

**IN THE MATTER**

of the Resource  
Management Act  
1991

**AND**

**IN THE MATTER**

of the Proposed  
Horizons One Plan  
– Chapter 3  
Infrastructure,  
Energy and Waste

## **STATEMENT OF EVIDENCE OF RICHARD JONATHON TURNER**

### **Introduction**

1. My full name is Richard Jonathon Turner.
2. I am Meridian Energy Limited's (*Meridian*) Planning Manager – Natural Resources. I have held this position for one year. In this position I am responsible for managing Meridian's response and involvement in statutory planning processes that are of interest to Meridian's existing electricity generation activities and new electricity generation development opportunities.
3. In this role I have been responsible for preparing Meridian's submissions and hearing evidence to proposed national policy statements, regional policy statements, regional plans and district plans that are of relevance to Meridian's existing electricity generation activities and new development proposals. This has included responsibility for Meridian's involvement in the hearings on the Proposed Horizons One Plan (*One Plan*).
4. I am authorised to give this evidence on behalf of Meridian.
5. Prior to becoming Meridian's Planning Manager – Natural Resources, I held the position of Planner – Operations with Meridian for a period of two years. In that position I:
  - 5.1 Managed resource consent applications associated with the ongoing operation of Meridian's existing electricity generation activities;
  - 5.2 Managed Meridian's response to third party resource consent applications, including those involving water abstractions upstream of Meridian's hydro generation infrastructure; and
  - 5.3 Managed Meridian's response to statutory planning processes that were of interest to Meridian's existing electricity generation activities.
6. Before joining Meridian I was employed by TrustPower Limited as a Senior Environmental Officer where I was also involved in resource consenting, planning and environmental compliance matters. I have been directly employed in, or involved with, the electricity industry for approximately 9 years.

7. I hold the qualification of Bachelor of Planning (Hons) from the University of Auckland, 2000. I am a full member of the New Zealand Planning Institute. However, this evidence is not planning evidence for the purpose of the hearings on the One Plan. Planning evidence on behalf of Meridian on the One Plan is being presented by Ms Clarke.

### **Scope of Evidence**

8. Given that Meridian did not present evidence at the Overall Plan hearings in July 2008 my evidence will deal with the following matters:
  - 8.1 An Introduction to Meridian Energy;
  - 8.2 The Importance of Electricity in Modern Day Life;
  - 8.3 New Zealand Electricity Demand Growth and New Generation Options;
  - 8.4 Meridian's Interests in the Horizons Region; and
  - 8.5 Meridian's Interests in the One Plan.

### **Introduction to Meridian Energy**

9. Meridian is a limited liability company wholly owned by the New Zealand Government. It is one of three companies formed from the split of the Electricity Corporation of New Zealand (ECNZ) on 1 April 1999.
10. Meridian's Statement of Corporate Intent states that:

*"Meridian Energy's nature and scope of activities is the generation of electricity (including the ownership and operation of related assets), the management of water related infrastructure, and the marketing, trading and retailing of energy and wider complementary products, solutions and services, primarily within New Zealand."*
11. As a State Owned Enterprise, Meridian is required by statute to operate as a successful business. A component of that requirement is to be an organisation that exhibits a sense of social responsibility by having regard to the interests of the community.
12. Meridian's objectives include maximising long-term shareholder value by its commitment to sustainable management and the development of the natural, physical and human resources utilised in its business.
13. Meridian's Sustainability Policy is a cornerstone of our operating philosophy. It means we balance every decision we make according to the social and environmental as well as financial impacts it will have on communities, the country and the planet.
14. Meridian is the single largest generator of electricity in New Zealand. It has also been the largest developer of new renewable electricity generation infrastructure under the Resource Management Act 1991 (RMA). Meridian's generation and storage capacity accounts for approximately 34% of New Zealand's electricity generating capacity and 77% of New Zealand's hydro storage capacity. Needless to say, Meridian's electricity generation



infrastructure is critical to the performance of the New Zealand economy and to the social wellbeing of people and communities.

15. When Meridian was formed on 1 April 1999 the assets associated with the Waitaki Power Scheme in Canterbury, the Manapouri Power Scheme in Southland and the Brooklyn Wind Turbine in Wellington were acquired.
16. Since this time Meridian has continued to operate and develop these assets and investigate, prove, consent, design and build new generation assets such as the Te Apiti Wind Farm in the Manawatu (90MW), the White Hill Wind Farm in Northern Southland (58MW), and we are presently constructing the West Wind project on the south-west coast of Wellington, comprising 62 turbines generating up to 2.3MW each.
17. Meridian has also recently received the necessary resources consents from the Ruapehu and Rangitikei District Councils and the Horizons Regional Council for the construction, operation and maintenance of a 130MW wind farm (Project Central Wind) approximately 12km north of Taihape. Project Central Wind will be capable of generating between 375 and 400 GWh per annum. The decision of the joint hearing panel is under appeal and should be heard in the Environment Court some time during 2009.
18. On 22 November 2004 Meridian announced its commitment to generate electricity solely from renewable sources in the future. This decision was not made because we thought it would be easy or because it is one with high financial rewards. Meridian chose this path because it considered it was, and still is, the right thing for New Zealand now and in the future and it reflects international and domestic policy imperatives and the preference of the public of New Zealand.
19. Meridian is actively investigating and pursuing options for further new renewable generation capacity and is investigating a number of sites that have potential for wind and hydro development throughout New Zealand. Meridian is also keeping a watching brief on marine energy and solar developments both within New Zealand and internationally.
20. Meridian also continues to upgrade and enhance its existing hydro generation assets in the Waitaki Catchment and at Manapouri. These works have included the re-running of the turbines at the Aviemore Power Station, the Second Manapouri Tailrace Project and the half-life refurbishment of the Manapouri Power Station, and the current re-running of turbines and half-life refurbishment of the Benmore Power Station. All of these projects help ensure that Meridian's existing generation portfolio is operating as efficiently as possible and generation output is optimised.

### **The Importance of Electricity in Modern Day Life**

21. The electricity system, from its generation to its local distribution, is critical infrastructure in the New Zealand economy. Over the past 120 years electricity has reshaped how New Zealanders live and work. Electricity has also become so central to day to day life that there are frequently no substitutes, yet its availability is often taken for granted. This is due to its unique advantages over other forms of energy, specifically:
  - 21.1 flexibility – it can be transmitted over large distances instantly in the quantity required;



- 21.2      versatility – it can be converted into three major uses of energy: heat, light and motion power;
  - 21.3      efficiency – it can be controlled and used with unparalleled precision; and
  - 21.4      availability – it can be produced from a number of different sources.
- 22.      As a result, reliable and cost-effective access to electricity is fundamental to the ongoing growth of both New Zealand and its economy.
  - 23.      Electricity is an essential ingredient to industry and commerce. Without modern electric devices and technology New Zealand's industry would be uncompetitive in the world market.
  - 24.      Consistent electricity supply is also critical to the ongoing operation of communication networks and other infrastructure, as well as the operation of banks, hospitals, schools and other public and private institutions that are the fabric of social, economic, and cultural wellbeing and the health and safety, of people and communities.
  - 25.      The future electricity market outlook is determined by growth in demand and supply, and the design of the policy and regulatory framework. A key target of the Government is to restore New Zealand's per capita income to the top half of the Organisation of Economic Co-operation and Development (OECD) rankings. For this to happen, the capacity to generate electricity will need to increase.

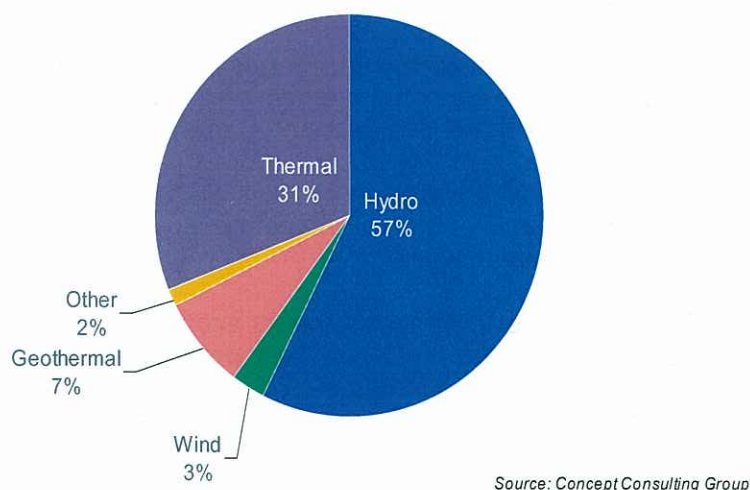
### **New Zealand Electricity Demand Growth**

- 26.      New Zealand's demand for electricity has grown consistently over the past 20 years. Electricity consumption has increased from approximately 30,000 GWh in 1990 to 42,000 GWh in 2008, an average growth rate of 2 percent per annum.
- 27.      The need for new electricity generation is driven by energy requirements (GWh), taking into account energy demand growth and the retirement of existing generation, and the need for spare capacity to cover shorter term demand and supply uncertainties. Energy demand growth is driven by a range of econometric factors which are difficult to predict and over which commentators often have differing views.
- 28.      It is also difficult to determine longer term trends in demand growth rates from observed trends. Year to year electricity demand fluctuations can be significant, due to climatic conditions, sectoral (for example dairy or forestry) or economy wide factors. Supply availability can also have a bearing (e.g. national electricity savings campaigns were instigated in 1992, 2001, 2003 and the 2008 winter given the low hydro inflows/lake levels and constraints in the transmission system). However, in recent years, it has been reasonable to assume that demand growth would continue at around 1.5%-2% per annum accepting that shorter term variations would occur.
- 29.      It is also reasonable to expect that higher electricity prices will cause the rate of electricity demand growth to slow over the longer term although there are differing views as to the extent to which this will occur. Electricity

prices have risen in recent years with the cheap Maui gas supply dwindling and more expensive alternative developments being required.

30. Government's policy response to climate change is also further likely to increase electricity prices with some resultant changes in electricity supply and demand.
31. In October 2007, Government published its New Zealand Energy Strategy (NZES)<sup>1</sup>. In relation to electricity, a key Government objective is for 90% of electricity to be supplied from renewable generation sources by 2025 (based on average hydrological conditions).
32. As is depicted in Figure 1, renewable electricity generation (hydro, wind and geothermal energy) can, currently on average, meet approximately 70% of New Zealand's annual electricity generation requirements. Clearly there is quite a gap to close between 70-90% to achieve the target by 2025 which will need to be accomplished through further development of renewable electricity production to both meet the gap and fill the generation void left by retiring thermal plant. Closing this gap also works in the assumption that the output of existing hydro generation infrastructure is not eroded by changes in surrounding land uses (i.e. pressure for water to be allocated to third parties) or through changes in operating requirements as a result of consent review or re-consenting processes.

**Figure 1: Average Contribution to Electricity Generation Requirements**



### **New Generation Options**

33. Regardless of the future demand scenarios that actually occur, it is evident that significant investment in new renewable electricity generation infrastructure will be required between now and 2025 in order to achieve the 90% renewable target.
34. New generation in the future is likely to be sourced from a range of technologies. This is evidenced by public announcements relating to:

<sup>1</sup> "New Zealand Energy Strategy to 2050. Towards a sustainable low emissions energy system"; October 2007; New Zealand Government.



- 34.1 over 30 wind farm proposals at different stages of evaluation, planning or construction equating to approximately 18,000 GWh of new generation potential;
  - 34.2 over 3,000 GWh of hydro potential in publicly announced projects;
  - 34.3 over 6,000 GWh of geothermal projects that have been publicly announced; and
  - 34.4 over 10,000 GWh of new thermal projects that have been publicly discussed.
35. These projects have a combined production of around 37,000 GWh. In addition to these projects, there are other projects that are not yet in the public arena. In Meridian's view, many of these projects are unlikely to proceed, at least in the short to medium term due to a number of factors including project economics, technology, transmission and consentability.
36. Availability and price of fuel sources, consentability and transmission connections are key issues for new generation options. As outlined above new generation options can come from a range of technologies, though it is worth noting the following salient points, which impact on the current viability of some technologies.
- 36.1 The need for new gas finds to make gas viable - such a discovery is highly uncertain and the Government's 90% renewable target may limit the amount of new gas fired generation that can be built;
  - 36.2 Importation of liquefied natural gas (LNG) at current delivered prices is very likely to be uneconomic and also faces the issues associated with the Government's renewable electricity target;
  - 36.3 Most coal options, because of their infrastructural requirements, are very expensive and also face the Government's renewable electricity target issues;
  - 36.4 Geothermal development appears economic in proven brownfield sites but these are limited in their potential output. Much of the large scale growth will depend on development in still to be proven green field sites. Nonetheless, geothermal will be an important part of the new renewable generation mix;
  - 36.5 Wind energy is expected to supply an increasing proportion of New Zealand's electricity over the next few decades. However, wind is an intermittent source of electricity and in New Zealand we are able to develop significant amounts of wind energy because of the existing flexible hydro plant which acts as a support to wind's intermittent nature;
  - 36.6 Hydro, and particularly hydro with storage, has the ability to work well with wind energy, ramping up and down as required. As well as offering a number of operational benefits that wind does not, further hydro development is important to allow the ongoing development of wind resources in the future;

- 36.7 Marine energy is still at a very early phase of its development cycle and will need considerable time to establish technologies that are robust and commercially viable, together with the necessary understanding of our marine resources before it becomes a main-stream feasible option. That said, given New Zealand's significant coastal resources, it is likely to play a key role in a future renewable energy scenario for the nation; and
- 36.8 Biomass, because of its very limited output, and solar energy because of its high costs, are unlikely to make any significant contribution to new generation in the near future.
37. In summary, hydro, wind and geothermal are economic propositions now depending on the site and the resource. Marine and solar are renewable technologies of the future.
38. It also needs to be recognised that there will be regional and inter-island factors in relation to the type of renewable electricity generation that is developed and that some regions may need to contribute more to national demand than others. In this respect, given the resources available in the South Island it is highly likely that any new generation developed there will be either wind or hydro given the abundant water resources (i.e. rivers in Canterbury and West Coast) and wind resources (i.e. in Southland / Otago). New generation development in the North Island will also potentially involve wind and some hydro, with the added option of geothermal in parts of the Waikato, Bay of Plenty and Northland.
39. At a regional level the prevalence of one form of electricity generation over others will also be obvious. In this regard, regions such as Wellington will be more suited to wind energy, Canterbury to hydro, and the Waikato to geothermal and hydro. Other regions such as Gisborne may actually have very limited options for development and as such may not be support any renewable electricity generation of substance.
40. Demand side management ('DSM') can also be utilised to reduce electricity consumption and therefore ensure that the demand for electricity can be met by supply. DSM initiatives can range from measures to reduce electricity consumption by employing more efficient technologies, the use of alternative energy sources at a consumer level (including solar and gas), and the avoidance of energy use. Meridian promotes a range of DSM initiatives to its customers. These include the distribution of energy efficient light bulbs in Canterbury, new and more efficient domestic and commercial hot water heating solutions, co-marketing and development of energy efficient pumping and cooling systems for on-farm milking, and the promotion of efficiency and conservation measures to our customer base.
41. However, DSM alone will not meet the projected demand for electricity into the future regardless of which scenario eventuates. One of the most frequently used examples to illustrate this point is the Electricity Commission study<sup>2</sup> which estimated that the likely contribution of DSM is around 1,800 GWh by 2025.

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<sup>2</sup> Electricity Commission (2006). Scenarios for electricity demand: the next 25 years.



### **Meridian's Interest in the Horizons Region**

42. As I have outlined above, Meridian owns the Te Apiti Wind Farm which is located in the Tararua District. Meridian also has an active programme of investigating new wind and hydro opportunities throughout New Zealand, including the Horizons Region.
43. Meridian considers there is significant potential for additional renewable electricity generation in the Horizons Region. Any new renewable electricity generation in the region during the life of the One Plan is likely, in Meridian's opinion, to be either wind or hydro generation. This view is supported by Sinclair Knight Mertz Renewable Energy Assessment of the Horizons Region (prepared on behalf of Energy Efficiency and Conservation Authority, July 2006). This assessment identifies approximately 200 to 400MW of additional wind generation capacity in the region and up to 600MW of new hydro potential outside of Department of Conservation land. The harnessing of this renewable electricity potential is of course subject to a range of consentability and economic factors.

### **Meridian's Interest in the One Plan**

44. In light of the above, Meridian considers it important that regional and district planning documents such as the One Plan appropriately provide for existing electricity generation infrastructure and the potential investigation and development of new renewable electricity generation sources so as to provide for the social and economic well-being of people and communities.
45. As you will appreciate the benefits to be derived from the use and development of renewable energy is a section 7 matter in the RMA. As a result, Meridian has a particular interest in how the One Plan manages the use and development of natural and physical resources which are associated with renewable electricity generation.
46. Furthermore, as a prospective developer of new renewable electricity generation in the region, Meridian has a particular interest in how the One Plan seeks to manage the dual responsibilities of protecting natural and physical resources and enabling development.
47. The management of the region's water resources is one example of how the One Plan has the potential to either constrain or enable the future development of hydro generation. In this respect, a water management framework that is either inflexible or unwilling to contemplate the case by case issues associated with large takes or diversions of water for hydro generation will inevitably limit the consideration of such developments in the future.
48. Of particular interest to Meridian are the chapters of the One Plan which deal with renewable energy and infrastructure, natural character and landscape issues, biodiversity and areas of heritage values, and water allocation and water quality issues.
49. In relation to Chapter 3 (Infrastructure, Energy and Waste), which is the subject of this hearing, Meridian is keen to ensure the chapter accurately recognises the importance of regional / nationally important infrastructure and renewable electricity activities and the issues that make their development relatively unique when compared to other forms of land use and development. This includes the technical and functional constraints



which can limit the type and location of renewable electricity generation activities.

50. Technical and functional constraints include:

- 49.1 the need for wind turbines to be located in areas with high average wind speeds and a lack of turbulence, while hydro generation requires waterbodies with suitable head and available flow; and
- 49.2 the fact that renewable electricity generation infrastructure needs to be located close to transmission infrastructure.

51. Meridian has also sought through its submission to ensure that Chapter 3 of the One Plan is only focused on providing for, enabling and maintaining infrastructure and renewable electricity generation, rather than also focusing on the adverse effects of these activities and how these should be managed. Meridian considers that Chapter 3 does not need to focus on adverse effects as the other chapters of the regional policy section of the One Plan also focus on managing the effects of development and that attempts to reconcile the tension between enabling infrastructure and renewable electricity generation with the protection of natural values should occur at the regional plan, district plan or resource consent application assessment level. This issue is discussed in more detail in the planning evidence of Ms Clarke.

52. In relation to the other chapters of the One Plan, Meridian has sought through its submissions to ensure that the objectives, policies and rules are consistent with the RMA to ensure the assessment of renewable electricity generation projects are suitably balanced.

### **Conclusions**

- 53. The provision of electricity is important to the social and economic well-being of people and communities. It is essential to the day to day functioning of people's lives. The Government has also set a target for 90% of New Zealand's electricity to be generated from renewable sources by 2025.
- 54. To achieve this target regional and district planning documents will need to give greater consideration to how they provide for existing and new renewable electricity generation activities. In this regard, compromises may need to be made between local adverse effects and regional and national benefits in order to allow new development to occur. This has already been recognised in some recent decisions of the Environment Court in relation to renewable electricity generation projects, but needs to be acknowledged in plans such as the One Plan.
- 55. Meridian also considered that the Horizons Region has a range of potential renewable electricity generation sources available which need to be considered in the formulation of the One Plan.
- 56. Finally, Meridian considers it appropriate that Chapter 3 of the One Plan is only focused on providing for and maintaining infrastructure and renewable electricity generation and the unique issues that impact on the locations selected for these types of developments.

Richard Turner  
17 April 2009