

IN THE MATTER OF The Resource Management Act 1991

AND

IN THE MATTER OF appeals under clause 14 of the First Schedule to the Resource Management Act 1991 concerning proposed One Plan (Combined Regional Policy Statement and Regional Plan) for the Manawatu-Wanganui Region.

BETWEEN **TRUSTPOWER LIMITED**

ENV-2010-WLG-000145

AND **OTHER PARTIES**

Appellants

AND **MANAWATU-WANGANUI (HORIZONS) REGIONAL COUNCIL**

Respondent

STATEMENT OF EVIDENCE OF FRANK BOFFA

17 February 2012

Introduction

- i. My name is Frank Boffa, I am a Landscape Architect and Principal of Boffa Miskell Ltd. I am a Life Member and Past President of the New Zealand Institute of Landscape Architects. I have been in practice as a consultant landscape architect for 35 years.
- ii. My qualifications include a Diploma in Horticulture (Dip Hort) from Lincoln College (now Lincoln University) and a Bachelor of Landscape Architecture (BLA) from the University of Georgia, USA. In April 2005, Lincoln University awarded me an Honorary Doctorate in Natural Resources.
- iii. Throughout my career I have had considerable experience assessing the landscape and visual effects of large infrastructure and utility projects within a diverse range of landscapes throughout the country. My experience includes assessments for hydro and thermal power projects; transmission lines and substations; roading and telecommunications; industrial and commercial developments in both urban and rural landscapes; landfills, quarries and mining related projects.
- iv. I have been involved in the preparation and implementation of landscape rehabilitation and restoration works in a wide range of rural landscapes including sensitive natural environments.
- v. I have also been involved in rural area planning and development, and in conservation and park planning and design projects within national, regional and local scales.
- vi. I have carried out landscape assessments for local and regional councils, and have assisted them with strategic and policy plan provisions, including the identification of outstanding natural features and landscapes.
- vii. My wind farm experience includes the preparation of landscape and visual effects assessments for TrustPower in respect of the Mahinerangi Wind Farm in Otago, and the Kaiwera Downs Wind Farm in Southland, both of which have been consented.
- viii. I have also been involved with investigations and feasibility assessments, strategic reviews and peer reviews for several other wind farm projects,

namely the Motorimu Wind Farm, Slopedown, and the Hau Nui Wind Farm. More recently, I have been involved with the Castle Hill Wind Farm in the northern Wairarapa and prepared the Landscape and Visual Effects Assessment for the AEE.

- ix. At the time of preparing this evidence conferencing between the landscape experts on TrustPower's issue has not occurred, however I did meet informally with Clive Anstey, Horizons Regional Council's (**Council**) landscape expert, during the course of mediations held in respect of the landscape and natural features topic to discuss the issue of cumulative effects.
- x. I have read the Code of Conduct for Expert Witnesses issued as part of the Environment Court Practice Notes. I agree to comply with the code and am satisfied the matters I address in my evidence are within my expertise. I am not aware of any material facts that I have omitted that might alter or detract from the opinions I express in my evidence.

Scope of Evidence

1. I understand TrustPower's primary concern is that, against the background of the Turitea decision, as well as the Council's decision to introduce Policy 7-7(aa), any repowering of the Tararua Wind Farm would be considered against the position that the Ruahine/Tararua Skyline ONFL is visually 'saturated', thus setting a very low threshold for significant adverse cumulative effects: i.e., potentially, even minor effects could be determined to trigger the threshold. In my opinion, it is very likely that future decision-makers could take a conservative approach in regard to the changes occurring as a result of a repowering proposal.
2. I have been asked by TrustPower to review and comment specifically on Policy 7.7 in the Horizons Proposed One Plan in regard to outstanding natural features and landscapes in the Region. Through the mediation process, I understand that the parties (including TrustPower) have agreed to make several amendments to Policy 7.7 as follows –

Policy 7-7: Regionally-outstanding natural features and landscapes in the Region

The natural features and landscapes listed in Schedule F Table F1 must be recognised as regionally outstanding and must be spatially defined in the review and development of district plans. All subdivision, use and development directly affecting these areas must be managed in a manner which:

- (aa) avoids any significant adverse cumulative effects on the characteristics and values of those outstanding natural features and landscapes, and*
 - (a) except as required under (aa), avoids adverse effects as far as reasonably practicable and, where avoidance is not reasonably practicable, remedies or mitigates adverse effects on the characteristics and values of those outstanding natural features and landscapes.*
3. While I agree with these amendments, I consider there could be some confusion and potential difficulties in the application of the policy provisions with respect to wind farm upgrades and more particularly to the repowering of all or part of an existing wind farm. This lack of certainty may be exacerbated where development proposals precede the spatial definition of outstanding natural features and landscapes by territorial authorities through district plan reviews as required by Policy 7-7.
4. My statement of evidence will cover the following aspects –
- (a) Overview of current thinking by landscape architects relative to the assessment of cumulative effects of a wind farm proposal, including the concept of "internal cumulative effects";
 - (b) Whether, and how, the repowering of an existing wind farm would invoke issues of cumulative effects, including significant, adverse cumulative effects; and
 - (c) In light of the above, from a landscape and visual effects perspective, how the cumulative effects of a new wind farm development or additions or extensions to the footprint of an existing wind farm development, compared to the complete or partial replacement of an existing wind farm, ought to be assessed – and what matters are relevant considerations in respect of assessing whether the threshold in Policy 7.7(aa) is met.

Cumulative Effects

5. With respect to Policy 7-7(aa), I understand this clause was inserted as an outcome of Council's decisions and has been described as being recognition that "enough is enough" with respect to the number of wind farms within the Ruahine/Tararua Skyline ONFL. In the context of the notion that "enough is enough", cumulative effects and the avoidance of these effects needs to be carefully considered with respect to new wind farms (or extensions to existing wind farms) relative to the upgrading and/or repowering of existing wind farms. Figure 1 (**attached**) shows the pattern and extent of the existing wind farms on the Tararua/Ruahine Ranges.
6. In the context of landscape and visual effects, cumulative effects are generally considered in relation to additional changes resulting from a new wind farm in conjunction with other surrounding (existing and consented) wind farms. The current approach to assessment of cumulative effects tends to be an additive approach where the effects (even if only minor) of proposed subsequent activities are added to and assessed in conjunction with the effects of existing installations.
7. This approach accords with the Parliamentary Commissioner for the Environment's ("PCE") 2006 report *Wind Power, People and Place*, which suggests that the consideration of cumulative effects requires the consideration of the effects of several wind farms located together and that the cumulative effects of wind farms relate particularly to landscape and visual impact.¹ I note this report is referred to by both Mr Anstey and Ms Barton in their respective statements of evidence, and which Mr Anstey records he was involved in the review of.
8. The assessment of cumulative landscape and visual effects are often considered under the following headings –
 - (a) Simultaneous effects – where more than one wind farm and/or parts of them and their component elements and infrastructure are seen in a single field of view.

¹ Parliamentary Commissioner for the Environment. 2006. *Wind power, people and place*. Wellington, page 52.

- (b) Successive effects – where more than one wind farm and/or parts of them and their component elements and infrastructure are seen in successive views from a single viewpoint.
- (c) Sequential effects – where a sequence of full or partial view of a wind farm or wind farms and their component elements and/or infrastructure are seen when moving through the landscape (as along a road or highway).
9. The PCE in *Wind Power, People and Place* cites guidance published by the Scottish Natural Heritage as being the most comprehensive on cumulative effects. The guidance states that cumulative landscape and visual effects can arise from:
- *"The number of and distance between individual wind farms;*
 - *How wind farms relate to each other visually;*
 - *The overall character of the landscape and its sensitivity to wind farms; and*
 - *The siting and design of wind farms.*¹²
10. I tend to agree with the PCE in that the guidance on how cumulative effects can arise looks to consider a wider range of factors rather than just how wind farms are viewed from particular locations.

Internal Cumulative Effects

11. The concept of "internal cumulative effects" first appears to have been considered in the New Zealand wind farm context in the *Motorimu* and the *Turitea* cases. While the individual proposals and their landscape context are quite different, the proposition that, within a wind farm, internal cumulative effects could or indeed should be considered is relatively recent. In the *Motorimu* instance, the proposed wind farm's visual prominence and the turbine expansion beyond its consented boundaries was considered in terms of internal cumulative effects, although the Court did not use this term expressly.³ In the *Turitea* situation, the turbine density and the consequent visual effects of the appearance of turbine overlapping and/or stacking was

² Parliamentary Commissioner for the Environment. 2006. *Wind Power, People and Place*. Wellington, page 52-53

³ *Motorimu Wind Farm v Palmerston North City Council* W067/08, para 185.

considered to be the key factor in the assessment of internal cumulative effects.⁴

12. Whereas the more traditional or additive cumulative effects assessments tend to relate to the size or footprint coverage of a wind farm, internal cumulative effects considerations tend to relate to the spatial composition of the turbines within a wind farm development relative to their overall visual coherence. Expressed another way, I consider the more traditional cumulative effects assessments tend to focus on a 2 dimensional footprint, whereas the consideration of internal cumulative effects tends to be focussed more on spatial design considerations relative to the developments 3 dimensional envelope and the patterns and appearance of the wind farm overall relative to this.
13. I accept that both external and internal cumulative effects are relevant to most wind farm applications. However, there is, in my opinion, a difference that needs to be recognised when considering an existing wind farm where upgrades and/or a repowering is contemplated relative to a new wind farm or an extension to an existing wind farm, particularly when only part of an existing wind farm is to be upgraded or repowered.
14. Based on my understanding of Policy 7-7(aa) and the current definition of an upgrade, there is scope for further clarity, particularly in the case of repowering where the significant adverse cumulative effects threshold may be triggered by any change, on the basis that even minor effects can create adverse cumulative effects.

⁴ Final Report and Decision of the Board of Inquiry into the Turitea Wind Farm Proposal (the **Turtiea Decision**) (September 2011, ISBN: 978-0-478-34860-6), paras 13-233 and 13-234.

Wind Farm Upgrades

15. I note that in the evidence of Ms Barton (paragraphs 89-92), the Council introduced a definition of 'upgrade' into the Glossary section of the Proposed One Plan, which reads as follows –

“Upgrade means bringing a structure, system, facility or installation up to date or to improve its functional characteristics, provided the upgrading itself does not give rise to any significant adverse effects, and the character, intensity, and scale of any adverse effects of the upgraded structure, system, facility or installation remain the same or similar.”

16. Based on the definition above, the replacement of the lattice towers at TrustPower's Tararua Wind Farm (Stages 1 and 2) with higher tubular steel towers, albeit a lesser number of towers similar in scale to the Stage 3 development, is very unlikely to meet the current definition of an upgrade.

17. In this regard I tend to agree with Mr Schofield's evidence (paragraph 2.36) which states that –

“Defining an activity by reference to the scale of adverse effects is an unusual approach, and in my view, not one that accords with best practice. An upgrade should be defined simply by the nature of the activity rather than the level of adverse effects – different types of upgrade can have a range of adverse effects, including significant adverse effects, but it is still an upgrade.”

Wind Farm Repowering

18. As I understand it, the replacing of aging wind turbines is a process described in the industry as “repowering” and is quite different to a wind farm upgrade as defined in the One Plan. Repowering of part of an existing wind farm or a particular wind farm within a contiguous group of wind farms is also quite different to the development of a new wind farm which adds to the existing wind farm or wind farms' overall footprint. As outlined in paragraph 5.3 in Mr Delmarter's evidence –

“Repowering is the process whereby wind turbines that have reached the end of their useful life are replaced with the latest turbine technology in order to continue to make the best use of the available wind resource, by maximising the efficiency and capacity of a given wind farm site. This process would result in an increase in the quantity of renewable energy produced.”

19. A possible repowering of the Tararua Wind Farm, as I understand it, would probably involve the replacement of the existing 103 lattice steel turbine towers. This would likely result in their replacement with fewer taller tubular steel towers that would be similar in size and rotor diameter to the existing Stage 3 turbines and the adjacent Te Apiti Wind Farm turbines. The replacement turbines would be micro-sited in different locations within the existing wind farm footprint and would (as I envisage would be the case) be planned to complement the existing Stage 3 development and would, in doing so, seek to manage internal cumulative effects relative to the ONL skyline values, consistent with the need to achieve optimum energy efficiency and productivity. Figure 2 (**attached**) shows the layout of the Tararua Wind Farm and identifies the 103 lattice steel tower turbines that would probably be removed and replaced with fewer, albeit taller tubular steel towers similar in height to the Tararua Stage 3 turbines and the adjacent Te Apiti turbines.
20. In my view, the context of cumulative effects where there is a proposal to alter the number and/or character of turbines within an existing wind farm footprint are different (to a new development) and should be recognised as such. Using the Tararua Wind Farm as an example, the repowering of this wind farm will result in a significant change that cannot be avoided due largely to the increased height of the turbines, albeit at a lower layout density. While I accept that there would be cumulative effects considerations to address, I also consider that in the context of the repowering of an existing wind farm the more relevant effects to consider relate to both internal and external spatial design and visual coherence considerations relative to the particular site's/area's landscape classification and its current land use activity. In my opinion, Policy 7-7 does not explicitly recognise this.

21. In paragraphs 36 – 43 of his evidence Mr Anstey considers the application of Policy 7-7(aa) to the upgrading of an existing wind farm. I agree with Mr Anstey's comments relative to what I would describe as minor upgrades (paragraph 36) that –

“While new wind farms have obvious cumulative effects in that they clearly add to those already existing, the upgrade of wind farms might be expected to add few, if any cumulative effects.”

22. Relative to what I would describe as a repowering rather than a minor upgrade, Mr Anstey goes on to say:

In paragraph 39 that –

“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.”

And in paragraph 38, that –

“There is the possibility for structures in the upgraded wind farm to contribute to cumulative effects to an extent greater than the structures they replace.”

However, in paragraphs 40 and 41, that –

“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.”

“...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.”

23. In the quotes above, Mr Anstey is perhaps referring more to a repowering rather than a simple upgrade as defined in the Plan’s Glossary. While I tend to agree with the sentiments expressed by Mr Anstey, I consider Policy 7-7(aa) as it currently stands to set an uncertain threshold with restrictive consequences. Clearly, if TrustPower were to replace the 103 lattice steel V47 turbines, which are 63.5m to the tip of the blade, with say half or less than the number of steel lattice turbines to a height similar to the Stage 3 Tararua turbines (110m), then the result may be a “more pleasing design which may enhance the quality of the wind farm generally” resulting in “a greater coherence in design”.
24. I also acknowledge that to “improve the internal character and visual qualities” of an existing wind farm will in reality be a difficult and challenging task, and note that this will be made more difficult and constraining by the current Policy 7-7(aa) threshold which to me appears to be particularly restrictive where changes to structures contribute to cumulative effects to an extent greater than what they replace.
25. Notwithstanding this, and in agreeing in general terms with Mr Anstey’s statements above, I consider there should be clear guidance in the One Plan as to the assessment of the effects of repowering.
26. The Turitea Wind Farm Board of Inquiry confirmed that when viewed collectively, and with the addition of the Turitea Wind Farm, the wind farms on the Ruahine/Tararua Ranges have an adverse cumulative effect from where they present an extensive coverage of a significant natural landform.⁵ The Board of Inquiry also confirmed that there are two quite separate and distinctive wind farm areas on the Tararua/Ruahine Range, namely the northern group based largely on the existing wind farms, and the southern

⁵ Turitea Decision, para 13-257.

group to the south of the Turitea Reserve which the Board found to be an Outstanding Landscape Feature.⁶

27. With regard to cumulative effects, the Board also considered in respect to the Turitea proposal that:

- (a) The scale of the Ranges is sufficiently large to accommodate 125m turbines.⁷
- (b) Layout improvements and design consistency can effectively address internal cumulative effects issues.⁸
- (c) Reduction in density and visual clutter can also reduce internal cumulative effects.⁹

In my opinion these observations are also relevant and applicable to the wind farms in the northern group as defined by the Board.

28. With respect to Policy 7-7(aa), which requires the avoidance of significant adverse cumulative effects, taken at face value this is a reasonable requirement where additional wind farms or the expansion of existing wind farms are proposed. However, in situations such as that envisaged by TrustPower at the Tararua Wind Farm, where an existing wind farm is likely to be upgraded in the form of a repowering, there should be provision to encourage improvements to the design and appearance of proposed developments, particularly where these are likely to reduce the internal levels of cumulative effects, particularly given the relatively limited options generally available to avoid, remedy or mitigate the effects of wind farms. The reduction of internal cumulative effects by way of design, greater consistency in appearance and/or reduced density and 'clutter' levels was supported by most of the expert landscape witnesses who appeared before the Turitea Wind Farm Board of Inquiry and indeed by the Board itself.

29. As the current policy stands, I consider there is scope for confusion and a misinterpretation of cumulative effects relative to the potential

⁶ Turitea Decision, para 19-43.

⁷ Turitea Decision, para 13-78.

⁸ Turitea Decision, para 13-234.

⁹ Turitea Decision, paras 13-233 and 13-234.

improvements/enhancements that are possible and can be made to an existing wind farm that is located within an area that has been acknowledged as being at the limit of its more traditional cumulative effects condition and/or where there are "mismatches" in terms of turbine appearance, design, density and size.

Repowering of the Tararua Wind Farm

30. As previously noted, the likely replacement of the 103 lattice steel turbines with taller tubular steel turbines will result in a change in the scale, intensity, character and appearance of the existing Tararua Wind Farm. This will largely be due to the following –

- (a) The increased height of the replacement turbines will alter the existing scale;
- (b) The reduced number of turbines will alter the existing intensity within the current overall farm footprint; and
- (c) The change from lattice to tubular towers will change the existing character and overall appearance of the wind farm.

31. Depending on the height of the replacement turbines, there is the potential for a repowering proposal to be assessed as a significant visual change, particularly as the change in the scale (due to the higher turbines) and their appearance (due to the form and colour of the turbines). There is also the potential for significant adverse cumulative effects to occur if the replacement towers were higher than the turbines they replace. However, provided the height of the replacement turbines is similar to those of other turbines within the Ruahine/Tararua Skyline ONFL, and that there is reduced density of turbines within the same overall footprint, then the overall change is unlikely to be deemed to be a significant adverse effect. In other words, if the repowering results in a coherent pattern of development and its character scale and appearance is complementary to and in accord with its wider ONL setting, then it could in fact result in an overall enhancement, despite triggering the cumulative effects threshold.

32. Of course others may take a different view given, in particular, the evolving approaches to cumulative effects assessments and the concept of internal

cumulative effects as well as the requirement to make such assessments in terms of repowering existing generation assets (which in itself is a relatively new concept in the New Zealand context).

33. In this regard, I note that Clive Anstey, in his expert landscape evidence, considers that "*outstanding natural features and landscapes are particularly vulnerable to adverse cumulative effects*" (paragraph 15). He also notes that "[d]ealing with cumulative effects can be a very challenging requirement for developers" (paragraph 34). I concur with Mr Anstey, and contend it is for that reason that guidance for developers (including TrustPower) would be appropriate for the One Plan to provide, rather than waiting for some future resource consent application.

34. I note here that the PCE in *Wind Power, People and Place* also refers to the Scottish guidance on assessing the acceptable level of development in an area.¹⁰ I have **attached** in Annexure "A" the relevant extract from the Scottish guidance. It states that, in assessing the threshold for acceptable levels of development:

"In the case of wind farms, assertion of a capacity or limiting threshold for wind farm development is more likely to be based on a well-considered judgment, informed by an analysis of landscape sensitivities, or a wind farm capacity study or other strategic perspective, on the limits in extent, scale and distribution of wind farm development which could be accepted within an area. It is unlikely that such thresholds or capacities can simply be expressed in terms of turbine numbers or power output; they are more likely to be expressed in terms of acceptable limits of change."¹¹

35. This guidance goes on to recognise that an issue likely to arise with proposals for wind farm extensions is where "*because of progress in turbine technology, developers may favour larger turbines in a more widely spaced array for the proposed extension than were utilised in the original*

¹⁰ Parliamentary Commissioner for the Environment. 2006. *Wind power, people and place*. Wellington: Parliamentary Commissioner for the Environment, pages 52-53.

¹¹ Scottish Natural Heritage. 2005. *Guidance: Cumulative effect of wind farms*. Version 2 Revised 13.04.05, para 52.

development."¹² The reference to wind farm extensions is somewhat helpful in the repowering context. I understand from Mr Anstey's evidence that concerns with turbine height may trigger the significant adverse cumulative effects threshold.¹³ As noted above, in my opinion other aspects of a repowering proposal such as layout, density and consistency with other surrounding wind farms should be applied to balance out the effects of that particular change.

Conclusion

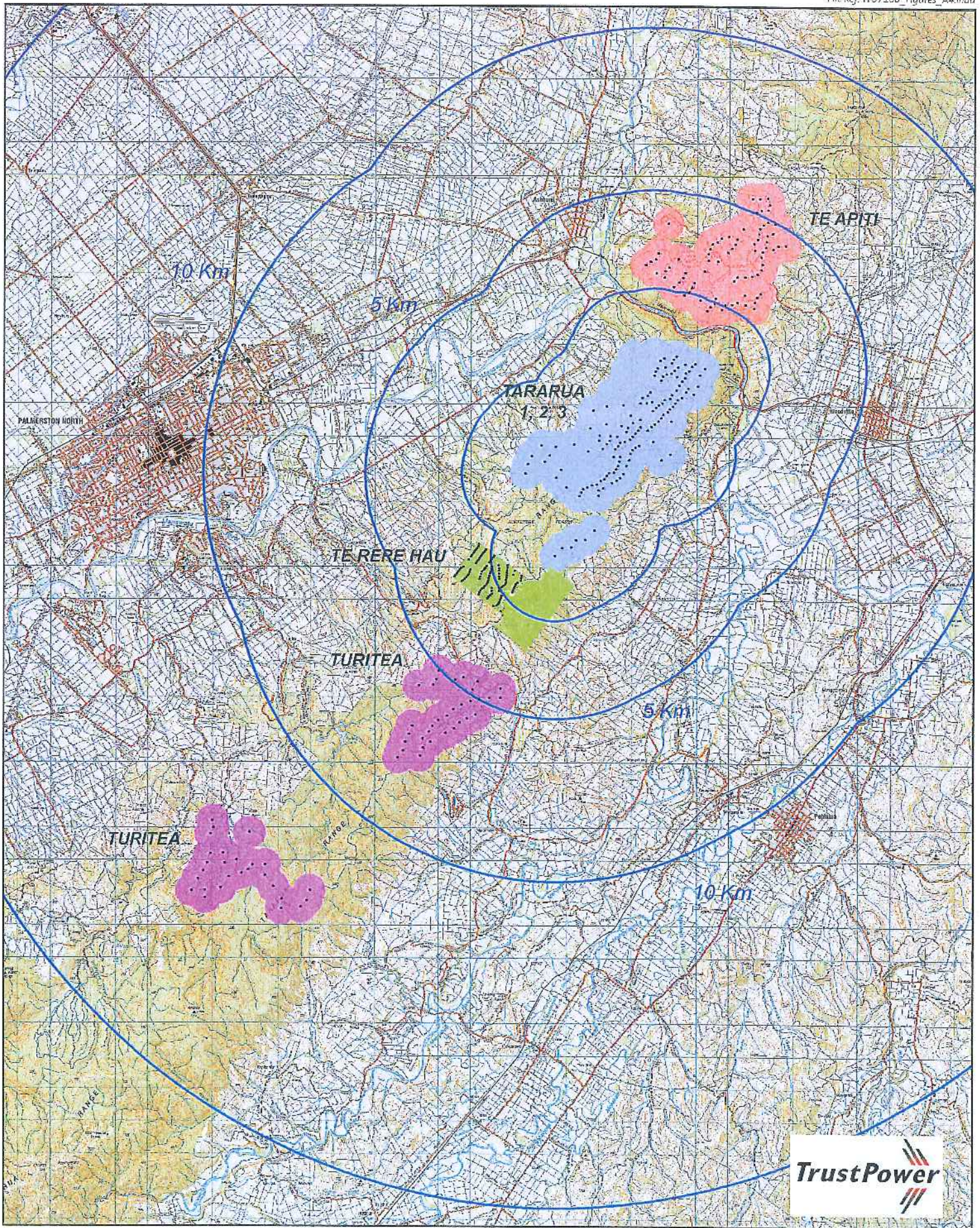
36. Each and every upgrade should be judged on its merits in so far as it should be assessed against what currently exists relative to what is proposed. This should also take into account what the Turitea Board of Inquiry referred to as internal cumulative effects. If the repowering is excessive then it would be, or could be, declined on visual effects rather than cumulative effects as such.

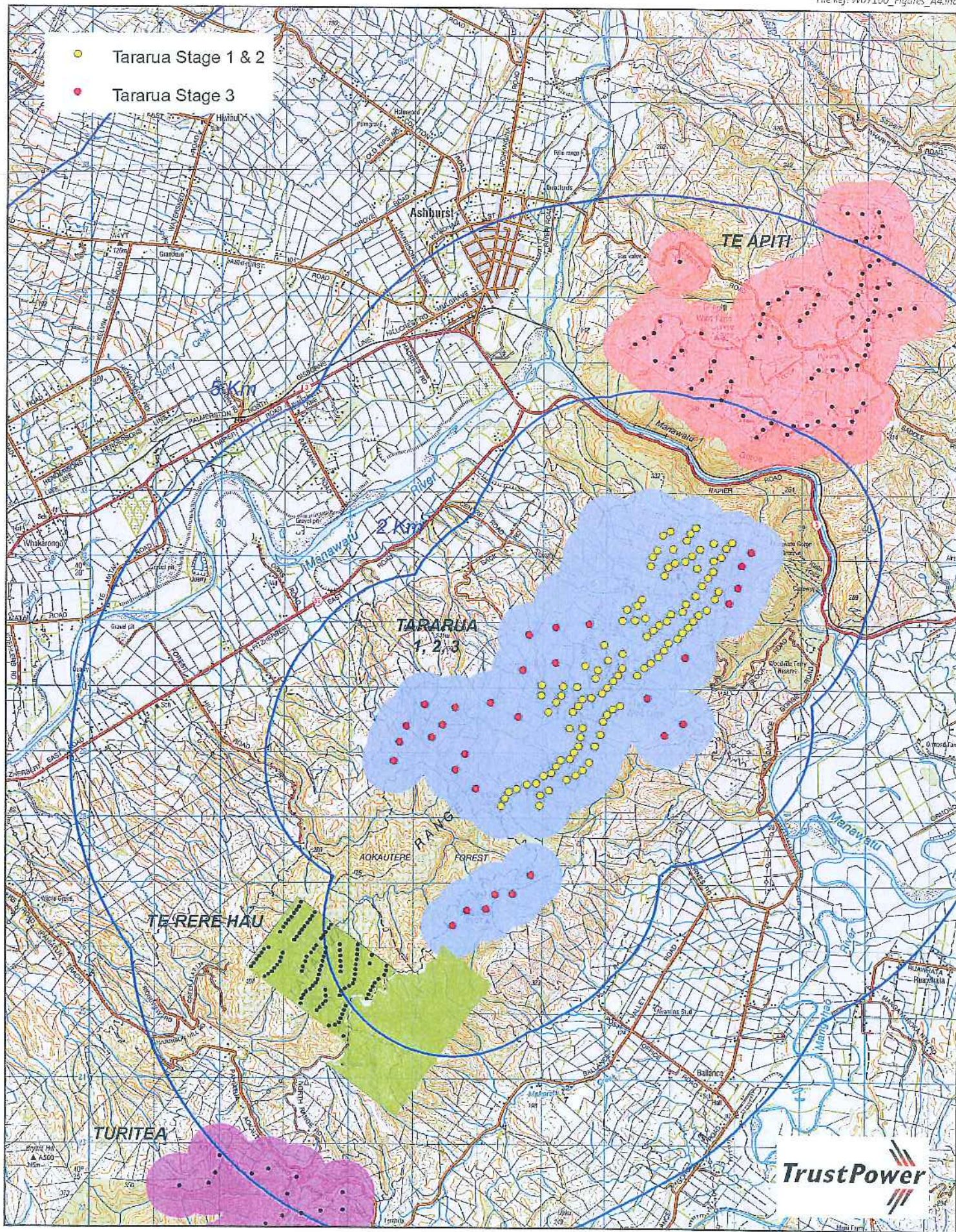
37. I consider that as a minimum the policy should provide some clear assessment criteria to clarify the issue.

Frank Boffa
Landscape Architect, Boffa Miskell Limited
17 February 2012

¹² Scottish Natural Heritage, para 56.

¹³ Paras 22, 31 and 37.





Annexure A

Extract from: **Scottish Natural Heritage 2005 *Guidance: Cumulative effect of wind farms*. Version 2 Revised 13.04.05.**

Guidance



CUMULATIVE EFFECT OF WINDFARMS

Version 2 revised 13.04.05

maintaining the population at least the levels present when the site was designated.

51. The conservation status of the species is likely to determine the degree of uncertainty which is acceptable. For example, in Argyll, due to forestry, golden eagles have been lost in several territories, and have suffered reduction in breeding success. The status of this species in this south-western extremity of its breeding range is therefore more fragile than in other parts of the Highlands. Such differences should be taken into account in drawing conclusions from cumulative assessments.

When should cumulative effects be judged unacceptable?

52. In relation to landscape and visual impacts, it may often be cumulative impact which will determine an upper limit to an acceptable level of development. Cumulative impacts on a bird species may also imply a limit to development, where a single population is subject to impacts from a number of windfarms in the same vicinity (e.g. concern has been expressed in Liverpool Bay, on the basis of the cumulative impact of a number of offshore windfarms on the Bay's population of common scoter).
53. A crucial element in identifying the potential for adverse cumulative impact is the concept of a "threshold" beyond which wind farms in a particular area become unacceptable. In other words the effect of the present proposal is limited, but when added to the effect of what has already been allowed or to new proposals which have been submitted for planning permission, it becomes unacceptable in planning terms. The principal difficulty in applying such an argument will be the identification and then justification for that threshold - particularly in the case of the cumulative impact on the landscape. The quantification of a cumulative impact on a road system or on other infrastructure is often simpler, whereby the authority may have an established methodology for determining an upper limit or capacity which further development must not breach. In the case of windfarms, assertion of a capacity or limiting threshold for windfarm development is more likely to be based on a well-considered judgment, informed by an analysis of landscape sensitivities, or a wind farm capacity study or other strategic perspective, on the limits in extent, scale and distribution of wind farm development which could be accepted within an area. It is unlikely that such thresholds or capacities can be simply expressed in terms of turbine numbers or power output; they are more likely to be expressed in terms of acceptable limits of change.
54. In order to justify a threshold based on natural heritage factors, there needs to be clarity over natural heritage objectives. Without such clarity, there is little value in seeking a cumulative impact assessment in the first place. Thus, for example, in relation to cumulative landscape impacts, one needs to be clear whether the landscape objective in the area is
 - to maintain the integrity and quality of the landscape (as may be appropriate within a designated landscape);
 - to maintain the landscape character; or
 - to accept landscape change.Development plans may provide an indication of landscape objectives. SNH's locational guidelines for windfarms indicates a need to accept change to some of Scotland's landscapes in order to accommodate sufficient renewable energy

development, but such change should be within landscapes of low natural heritage sensitivity.

55. In relation to cumulative impacts on a bird population, one needs to be clear whether the species objective in the area is
- to maintain the population at the existing level;
 - to ensure continued presence of the species in the area; or
 - to accept that loss of this species in this locality.

Where a strategic study has been undertaken of the potential for multiple developments, or a capacity assessment undertaken, such objectives should be considered as part of the study.

56. Cumulative effects may also be judged unacceptable on the basis of incompatibility in design between windfarms in the same vicinity. While two windfarms of similar design on adjacent hills may be judged acceptable in landscape terms, two windfarms which contrast in size, turbine height, or layout may give rise to a visual conflict and be judged unacceptable. This may be so even if either of the designs would be suitable if replicated on both. This same issue is likely to arise frequently in relation to proposals for windfarm extensions, where because of progress in turbine technology, developers may favour larger turbines in a more widely spaced array for the proposed extension than were utilised in the original development.

57. There is no prescribed method for determining when a significant adverse cumulative impact might warrant an objection from SNH. **Such assessment should form part of the usual judgements to be exercised when responding to consultations on planning applications** as set out in the Local Authorities Handbook (Appendix V), Environmental Assessment Handbook and PGN 99/4 "SNH's involvement in the Town & Country Planning System". **SNH should also encourage planning authorities to promote forums or discussions aimed at securing a consensus of view on the extent and type of renewables development which should be considered acceptable in an area, as a help to the identification of appropriate thresholds.**

SNH's advice to decision-making authority

58. Given the possibility that cumulative impacts may in due course present a constraint on wind farm development, it is important that SNH's advice to planning authorities (and to the Scottish Executive Energy Division) conveys not only our views on the acceptability of a proposal in terms of its individual impacts, but also (if we have formulated one) our view on cumulative effects.

59. Five examples may serve to illustrate how advice on cumulative effect may be best presented to the planning authority or other decision-maker. These examples do not set out preferred model wordings, but indicate the logic underlying the advice.

- (a) A is an existing wind farm. B is proposed. B would be considered acceptable (in natural heritage terms) on its own, but in combination with A, the cumulative impact is judged unacceptable.
SNH objects to B on the grounds of the cumulative natural heritage impact of B when combined with A.