

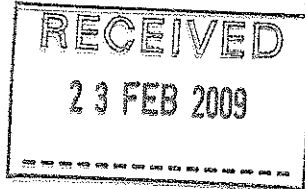
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Energy Efficiency and Conservation Authority  
Te Tari Tiaki Pūngao

23 February 2009

Kim Morgan  
Ministry for the Environment  
PO Box 10362  
Wellington



Dear Kim,

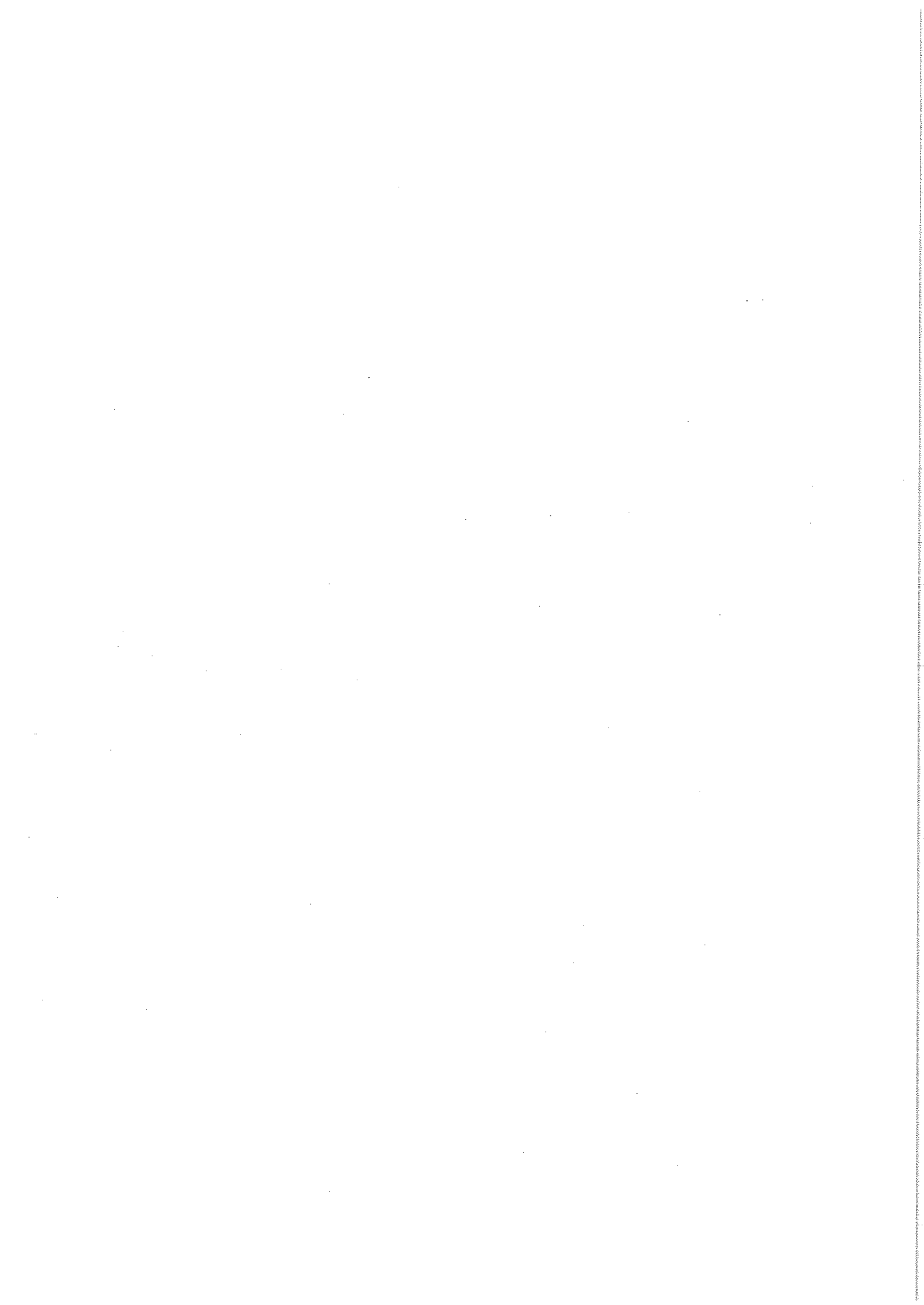
**Turitea Wind Farm Resource Consent**

Please find attached the Energy Efficiency and Conservation Authority's submission in support of Mighty River Power Limited's application for resource consents for the proposed Turitea Wind Farm.

Yours sincerely

Fiona Weightman  
Manager Energy Supply

Improving energy choices



## **SUBMISSION ON AN APPLICATION FOR RESOURCE CONSENT UNDER SECTION 145 OF THE RESOURCE MANAGEMENT ACT 1991**

**To:** Minister for the Environment

**Submitter:** The Energy Efficiency and Conservation Authority (EECA)

EECA is a Crown entity established by the Energy Efficiency and Conservation Act 2000. Its statutory mandate is to encourage, promote and support energy efficiency, energy conservation and the use of renewable sources of energy.

**Address:** The Energy Efficiency and Conservation Authority  
PO Box 37 444  
Auckland, 1151  
**Attn:** Tania Hood

**1. This submission relates to the following Resource Consent application:**

The application by Mighty River Power Limited to construct, operate and maintain a wind farm containing up to 131 wind turbines located at the northern end of the Tararua Ranges, south-east of Palmerston North City to generate electricity and associated ancillary activities ("the proposal").

**2. EECA supports the proposal for the following reasons:**

The proposal is likely to affect New Zealand's international obligations to the global environment: the Kyoto Protocol. In addition, the proposal will contribute to the achievement of the national target of 90% of electricity generation from renewable energy sources by 2025 and will have national benefits deriving from the use and development of renewable energy in accordance with section 7(j) of the Resource Management Act 1991 (RMA).

**2.1. New Zealand's Electricity Context**

As the New Zealand economy grows so will its demand for electricity. It is important that energy efficiency improves and electricity consumption patterns change to waste less. However, it is clear that economic growth will - despite the current recession - continue to place upward pressure on future electricity demand. It is imperative, for a number of economic and social development reasons, that New Zealand has the electricity generation capacity in place in time to meet demand.

New Zealand's reliance on hydro electricity means that it can be vulnerable to periods of low rainfall (often referred to as dry years). This, in combination with uncertainty over New Zealand's future gas supply (e.g. the rundown of the Maui gas field), means that other sources of energy for electricity generation need to be developed.

A long term sustainable energy future will require New Zealand to use increasing amounts of renewable (rather than fossil) sourced energy, such as electricity generated from wind generation. Such generation is expected to play an increasingly important role in ensuring an efficient energy system that delivers secure, clean energy at affordable prices and in an environmentally responsible manner.

## **2.2. Government Energy Policy**

The New Zealand government has made public a series of policy announcements relevant to the achievement of a reliable, resilient and secure system that delivers New Zealand sustainable, low emissions energy. The following are of particular relevance to the proposal:

- securely delivering energy services at competitive prices;
- maximising the contribution of cost-effective renewable energy resources while safeguarding our environment; and
- reducing greenhouse gas emissions.

The Government has confirmed its support for a target for renewable electricity generation of 90 per cent by 2025 (based on delivered electricity in an average hydrological year).

## **2.3. New Zealand Energy Efficiency and Conservation Strategy**

The NZEECS is a statutory document formed pursuant to section 10(1) of the Energy Efficiency and Conservation Act 2000. It is the detailed action plan for increasing the uptake of energy efficiency and conservation, and renewable energy including the realisation of the renewable electricity target.

The Energy Efficiency and Conservation Act 2000 gives a strong mandate to the Minister responsible for that Act and to EECA to promote renewable energy. In lodging this submission, EECA has taken into account the sustainability principles in section 6 of the Energy Efficiency and Conservation Act including the principles of the Treaty of Waitangi, bearing in mind that the comprehensive analysis and balancing of all issues is completed by the RMA decision-maker in the context of achieving the sustainable management of all natural and physical resources.

## **2.4. Resource Management (Energy and Climate Change) Amendment Act 2004**

The Resource Management (Energy and Climate Change) Amendment Act 2004 introduced the following matters into Part II, section 7, of the RMA, which EECA considers to be relevant to the proposal:

- the effects of climate change [section 7(i)]; and

- the benefits to be derived from the use and development of renewable energy<sup>1</sup> [section 7(j)].

EECA submits that there are two principal ways in which particular regard may be given to section 7 (i) and (j), these being:

- **when making decisions** on resource consent applications for renewable energy developments; and
- **by incorporating policies and provisions** in plans and policy statements which recognise and provide for renewable energy developments and their associated benefits.

#### 2.4.1. The effects of climate change

With regards to section 7(i), EECA submits that renewable energy developments such as the proposal have the potential to make a significant positive effect on climate change, by being benign in respect of greenhouse gas emissions compared with alternative sources of generation. In this regard, EECA submits that the Board of Inquiry is required to have explicit regard to the following when considering whether or not to grant resource consent:

- It is widely accepted that one of the principal contributors to accelerated climate change are greenhouse gas emissions generated from human activities, such as the burning of fossil fuels for electricity generation. Accordingly, in order to minimise the adverse effects of greenhouse gas emissions, new generation needs to increasingly come from renewable energy sources, (e.g. wind), rather than fossil fuels (e.g. coal).
- Cumulatively renewable energy developments have the potential to make a significant contribution to the achievement of New Zealand's commitments under the Kyoto Protocol<sup>2</sup>. As a signatory to the Protocol, New Zealand has agreed to reduce its carbon dioxide (CO<sub>2</sub>) emissions<sup>3</sup> in the first commitment period (2008-2012) to 1990 levels or otherwise take responsibility for any surplus emissions.
- Despite its international commitments, in recent years New Zealand's emission levels have continued to increase. For example, in 2006, approximately 8 million tonnes of CO<sub>2</sub> were emitted into the atmosphere from electricity generation, compared with less than 4 million tonnes of CO<sub>2</sub> in 1990<sup>4</sup>. This represents more than a doubling of New Zealand's CO<sub>2</sub> electricity related emissions over the past 16 years.

<sup>1</sup> The following definition of "renewable energy" was added to section 2 as part of the Amendment Act, "energy produced from solar, wind, geothermal, hydro, biomass, tidal, wave, and ocean current sources" [emphasis added].

<sup>2</sup> The Kyoto Protocol, which came into force on 16 February 2005, is the principal international response to climate change, following on from the United Nations Framework Convention on Climate Change.

<sup>3</sup> The commitment relates to greenhouse gases of which CO<sub>2</sub> is the major contributor.

<sup>4</sup> Ministry of Economic Development, *New Zealand Energy Greenhouse Gas Emissions 1990-2006, June 2007*

- This proposal will not only contribute 360 megawatts (MW) towards the region's electricity requirements, but it will also not emit any greenhouse gases (other than the very small amount emitted during construction). Accordingly, at up to 1,400 gigawatt hours (GWh), the proposal would avoid between approximately 530,000<sup>5</sup> and 1,300,000<sup>6</sup> tonnes of carbon dioxide equivalent (CO<sub>2</sub>-e) per annum, depending on whether gas or coal generation is avoided<sup>7</sup>.

#### **2.4.2. The benefits to be derived from the use and development of renewable energy**

With regard to section 7(j) and the benefits of wind energy schemes such as the proposal, EECA submits that the Board of Inquiry is required to have explicit regard to the following when considering whether or not to grant resource consent:

##### **Security of Supply Benefits**

- The proposed wind farm with a maximum capacity of 360 MW will generate approximately 1,400 GWh annually (approximately 5 petajoules), which is enough electricity to supply approximately 170,000 households per annum
- Wind electricity assists with long-term electricity supply security by adding to, and diversifying, New Zealand's electricity generating base. In many respects, wind electricity compliments New Zealand's existing renewable generation sources, typically allowing hydro resources to be stored during dry periods.
- Diversity in energy supply through the development of renewable energy, such as wind electricity, reduces exposure to energy supply disruptions or price shocks that are associated with fossil fuels. In contrast, thermal generation costs can rise sharply as a result of fuel supply interruptions and changing fuel prices.

##### **Reliability**

- Wind is a relatively reliable natural resource over timeframes greater than one month. The inter-annual wind electricity variation is typically 10%, compared to rainfall variation which is approximately 20%.
- Wind is also a relatively reliable economic resource. Once a wind farm is built, the cost of producing electricity from the wind depends

<sup>5</sup> 0.38 kt CO<sub>2</sub>/GWh Gas generation emission factor *New Zealand's Energy Outlook to 2030*, p.41 footnote 86

<sup>6</sup> 0.90 kt CO<sub>2</sub>/GWh Coal generation emission factor *New Zealand's Energy Outlook to 2030*, p.41 footnote 86

<sup>7</sup> Recent work by the Energy Data and Analysis Co-ordination cross-government group has predicted an average reduction of CO<sub>2</sub> equivalent emissions of 0.2 kt CO<sub>2</sub>/GWh per annum, for the next 10 years, as a result of the installation of new renewable projects and energy saving measures. This reflects the expectation that a mixture of renewable and fossil-fuelled generators will be the marginal generator throughout any year and so the new generation of this proposal will displace a mixture of fossil-fuelled and renewable generation. Using this factor the predicted reduction in CO<sub>2</sub> emissions from this proposal would be 280,000 tonnes of CO<sub>2</sub> equivalent per annum. (<http://www.med.govt.nz/upload/55313/emission%20reduction%20effects.pdf>)

primarily on the average annual wind speed which is relatively constant from year to year. The cost of electricity produced is not affected by international fuel prices for scarce local fuel resources.

#### **Reduction in transmission losses**

- A significant benefit of the proposal is that it will be installed relatively close to the national electricity grid source of electricity demand with electricity being injected into the national electricity grid, thereby avoiding losses from transmitting the electricity on the grid. The average national-wide losses due to transmission were 3.7%<sup>8</sup> of the total electricity generated in 2007.

#### **Development benefits**

- The promotion and development of electricity generated from wind resources will result in short and long-term employment opportunities, and have obvious positive flow-on effects for businesses in the region, including industry.

### **2.5. Resource Management Act – Section 141B(2)(e)**

The principal international response to climate change is the United Nations Framework Convention on Climate Change, which in turn led to the development of the Kyoto Protocol. As previously noted, New Zealand is a signatory to the Kyoto Protocol, which came into force on 16 February 2005. As a signatory, New Zealand will be required to reduce its CO<sub>2</sub> emissions in the first commitment period (2008-2012) to 1990 levels or otherwise take responsibility for any surplus emissions. The challenge for New Zealand is to achieve these levels as it remains committed to meeting these obligations.

This proposal will play a significant role in reducing the impact of energy use on New Zealand's greenhouse gas emissions, i.e. by preventing CO<sub>2</sub> emissions (detailed above) that could have otherwise been created by generating electricity via fossil fuel resources.

### **2.6. Public Support for Renewable Energy**

A public opinion survey of attitudes towards energy issues undertaken between January and March 2008<sup>9</sup> indicated that New Zealanders overwhelmingly supported renewable energy generation. The survey examined approval ratings for different types of energy resources and, although direct comparisons can not be drawn, the results of similar survey undertaken in 2004<sup>10</sup> indicate an increasingly positive view of renewable energy in general and in particular wind energy, between 2004 and 2008.

<sup>8</sup> New Zealand Energy Data File June 2008 ([www.med.govt.nz/upload/59482/00\\_EDF-June2008.pdf](http://www.med.govt.nz/upload/59482/00_EDF-June2008.pdf)).

<sup>9</sup> [www.eeca.govt.nz/renewable-energy/documents/renewable-energy-nielsen-research-report-may-08.pdf](http://www.eeca.govt.nz/renewable-energy/documents/renewable-energy-nielsen-research-report-may-08.pdf)

<sup>10</sup> [www.eeca.govt.nz/eeca-library/renewable-energy/wind/report/umr-omnibus-results-wind-research-report-04.pdf](http://www.eeca.govt.nz/eeca-library/renewable-energy/wind/report/umr-omnibus-results-wind-research-report-04.pdf)

The 2008 survey reveals that New Zealanders consider where their energy comes from as being important enough to personally do something about or think about what they could do (i.e. become actively involved) and consider that where energy comes from will have an impact on future generations.

Renewable energy sources are favoured highly over fossil fuel sources and wind energy is identified as the most supported type of electricity generation, with 88% support. Of respondents, 91% consider wind energy will have a positive impact as an energy source for New Zealand in the future along with established energy sources like hydro and geothermal, all are perceived as having a constant positive impact from now into the future. Fossil fuel sources are seen as having largely negative impact, both now and in the future.

The public opinion survey was repeated between October – December 2008. Preliminary results of this survey indicate that there is still strong support for renewable energy and wind energy in particular.

## **2.7. Summary**

The reasons EECA believes the proposal should be approved by the Board of Inquiry are summarised below:

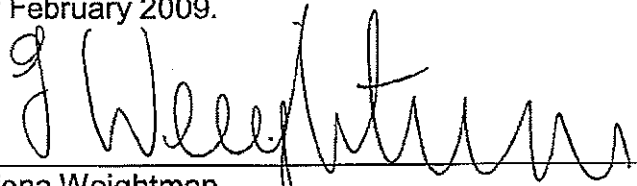
- a) Renewable energy developments, such as the proposal, will cumulatively play a significant role in: providing enhanced security of electricity supply; meeting the renewable electricity target; and in meeting New Zealand's obligations under the Kyoto Protocol (and supporting subsequent likely international climate change commitments).
- b) The proposal will contribute to meeting current and future electricity demand and will assist in increasing diversity in energy supply and contribute to maintaining/developing a more reliable, robust and sustainable electricity system.
- c) The development and use of energy from renewable sources, such as the proposal, creates local, regional and national benefits and positive effects.

With specific regard to the RMA, the proposal is particularly consistent with section (7) (i) and (j) and section 141B(2)(e). In addition, EECA submits that under section 104(1)(c) and section 147(4) and (5) of the RMA, the Board of Inquiry is required to have regard to the governments energy policy context as presented in this submission when considering the proposal.

All of these factors should be given weight in the consideration of the achievement of sustainable management of natural and physical resources pursuant to the RMA.

3. **EECA wishes the Board of Inquiry to approve Mighty River Power's application for resource consent subject to appropriate conditions to avoid, remedy or mitigate adverse environmental effects.**
4. **EECA may wish to be heard in support of its submission.**
5. **If others make a similar submission EECA is prepared to consider presenting a joint case with them at the hearing.**

**DATED** at Auckland this 23<sup>rd</sup> day of February 2009.



Fiona Weightman  
Manager Energy Supply  
Energy Efficiency and Conservation Authority

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