

BEFORE THE SPECIAL TRIBUNAL

No.

In the matter of

The Resource Management
Act 1991

And

In the matter of

an application to amend the
Water Conservation
(Kawarau) Order 1997 by The
New Zealand & Otago Fish &
Game Councils

EVIDENCE OF PETER JAMES DOWLING

BUDDLE FINDLAY
Barristers and Solicitors
Christchurch

Solicitor Acting: **Kerry Smith**
Tel 64-3-379 1747 Fax 64-3-379 5659 PO Box 322 DX WP20307 Christchurch

Introduction

1. My name is **Peter James Dowling**.
2. I have been the Chief Executive Officer of Pioneer Generation Limited for the last 10 years.
3. Before being appointed to my current position I was the Generation Manager for Pioneer Generation's predecessor: Central Electric Limited, which position I held from 1996 until 1999.
4. I qualified as a Mechanical Engineer in the United Kingdom, earning a Higher National Certificate in Engineering (UK) which was conferred on me by Southall College of Technology in 1966. I am a member of the Institute of Mechanical Engineers (UK).
5. I began my career with the New Zealand Electricity Department ("NZED") in 1972. From about 1982 onwards there were several reorganisations within NZED, the last set of which culminated in the electricity industry reforms of 1987 and the forming of Electricity Corporation of New Zealand ("ECNZ"). My final job with NZED was Assistant Regional Manager based in Dunedin. All of my work for NZED, prior to entering managerial positions, was in hydroelectric operations. For example, between 1979 and 1982 I was based in the Dunedin office of NZED as Generation Engineer, responsible for the operation and maintenance of Roxburgh and Manapouri power schemes. From 1982-86 I was employed as District Design and Construction Engineer responsible for the substation and transmission line design and construction staff of NZED south of the Waitaki River.
6. I was then appointed Assistant Regional Manager between 1986 and 1987. In 1987 NZED was corporatised and became ECNZ establishing area

offices in Alexandra, Twizel and Benmore. I moved to Alexandra to take up the position of Area Manager responsible for Roxburgh, Clyde and Manapouri power stations.

7. I joined Central Electric Ltd in July 1996 as Generation Manager and I was appointed to my current position with Pioneer Generation Limited in 1999.
8. I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note and that I agree to comply with it. I confirm that I have considered all of the material facts that I am aware of that might alter or detract from the opinions expressed here.

Pioneer Generation Limited Described

9. Pioneer Generation Limited was established in July 1999 as a direct result of the Electricity Industry Reform Act 1998.
10. Prior to 1993 the company was known as the Otago Central Electric Power Board (OCEPB). The OCEPB was a community-owned organisation which was governed by an elected board of trustees.
11. In 1993 Central Electric Limited was established and the Government appointed a Board of Directors. The shares in the company were held by Otago Central Electric Power Trust on behalf of the community.
12. In 1998 a decision was made by Parliament that power companies could not be generators and own distribution lines and divestment was required. Central Electric Limited was both a power generator and a lines company and therefore had to divest itself of either its lines or generation business.
13. Central Electric Limited decided to sell its lines business unit to Dunedin Electricity (now Aurora Energy Limited) which is a company owned by Dunedin City Council. The retail business unit of Central Electric Limited was sold to TrustPower as was the name "Central Electric".

14. The generation business unit assets of Central Electric Limited were retained and the company was renamed as Pioneer Generation Limited. As a result of these reforms, Pioneer Generation Limited is a power generating company and it has no retail customers.
15. Prior to electricity reforms in 1993, Central Electric Limited had exclusive rights, by statute, to supply electricity to a geographical area covering Millers Flat, Omakau, Makarora, Wanaka, Queenstown and Milford Sound. Under previous legislation Power Boards were granted a defined geographical area in which they generated and supplied electricity. That area remains the area of most interest for Pioneer Generation now.

Ownership

16. The shares in Pioneer Generation Limited are held by the Central Lakes Trust. The Central Lakes Trust is the successor to the Otago Central Electric Power Trust which I described earlier. It was necessary to establish a new trust, because as a result of the electricity reforms, the Otago Central Electric Power Trust was left without direct beneficiaries.
17. The assets of Central Lakes Trust are: Pioneer Generation Limited, plus the proceeds of the sale of its former lines business and retail business units. Central Lakes Trust is the only shareholder in Pioneer Generation Limited, and the beneficiaries of the Central Lakes Trust are the rate payers living in the geographical area I described earlier.
18. Central Lakes Trust distributes the income which it generates from all of its assets, primarily the returns provided by Pioneer Generation Limited, into the community. Typically the Trust distributes approximately \$6 million into community projects each year.
19. Central Lakes Trust appoints all of the directors of Pioneer Generation Limited. Membership of the trust itself is subject to triennial elections. There

are six trustees. Each of the trustees are entitled to serve a maximum of three terms, after which they are no longer eligible for appointment.

20. Having made the point that Pioneer Generation Limited is community owned, the mandate which it received from the Trust requires it to act as a responsible commercial enterprise and to seek appropriate returns from its capital.

Pioneer Generation Limited's present assets

21. Pioneer Generation is a relatively small distributed or embedded generator of electricity based in Alexandra (It owns and operates 12 small power stations which, because of their small size, are not required to sell their electricity to the electricity market which is operated by Transpower.
22. Pioneer has 12 power small hydro generation power stations. They are:
 - (a) The Teviot River scheme which incorporates the Onslow dam (with the Onslow storage lake), a dam at Horseshoe Bend, the Horseshoe Bend power station, the Marslin dam, the Michelle power station, the Head Pond, the George power station and the Teviot Bridge and the Ellis power stations. We are presently building a 2 megawatt power station called Kowhai, which is between the Marslin Dam and the Head Pond on the Teviot River. The Kowhai station will be completed in about May 2010.
 - (b) The Fraser Dam and Fraser River power station.
 - (c) Two small power stations called the Upper Roaring Meg and Lower Roaring Meg in the Kawarau Gorge.
 - (d) At the Wye Creek scheme there is small intake weir, with a single power station situated adjacent to SH6 between Frankton and Kingston.
 - (e) The other power stations are located at Glenorchy, Monowai and Falls Dam, near St Bathans.

23. All of Pioneer Generation's power schemes at the present time are hydro-electric ones, although it is currently building a small wind farm at Horseshoe Bend (three turbines of 750 kilowatts each) which is due to be commissioned in 2009.
24. The currently consented generating capacity of all of Pioneer Generation's power generating power assets is 32 megawatts. Once the Kowhai power station, and the wind turbines at Horseshoe Bend are operative, the power generation capacity will be about 36.5 megawatts.
25. The power which is generated by Pioneer Generation is fed directly into the local distribution network. The Central Otago network is owned by Aurora Energy Ltd. Power generated at Monowai is fed into PowerNet network and the Falls Dam production is fed into the OtagoNet distribution network. The distribution network company is effectively a "trucking" system meaning that it transports power from the generators to the retailers customers. In a retail sense the power generated by Pioneer Generation is mostly sold by TrustPower.
26. The majority of Pioneer Generation's power is sold into the local distribution network, not into the national grid. So long as any power station produces less than 10 megawatts of power it is not required to bid its generation into the electricity market operated by Transpower.
27. Occasionally there are times when Pioneer's generation exceeds the load on the local distribution network. On those few occasions it is fed into the national grid at Clyde, but there is a price disincentive for Pioneer Generation created by the Transpower pricing methodology. Pioneer is charged substantial fees for using the Transpower network, which makes it a cost disincentive.

28. About 95% of the time all our generation is fed into the local distribution networks. The Teviot scheme output is injected into a substation, owned by Aurora Energy Ltd, adjacent to the lower Teviot river stations.
29. Wye Creek generation is fed into the Frankton substation (near Queenstown). Glenorchy is supplied into the local 11kV network and distributed in the Glenorchy region. The Roaring Meg stations generation goes into Aurora Energy substation in Cromwell. The Falls Dam energy is fed into the OtagoNet 33kV network at Ranfurly and Monowai goes into the PowerNet network.
30. Of all of these stations it is only Teviot generation which has the occasional need to be fed into the national grid. The rest of our generation is embedded and does not enter the national grid as the stations are all generating at levels well below the local load demand.

The Nevis

31. Pioneer Generation Limited considers the Nevis River an attractive development proposition because the river has reliable flows and a good operating head (i.e. a fall over distance which allows energy to be developed by the drop from point A to point B).
32. An overview map of the Nevis River is **attachment 1**. The points marked A, B, C, and D on that map and the corresponding grid references in the accompanying table indicate the locations referred to in the 1997 water conservation order. Point C marks the headwaters of the river, point D marks the upper limit of any inundation that could occur under the 1997 order, point B marks Nevis Crossing, and point A is where the Nevis River meets the Kawarau River.

33. In general, when I and Pioneer's other witnesses refer to the Upper Nevis, we mean the section of the River and the valley from around the Whitten Creek area to the headwaters at point C. When we refer to the lower Nevis, we mean the area from around Schoolhouse Flat, above the confluence with Schoolhouse Creek, downstream to a short distance below Nevis Crossing. When we refer to the Gorge, we are referring to an area that starts some distance below Nevis Crossing, where the river becomes difficult to access and descends steeply down to where it ends at its confluence with the Kawarau River at point C.
34. The possibility of using the Nevis River has been considered by Pioneer Generation, or its predecessors, since the late 1960's. It was the difficulties with transmission issues and unfavourable economics of generating power on the river that prevented a viable scheme from being proposed for consideration earlier.
35. Options for possible development of the Nevis River became attractive when power prices increased faster than the construction costs, and transmission options opened up with changes in legislation.
36. Other activities which have made the generation of power on the Nevis potentially attractive are technological changes. As Mr Mulvihill will explain, all of the options for power generation on the Nevis River involve tunnelling into the adjacent hillside. The improvement and techniques for tunnelling, have reduced the cost. Generating plant technology has also been improving over time increasing performance and reducing costs.
37. Having made the point that the Nevis River is an attractive option for electricity generation, Pioneer Generation has no present plans to establish a power system on the Nevis River and is not yet in a position to make an application for resource consent to do so. From the 1960's Pioneer (and its

predecessors) considered a number of options but they have never got beyond a conceptual stage. Pioneer Generation is interested in pursuing options for potential development on the Nevis River, but it has not chosen one option over any other option; nor has it made a commercial decision to attempt to proceed with a hydro scheme. Pioneer Generation's interest in the Nevis River is to seek to develop a hydro generation scheme in the future. The company does not want to see options for the future development of hydro generation precluded; but it accepts that any application will need to pass very stringent environmental tests, and potential opposition before it might succeed.

38. For completeness I need to add that Pioneer owns the leasehold of two farm properties on the banks of the Nevis River, Ben Nevis and Craig Roy. The company has had a financial interest in both properties since 1992 and purchased both leases in 1997. Craig Roy is leased back to its original owner. Ben Nevis is leased to a local farmer.
39. Both stations are Crown leases and they are currently subject to tenure review. A Draft Preliminary Proposal was signed by Pioneer Generation about two years ago. This proposal is currently with the Minister of Lands for consideration and approval prior to being advertised for public submissions.
40. Neither farm property is a profitable leasing proposition for Pioneer. A rental return is obtained, but does not represent a commercial return on capital invested. Pioneer's core business is power generation, not farming. But both stations do provide access to suitable land, and development sites, for locating any future power scheme.

Power Generation Options

41. Mr Mulvihill will describe the options which may be available for power generation on the Nevis. Two broad options are conceivable at this stage. One of them is a small head pond, which might lead to a station capable of producing between 33 and 45MW megawatts (MW). In this option the proposal would essentially be run of river, because there would be no storage lake.
42. Another option is for a 45 megawatt station with peaking capacity which would need a storage lake.
43. There are a number of obvious restrictions or constraints on the ability to develop either scheme. Aside from the need to be able to convince Pioneer Generation's Board that any project is financially viable, there are a number of other issues as follows:
 - (a) *Residual Flows.* Pioneer accepts that it would be appropriate in any resource consent to make sure that there are adequate residual flows maintained in the Nevis River on the downstream side of any water take. Any consent conditions, and particularly those relating to the residual flow in the Nevis River, could make either of the options uneconomic. It is an unfortunate consequence of hydroelectric power that they are long-term projects; essentially they become multi-generational and do not really provide a sustainable return on investment until many years after the construction costs have been incurred. At its simplest, even if the company commits to the capital costs, the conditions of any consent may render the process completely uneconomic.
 - (b) *Transmission Issues.* No matter which option is chosen, Pioneer Generation needs to be able to transmit the electricity to a market

place. At the moment there are two broad options. One is to supply into the existing Transpower Cromwell to Frankton 110kV line. The other option is to follow the Nevis River downstream to join into the Aurora Energy network in the Gibbston Valley and then transmit either/or back into Queenstown and/or Cromwell.

No decision has been made as to which alternative might be preferred, as the economics of each option need to be judged on the relative pricing regimes in place at the time in which the scheme is proposed to go ahead.

- (c) *Other Consent Conditions.* An obvious constraint if Pioneer was to apply for consent for the peaking option project, with a bigger impoundment, is the operating range of the proposed lake, or lack of it. In any large storage reservoir there is a drawdown from the maximum operating level in order to generate power. It might not be viable, or consentable, to expect to create an impoundment with a large drawdown leaving substantial areas of exposed ground uncovered by water from time to time.

44. At this stage the economic, and other conditions, lean towards a run of the river power station with a small impoundment, not much more than a head pond, with a tunnel and power station.
45. While present conditions favour a run of the river scheme as current electricity demands do not have a premium for peak energy, this may change in the future. The Water Conservation Order as it stands allows for a peaking option to be developed if future generations decide that the need for peak energy is greater than other values associated with the region. The Water Conservation Order as it stands allows future generations to make this choice.

The destination of any power

46. Electrical energy is freely interchangeable and short lived. It is not possible to definitively track the path of the electricity once it is generated, or to say categorically where it goes, once it is put into a network. How electricity passes through the various nodes connecting the grid and goes from one place to another, is referred to as a participation factor i.e. how much generation from one plant or another has reached a load destination.
47. In this case, however, I consider that most of the power that would be generated from a station in the Nevis River is destined for Central Otago and the Southern Lakes region; Queenstown, Cromwell and to other centres in Central Otago. I can make that statement because the power would go via the Aurora Energy Lines, or through a spur line on the Transpower grid to Queenstown, because we can actually make connections in a way that ensures that outcome.
48. Security of supply is a difficult issue for all power generation. At the present moment Queenstown, as an example, is serviced by a double circuit 110kV spur line from Cromwell to Frankton. Queenstown is at the end of the line. There are no backup supplies to Queenstown in the event that there is a major failure of the line from Cromwell. The electricity system works on an N-1 (normal minus one) system; so that it is designed with a fail safe. If one method of power supply fails the system can nevertheless continue to supply load. Queenstown has two circuits supplying it from Cromwell but they are both on the same transmission towers. A failure of a tower or series of towers would leave Queenstown without supply. While events of this type are very rare the Cromwell to Frankton lines cross some rugged and exposed country which leaves the line vulnerable to major earthquake and weather events.

49. If Pioneer Generation creates a hydro electric power scheme on the Nevis River, and connects into the Aurora network, there would be two points of supply into Queenstown.
50. Queenstown has a growing demand for electricity, it has base load of between 35-40MW and a peak demand closer to 80MW. The base load of 35-40MW is similar to Gore which has three points of supply.

Conclusion

51. Pioneer Generation accepts that the existing Water Conservation Order is appropriate and acknowledges that it will take a substantial effort to obtain appropriate resource consents. Having made that point Pioneer does not seek to lessen the terms of the order, or to revoke the restrictions it has. They were accepted as being appropriate in 1997 and nothing has changed.

P. J. Dowling

6 May 2009