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**BEFORE THE ENVIRONMENT COURT**

*In the matter of* appeals under clause 14 of the First Schedule to the Resource Management Act 1991 concerning proposed One Plan for the Manawatu-Wanganui region.

*between* **MERIDIAN ENERGY LTD**  
**ENV-2010-WLG-000149**

*and* **MIGHTY RIVER POWER LTD**  
**ENV-2010-WLG-000147**

*and* **TRUSTPOWER LTD**  
**ENV 2010-WLG-000145**

*and* **GENESIS POWER LTD**  
**ENV-2010-WLG-000159**

*Appellants*

*and* **MANAWATU-WANGANUI REGIONAL COUNCIL**  
*Respondent*

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**STATEMENT OF TECHNICAL EXPERT EVIDENCE BY CLIVE ANSTEY ON THE  
TOPIC OF OUTSTANDING NATURAL FEATURES AND LANDSCAPES,  
INCLUDING SCHEDULE F, ON BEHALF OF MANAWATU-WANGANUI  
REGIONAL COUNCIL**

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Dated: 31<sup>st</sup> January 2012



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**Introduction**

**Qualifications and experience**

1. My name is Clive Anstey. I am a Landscape and Resource Planner and work as an independent self employed consultant. I have been responsible for assisting in the Proposed One Plan landscape provisions since the plan was initially drafted.
2. I have the following qualifications and experience relevant to the evidence I shall give:
  - (a) a BSc in Earth Sciences from Victoria University (1967);
  - (b) a BSc in Forestry from Aberdeen University (1969); and
  - (c) a Post Graduate Diploma in landscape architecture from Lincoln University (1975).
  - (d) I am a full member of the Forestry and Landscape Institutes, a Fellow of the New Zealand Institute of Landscape Architects, and a registered landscape consultant.
  - (e) I have 33 years experience as a landscape and resource planner and have been an independent consultant for fourteen years.
3. In respect of wind farm developments:
  - (a) I was a reviewer of the Parliamentary Commissioner for the Environment's publication "*Wind Power, People and Place*" (November 2006).
  - (b) I have reviewed (for the relevant local authority) landscape assessments provided by applicants in support of resource consent applications for a number of wind farms: Trustpower's Tararua 3; the Motorimu Wind Farm; Meridian's West Wind Farm and Mighty River Power's Turitea

Wind Farm. I provided expert evidence to the Environment Court on the West Wind and Motorimu Wind Farm proposals, and to the Board of Inquiry hearing the Turitea Wind Farm proposal.

- (c) In 2010 I reviewed the landscape evidence prepared by Mr Gavin Lister in support of the Waitahora Wind Farm on the northern Puketoi Range. This review was undertaken on behalf of the applicant for resource consent, Contact Energy Limited.
  - (d) I have been involved with three further wind farms as an expert advisor.
  - (e) I am also familiar with Meridian's Mill Creek Wind Farm (Wellington's west coast) as I used this proposal as a case study for the third year students I teach at Victoria University's School of Design.
4. I was one of two reviewers of the Parliamentary Commissioner for the Environment's publication, *"Managing Change in Paradise - Sustainable Development in Peri-urban Areas"* (June 2001). I have subsequently reviewed a number of guidelines dealing with rural subdivision. In 2004 I was co-author of a "Rural Area Design Guide" prepared for Wellington City Council. I have provided design advice on, and prepared evidence for, a number of rural subdivisions. I am therefore familiar with the critical attributes of rural character and amenity and the sensitivity of landscapes to development and change.
5. As an expert advisor to the Regional Council I was involved in a number of facilitated pre-hearing meetings with submitters to the Proposed One Plan before preparing expert evidence for formal hearings. Through the process I have become familiar with the existing and evolving policy framework for the Region and, in particular, the tensions associated with protecting valued landscapes from inappropriate development while providing for the Region's essential infrastructural needs. I was also engaged by Horowhenua District Council to review a landscape assessment contracted by them in 2008. I have more recently been involved with landscape assessments and the development of planning provisions for both Porirua and Palmerston North City Council's.

6. In June of 2010 I viewed a number of wind farms in Scotland and was able to discuss planning provisions as these relate to the accommodation of an energy infrastructure within highly valued landscapes.
7. I confirm that I have read the 'Code of Conduct for Expert Witnesses' in the Environment Court Consolidated Practice Note 2006. My review has been prepared in compliance with that Code. In particular, unless I state otherwise, this review is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.
8. Technical bundle reference: 3003-3050 LANDSCAPES AND NATURAL HAZARDS, Mr Clive Anstey, Assessment of outstanding natural features and landscapes.

### Summary of Key Issues

9. I understand there are two substantive unresolved appeal issues and two minor issues concerning Chapter 7 *Indigenous Biological Diversity, Landscape and Historic Heritage* of the DV POP and specifically the topic of Landscapes and Natural Features including Schedule F.
10. The two substantive issues both relate to Policy 7-7. In summary, Policy 7-7 *Regionally Outstanding Natural Features and Landscapes* contains two sub-clauses. Clause (aa) requires the avoidance of significant adverse cumulative effects on the characteristics and values of the outstanding natural features and landscapes listed in Schedule F. Clause (a) requires that all other adverse effects on the characteristics and values of the outstanding natural features and landscapes listed in Schedule F are avoided as far as reasonably practicable and otherwise adverse effects are remedied or mitigated.
  - (a) **Key Issue 1:** Appellants seek to have Policy 7-7 clause (aa), dealing with cumulative effects, either deleted or a cross reference made to Chapter 3 *Infrastructure, Energy, Waste, Hazardous Substances and*

*Contaminated Land.* The issue centres on concerns by energy company interests in particular that:

- (i) The policy 7-7(aa) sets an unreasonable requirement of avoidance.
- (ii) the policy sits in isolation without reference to the policies in Chapter 3 (not appealed) supporting renewable energy.
- (iii) In the context of renewable energy does not give effect to the National Policy Statement on Renewable Energy 2010 (NPS REG 2010).

(b) **Key Issue 2:** TrustPower Ltd's appeal on Policy 7-7 is more limited. It focuses on the 'consenting risk' that Policy 7-7 may raise in obtaining consent approval for the upgrade of its existing generation portfolio on the Tararua Ranges (known as T1, T2 and T3). TrustPower is concerned that clause (aa) would require the avoidance of significant adverse cumulative effects in relation to any resource consent to upgrade the Tararua Wind Farm which may hinder using different turbines since the existing smaller turbines are no longer manufactured.

11. The two minor issues relate to Schedule F *Regionally Outstanding Natural Features and Landscapes* that have not been formally resolved by memorandum but have been the subject of conferencing between the planners and landscape architects for the parties. These arise from an appeal by Mighty River Power Limited. These two issues are:

- (a) **Issue 3:** The inclusion and wording of item (da) Skyline of the Puketoi Ranges and Associated Characteristics and Values in Schedule F.
- (b) **Issue 4:** The inclusion and wording of item (ia) Skyline of the Ruahine and Tararua Ranges and Associated Characteristics and Values in Schedule F.

12. Mighty River Power Ltd seeks to have the reference to skyline in relation to the Puketoi Ranges deleted and the references to the Ruahine and Tararua Ranges including the references to skylines deleted.

13. Issues 3 and 4, as listed in paragraph 11 above, are addressed in tabular form in Attachment A attached to the Evidence of Clare Barton. I confirm the evidence I provide in that attachment.

### **Executive summary of key issues**

14. Before new land use activities were subject to the requirements of the Resource Management Act their effects on the receiving environment were not subject to more than a cursory assessment, if at all. The focus tended to be on the activity itself and judgements about location were made in relation to other, often competing, activities rather than in relation to the resource characteristics and qualities of the environment. While most land users have now come to terms with a requirement to have regard to the effects of a proposed activity on the more immediate environment there remains a reluctance to consider effects in the wider environment, in the landscape beyond the boundaries of the site. However, it is important to consider the landscape in its entirety and ensure that the landscapes capacity to absorb culturally imposed change is not exceeded.
15. Development in landscapes that are valued by communities can, over time and as a result of incremental changes, lead to a deterioration in both character and quality due to cumulative and adverse effects on critical resource characteristics and values. In this regard, outstanding natural features and landscapes are particularly vulnerable to adverse cumulative effects. The management of such cumulative effects is critical in the sustainable management of landscapes, and in particular the sustainable management of outstanding natural features and landscapes over time. In my opinion, significant adverse cumulative effects on outstanding natural features and landscapes are inappropriate, and avoidance of them is desirable.
16. Cumulative effects can arise not only as a result of activities increasing in their scale and extent, but also as a result of increases in their intensity. This increased intensity can be driven by a greater efficiency and effectiveness in

resource use, and associated with this comes new technology and design. This change in the nature of activities means the effects associated with new developments can be different to those existing. This has implications for upgrades; the introduction of new structures can have quite different effects to those replaced.

17. When existing wind farms are upgraded it is likely that their effects will be quite different to those occurring previously. There is potential for an increase in cumulative effects. The cumulative effects of a particular proposal must be assessed in relation to the particular landscape. An assessment of these cumulative effects will determine if they are adverse and determine their significance.
18. My conclusions on Issue 3 and Issue 4, listed in paragraph 11 above, are contained in Attachment A attached to the Evidence of Clare Barton.

### **Key Issue 1 - The need for and the wording of Policy 7-7**

19. The Regions wind resource has made it a focus for the development of wind farms. There are three operational wind farms on the Tararua Ranges and a fourth consented. A fifth, the Motorimu Wind Farm, was consented but the consent relinquished in 2011. A consent for a wind farm on the northern end of the Puketoi Range has been granted and an application lodged for another at the southern end by Mighty River Power Ltd. Resource consent applications have also been lodged for two further wind farms, one to the east of the Puketoi Ranges by Genesis Power Ltd (Castle Hill Wind Farm, currently being heard) and another by Meridian Energy Ltd for a wind farm on Mt Munro, immediately south of Eketahuna.
20. While the development of renewable energy is clearly to be encouraged and supported, there is a real potential for significant adverse cumulative effects. This has already become an issue on the Tararua Ranges and was a matter the Board of Inquiry hearing the resource consent application for the Turitea Wind Farm recognised as a particular concern.

21. The most favourable wind resources are located in quite specific areas so that wind farms tend to be collocated. Access to the national grid further influences location and new infrastructure may be shared between wind farm companies.
22. Both the wind resource and the proximity to the national grid has resulted in a focus on the Northern Tararua's with cumulative effects becoming an increasingly significant issue, particularly for new wind farms south of Pahiatua Track. This is because the Tararua Ranges are an important backdrop for Palmerston North City and the surrounding plains. Wind turbines are seen as a threat to the integrity and natural character of the Tararua Ranges. The encroachment of turbines in increasing numbers and of an increasing height along the skyline is resulting in their greater prominence on the skyline. Areas at higher elevations with a more indigenous and natural character are being occupied as well as prominent hills. Lower ridges and hills immediately above the plains are also of interest to energy companies and their development threatens amenity values for foothill communities.
23. The Environment Court declined consent for a number of turbines along front ridges in the Motorimu case and the Board of Inquiry declined consent for a number of turbines on similar grounds in the Turitea case.
24. In the Turitea case turbines were also declined because they were too prominent on the skyline and would have extended along the Ranges to an unacceptable extent. A recurring theme in submissions was *"enough is enough"*. The visual and landscape effects, considered in combination with existing and consented turbines, were considered to be unacceptably cumulative. During the hearing process the Motorimu consent was relinquished so that the potential for cumulative effects as a result of the Turitea Wind Farm was reduced.
25. A map showing the existing and consented wind farms on the Tararua Ranges is in Attachment A, attached to this evidence. To provide a fuller picture of the history outlined above the Motorimu Wind Farm, for which consent was relinquished, is included in the map.
26. Because wind farms tend to be located in more natural areas where existing cultural patterns and structures are limited, or non-existent, their development

usually results in a significant change to the character of an area. For many New Zealanders it is the ongoing development of, and incremental encroachment into, natural landscapes that concerns them. While accepting ongoing development as a necessity many wish to see containment and constraint.

27. The Resource Management Act provides the forum for debate on this critical issue, and wind farms tend to highlight an inherent tension; highly visible cultural (and some say industrial) structures imposing on natural places. Because the places on which wind farms impose are so visible their cumulative effects are obvious.
28. Concerns about the cumulative effects of development have been most clearly recognised in our coastal environments with the development and implementation of the New Zealand Coastal Policy Statement 2010 (NZCPS 2010). Policy 15 of the NZCPS 2010 in particular is very clear on the need for an inventory of resources to provide, among other things, a mapped and detailed overview of the character and quality of the coast's landscapes. Without this it is impossible to manage effects, cumulative effects in particular, and to monitor change over time. The same applies for all of our landscapes and to date our record in assessing and systematically attributing value to landscapes has been poor. As a result we too often lack sufficient information to make an informed assessment of effects, and especially cumulative effects which requires an understanding of the shift in landscape character and quality of the wider landscape over time.
29. The cumulative effects of ongoing development are most clearly seen and most directly experienced at a 'landscape' scale, at the scale of the overview. The landscape is an inclusive resource in that it is a part of all of our lives and can be thought of as a commons. This is perhaps why wind farms have been such a contentious issue in Scotland, both on the mainland and on offshore Islands.
30. As early adopters of wind energy Scottish planners and landscape architects have been struggling with the issue of cumulative effects for some time and we in New Zealand have benefited from their experience. While wind farms in Scotland are numerous they are well integrated into the landscape so that their prominence is contained. When seen sequentially from a vehicle the

presence of turbines is not experienced as excessive, and set backs from main highways help. The critical determinant in their acceptability has been a willingness to mediate a balance between the optimisation of resource use and limiting the effects on environments that are both ecologically and visually sensitive.

31. It is not possible to anticipate the likely cumulative effects of particular development proposals so that while planning provisions may direct location they cannot direct design standards for an industry that is highly innovative and evolving. The wind energy industry is using turbines of an ever increasing height and rotor diameter so their effects are changing. The size of wind farms is also increasing and formerly inaccessible areas can become more attractive as economic viability improves. Each wind farm proposal must therefore be dealt with on its merits. The cumulative effects of the particular proposal must be assessed in relation to the particular landscape. The visual effects of turbines are always more than 'local' and can be significant for areas some distance away. For example, the high ridges along the Tararua Ranges are seen from all of the coastal plains so wind farms can be seen individually, together, or sequentially when moving through the landscape.
32. In assessing cumulative effects it needs to be kept in mind that the significance of the visual effects will likely vary with their context; while their presence may be acceptable in some locations they may not be in others. Knowing that turbines are to be located in an area with high natural values or important for outdoor recreation activities may make them unacceptable to local users, especially if development is already encroaching into such areas. The cumulative effects of increasing numbers of turbines in the view will be seen as particularly adverse for viewers who are constantly reminded of an encroachment into natural areas.
33. In assessing the significance of cumulative effects the following (and not exhaustive list) of factors needs to be taken into account:
  - (a) The natural character and quality of the site as well as the character of the wider landscape or visual catchment.

- (b) The topography of the site and surroundings and the relative elevations of the site and the places from which turbines will be seen from the surrounding landscape.
  - (c) The relationship of the site to established developments; existing and already consented wind farms, settlements, roads, and public places.
  - (d) The landscapes capacity to absorb the scale of proposed development, the scale of structures and supporting infrastructure, and the area covered.
34. The concept of "significant cumulative effects" is not the same as "significant effects". It draws on the concept of resource capacity and there being limits to what can be sustainably absorbed; at some point 'enough is enough'. Dealing with cumulative effects can be a very challenging requirement for developers. While accepting the need to deal with the effects of a proposal at the local scale, within the immediate environment, considering effects in relation to the wider landscape requires an understanding of the wider landscape and the effects of existing activities already occurring within it. This is why local authorities need to assist in assessing and articulating the values of this wider context in consultation with their constituents. Recurring effects spreading across the landscape are cumulative and with time can become excessive and unacceptable.
35. In my opinion significant adverse cumulative effects on outstanding natural features and landscapes are inappropriate, and this is generally a thread in the decisions that have been made on wind farm developments in the Manawatu-Wanganui Region. Therefore, avoidance is desirable.

## **Issue 2 - The application of Policy 7-7 to the upgrading of an existing wind farm**

36. While new wind farms have obvious cumulative effects in that they clearly add to those already existing, the upgrading of wind farms might be expected to add few, if any cumulative effects. If such upgrades were simply to replace 'like with like', or if there were no visual changes, then there wouldn't be any cumulative effects to consider. There have however been radical changes in

technology since the first turbines were built in the Region, both in their scale and their visual quality. Functional latticed towers have rapidly evolved into very sculptural columns and rotors that are aesthetically pleasant, and their movement is more graceful. They are however larger so that while the visual quality of turbines may be enhanced for the locals their visibility within the wider landscape has increased.

37. TrustPower's wind farm covers some 700Ha and the first turbines, on lattice towers, were commissioned in 1999. The commissioning of a further 55 turbines in 2004 raised the total to 103. These early turbines have 23.5m blades and rotate at 29 revs per minute (rpm.) By contrast the most recently commissioned turbines (there are 31) rotate at 16 rpm with 45m rotor blades. These are set on sculptured towers and are set further apart than earlier turbines; because they need more space and are approximately 100m tall (to the tip of the blade.), and were commissioned in 2007. As the number and height of turbines has increased so have their visual effects. Several of the most recently introduced turbines are located along the highest section of the Ranges between the Manawatu Gorge and the Pahiatua Track, so they are particularly prominent.
38. TrustPower's wind farm can be clearly seen from Palmerston North City and areas in between, as can the two neighbouring wind farms, Te Apiti to the north and Te Rere Hau to the south. While an upgrade of older turbines may not alter the existing character of TrustPower's site, the visual effects and effects on the quality of the environment currently enjoyed by foothill communities and the wider community may be unacceptable. There is the possibility for structures in the upgraded wind farm to contribute to cumulative effects to an extent greater than structures they replace.
39. While an upgrade of TrustPower's wind farm may result in fewer and more aesthetically pleasing turbines, if the turbines are taller with greater rotor diameters their visual effects will likely be greater than those structures they replace. Not only could their prominence on the upper slopes and ridgeline be greater so that they are visible from a wider area, but also their greater prominence on lower slopes could increase the wind farms contribution to sequential cumulative effects; the presence of turbines in views from highways will become more apparent.

40. The presence of fewer turbines of a more pleasing design may well enhance the quality of the wind farm generally. Replaced turbines are likely to be similar to those commissioned in 2007 so a greater coherence in design would be apparent. Although the options for locating replacement turbines may be constrained by existing access, and retained turbines, there would be the opportunity to better integrate new turbines into the land form.
41. It is not possible to anticipate the likely cumulative effects of particular development proposals for an industry that is highly innovative and evolving. Depending on how the upgrade is designed and configured, it is possible (and even likely) that an upgrade of TrustPower's wind farm would improve its internal character and visual qualities. It is possible that an upgrade using larger and fewer turbines on the same footprint, if properly configured and designed, may not cause *significant* adverse cumulative effects, but this can only be determined through a robust assessment of the particular proposal within the context of the wider landscape.
42. Nevertheless, with a wind farm upgrade there is the possibility of:
  - (a) an increase in the effects on the outstanding landscape within which the wind farm is located; and
  - (b) an increase in cumulative effects as a result of taller turbines with larger diameter rotors than those they replace.
43. It is therefore my opinion that the cumulative effects of an upgrade have the potential to be significant, and that the cumulative effects of any particular proposal must be assessed. The cumulative effects of wind farm upgrades must be considered on a case by case basis and considered in the context of the particular landscape. An assessment of these cumulative effects will determine if they are significant and adverse.



**CLIVE ANSTEY**  
**LANDSCAPE AND RESOURCE PLANNER**

# Attachment A

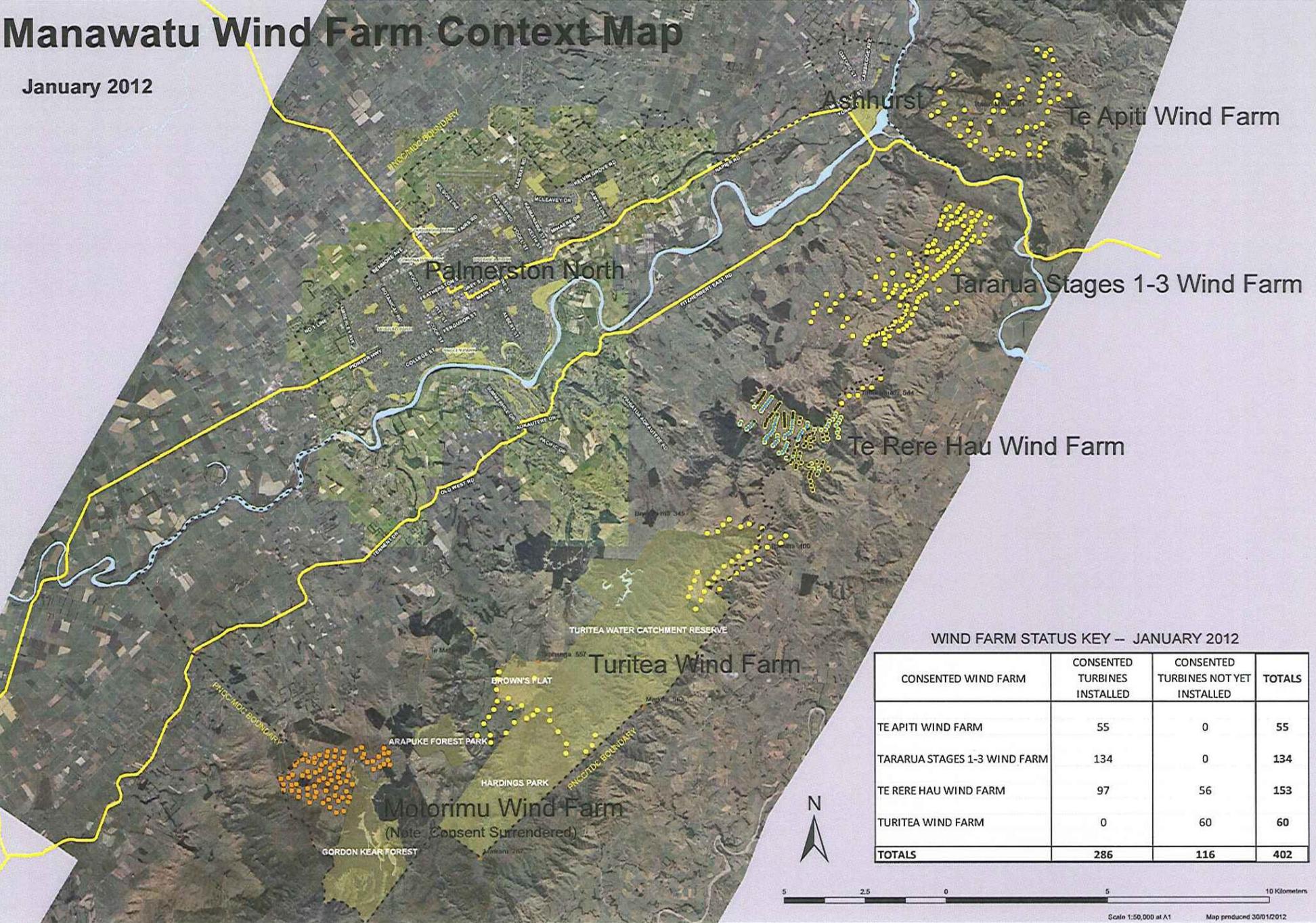
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**Plan view showing where wind farms existed or  
were consented on the northern end  
of the Tararua Ranges**



# Manawatu Wind Farm Context Map

January 2012



WIND FARM STATUS KEY – JANUARY 2012

CONSENTED WIND FARM	CONSENTED TURBINES INSTALLED	CONSENTED TURBINES NOT YET INSTALLED	TOTALS
TE APITI WIND FARM	55	0	55
TARARUA STAGES 1-3 WIND FARM	134	0	134
TE RERE HAU WIND FARM	97	56	153
TURITEA WIND FARM	0	60	60
<b>TOTALS</b>	<b>286</b>	<b>116</b>	<b>402</b>



Scale 1:50,000 at A1 Map produced 30/01/2012