**BEFORE THE BOARD OF INQUIRY**

**IN THE MATTER** of the Resource Management Act 1991

**AND**

**IN THE MATTER** of applications for resource consent and notices of requirement by Transpower New Zealand Limited for the North Island Grid Upgrade Project

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# STATEMENT OF EVIDENCE OF ROY JOHN CLEMENT NOBLE IN REBUTTAL (2) ON BEHALF OF TRANSPOWER NEW ZEALAND LIMITED (Overview: transmission line engineering)

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## Introduction

1. **MY** name is Roy John Clement Noble. I wish to present rebuttal evidence to the three briefs of evidence on behalf of Glencoal Energy Limited and Mr Andrew Stirling, Ms Margaret Stirling, and Ms Jan Stirling (**Glencoal/Stirlings**). These briefs were submitted by:-

   (a) Mr Benjamin William Coleman;

   (b) Ms Jan Julienne Stirling; and

   (c) Dr Ian Roderick Brown.

2. **THE** line design submitted in the Waikato District Council Notice of Requirement in the region of the Stirling property took cognisance of the coal resource below this property. Transpower was of the understanding from another party interested in developing the same resource that the mining resource existed across the complete width of this property. As such, Transpower placed towers 88 and 89 as close to the boundaries of the property as possible, to mitigate the potential impacts to future mining operations. This placement can be seen by the fact that Transpower designed the spacing between these towers such that the conductor to ground clearance was compromised mid-span necessitating earthworks to be undertaken to achieve the required design clearance of 12.7 metres (as detailed in Sheet 14/63, Revision B of the Plan and Profile Drawing, Map Book Series 6a).

3. **INFORMATION** that has recently come to hand from Glencoal/Stirlings, has provided a better understanding of the impacts on the mining of the coal resource below the Stirling property. Transpower understands that Glencoal have two major areas of concern. These are:

   (a) The location of tower 88 which has the potential to reduce the area of the open cast pit, reducing production by 123,800 tonnes of coal.

   (b) Constraints on future mining operations below the line, predominantly by the limitation of dust.

4. **THE** evidence provided by Dr Brown has provided Transpower with a definitive design of the open cast mine in relation to the proposed line. This information

varies from the previous assumptions on the extent of mining over this block. However, it provides Transpower with the ability to offer mitigation measures which take account of the mine design and provide an overall better design outcome across the Stirling property.

*Mitigation of potential coal sterilisation*

**5.** **I** have assessed the design of the "*Proposed open pit design, unconstrained model*" shown in figure 2 or Dr Brown's evidence. I have incorporated this information into Transpower's transmission line design package. From this process, we have identified the following mitigation option.

**6.** **TOWER** 88 could be moved approximately 35m along the alignment to the north. This location would provide a 35m clearance from the closest tower leg to the edge of the batter slope depicted in Figure 2 of Dr Brown's evidence. This tower would remain within the Stirling property. A 35m movement would be within the tolerance requested within the NOR, and described in my first statement of evidence (paragraphs 167 and following).

**7.** **TOWER** 89, in conjunction with the above move, could be moved approximately 125m along the alignment to the north. This location would provide more than 40m clearance from the closest tower leg to the edge of the unconstrained batter slope depicted in Figure 2 of Dr Browns evidence. The 125m movement is outside the tower move tolerance requested within the NOR, and described in my first statement of evidence.

**8.** **THESE** proposed tower moves are shown in **Appendix "A", Figure 1**. The yellow dots are the location Towers 88 and 89 as submitted in the NOR. The purple line on the Stirling property is the top of the unconstrained batter slope as described by Dr Brown.

**9.** **DRAWINGS** of the proposed tower moves are shown in **Appendix "B"**. Sheet 14/63 Revision B marked "Superseded" is the same as the drawing lodged in the NOR, (Sheet 14/63, Revision B of the Plan and Profile Drawing in Map Book, Series 6a), whereas Sheet 14/63 Revision C shows the proposed line design.

**10.** **I** consider that the tower moves described above provide the following benefits:

(a) Tower 88 reduces in height by 3.0 metres;

(b) The new location of tower 88 would not constrain the size of the proposed open cast mine;

(c) Clearance above the proposed State Highway 2 (**SH2**) bypass to the north of tower 88 would be increased from 14 metres previously described in paragraph 223 of my evidence in chief. (I discuss this bypass further below);

(d) Tower 89 reduces in height by 4.5 metres;

(e) The new location of tower 89 would not constrain the size of the proposed open cast mine;

(f) Increased clearance would be obtained across the Stirling property. This would nullify the requirement to undertake earthworks on the Stirling property to meet conductor to ground clearance requirements; and

(g) Spans 88 to 89 and 89 to 90 become uniform in length.

**11.** **I** am confident that clearances of more than 35m from the top edge of the batter slopes combined with the Glencoal proposal to make a 1.6 horizontal to 1 vertical batter slope will be sufficient to provide structure security. Transpower would however add additional mitigation into the foundation design of towers 88 and 89 to allow for possible minor movement of the batter slopes, although this is considered a low risk. Such measures could include increasing the foundation depths, and possible installation of beams to allow for differential settlement.

*Impacts on other parties*

**12.** **AS** discussed above, the proposed line (and the existing ARI-PAK A line) spans SH2. The ARI-PAK A line and the proposed line follow the same alignment. As a result, Transit New Zealand (**Transit**) is considered a directly affected party, and a number of discussions have taken place.

13. **TRANSIT** has a planned bypass of SH2 in this area (depicted in red in **Appendix "A", Figure 1**). The removal of the ARI-PAK A line or the increase in height of the ARI-PAK A towers adjacent to SH2 is required to provide statutory clearance before the bypass can proceed.

14. **THE** distances of the proposed line and ARI-PAK A towers to SH2, are as follows:

(a) Distance to the existing ARI-PAK A tower to the current alignment of SH2 is 43 metres to the existing road at right angles to the road (53m along the transmission line alignment).

(b) Distance of tower 88 as located in the NOR to the current alignment of SH2 is 58m to the centre of the existing road at right angles to the road (74m along the transmission line alignment).

(c) Distance of the relocated tower 88 to the current alignment of SH2 is 30m to the centre of the existing road at right angles to the road (39m along the transmission line alignment).

(d) Distance to the existing ARI-PAK A tower to the realigned SH2 is 119m to the centre of the proposed road along the transmission line alignment. (The distance is the same for right angles to the road alignment).

(e) Distance of tower 88 as located in the NOR to the realigned SH2 is 140m to the centre of the proposed road along the transmission line alignment (it is the same distance for right angles to the road alignment).

(f) Distance of the moved tower 88 to the realigned SH2 is 105m to the centre of the proposed road along the transmission line alignment (it is the same distance for right angles to the road alignment).

15. **ON** 8 April 2008, I wrote to Transit outlining the distances of the towers, as in the NOR and as proposed to be relocated. This letter is attached to my evidence as **Appendix "C"**. On 21 April 2008, I received a response from Transit (as shown in **Appendix "D"**) confirming that:

> *"1. Transit has no objection to the relocating of Tower 88 in the new location adjacent to existing State highway 2.*