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 (1) FOR 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 statements of evidence of:

   (a) Mr Roger Loveless, on behalf of Ewan Mackay;
   (b) Mr George Vercoe;
   (c) Mr Murray Parrish, on behalf of Carter Holt Harvey Limited (**CHH**);
   (d) Mr Doug Parker on behalf of Hunua and Paparimu Valley Residents' Association Incorporated; and
   (e) Mr Philips on behalf of Matamata-Piako District Council (**MPDC**).

2. **I** address the evidence of each submitter below.

Mr Roger Loveless on behalf of Mr Ewan Mackay (Submission number 0556 and 0807)

3. **MR** Roger Loveless presents a peer review of a report undertaken by Mr W McIntosh for Mr Ewan Mackay. Paragraphs 211 to 215 of my first statement of evidence respond to the report written by Mr McIntosh.

4. **THE** primary reason for not moving the line, as suggested by Mr Mackay and Mr McIntosh, and later peer reviewed by Mr Loveless, was visual. Mr Lister will present evidence in relation to these visual issues. My evidence focuses on the impact of the tower moves on the alignment. Transpower considered two potential alterations to the proposed line in order to avoid the Macrocarpa trees on the Mackay property. These involved:

   (a) Following a similar alignment as identified by Mr McIntosh, with a change in angle at Tower 132, and the inclusion of a new angle at Tower 138. This option would traverse the proposed line around the shed and Macrocarpa trees on the Mackay property. This option would require the repositioning of six towers (Towers 133 to 138), and would require the movement of the proposed designation over six properties. As noted in my first statement of evidence, this movement creates a dog-leg in the alignment at Tower 138. This movement is shown on the **attached** diagram (entitled Towers 133 to 138 – Centre-line & Easement).

The offset of each tower, and effectively the designation would be:

Structure Number	Change in Position
	Delta XY (m)
132	0.00
133	8.67
134	17.32
135	25.53
136	34.64
137	56.97
138	56.81
139	0.00

The degree of the offsets requested by Mr McKay, Mr McIntosh and Mr Loveless are significantly more than the 5m lateral movement tolerance proposed in the NOR. These changes would move towers outside the designation.

(b) Retaining the alignment from Tower 132 to Tower 137, then forming a new angle point at Tower 137, and a new angle point at Tower 138 to deviate the proposed line around the shed and Macrocarpa trees on the Mackay property. This option repositions one tower, as well as requires the movement of the proposed designation over three properties. This movement is shown in the **attached** diagram (Tower Shift – Centre-line & Easement).

The offset Tower 138 would be 56.8m. This is significantly more than the 5m lateral movement tolerance proposed in the NOR. This change would move towers outside the designation.

5. **THE** specific move now requested would affect the visual appearance, and impact of the line for some distance. In particular, the change in alignment proposed by Mr Mackay would introduce a dog-leg of angles at the crossing of Taniwha Road. The alignment would have an angle of about 9 degrees to the left at tower 138, followed by an angle of about 4 degrees right at tower 139. This option requires Tower 138 to be increased in size and weight from a Standard Suspension Tower to an Angle Suspension Tower. Tower 139 remains a Light Strain Tower regardless of which alignment is chosen.

6. **MOVING** the tower as requested by Mr Mackay would not comply with the design principle that straight consistent lines are preferred to lines that contain numerous angle changes or where tower heights and spacings vary greatly over a short distance. As a result, the requested tower move was not supported by Transpower's landscape and visual impact expert, or planning expert during the indicative centre-line workshops.

7. I accept that it is technically possible from an engineering perspective to move the line around the trees as requested by Mr Mackay.

8. **AS** discussed above, the move requested would go outside of the designated area sought in the NOR, on Mr Mackay's property and those of his neighbours. At the time of finalising the alignment and lodging the NOR, I was not aware of Mr Mackay's neighbours providing written consent to the designation being moved to cover their property. I also note that Mr Mackay does not present any evidence to the Board that his neighbours now give approval (although Mr Loveless presents evidence that Mr Mackay has indicated that his neighbours have no concerns with the proposed realignment).

9. **MR** Mackay also raised concerns about the impact on his woolshed and yards. The evidence of Mr John Hall addresses these issues, and also the impact on the Macrocarpa trees at paragraphs 98-108

Mr George Vercoe (Submission number 1129)

10. **ON** page 2, Mr Vercoe requests the Board to maintain the original ARI-PAK-A alignment in the vicinity of 544 Tauhei Road. The evidence provided by Mr Vercoe is correct that the proposed line follows the existing ARI-PAK-A line to the north and south of this position, however deviates away from that alignment in the vicinity of the Tauhei Road crossing.

11. I can confirm that Transpower investigated the route proposed by Mr Vercoe in the early stages of design. However, it deviated from the ARI-PAK-A alignment in the vicinity of Tower 200 to avoid a number of farm buildings at Tauhei Road and near the proposed Tower 198. This is described in my first statement of evidence in paragraphs 99 to 102, and shown in Appendix A Figures 29 and 30 of my first statement of evidence.

12. I am unsure of the unit of measure that Mr Vercoe is using to describe the angle of deflection in his evidence, however I can confirm that the angle at the proposed Tower 200 is approximately 35.5 degrees.

Mr Murray Parrish (CHH) (Submission number 0558)

13. **AT** paragraph 7.14, Mr Parrish raises the issue of potential changing technologies and attempts to relate the potential hazards of aerial application of fertiliser to changing understanding in relation to epidemiology of EMF risks.

14. **THE** hazards and impacts of aerial application of fertilisers are not new. The hazard of aerially applying fertiliser near transmission lines requires an increased awareness by aerial topdressing pilots and amendment of flight planning practises. This matter is discussed by Mr Alan Nicol in evidence.

15. **APPLYING** large quantities of fertiliser directly to transmission lines has two effects, firstly this increases the risk of flash-over if the pollutant is not washed by rain, and secondly this application leads to an increased rate of corrosion to the transmission line components. Aerial topdressing includes spreading substances such as urea, DAP and lime. These substances are typically salts that can absorb moisture from the air and form a thin layer of water over the zinc surface and promote accelerated corrosion, or form conductive layers on insulators. Transpower does not promote the application of aerial topdressing materials directly onto its transmission lines, however does accept that residual application of small amounts of overspray will occur. The effects of these small amounts are typically mitigated by the washing of surfaces by rain.

Mr Doug Parker (Hunua and Paparimu Valley Residents' Association Incorporated) (Submission number 0748)

16. **MR** Parker raises a number of issues in relation to my evidence in Appendix 4 of his evidence. I address each of these points as follows:

    (a) In Appendix 4, point 1, Mr Parker notes that there is no explanation for the increase of circuit capability from 1200MVA per circuit in to 2700MVA in the amended Grid Upgrade Plan. The reasons for this change are presented in Mr Boyle's first statement of evidence.