BEFORE THE HEARINGS COMMISSIONER
AT PALMERSTON NORTH

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of an application by NZ Windfarms Limited for land use, stormwater discharge and contaminants discharge consents required to establish the proposed Te Rere Hau Eastern Extension

BETWEEN **NZ Windfarms Limited**

Applicant

AND **Horizon Regional Council**

AND **Tararua District Council**

Consent Authorities

AND **Submitters on the application**

Submitters

Statement of Evidence of Stephen Eric Cross

INTRODUCTION

Qualifications and experience

1. My name is Stephen Eric Cross. I am the Chief Executive of NZ Windfarms Limited (**NZ Windfarms**) and have held that position since December 2008. In my capacity as Chief Executive I have overall responsibility for NZ Windfarms operations.

2. I hold a Bachelor of Engineering (Civil) (Honours) degree from the University of Canterbury.

3. I have had approximately 30 year's experience in the New Zealand energy industry in both upstream and downstream roles, having joined Petrocorp in 1983 and remaining with that company and its successor entity Fletcher Challenge Energy until 1993.

4. I subsequently worked in a consultant capacity in Australia before joining Contact Energy in 1998. In 1999 I was appointed Contact Energy General Manager of Fuels Trading and as such was responsible for managing Contact's portfolio of gas assets, including its gas supply contracts and sales contracts to major users. In 2000 I became responsible for Contact's electricity and gas retail business and in 2003 I was appointed General Manager of Trading and responsible for all of Contact's trading activities. After leaving Contact in 2006 and prior to joining NZ Windfarms I undertook consulting work, primarily in the oil and gas sector.

Scope of evidence

5. The purpose of my evidence is primarily to outline NZ Windfarms' commercial objectives. This will include discussion of the significance of the proposed Te Rere Hau Eastern Extension (**TRHE**) to NZ Windfarms.

6. Specifically, in my evidence, I will:

   (a) Introduce NZ Windfarms;

   (b) Describe NZ Windfarms objectives for the TRHE proposal;

(c) Discuss the benefits of renewable wind energy;

(d) Comment on the quality of the wind resource;

(e) Comment on TRHE site benefits; and

(f) Set out my conclusions.

TE RERE HAU EASTERN EXTENSION

NZ Windfarms

7. NZ Wind Farms was established in 2002 to own, operate and develop economically viable wind farms with principle revenues arising from sale of the electricity generated.

8. The Company has 78,559,197 shares on issue, around 2,500 shareholders and a current market capitalisation of around $50 million.

9. NZ Windfarms is currently well advanced in building its Te Rere Hau wind farm in the Tararua ranges between Palmerston North and Pahiatua.

10. When the current project is complete a total of 97 turbines will be installed at Te Rere Hau with an installed capacity of 48.5 MW and forecast annual energy yield of around 153 GWh/annum.

11. As at 15 September 2009 a total of 60 turbines were operational at Te Rere Hau and injecting electricity into the National Grid. The Project is proceeding to a timetable that should see all 97 turbines installed and operational by the third quarter of 2010.

12. Since December 2008 the Te Rere Hau Wind Farm has been exporting to the National Grid via a purpose-built transmission line which connects to the Tararua Windfarm Limited Grid Injection Point. NZ Windfarms is a Market Participant in terms of the Electricity Governance Rules (**EGR's**) and as such offers its electricity into the New Zealand Electricity Market and receives the clearing price from the spot market for the quantity of electricity injected each half hour. Market rules are such that intermittent generators such as NZ

Windfarms are required to offer into the market at $0.01/MWh and as such wind generators are price takers rather than price makers. Spot prices vary widely.

13. NZ Windfarms is somewhat unique within the electricity sector due to the following factors:-

- Publicly listed company;
- Renewable generation (wind) only;
- Intermittent generator;
- No vertical integration – pure generator currently exposed entirely to spot market prices; and
- New entrant into the generation market.

14. Te Rere Hau wind farm received consent in May 2005 for up to 97 turbines to be built in four stages.

15. Following the granting of the Te Rere Hau wind farm application, NZ Windfarms was listed on the New Zealand Alternate Market in December 2005 when it raised over $4 million dollars from its Initial Public Offering. .

16. Stage 1 of the Te Rere Hau wind farm was opened in September 2006 and the Te Rere Hau Joint Venture, with partners NP Power and Babcock and Brown Wind Power (**NPBB**), confirmed in December 2006.

17. Following confirmation of the joint venture, a further $75million was secured in a second capital raising where Vector (New Zealand's largest line company) became a 19.99% cornerstone shareholder of NZ Windfarms and the company moved to the New Zealand Stock Exchange.

18. During 2007 and 2008 construction of the Stage 2 (28 turbines) of Te Rere Hau began. At the end of 2008, NZ Windfarms announced that its wholly owned subsidiary (NZWL-TRH Limited), had reached an agreement with

NPBB to purchase their 50% interest in the Te Rere Hau wind farm Joint Venture.

19. Since the acquisition of NPBB's 50% of the Te Rere Hau Wind Farm Joint Venture, Stage 2 has been completed and Stage 3 (32 turbines) construction and commissioning is nearing completion. Completion of Stage 3 is anticipated in late October 2009. NZ Windfarms has also placed an order for 32 Stage 4 turbines.

20. NZ Windfarms has built a reputation as a successful and responsible power generation company. Achieving strong environmental performance is an integral part of NZ Windfarms business proposition.

Te Rere Hau Eastern Extension Development Objectives

21. Early in 2009 NZ Windfarms commissioned an independent energy yield forecast for Te Rere Hau. This work, which involved wind data analysis and computer simulations based on various turbine layout configurations, highlighted significant benefits from preferentially locating the 32 turbines, comprising stage 4, in the proposed TRHE area of the farm rather than on the lower slopes of the existing consented area. Modelling showed that the expected annual electricity output from the farm with 65 turbines on the existing farm and 32 located on the proposed TRHE site area would be 153 GWh/annum whilst the expected output with all 97 turbines located on the existing farm would be 122 GWh/annum. Separate wind modelling work undertaken concurrently identified that 56 turbines could be located on the TRHE site to optimally harvest the available wind resource.

22. The location and timing of the construction programme for the ordered stage 4 turbines will depend on the progress and outcome of this consent application currently before the hearings panel. NZ Windfarms will ultimately select its preferred development option/s and timing with the view to maximising the outcome for shareholders.

23. A favourable consent outcome on the TRHE proposal will present NZ Windfarms with expansion opportunity beyond the consented Te Rere Hau project scope, allowing existing infrastructure to be leveraged. Whilst this

consent process has created a break in the construction programme at Te Rere Hau, the economics of locating the 32 stage 4 turbines on the TRHE site rather than the lower slopes of the existing farm are compelling and outweigh the effects of a small project delay.

Benefits of Renewable Wind Energy

24. As stated in the evidence of Mr Copeland, wind energy plays an important, global role in addressing climate change.

25. Wind-generated electricity is produced without emitting carbon dioxide, the greenhouse gas that is the major cause of global climate change. The lifecycle emissions (including manufacturing of components, construction, operation and decommissioning) from wind farms are about 1% of emissions from thermal generation.

26. In addition, wind farms are far more efficient than thermal stations. Within six months of operation a wind farm will produce more energy than it will use in its entire lifetime. In contrast the efficiency of a thermal station is about 60% – meaning it will use about twice as much energy as it produces in the form of electricity. Using coal or gas to generate electricity creates a lot of heat that cannot be easily used for generating electricity.

27. New Zealand has ratified the Kyoto Protocol and so must take steps to reduce its greenhouse gas emissions. The Kyoto Protocol is an international treaty that sets out to reduce the emission of greenhouse gases that cause climate change. Between 2008 and 2012 New Zealand is required to reduce its greenhouse gas emissions to an annual average equal to or below its 1990 emissions level, or to take responsibility for the excess emissions.

28. We can reduce our greenhouse gas emissions by increasing the proportion of electricity that is generated from wind and other renewable energy sources.

29. Essentially, every unit of electricity produced by a wind farm is one unit that does not need to be produced by a coal or gas power station. By building more wind farms we can avoid investing in coal and gas fired power plants.

For the existing thermal stations, greater wind generation will enable us to make more judicious use of limited gas reserves.

30. Electricity generation is one of the fast growing sources of greenhouse gas emissions in New Zealand. Between 1990 and 2006, greenhouse gas emissions from electricity generation increased by approximately 138 per cent[1].

31. Emissions from electricity generation will continue to grow unless we take action now to increase the use of renewable resources. New Zealand has a plentiful supply of renewable energy sources that can be harnessed to generate clean, low emissions electricity.

32. New Zealand generates about 60-70% of our electricity from renewable resources, with the majority coming from hydro. This proportion has been dropping as new coal and gas generation has been built over the last 20 years to meet growing demand. Diversifying our electricity generation to make greater use of wind energy and other renewables will enable us to have a reliable supply of electricity as well as reduce emissions from fossil fuel generation.

33. While the effects of a wind farm on the local environment should not be played down, they must be viewed in the larger context of the broader risks posed by climate change.

34. The direct impact of a wind farm on the land on which it is located is usually minimal as most of the land within a wind farm site is not affected and developers can avoid areas with high environmental or ecological values. The area occupied by wind turbines, roads and other structures in a wind farm is small – typically 1% to 3% of a wind farm site. While it is

[1] Ministry for the Environment, Emissions Trading and Energy, 2007, retrieved from: http://www.mfe.govt.nz/publications/climate/emissions-trading/7-emissions-trading-energy-sep07/7-emissions-trading-energy-sep07.pdf

acknowledged that wind farms can have other effects, (such as traffic, noise and landscape impacts), such effects can be managed.

Wind Resource Quality

35. The wind resources along the Tararua Ranges have long been established as one of the most consistent and valuable wind resources in the country and the area rates very favourably in terms of international standards. Due to the excellent wind resource along the Tararua Range the area has seen the development of three existing wind farms, Te Apiti, Tararua and Te Rere Hau and several more proposed sites are under assessment.

36. Wind resources at Te Rere Hau have been measured for well over a decade at the wind farm site. The wind resource at the site blows from two predominant directions, namely between the southwest to northwest (55% of the total time) and from between the southeast to northeast (33% of the total time). Given the strong direction patterns, namely from the west and east, further wind farm development has been found to be very viable on the eastern side of the Tararua Range adjacent to the Te Rere Hau wind farm. To not develop the eastern side of the range would result in a considerable lost opportunity for utilising the excellent wind resource in the Te Rere Hau area.

TRHE Site Benefits

37. Like other potential wind farm developers in New Zealand, NZ Windfarms is finding it difficult to identify potential wind farm sites that will be economically viable in the near future. This is a result of delays and uncertainties around the implementation of an Emissions Trading Scheme and the price on carbon. This uncertainty has flow on effects of further uncertainty regarding when renewable generation will benefit vis-a-vis non renewable generation. Successful projects require coincidence of future electricity price, turbine cost, consentable sites and access to transmission. The proposed TRHE site combines these elements most favourably.

SUBMISSIONS AND CONSULTATION

38. Ms van Polanen addresses the submissions relevant to NZ Windfarms (as a company) in her evidence and details the consultation undertaken with submitters and the local community to date.

39. NZ Windfarms has taken an open inclusive approach to consultation with submitters and interested parties and will continue to do so in the future.

PLANNERS REPORTS

40. Ms van Polanen addresses matters arising in the planners' reports which are relevant to NZ Windfarms (as a company).

CONCLUSIONS

41. I believe the existing Te Rere Hau wind farm and the proposed TRHE site will be able to be operated in an integrated matter utilising the same infrastructure, thereby encouraging resource efficiency. Furthermore, TRHE will utilise a significant renewable energy resource to assist in meeting New Zealand's electricity supply requirements whilst minimising adverse environmental impacts.

Stephen Cross
30 September 2009