

Before the Hearing Panel – Proposed Waikato District Plan

Under The Resource Management Act 1991 (the Act)

In the matter of Proposed Waikato District Plan
- Hearing 22: Infrastructure

Between Waikato District Council

Local Authority

And Transpower New Zealand Limited

Submitter S576 and Further Submitter FS1350

Statement of Rebuttal evidence of Andrew Charles Renton

Dated 6 October 2020

EXECUTIVE SUMMARY

- 1 This statement of rebuttal evidence responds to evidence filed on behalf of Kāinga Ora – Homes and Communities (Kāinga Ora) in respect of the Proposed Waikato District Plan (“PWDP”) Hearing 22 – Infrastructure.
- 2 The rebuttal addresses evidence of Matthew Lindenberg on behalf of Kāinga Ora in relation to the width of the National Grid Subdivision Corridor.

INTRODUCTION

- 3 My full name is Andrew Charles Renton.
- 4 I am employed by Transpower New Zealand Limited (Transpower) as the Senior Principal Engineer. I have the qualifications and experience set out in my statement of evidence on Hearing 22: Infrastructure (Primary Evidence).
- 5 While this is a council hearing, I repeat the confirmation that I provided in my Primary Evidence that I have read, and agree to comply with, the Code of Conduct for Expert Witnesses contained in the Environment Court Consolidated Practice Note (2014).

RESPONSE TO EVIDENCE OF MATTHEW LINDENBERG

- 6 At paragraph 5.1 Mr Lindenberg seeks:

“a more nuanced and evidence-based approach to the identification of the spatial extent of the National Grid (and in particular the NGSC), such that the spatial extent of the NGSC (and thus the provisions in relation to the framework for managing potential adverse effects) better reflect the actual special extent of the effects which may be generated (e.g. the application of a ‘variable width corridor’, rather than the currently proposed ‘default’ corridor widths).”

- 7 The corridor approach sought by Transpower in the Proposed District Plan is evidenced based – albeit on a national level. The relevant distances from the centreline for the National Grid Subdivision Corridor are as follows:
 - 14m for 110kV transmission lines on single poles;
 - 32m for 110kV transmission lines on towers; and
 - 37m for 220kV transmission lines.

- 8 The distance a transmission conductor swings in the wind is dependent on the ambient temperature, the power being carried, the wind speed, the type and size of conductor, the tension the conductor is strung at, the supporting structure configuration (cross arm length) and the length of the span (distance between two towers or poles).
- 9 To calculate appropriate corridor widths, a set of standard line types, based on voltage and structural configuration have been developed by Transpower. Following analysis, it was determined that the swing is most sensitive to the wind speed and span length.
- 10 An ambient temperature of 10°C, a wind pressure of 100Pa (46km/hr), full electrical load and the conductor type applicable for the line type were assumed for each transmission corridor. A range of swings was then determined for each line type.
- 11 The width of transmission corridors was then determined by the swing of the 95th percentile span across the country and access requirements for maintenance purposes. The 100th percentile span would have resulted in a much wider corridor, even though this is not necessary for the majority of spans.
- 12 Mr Lindenberg supports a detailed assessment of maximum line swing by span based on the Auckland Unitary Plan approach. The work required to undertake the span by span approach within Auckland was significant and took approximately two months. The cost was approximately \$250,000 (in technical expertise). Given the Waikato has a similar total length of line within the district, the cost and time to complete the assessment would be similar.
- 13 In the limited time available we have been compared the average span length for four lines within the Waikato District (two of 220kV and two of 110kV) to the overall average on a national basis. In general, we have identified that the average span length for the lines in the Waikato are mostly greater than the national 95th percentile average blowout by around 4-6m. This increased length would mean the blowout of a conductor would be greater than the national average. This indicates a wider Subdivision Corridor than that sought in the Proposed District Plan may be warranted if a more detailed span-by-span assessment was undertaken.
- 14 One of the lines 110kV lines¹ that traverses the Huntly urban area is a single circuit line on single poles. This means that the National Grid Yard for this line would be 10

¹ The Hamilton-Mercer A 110kV transmission line

metres either side of the centreline, and the Subdivision Corridor would take in an area of 14 metres either side of the centreline. This means that development can occur up to 14 metres from the centreline of that transmission line with a high degree of confidence that it will not compromise the National Grid, and that the developer/owner will not have to meet any further Transpower requirements.

- 15 Paragraph 5.5 of Mr Lindenberg's evidence promotes a span by span assessment of maximum line swing particularly within urban areas of the district. Of the existing urban areas that are traversed by transmission lines, all are traversed by 110kV lines. Paragraph 13 of my Primary Evidence describes a project that could result in the 110kV network south of Bombay being dismantled. In my opinion there is insufficient certainty regarding the future of these lines to support the cost and resource required to undertake a span by span assessment of maximum line swing for the 110kV network. The future of these lines will become known in the next five years.

CONCLUSIONS

- 16 I have read and considered the views put forward in the statement of evidence referred to above. My view on the provisions that relate to the National Grid in the Proposed District Plan remain as set out in my Primary Evidence.

Andrew Charles Renton

6 October 2020