

**BOARD OF INQUIRY**

**HAUĀURU MĀ RAKI WIND FARM PROPOSAL**

**In the matter** of the Resource Management Act 1991

**And**

**In the matter** of resource consent applications by Contact Wind Limited in respect of the Hauāuru mā raki Wind Farm Proposal

**And**

**In the matter** of notices of requirement and a resource consent application by Contact Energy Limited for transmission infrastructure related to the Hauāuru mā raki Wind Farm Proposal

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**BRIEF OF EVIDENCE OF ROBERT JOHN KINNEY**

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1. My full name is Robert John Kinney. I am the Operations Manager for Ravensdown Fertiliser Co-operative Limited. I hold a B.Sc. (Hons) (Geology) from Canterbury University and hold an A and B Grade Quarry Manager's Certificate and an Unrestricted Blasting Certificate both in Western Australia and in New Zealand. I am authorised by Ravensdown Fertiliser Co-operative Limited to present evidence to this hearing.

### **Ravensdown's Interest**

2. Ravensdown owns and operates a limestone quarry at Waikaretu. This quarry is within the proposed transmission corridor. It is solely in relation to the location of that transmission corridor that Ravensdown has an interest in Contact's proposal.
3. Ravensdown does not wish to express any view relating to the proposed windfarm. The Company's issues with the proposals are centred around the operational impediments which the proposed corridor will have on its existing and future operations for this quarry.

### **Quarry Location**

4. I attach to this evidence copies of the Certificates of Title for the quarry site itself (marked "A") showing the directional movement of the quarry and the general area of the transmission corridor. A second title (marked "A1") is also attached over which Ravensdown holds access rights and mineral rights for future development.
5. Also attached are an overhead aerial photograph of the Waikaretu area showing the location of the quarry (marked "B") and a second aerial photograph with the proposed transmission line marked on it (marked "C"). I understand this route to be indicative only and that the line can be located anywhere within the 350 metre wide corridor.

### **Summary of Ravensdown's Submission**

6. Ravensdown's concerns are that the location of a transmission line either above or in close proximity to the existing quarry will "sterilise" the available mineral resource.

7. Ravensdown's view is that the close proximity of transmission lines is incompatible with the operations of a working limestone quarry.
8. The effects of flyrock from the blasting at the quarry cannot be avoided. These are effects of low probability but high impact (literally!). The nature and extent of damage to a transmission line from flyrock could pose serious health and safety issues to people and the community. The liability issues could be far-reaching.
9. The effects of this proposal can be mitigated by:
  - 9.1 Placing the transmission lines in close proximity to the quarry underground for the length of the existing and proposed quarrying operations; or
  - 9.2 Relocating the line further eastwards with a separation distance of not less than 500 metres from the existing quarry and future expansion sites.
  - 9.3 Providing for the transmission line to be shifted in approximately 10 years time after the resource has been fully worked out.
10. These points will be elaborated further in my evidence.

#### **Existing Activities at Waikaretu**

11. The Waikaretu Lime Works provides a regional resource of high quality agricultural lime. Ravensdown purchased its interest in the Northern Waikato quarry at Waikaretu approximately five years ago from the Smiths Waikaretu Lime Co Limited and the existing land owners, the Whitford family. The quarry is run under a joint venture arrangement with the Perry Group, which also jointly operates the Supreme Quarry, so that the quarry operations are conducted and marketed as the Ravensdown-Supreme Waikaretu Lime.
12. The aerial photo is historical and does not show the precise line of the working face which has moved further eastwards (towards the proposed transmission line corridor) so that there is an approximately 300 metre separation distance from the centre line of the proposed transmission corridor. The nearest boundary of the quarry is approximately 150 metres from the centre line.

13. At the time of purchase Ravensdown also negotiated access rights and acquired rights to the minerals over other titles owned by the Whitford family. More specifically, the Company has identified a mineral outcrop marked "X" on the attached plan for the future expansion of the quarry and this has been specifically identified in the access arrangements and mineral rights negotiated at the time of acquisition.
14. Road access to the quarry is via the Waikaretu Valley Road. At the road frontage to the quarry there is an administration and processing building where crushing and screening of lime occurs. The quarry has then been developed in an easterly direction with the removal of the lime from the existing outcrop being achieved by blasting, then loader and truck transport to the base of the quarry for crushing and further processing before being transported by contractors offsite.

### **Regional Quarry Resource**

15. Agricultural lime from Waikaretu services a large regional area principally from Warkworth in the north to Huntly in the south.
16. A limestone quarry known as Redvale Quarry used to exist at Silverdale, Auckland. This Quarry has recently closed due to land use pressures as residential development in the area has intensified. As a corollary of that closure the Waikaretu Quarry services the market gardens in the Pukekohe area and the northern Waikato properties and east to the Coromandel. Accordingly it is an important regional resource to the horticulture, dairying and sheep and beef farming areas to neutralise acidic soils through both capital and maintenance applications of agricultural lime. The closest lime quarries to the south of Waikaretu are in the Otorohanga, Te Kuiti area.

### **Lime Quarries generally**

17. Lime quarries generally in the northern Waikato area are highly problematic to establish – principally for two main reasons:
  - 17.1 Firstly, quarries are generally found to be incompatible with any form of residential development given the blasting techniques used to extract the lime, the vibrations associated with the operation of the lime quarry and the high degree of heavy traffic movement associated with quarries.

- 17.2 Secondly, and more importantly the availability of a quality lime resource at sites which are isolated from surrounding settlements and where the lime is at or close to the surface is severely limited. In many cases in this area the seams of lime are thin with significant overburden which makes the extraction of economic quantities of quality lime uneconomic.
- 17.3 Accordingly, the lime industry generally focuses on lime works establishing in areas where there are visible outcrops of lime at surface level and where the seam depth and lime quality are moderate to good.
- 17.4 From our research there are relatively few sites in the northern Waikato that have commercial quantities of lime available. Our field work has identified a resource in the Rodney District but competing land use pressures in that area will make it highly problematic to exploit in commercial quantities.
- 17.5 There is a further area to the north of the Waikaretu site but our investigation shows that the quality of the lime (the  $\text{CaCO}_3$  content) drops to approximately 65 percent which makes it unattractive to develop commercially. By contrast the Waikaretu lime has a  $\text{CaCO}_3$  content of 80% which, whilst not the best in the country, still provides a significant regional resource.
- 17.6 We are not aware of any significant deposits in the Coromandel or Bay of Plenty area and accordingly the Waikaretu area is likely to remain, in the immediate future, as the only good regional supply of lime to the farming community.
18. Clearly there are other lime works available in the North Island but the transport costs associated with trucking lime over large distances make it uneconomic.
19. There are other alternatives to lime such as CKD (cement dust which is available in the South Island) or dolomite ( $\text{CaMg}(\text{CO}_3)_2$  which is available ex Nelson or gypsum ( $\text{CaSO}_4$ ) which can be imported from Australia but neither of these provide the quantities for the agricultural market.

## **Extent of Waikaretu Resource**

20. Based on existing extraction volumes it is likely that on the current Waikaretu title the resource will be exploited within the next five years. At that point Ravensdown will likely move to the south to the block known as the Pukerewa block and then to the site marked as "X" on the attached aerial photograph immediately under the transmission corridor. In all cases the quarry is edging closer to the transmission corridor. This is unavoidable following a detailed site geological investigation on the land surrounding the existing quarry. These are the two locations where there is readily accessible quantities of limestone which can be quarried in accordance with the existing operations.

## **Manner of quarrying**

21. Ravensdown's principal concern with the incompatibility of transmission lines and quarry operations arises from the incidence of flyrock. In order to win material Ravensdown conducts a controlled blast of the quarry face by the spacing and stemming of multiple charges in the quarry face.
22. Ravensdown uses Red Bull a specialist upper North Island explosives company that is engaged over a three to four day period to drill holes and formulate a blast plan outlining the burden and spacing for the blast depending on the nature and extent of the material required for the quarry. The drill holes are then charged and stemmed. All neighbours are notified prior to blast occurring.
23. Generally a routine blast is perceived as a wave or ripple over the entire quarry face bringing down material in a controlled manner of a shape and size that can then be handled by loader and trucking operations for transport to the base of the quarry. Flyrock can occur as a natural consequence of blasting where a natural fracture or fissure is unable to be detected in the blast surface.
24. The nature and extent of the fracture can mean that very large quantities of rock can fly off at distances up to 400 metres distant from the rock face. Acceptable tolerance distances for flyrock occur within a radius of 200 metres from the blast face.

25. Notification to neighbours enables stock to be removed from the area prior to the blast. Ravensdown is particularly concerned that no structures are built within the area exposed to flyrock and are particularly concerned with the location of a transmission corridor within a radius where flyrock can occur from a known quarry.
26. With respect to the location of the line immediately above the limestone outcrop where Ravensdown has secured rights to mineral extraction the effect of a transmission line would be to sterilise the resource both by virtue of the vibration effects associated with quarrying as well as the potential for flyrock to damage pylon structures and/or break transmission lines.

### **Consultation**

27. Ravensdown has already carried out consultation with Contact in October 2008 (Vaughan Chaffey – Alistair Yates). Ravensdown discussed both the resource management issues associated with the lockup of potential quarryable areas as well as the commercial liability issues arising from an incidence of flyrock interrupting transmission from the windfarm and potential downstream effect on electricity clients.
28. The liability Issue was promised to be covered by a letter providing assurances to Ravensdown of an indemnity relating to any damage or consequential damage arising from flyrock. To date, however, no such letter has been received.
29. In addition, Ravensdown discussed the possibilities for moving lines in order to avoid the effects on the operation of a quarry arising from the transmission lines.

### **Mitigation Measures**

30. There appears to be a number of mitigation measures open to Contact Energy to resolve Ravensdown's concerns. These mitigation measures range from a very simple movement eastwards of the proposed corridor in order to avoid the incompatibility of the two operations. From Ravensdown's perspective there appears to be no physical impediment in moving the line further eastward and indeed it would potentially slightly shorten the distance of the transmission line at the Waikaretu site. In Ravensdown's view there are no particular landforms or physical barriers which would prevent the

construction of a transmission line outside a potential flyrock zone affording a safe working distance of 500 metres at all times.

31. Secondly from a physical perspective there would be no impediment to placing a small stretch of the line of approximately 2 kilometres underground. This would ensure that any issues associated with vibration and flyrock are mitigated from Ravensdown's perspective in the immediate vicinity of the working quarry.
32. Thirdly, Ravensdown has identified that the resource at Waikaretu at its present site will be sufficient for a further 5 to 15 years based on a working out of its existing title and the Pukerewa land. At that stage the quarry would be completely worked out and Ravensdown's interests with respect to transmission lines would no longer be a significant issue at that site.
33. At that point in time the transmission line could be relocated from the point marked "X" on the attached plan to align with the existing worked out quarry site leaving the way for further lime extraction in the vicinity of the limestone outcrop at site "X". Again this would involve the reconstruction of approximately 2 kilometres of line but given the identified regional benefits associated with the lime quarry it would preserve the ability to service the lime requirements of the northern Waikato/South Auckland/Coromandel region from this site.

## **Conclusion**

34. Ravensdown has conducted geological testing at the site to identify the sites where lime is economically recoverable in the area. It cannot move the lime resource. The lime resource is a significant regional asset.
35. The effect of flyrock associated with quarrying operations on a transmission line would be significant and raise public safety issues. Reports attached to this evidence marked "D" identify the significant risks associated with flyrock.
36. The blasting of quarry faces cannot be conducted so as to avoid any incidence of flyrock. The proposed transmission line completely removes the possibility of Ravensdown working in an identified limestone outcrop which has already been identified and registered on the future expansion site for the existing Waikaretu site.

