Foreword

The Turitea wind farm proposal was called in by the Minister for the Environment in December, 2008. Following the appointment of the Board of Inquiry and the preparation and exchange of evidence by the parties, the hearing commenced in Palmerston North on 6 July 2009. At MRP’s request, the hearing was adjourned for 5 months on 14 October, 2009 to allow MRP to reconsider its design of the wind farm layout. Evidence on the redesign was circulated by MRP to all other parties in February 2010 following which the hearing was reconvened on 15 March 2010. This second stage of the hearing concluded on 30 March 2010.

During the course of the hearing the Board heard evidence from a great number of experts, and oral submissions and presentations from numerous submitters.

The inquiry involved the consideration of a number of complex and wide ranging issues. Of considerable concern was the need to keep the number of parties, and submitters (of whom there were 700) fully informed of the legal and practical processes involved in an inquiry like this, and to ensure those who wished to appear had a fair hearing.

While the documentation became all consuming, all parties were kept up to date with the provision of daily transcripts of the record of proceedings. Nevertheless, with so many submitters who wished to be heard in full-time employment, we can only commend the way they organised themselves and the efforts they went to to provide us with relevant information.

We acknowledge the quality of the submissios and the extensive literature supplied by the submitters as background to their particular concerns especially to do with noise and environmental set-backs.

As the hearing progressed, MRP received a large number of requests from the Board for additional information. We wish to acknowledge to the company the consistently high standard and very timely responses to all of these requests.

Throughout the whole inquiry process, all the parties and the Board received a consistently high standard of support services from the Project Co-ordinator and her team. This was not an easy task particularly during the hearing where it involved extended hours of work to ensure smooth progress of witnesses and the collation of evidence on a daily basis.

We wish to thank all counsel for the parties, and the representatives of TAG and FOTR, for their generous consideration and assistance throughout.
Executive Summary

Introduction
The proposed Turitea Wind Farm is located along the ridgelines of the northern Tararua Ranges in the Turitea Reserve and on surrounding farmland, 10 kilometres to the south east of Palmerston North. Within the reserve the land predominantly supports native vegetation with the farmland generally being in pasture for sheep and cattle grazing. Along its south and south eastern boundaries the reserve abuts Hardings Park and the Tararua Forest Park. The reserve incorporates the catchment and two large reservoirs which provide most of the water for Palmerston North City.

A large number of rural residential properties are located on the slopes below the wind farm with the residents of these properties having major concerns primarily over visual and noise effects.

The wind farm proposal was called in by the Minister for the Environment in December, 2008. Following the appointment of the Board of Inquiry and the preparation and exchange of evidence by the parties, the hearing commenced in Palmerston North on 6 July 2009. At MRP’s request, the hearing was adjourned for 5 months on 14 October, 2009 to allow MRP to reconsider its design of the wind farm layout. Evidence on the redesign was circulated by MRP to all other parties in February 2010 following which the hearing was reconvened on 15 March 2010 to hear this evidence. This second stage of the hearing concluded on 30 March 2010, some 15 months following the date of the call in.

Parties to the inquiry included the applicant, (Mighty River Power), two councils (Palmerston North District Council, and Horizons Regional Council), (the third council, Tararua District Council did not participate in the inquiry), the Department of Conservation, four property owners on whose land turbines were proposed, (Ngawai Farms Ltd, Joseph Poff, Maurice and Dorothy Alley and John and Kathryn Love), two community groups (Tararua-Aokautere Guardians Incorporated and the Friends of Turitea Reserve Incorporated), two mandated Iwi authorities – Tanenuiarangi Manawatu Incorporated (TMI) and Rangitane o Tamaki nui a Rua, Te Rangimarie Marae Trustees, a local marae (Huatau Marae), two interest groups (the Energy Efficiency and Conservation Authority and the New Zealand Wind Energy Association), and 702 private submitters.

The proposal as notified was for 122 three bladed turbines with 80 metre towers, a rotor diameter of some 90 metres, and a maximum height with a rotor blade vertical of about 125 metres. MRP’s redesign changed this to a maximum of 104 – 2.3MW turbines or 96 – 3MW turbines with an installed capacity of up to 288MW.

Turitea’s Weather
The wind farm is sited in an area with an outstanding wind resource with the potential to operate with a very high capacity factor of up to 45%. It is also
located in an area of high rainfall. There was general agreement among the experts on the rainfall estimates although the Board was left in some doubt as to whether the worst case landslip scenario should have been based on a 2 year average recurrence event (as adopted by Mr Levy) or the more severe 10 year event (adopted by Dr Salinger). As it turned out, the effects of the landslips modelled for each event were shown to be very similar. The Board commends the inclusion of a condition of consent restricting construction in nominated locations of the wind farm during winter when rainfall will be at its worst.

Any effects from climate change will most likely be limited to a small increase in wind speeds later in the life of the wind farm and this will be factored into the design of the turbines. In addition, the effects from the natural variability of weather patterns from such influences as el Nino and la Nina should be minimal and readily provided for in the design of the wind farm’s infrastructure.

The New Zealand Electricity Market, Project Economics and Alternatives

Renewable energy is a key plank in New Zealand’s priority policy for reducing greenhouse gas emissions and the development of the Turitea wind farm is well aligned with this policy. It is not surprising that Mighty River Power Limited (MRP) is seeking to maximise the size of the wind farm given its very high quality wind resource and its proximity to both the national grid and the centre(s) of electricity demand.

The Board accepts the advice of MRP’s experts that the cost of the wind farm is primarily an issue for MRP with the cost to electricity consumers being protected through the electricity market pricing structure for the purchase of wind generated power.

The Board has concluded that endeavouring to undertake a comprehensive economic analysis of all of the potential benefits and disbenefits of the wind farm would be largely a theoretical exercise with individual economic valuations, by necessity, requiring a range of variables to be considered to cover uncertainties. When aggregated, this range would then result in an even wider range of possible outcomes which would lack any robustness in assisting with any meaningful decision making. Further, the Board accepts Dr Layton’s view that an economic value is implicit in all consent decisions including the measures taken to avoid, remedy or mitigate effects. If the wind farm is built to operate within specified limits to control these effects, then the economic value can be regarded as having been internalised within the design and operational costs of the wind farm with no unaccounted external effects. The Board’s role under the Resource Management Act 1991 (RMA) is to decide on the consent application based on its assessment as to whether the project’s benefits outweigh its adverse environmental effects. In this context, the Board has undertaken detailed evaluations of all of the potential environmental disbenefits including whether each can be avoided, mitigated or remedied to an acceptable degree. These evaluations are discussed in detail in the individual chapters of the report.

Finally, in terms of considering alternatives, the Board accepts that it is not a modern day electricity planning committee deciding from all possible options as to what generation capacity is necessary, what kind of generation plants should be
built, and when a particular plant should be built (other than by setting an upper limit on the term of the consent). Overall, the Board has concluded that it is not its responsibility to reach a conclusion on whether the Turitea wind farm should be built by comparing Turitea with some other hypothetical competing proposal.

**Terrestrial Ecology of Reserve**

The access roads for the wind farm will need to be designed to accommodate large construction cranes and the transport of very long turbine components. Other critical infrastructure components include the need for detailed consideration of the interface between the geology of the site, its stability, and the control of sedimentation discharge from the planned civil engineering works, as well as the design and construction of the turbine foundations. For each of these components the Board has concluded that MRP’s proposed approach is based on well proven technologies and methodologies.

It is inevitable that the construction of a wind farm in the reserve will result in negative environmental effects including the need for clearances of tracts of indigenous vegetation.

The Turitea Reserve represents 90% of the biodiversity of Palmerston North City. The Board has identified that the critical areas for clearances of indigenous vegetation are Game Ridge, the individual access roads and the turbines on the spurs off the Back Ridge (South) and along the southern boundary with Hardings Park and the Tararua Forest Park.

Mr Shaw for MRP does not consider the range of species present on Game Ridge as ranking of national significance, as the plant species, (possibly falling within development areas associated with the wind farm) are not classified as threatened, except *Brachyglottis Kirkii* (‘At Risk’) and from that species cuttings for replanting have already been taken. It is his view that the range of species present is certainly ‘of local and possible regional significance’ as it ‘supports local and regionally threatened species (also some habitats, such as the tawa-dominant forest)’. However, it is the Board’s view that legislation (namely s6(c) RMA) does not require areas of significant indigenous vegetation to be divided up into hierarchies of significance – local, regional or national. ‘The matter of national importance’ is the ‘area of significant indigenous vegetation’ irrespective of whether it falls within the city of Palmerston North, the Manawatu District, or the rohe of Rangitane. Once an area, as here, has been identified as containing significant indigenous vegetation then the fact of that identification triggers a need for recognition and protection as a matter of national importance – not of local or regional importance. How far that protection and recognition goes however, is a matter of degree in any one case.

MRP’s turbine layout on Game Ridge portrays the break up and fragmentation of what its own expert witness identifies is an area of significant indigenous vegetation which the legislation requires to be recognised and provided for as a matter of national importance. The expansive scatter of very large turbines and their large and relatively shallow concrete bases throughout the area in conjunction with the proposed 10 metre wide access roads to the turbines discount this significance, let alone fail to protect it.
The Board has determined from the evidence of particularly Mr Shaw and Dr Blaschke that as Game Ridge forms a central place in the area of ‘significant indigenous vegetation’ (the whole being the total sum of parts such as the ridges in question), consent should be declined for the Game Ridge turbines WT57-WT66.

The vegetation around turbines WT39-WT43 on Back Ridge (South) has been assessed to have ‘high’ ecological value and the clearances of this vegetation for construction would have a ‘high’ degree of impact with effects that are ‘more than minor’. Extended individual roads are required for access to each of the turbine platforms and in total these require vegetation clearances some 2.7 times more than the clearances required for the turbine platforms.

Ms Gabite’s notes from her site visit that for turbines WT39 and WT40, within just a few metres from the water catchment road, the species Raukaua edgerleyi (only recently taken off the threatened species list) was plentiful and at both areas the canopy was 5 to 6 metres. It is her view that if this is typical of the intrusions into the more sheltered eastern aspect sites, then the adverse effects of clearances for turbines WT39-WT43 will be significant. She also pointed out that other canopy species present such as tawa and miro are like raukaua – mid to late successional stage species. In her opinion to replace such losses through mitigation planting packages will take at least 30 to 40 years.

Having taken account of Mr Shaw’s, Ms Gabite’s and Dr Rapson’s assessments as well as the extended areas of vegetation clearances required for access and construction, the Board has determined that consent for the Back Ridge (South) turbines WT39-WT43 should be declined.

All of the turbines along Hardings Park Ridge are in an ecological continuum between Hardings Park, the Tararua Forest Park and the Turitea Reserve and considered of significance under s6(c) RMA to be protected. The ecological effects of the clearances required for their construction are very similar to those applying to Game Ridge. Again, as for Game Ridge, with reference to s6(c) RMA, once an area has been identified as containing significant indigenous vegetation then the fact of that identification triggers a need for recognition and protection as a matter of national importance.

There is, of course, a key distinction between Game Ridge and Hardings Park Ridge and that is, while Game Ridge is currently undisturbed, the integrity of Hardings Park Ridge has already been broken by the water catchment access road. MRP’s proposal is for this road to be widened over most of its length as well as being realigned over two lengths totalling some 900 metres adjacent to turbines WT26 and WT33 to provide access for the construction of the turbines both along Hardings Park Ridge and beyond.

The Board has been left in something of a quandary on consistency between the vegetation clearances required for the Game Ridge turbines and the Hardings Park Ridge turbines, road realignments and road widening. In its RMA Part 2 analysis set out in Chapter 19 of this report, the Board has decided that the potential for the generation of up to 69MW of electricity by turbines along and beyond Hardings
Park Ridge and a number of environmental offsets marginally outweigh the negative effects of the vegetation clearances.

Turning to the offsets, firstly if WT44-WT46 are to be retained, these must be relocated adjacent to the water catchment access road to limit the overall extent of the vegetation clearances required for the construction of the turbine access roads. Secondly, MRP is required to rehabilitate and revegetate those sections of the existing water catchment access road which will become redundant once the two new realignments have been put in place.

In the context of MRP’s proposed pine plantation package rehabilitation and restoration package, the Board has decided that the pine plantation should be left to senesce naturally and instead MRP should undertake the restoration of ‘another area of equitable size’ at Browns Flat as provided for in Schedule 2, condition 34 of the 28 March 2010 Resource Consent Conditions.

On a related matter, from a detailed consideration of the eco-park proposal, the Board has concluded that this should be put to one side in its consideration of the potential for a wind farm in the Turitea Reserve.

We accept MRP’s ecological assessments and conclusions for retaining the balance of the turbines in the reserve although as noted elsewhere, the Board has determined that some of these should also be declined for landscape and amenity reasons.

In summary, from the Board’s consideration of the ecology of the reserve, it has determined to decline turbines WT57-WT66 on Game Ridge and turbines WT39-WT43 on Back Ridge (South). In addition, turbines WT44, WT45 and WT46 are to be relocated adjacent to the water catchment access road to limit the need for the vegetation clearances required for the construction of the turbine access roads. Finally, to offset the substantial clearances of indigenous vegetation required for the construction of the road realignments on either side of turbines WT26 and WT33, for the widening of the water catchment road in the vicinity of Hardings Park Ridge, and for the turbines along this same ridge, a series of offsetting environmental mitigation measures is to be undertaken.

**Palmerston North City Water Supply**

The Turitea Reserve is the catchment which provides much of the water for Palmerston North City with its population of around 68,000. Specific concerns surrounding construction in the reserve include the potential contamination of the reservoirs from a number of sources including sediment run-off, oil and fuel leakages from construction machinery, the wind turbines and the sub-stations, nutrients from disturbed vegetation, wash down water from concrete batching plants and debris run-off should there be a fire.

The Board was provided with a detailed breakdown of how MRP intend to manage and control the risk of contaminants from each of these sources. The Board accepts that the risks are low and well understood, that MRP’s proposed environmental management techniques and plans are robust and aligned to industry best practice, and that they should achieve an acceptable level of
protection for the water supply catchment. This includes the potential effects from a 10 year return period landslip on the reservoir catchments and the water treatment plant. For this, we have concluded that the contingency measures which are in place to respond to such an event, allied with an appropriate water monitoring plan, should provide adequate safeguards for the uninterrupted operation of the PNCC reservoir/water treatment plant/water supply system.

We have been unable however to find details of the proposed water quality monitoring programme in the 28 March 2010 Resource Consent Conditions. MRP is therefore requested to provide details of this programme and how the measures determined from the programme will be applied in the adaptive management of the construction and operation of the wind farm.

We accept Dr Coffey’s conclusion that MRP’s proposed consent conditions provide a suitable basis to proceed in relation to construction effects on aquatic ecology within the Turitea water catchment. Elsewhere, we have requested that MRP respond on some aspects of the aquatic ecology monitoring proposed by Dr Joy for the streams outside of the Turitea catchment. We extend this request to include details of the proposed monitoring of aquatic ecology for the Upper Turitea Stream and the water reservoirs.

**Disposal of Surplus Soil**

For the redesigned wind farm there would be some 1 million cubic metres of surplus soil to be disposed of although this volume will no doubt have reduced following the Board’s decision to decline a number of the turbines in the reserve. All of the surplus soil will be disposed of outside of the reserve but within catchments of a number of ecologically sensitive streams which drain to the Manawatu River.

Expert evidence was provided on the ecological values and sensitivity rankings of the upper and lower reaches of each of the streams with concern expressed over the negative effects that would result for aquatic life if significant sediment escaped into the streams, particularly those assessed as being highly ecologically sensitive.

In the final analysis MRP advised that, for the redesign, the number of disposal sites would be limited to 8, each highly engineered and with its own sedimentation pond. All of the sites would be located in the less sensitive catchments or for the more sensitive catchments, at least 25 metres from any permanent water course. A precautionary approach was agreed to allow for flocculation to be introduced on a site specific basis if soil testing found this to be necessary. Apart from some aspects of the stream monitoring proposed by Dr Joy (MRP have been requested to respond on this), all of the measures agreed among the experts for the management and control of the disposal of surplus soil have been carried through to the 28 March 2010 Resource Consent Conditions.

On the basis that these measures are fully implemented, we are satisfied that there should be less than minor effects on the ecology of the catchments from the disposal of surplus soil from the construction of the wind farm.
Avian Ecology

Key concerns surrounding the effects of the wind farm on avifauna include the potential for mortality or injury resulting from birds colliding with the turbines and other structures, the potential for turbine barrier effects to force birds to alter their flight lines, the potential for the displacement of birds, and the need for a well considered bird monitoring programme.

We have concluded that the risk of blade strike for named species does not appear to be severe. Birds likely to be at risk (such as magpies) are predators on New Zealand’s native species and removing them will in fact benefit the local population.

*Turitea* is not in the path of a large number of migrating birds. In addition, many of the turbines which had been identified as being obstructions to key flight paths, (such as those along the boundary with the Tararua Forest Park), have been removed following MRP’s redesign and as a result of the Board’s own evaluation.

The one raptor which is critically endangered is the New Zealand falcon and it, unlike its international relatives, is very agile.

There are gaps in the knowledge about the seasonal movements of some birds in the Turitea Reserve, the habits of two of its rare species and whether this bird life can be sustainably managed in the presence of the wind farm. The answer to this will come from the comprehensive bird monitoring programme provided for in the MRP 28 March 2010 Resource Consent Conditions and from this, the response of MRP to the findings of this programme in the context of the layout and operation of the wind farm.

Traffic Issues

The traffic impacts from the proposed wind farm have been considered under three headings, the transport of the turbine components to the wind farm site, the suitability of the proposed northern access off the Pahiatua Track, and the suitability of the proposed southern access from Kahuterawa Road and Greens Road.

The movement of over-dimension and overweight loads over a roading network is quite common and follows well established procedures under which permits are sought from the NZ Transport Agency and/or the relevant road controlling authorities. There is no obvious impediment to such permits being granted for the transport of the turbine components for the wind farm although ultimately that will be for the relevant roading authority to decide.

The Board accepts that the transport of turbine components and construction plant, labour and materials should be able to be safely accommodated at the proposed new permanent access from the Pahiatua Track onto South Range Road (and if necessary through the proposed second and temporary access on the eastern side of the summit).

Conversely, we accept that if the wind farm is to proceed then some construction traffic must use the Kahuterawa/Greens Road access, although there remains
considerable concern about the safety of this access under the traffic conditions currently included in the MRP 28 March 2010 Resource Consent Conditions. In particular, the residents of Kahuterawa Road and Greens Road need to be given a much higher degree of certainty on daily maximum truck movements and the period over which these truck movements will occur. Agreements on these matters which were recorded in “The Joint Statement of the Traffic Experts” dated 16 July 2009 have not been carried through to the Resource Consent Conditions.

The Board has therefore requested MRP to develop, in consultation with PNCC and the local residents, for the Board’s approval, a revised schedule of restrictions for the use of Kahuterawa Road and Greens Road by construction traffic. These are to include the restrictions already included in the 28 March 2010 Resource Consent Conditions with the possibility that the night time restriction could finish at 6:30am instead of 7:00am; the carry forward of the agreements reached in the 16 July 2009 “Joint Statement of Traffic Experts”, namely a maximum of 34 daily truck movements with this restriction to be limited to one defined period of 4 months duration except where truck access is required at times when the internal loop road is closed by the turbine erection crane either travelling along the loop road or obstructing this road during the erection of a turbine; and the restriction of construction traffic on Saturdays to a set number of light vehicles for transporting construction workers over two short defined periods in the morning and the afternoon.

It is also not clear to us as to why the number of light vehicles using Greens Road is forecast to double from 50 per day over the first 3 to 4 months to 100 per day thereafter and MRP is requested to respond or reduce this number.

The Consent Conditions also require MRP to prepare a Construction Traffic Management Plan (CTMP) at the detailed design stage with this to be circulated to all stakeholders for their input, including the residents of Kahuterawa, Greens and South Range Roads. The CTMP will then be submitted for approval to the PNCC and Tararua District Councils following which it will be progressively updated as a living document to incorporate schedule changes with all stakeholders being sent these as and when changes occur or are anticipated.

The Board accepts this concept of the CTMP and acknowledges that its final approval will lie with the relevant road controlling authority or authorities.

**Noise**

The Board has accepted that the wind farm can be constructed in compliance with NZS6803: Acoustics - Construction Noise. The Board has also accepted the conditions on Acoustic Matters - Construction Noise contained in the MRP 28 March 2010 Resource Consent Conditions.

On 1 March 2010 just prior to the commencement of the second part of the hearing, the new version of the New Zealand Standard Acoustics - Wind Farm Noise, NZS6808:2010 was released. This has been accepted as the standard which should apply for Turitea.
In considering the operational noise of the wind farm the Board has been guided by the Foreword to NZS6808:2010 which states:

- wind farm sound may be audible at times at noise sensitive locations, and this Standard does not set limits that provide absolute protection for residents from audible wind farm noise.

The Standard also states at Section 1.2:

- the noise limits in the Standard provide a reasonable rather than an absolute level of protection of health and amenity.

Mr Lloyd, the noise expert for PNCC also made the point that:

- the purpose of NZS6808 is to protect amenity to the degree when a great majority of people are not annoyed. But ‘it will allow for a small percentage of people [to be] more sensitive to noise. Some annoyance will remain but the aim is, on the Bellcurve, to pick up in 80% or 90% of the population and ensure they are not severely annoyed’.

While the Board acknowledges that it is not bound by what NZS6808:2010 (or Mr Lloyd) say, the point remains that different individuals have different noise sensitivities. Irrespective of the noise conditions which may be imposed at Turitea, noise from the wind farm will be audible to varying degrees in the surrounding environs.

We also acknowledge Mr Lloyd’s description of the special nature of the location of the Turitea:

- the location is next to the currently quiet Tararua Ranges and the majority of surrounding areas are remote from significant roads or significant industrial activity;
- people come to such areas to escape from the close confines of residential or urban living; these people appreciate the aural amenity that is generally the quietness and peacefulness of the area (given that rural noise can be high from time to time);
- wind farm noise is different from all other noisy activities in that it is generated over a wide area and spreads over a wide area of the surroundings – it is difficult to escape from.

Creating an environment where wind farm noise will be clearly noticeable at times of quiet background sound levels is not an option the Board condones, especially where large numbers of residents are affected. It is the Board’s view that energy operations in New Zealand will have to learn not to place wind farms so close to residential communities if they are not prepared to accept constraints on noise limits under such conditions.

Nevertheless, the Board did not go as far as accepting Dr Thorne and Professor Dickinson’s proposed primary and secondary noise limits as well as their proposed minimum set-backs, instead preferring the evidence of the other experts on these matters.
The proposed noise conditions contain specific provisions for independent noise testing for Special Audible Characteristics (SAC) at the manufacturer’s plant as well as progressive field testing as the turbines are installed. This field testing is structured to identify and rectify any SAC (if an SAC should occur) soon after the installation of individual or groups of turbines, as opposed to delaying testing until the whole wind farm has been completed. The Board commends this approach.

Not all of the “Acoustic Matters - 23 March 2010” conditions agreed by the experts (except for Dr Thorne) have been taken forward to the MRP 28 March 2010 Resource Consent Conditions document – in particular the following condition:

- the experts’ agreed conditions require that reduced noise limits should apply between the hours of 10pm to 7am for locations with low background sound levels as would apply as if these were classified as high amenity areas under C5.3.1 of NZS 6808.

In her closing legal submission, counsel for MRP advised that MRP disagrees with this proposed condition unless the locations referred to are classified as high amenity areas defined in the relevant district plan. Whilst the Board acknowledges that there are no high amenity areas defined in the current PNCC District Plan (or the Tararua District Plan), it nevertheless supports the findings of the experts that a secondary noise limit should apply at times of low background sound levels.

The Board signals its general agreement to the proposed noise conditions and the draft Noise Management Plan (NMP) set out in the noise experts’ 23 March 2010 document in preference to the conditions included in the MRP 28 March 2010 Resource Consent Conditions. In doing so we remain unclear as to why most of the provisions contained within the draft NMP of the 23 March 2010 document are not included as primary noise conditions. It is our decision that unless there are very good reasons, all of these NMP provisions should form part of these conditions.

Accordingly, in conjunction with PNCC, MRP has been requested to prepare a revised set of noise conditions to include all of the provisions set out in detail at the end of the noise chapter of this report with particular reference to the provision for a secondary noise limit to apply, for the progressive assessment and measurements of noise as the turbines are installed on the wind farm, and for a specific method for testing for SAC.

**Public Opinion Surveys**

MRP sought to strengthen its case for building the proposed wind farm by introducing the results of a public perception survey it had undertaken of Palmerston North residents. PNCC also presented findings of a social impact survey it had undertaken.

In her closing legal submission counsel for MRP concluded that rather than being a project which the community was universally opposed to, as had been projected by many if not most of the submitters, the MRP public opinion survey had shown
there to be a strong body of people who would like to see the wind farm developed. For its part, while the Board agrees that the surveys do indicate that an overall level of public support exists, this support reduces dramatically the closer the survey respondents live to the wind farm. In particular, for those respondents who live on the foothills of the Turitea Valley, the level of support is only 18% with 67% in opposition.

The Board has also noted that Dr Layton is sceptical as to how the public perception surveys might be used to evaluate a particular effect from the construction and operation of the wind farm. Dr Layton notes that he did not undertake a non-market valuation of the community’s willingness to pay because in his view, their inherent uncertainties would lead to a lack of reliable guidance in weighing up the evidence of such effects.

**Landscape & Natural Features**

The two key issues which have had to be determined by the Board on landscape and natural features are whether the Turitea Reserve is an outstanding natural landscape (ONL) under s6(b) RMA and whether the skyline of the Turitea Reserve is an outstanding natural feature (ONF) under s6(b) RMA?

Based on our consideration of all of the expert evidence, we have concluded that the skyline is an ONF and that Turitea Reserve/Hardings Park is part of an ONL. The Board has also found that the skyline ridgeline of the Tararua Ranges, including specifically Back Ridge and Game Ridge of the Turitea Reserve as seen from Palmerston North, has high scenic qualities and natural character provided by its ONF characteristics, its prominence and backdrop vista to the city. These are in contrast to the Region’s plains.

The wind farm as proposed by MRP would have a significant adverse effect on these outstanding features and landscape, and the natural character would not be protected.

For these reasons, the Board has determined that the wind turbines on the southern end of Back Ridge would be an inappropriate development and would not protect this ONF. The affected turbines are WT15-WT29 and WT39-WT43, which should be removed. Turbines WT56-WT66 on Game Ridge also break the skyline and should also be removed.

In addition to these deletions for ONF protection we have also found that turbines WT39-WT43 and WT57-WT66 are also inappropriate and should be deleted for ecological reasons. This is because of the extensive native vegetation clearances which would be required for both access tracking and for the turbine platforms and the large concrete pads which would remain after consents have expired.

Turbines WT127-WT131, WT134-WT136 and WT56 on Love Ridge also cause adverse amenity effects on immediate properties due to their dominance and act as a picket fence, piercing the skyline when seen from public viewpoints within and around Palmerston North. Although not located within the reserve, we have concluded that their presence on a parallel ridge would extend the prominence of turbines across much of the visible internal parts of the Turitea Reserve, negating
efforts to protect the skyline, the ONL and the ONF of Hardings Park. These turbines should also be removed.

**Landscape and Visual Amenity Effects**

This is the first wind project in New Zealand which will impact on a large population base. Visual amenity landscapes and the potential effects the project may have on viewers’ perceptions and lifestyles were thus one of the most significant issues to be discussed during the inquiry. It is complicated because many of the rural residential landowners live in the lower foothills/slopes of Turitea and its valleys, some in close proximity to the turbines, with topography intermittently providing shelter from, or exposure to, multiple layers of wind turbines. It is a significant issue too for the residents of the urban area and the environs of Palmerston North itself, because of the potential visual impact from public places.

In terms of general conclusions, we have decided that, from a public viewpoint perspective at least, the scale of the ranges is sufficiently large to accommodate one of MRP’s options for 125 metre high turbines. Conversely, we do not agree with planting as a general mitigation technique for dominant turbines, that the number of viewers should be determinant of the acceptability or otherwise of the visual effects of the proposed turbines or that the findings of the public perception study are an acceptable basis on which to ‘mitigate’ significant adverse effects for a controversial wind farm.

From an infrastructure perspective, the transmission lines required for the project will have significant effects, but we note that landowners have granted permission where these are located on private land. The landscape and visual effects of the substations is mitigated to a significant extent by their discreet locations, and can be further mitigated by planting.

The Board acknowledges that there were major gains for the landscape and visual amenity from the redesign, particularly for nearby communities and residents. But even with these gains, a significant amenity landscape would still be compromised without further modification of the design. For example, the remaining Bryant Hill turbines contribute to an isolated effect, while the Love Ridge turbines contribute to a picket line effect across the back ridge sequence and skyline. Both effects are significant and adverse on amenity values associated with the signature feature of the Turitea Reserve as seen from public viewpoints.

Grouping of the turbines has been a useful tool for analysis, providing assistance when referencing turbines within the wind farm. This grouping did not, however, detract from our assessment of the effects of individual turbines, as is evidenced by the fact that our retention or deletion of turbines has not always followed the group boundaries.

**Turbines in Groups D & E**

We have concluded that the Group D turbines will be dominant and that their effects on the integrity of the Tararua Ranges will be severe with turbines south of
WT11 having a significant adverse landscape and visual effects. As already noted, WT15-WT29, and WT39-WT43 have been deleted as these will adversely affect the valued public amenity views of the Tararua skyline and internal views of the Turitea Reserve’s Back Ridge ONF from Fitzherbert Avenue. The negative effect of the Group D & E turbines on the Percy family in Makomako Road is significant and we have invited MRP to consider some form of compensation for the Percy family.

**Turbines in Groups G, F and H**

Most of the Group G turbines along the Hardings Park boundary present a significant adverse effect on the outward scenic views from Red Knock Knob from a relatively confined viewpoint. We empathise with Mr Brown’s view that these effects have to be balanced against the very much more limited impact that the proposed wind farm would have in respect of the rest of Hardings Park and that they are not, in his opinion, sufficient to warrant the significant amendments required to address the impacts on Red Rock Knob in isolation.

We similarly accept Mr Bray’s evidence that external views from the west of the G Group are screened to varying degrees by the topography of Game Ridge and Tirohanga. The turbines east of WT33, plus the turbines in the F and H Groups, are primarily seen from the west in terms of a rural character rather than a natural character context.

The removal of WT122-WT125 from Group H under the MRP redesign has resulted in a very positive impact for the views for the residents of Greens Road and Kahuterawa Road and we commend MRP for this. We have accepted the retention of the remaining turbines in Groups F and H.

The removal or otherwise of the turbines in Group G has been determined under our Part 2 analysis.

**Turbines in Group J**

Earlier, in this Executive Summary, we concluded that the Group J turbines on Game Ridge (apart from WT56) should be deleted for ecological reasons. In our assessment of the public viewpoints from the Manawatu Plains and Palmerston North, these turbines are also seen clearly on the skyline and would have significant adverse effects on the natural character of this ONF. For these reasons, they should also be deleted.

**Turbines in Group K**

We have concluded that for visual amenity reasons the turbines WT127-131 and WT134-136, in Group K on Love Ridge should be deleted. WT56 in Group J reads from the west as part of Group K and should also be deleted. Conversely, WT54 the remaining turbine in Group K reads from the west as part of the Group G and can remain.
Turbines in Group A

MRP has removed a large number of the Bryant Hill turbines that caused offence and it is to be commended for taking such a significant step to sustain this part of the foothill’s environment. But we have decided that the remaining turbines on Bryant Hill should also be deleted.

Turbines in Group C

WT95 in Group C is within one kilometre of the Grassick property and while the frontage of the Grassick house overlooks several Te Rere Hau turbines, the rear of the property is immediately adjacent to WT95. This turbine has been assessed as dominant and should be removed.

Transmission Line Along Back Ridge (South)

As already noted, we have decided to delete WT15 to WT29 and WT39 to WT43 on Back Ridge (South) as we have found that these would be an inappropriate development and would not protect the ONF.

For the same reason, we find that the proposed transmission line along Back Ridge (South) would also be an inappropriate development. In its response to this draft report, MRP is therefore directed to provide us with an alternative route for this transmission line so that the ridgeline is protected in an equivalent manner to that which has resulted from the deletion of WT15 to WT29 and WT39 to WT43.

Cultural

Tanenuiarangi Manawatu Incorporated, (TMI) is the legal entity for Rangitane o Manawatu (ROM) since 1989.

Rangitane o Tamaki nui a Rua (ROTNAR) is the Iwi Authority for Rangitane on the eastern side of the ranges.

Huatau Marae is based on Greens Road just below the proposed wind farm site. This marae is unique in the sense that the people of the marae are affiliates of another Iwi based in the Rangitikei District. This marae was established by the Adams’ family within the rohe of Rangitane with the sanction of some of their elders.

MRP’s signing of an MOU with TMI and an agreement in principle to move to an MOU with ROTNAR recognise that the lands on and adjacent to the Turitea site are the ancestral lands of these two Iwi. These MOUs will be important mechanisms for recognising and providing for the relationship of these two Iwi with their ancestral waters within the wind farm site.

The Board recognises that the proposed cultural monitoring plan will be an important component in fulfilling the recognition of this aspect of s 6(e). In addition, the consent conditions which provide for the participation of TMI in the revegetation work will assist in the relationship of TMI with its ancestral waters.
It is also part of the MOU with TMI that a Pou Whenua will be commissioned at the entrance to the wind farm, an important outcome that will recognise the mana whenua of Rangitane o Manawatu.

The enduring relationship envisaged in the MOU with TMI is also seen as a means for recognising and providing for the culture and traditions of Rangitane on the wind farm site. This relationship will be important in order to counter any imbalance between the adverse effects of the wind farm with the cultural identity of the tribe. MRP’s undertaking for blessing ceremonies prior to construction also recognise the importance of tikanga Maori to Rangitane.

Turning to wahi tapu and other sites, MRP’s agreement to remove WT55 along with its commitment to work closely with TMI on the turbine sites that affect Ramihia, Marima, Te Mata and Mairehau will recognise and provide for the relationship of Rangitane o Manawatu with their sites and wahi tapu. The conditions regarding the Accident Discovery Protocol will also provide a process for dealing with unknown sites that may arise in the process of constructing the wind farm.

Concerns over taonga will be addressed through the cultural monitoring plan. The planned revegetation of Brown’s Flat should also assist in creating biodiversity for taonga species to flourish. It is also envisaged under the MOU that Rangitane o Manawatu will receive other monitoring plans in order for them to be able to track numbers and condition of taonga species. The removal of the turbines in areas of indigenous vegetation within the reserve should also lessen the impact on taonga species.

The Board finds in having regard for kaitiakitanga that MRP has achieved this through developing the MOUs, including the cultural monitoring plan, protocols for the placement of turbines WT99 and WT27, and the removal of WT55. (It is noted that this will be assisted through the Board having deleted WT27 for ONF reasons).

We are satisfied that there has been adequate consultation between MRP, TMI and ROTNAR with the processes culminating with the MOUs which set out agreed actions.

Despite concerns raised by Huatau Marae, we consider that MRP has followed good practice in their consultation with this marae. MRP has listened to the marae’s concerns and has undertaken several ‘actions and commitments’ including the commissioning and provision of photomontages, background noise monitoring, a commitment to seal parts of Greens Road, and the removal of and repositioning of several turbines in the vicinity of the marae. For the purposes of the RMA, and based upon the evidence presented, the Board is limited in recognising the kaitiaki status of the marae itself as well as the surrounding marae lands. But the Board notes that, in having regard for the kaitiakitanga of the marae, specific adverse effects of the wind farm proposal on the marae have been taken into account in the Board’s overall deliberations.

In response to consideration of the principles of the Treaty of Waitangi as required under s8 of the RMA, MRP has agreed three key measures. The first is to
include a review condition to protect the potential outcome of any future treaty settlement that may intersect with the lands involved with the wind farm proposal. The second measure is the development and agreement of the two MOUs with TMI and ROTNAR. These documents take into account the Treaty Principles of active protection and partnership, whilst also allowing the tino rangatiratanga of these two Iwi to be upheld. The third measure as noted by Mr Henry of MRP in his supplementary evidence is that MRP will be ‘establishing a tertiary scholarship’ as part of the MOU with TMI to assist in building the capacity of the Iwi to uphold their position as treaty partner into the future.

Based on the evidence presented, the Board is satisfied that MRP has responded well in meeting its obligations under s 6(e) and s 7(a) and s 8 RMA with respect to the wind farm proposal.

Planning Instruments

Section 104(1) RMA provides that when considering an application for a resource consent and any submissions received the consent authority must have regard to (inter alia):

(a) . . .
(b) any relevant provisions of –
   (i) a national policy statement:
   (ii) a New Zealand coastal policy statement:
   (iii) a regional policy statement or proposed regional policy statement:
   (iv) a plan or proposed plan; and
(c) other matters the consent authority considers relevant and reasonably necessary to determine the application.

The planning documents against which the Board has evaluated the wind farm proposal are as follows:

- Manawatu-Wanganui Regional Council Regional Policy Statement
- Manawatu-Wanganui Regional Council Regional Air Plan
- Manawatu-Wanganui Regional Council Regional Water Quality Regional Plan
- Operative PNCC District Plan
- Operative Tararua District Plan
- Proposed One Plan
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- **Turitea Reserve Management Plan**

The key issues arising from these planning provisions are:
- renewable energy and climate change matters;
- land use and water (water/sediment concerns);
- outstanding and significant natural features and landscapes and their identification in the operative regional policy statement (RPS).

Following detailed evaluations, the Board is satisfied that the wind farm proposal is consistent with the provisions of the national policy statements on energy generation and renewable energy as well as the national strategies on energy and energy efficiency and conservation.

Likewise the Board has satisfied itself that the proposal meets the provisions of the regional policy statement, air plan and water quality plan and the two district plans on renewable energy, climate change and land use and water.

The Board has put particular emphasis on the evaluation of the RPS provisions for the identification of outstanding and significant natural features and landscapes within the wind farm site. Our findings against the individual policies of the RPS may be summarised as follows:

- the main ridgeline and skyline along the Turitea site is a major geological/geographical feature in its setting and because of this contributes significantly to the region’s character;
- there is a clear relationship spatially between the ranges and Palmerston North with the visual prominence and scenic characteristics of the Tararua Range in the location of the Turitea water catchment providing a signature backdrop feature both to the city and the Manawatu Plains;
- the vast majority of the Turitea Reserve despite its minor modifications, through to Hardings Park and the Tararua Forest Park, is an important area of ecological significance in terms of its indigenous flora which brings it within the ambit of s6(c) RMA, the requirement to recognise and provide for the protection of areas of significant indigenous vegetation.
- Turitea Reserve (and Hardings Park Ridge) because of its recreational values demonstrate some of the ‘intrinsic values’ identified under s2(b) RMA and are affected adversely by what is proposed;
- the landscape of the Turitea Reserve is an ONL as a matter of fact and it is to be protected from inappropriate use and development under s6(b) RMA;
- the major geographical/geological features of Turitea including the skyline under the RPS are regionally significant as an ONF and are to be protected from inappropriate use and development under s6(b) RMA;
- the area of significant ecological value on the site (the water catchment area down to Hardings Park) is an ONF, to be provided for and protected as a matter of national importance under s6(c) RMA;
the ecological footprint of the Turitea Reserve which includes Game Ridge and the ecological areas on the Back Ridge (South) should not be disturbed, as an ONF and part of the ONL;

- the key question is not whether the RPS is correct to determine the skyline is an ONF, but whether what MRP proposes protects the identified values of the ONF.

The Board has concluded that a number of the turbines proposed in the Turitea Reserve do not protect these values. The identification of the offending turbines and the removal or mitigation measures proposed for them are summarised in our Part 2 RMA evaluation.

Other matters such as traffic and noise are addressed in the individual chapters of this report with the Board being satisfied that MRP’s proposed conditions and management plans for each (in some cases with our amendments) meet the requirements of the relevant planning provisions.

**Resource Management Act: Part 2 Determinations**

The Resource Management Act 1991 defines the law relating to the use of land, air and water. Section 5 of Part 2 defines the purpose and principles of the Act. In turn, Section 5 matters are informed by the issues raised in 6, 7 and 8. The Board’s evaluation of the wind farm against each of these sections is described in detail in Chapter 19 of this report.

We have determined that the Turitea Reserve is an Outstanding Natural Landscape (ONL) and that it contains Outstanding Natural Features (ONFs). In its Part 2 RMA evaluation, the Board has been required to decide on the weight that should be placed on protection of the ONL and ONFs from inappropriate development. In doing so, we have concluded that many locations within Palmerston North view the internal Turitea Reserve, which it has found to be an ONF, and the skyline back ridge, which the Regional Policy Statement (RPS) defines as an ONF (with which we agree).

The following is a summary of our findings on the appropriateness of all of the turbines proposed by MRP under its redesign.

Turbines on Back Ridge (South) would be an inappropriate development and would not protect the ONF. The affected turbines are WT15-WT29 and WT39-WT43, which we have deleted. Turbines WT56-WT66 on Game Ridge also break the skyline and have also been deleted.

In addition to these deletions for ONF protection, turbines WT39-WT43 and WT57-WT66 are also inappropriate and should be deleted for ecological reasons. This is because of the extensive native vegetation clearances which would be required for both access tracking and for the turbine platforms and the large concrete pads which would remain after consents have expired.

Turbines WT127-WT131, WT134-WT136 and WT56 on Love Ridge cause adverse amenity effects on immediate properties due to their dominance and act as a picket fence, piercing the skyline when seen from public viewpoints within and
around Palmerston North. Although not located within the reserve, their presence on a parallel ridge would extend the prominence of turbines across much of the visible internal parts of the Turitea Reserve, negating efforts to protect the skyline, the ONL and the ONF of Hardings Park. These turbines have been deleted.

In spite of some of the problematic turbines on Bryant Hill having been removed under MRP’s redesign, the remainder in the Group A turbines occupy a significant stretch of landscape with most on a really clear day registering as being over the skyline, as well as appearing as an isolated ‘breakaway’ group. They would also maintain a dominating presence over nearby residential properties. For these reasons, the turbines in Series A (WT74-WT78) have been deleted.

WT95 is within one kilometre of the Grassick property and while the frontage of the Grassick house overlooks several Te Rere Hau turbines, the rear of the property is immediately adjacent to WT95. This turbine has been assessed as dominant and has been deleted.

Turbines WT30-WT37 along the boundary with Hardings Park can be retained even though they would be placed in an area of ecological significance, (an ONF and an ONL). For the same reasons WT44-WT46 can be retained on the basis that MRP is able to relocate these turbines close to the water catchment access road.

While the adverse effects on recreational users of Red Rock Knob from the placement of these Hardings Park Ridge turbines cannot be mitigated, and the placement of turbines across the continuum of the ONL is acknowledged, the reasons for the retention of these turbines are as follows:

- the widening of the water catchment access road and its two new road alignments even though through dominant horopito vegetation will create access for the construction of 23 turbines in the G, H, and K (WT54) and F Groups which for 3MW turbines have the combined potential to generate up to 69MW of electricity;

- WT30-WT35 are substantially screened from many parts of Palmerston North by the high ground of Tirohanga and Game Ridge and acknowledging Mr Brown’s reference to the ranges as a signature feature, and its role as a focal feature in views from Palmerston North, these turbines can remain while still providing for this reference.

- WT36-WT37 are acceptable as they form part of the visual grouping of the remaining Group G turbines and with the F and H groups;

- from an assessment of the Beca drawings for turbines locations, these turbines (WT30-WT37) are already located alongside the water catchment access road;

- there will be mitigation of the resulting effects by rehabilitating with native vegetation those sections of the water catchment access road which will become redundant once the two new realignments have been put in place and the restoration of Browns Flat as described in detail in Chapter 8 of this report (with the extent of this yet to be decided);
We have determined that if the deletions listed above are made, the project will meet all the provisions of s5(2) of the Act.

The turbines that will remain will be 61 in number, being 38 in the north and 23 in the south, namely:

- **C Series**: WT67-WT71, WT96 (6 turbines)
- **D Series**: WT1-WT9, WT11-WT14, WT97-WT98, WT30-WT33 (20 turbines)
- **E Series**: WT10, WT38, WT99-WT107, WT109 (12 turbines)
- **G Series**: WT34-WT37, WT44-WT48, WT110 (10 turbines)
- **F Series**: WT115-WT118 (4 turbines)
- **H Series**: WT52, WT111-WT114, WT119-WT121 (8 turbines)
- **K Series**: WT54 (1 turbine)

This total is contingent on WT44-WT46 being retained only if they can be relocated close to the water catchment access road. If not, then these three turbines are to be deleted.

The retained turbines will separate the wind farm into two distinct groups which will frame the Turitea Reserve, emphasising its importance as an outstanding natural feature when viewed from Palmerston North and the Manawatu Plains. Should additional wind farms to the south ever be sought and approved, the southern group could relate to these just as the northern group will relate to the range’s existing wind farms, widening the framing and thus further emphasising the importance of the Turitea Reserve.

**Conditions of Consent and Construction and Environmental Management Plans**

The document Turitea Wind Farm – Resource Consent Conditions dated 28 March 2010 contains the latest draft of the conditions of consent for the wind farm. These conditions are supported by a second document Major Capital Works, Construction and Environmental Management Plan Turitea (CEMP) dated 30 March 2010.

In preparing this report the Board elected to undertake its evaluation of these conditions and CEMP on an individual subject chapter by chapter basis as opposed to completing a comprehensive evaluation in one consolidated chapter. In doing so the Board notes that the conditions and CEMP which were presented by MRP at the start of the hearing were substantially modified during the course of the hearing to incorporate the updated information and expert caucusing agreements which emerged during the hearing.

**Consent Lapsing Period**

Under s125 RMA, a resource consent lapses five years from the date of its commencement unless it has been given effect to before the end of this period or the resource consent expressly provides for a longer lapsing period.

For the Turitea wind farm, MRP has requested that all of the resource consents have a 10 year lapse period. MRP’s reasons for requesting this period are based
on a number of factors, including New Zealand’s demand for electricity, the availability of the design of turbines at a favourable exchange rate, and the preconstruction studies to be undertaken. MRP has submitted that a 10 year lapse period will provide it with enough flexibility to enable the full implementation of the proposed development should these factors not be favourable within the normal five year timeframe.

Various areas on the lower foothills including the area at the end of Pacific Drive owned by Mr Green have been earmarked for subdivision. Under MRP’s notified proposal a number of these areas were within the shadow of the turbines proposed on Bryants Hill and Love Ridge. A 10 year lapse period could well have had an adverse economic impact on the timing of the development of these proposed sub-divisions particularly if in the extreme, after 10 years MRP decided against exercising its consent for the wind farm.

We consider that this concern has been substantially removed as a consequence of MRP’s redesign and our own decision to delete the turbines on Bryants Hill, below Tirohanga and on Love Ridge. We also see a positive consequence of a 10 year period being the extra time that would be available for further growth of the vegetation in the Turitea Reserve and the increased resilience that would result for the vegetation during the eventual construction of the wind farm.

Taking account of MRP’s reasons and these additional considerations, our provisional view is to approve the 10 year lapse period. We have invited the parties to advise us of any other relevant factors which they consider should be taken into account before we confirm our final decision on the lapse period.

Consent Duration

MRP has sought the maximum duration of 35 years allowed for under the RMA for the resource consents associated with the project. For a project of this magnitude and kind, and with the level of investment required, we consider that the requested 35 year term for the consents is appropriate and a 35 year term is agreed.