contain any hazardous substances that may be accidentally released
  - disposing of hazardous substances in an environmentally safe manner (e) not causing contamination of land, its soil resource, or bio-accumulation of toxic substances in plants, animals and ecosystems
  - containing all accidental or uncontrolled releases of hazardous substances on-site
  - having procedures for storing and handling hazardous substances
  - having a hazardous substances management plan to deal with accidental or uncontrolled releases
  - using non-hazardous substances and technologies where possible.