

BEFORE THE HEARINGS PANEL

UNDER THE

Resource Management Act 1991

IN THE MATTER OF

the Proposed Far North District Plan

**STATEMENT OF EVIDENCE OF NISHAN SOOKNANDAN ON
BEHALF OF TOP ENERGY**

HEARING STREAM 11

Electrical Engineering

14 April 2025

GREENWOOD ROCHE
LAWYERS
AUCKLAND
Solicitor: F M Lupis
(francelle@greenwoodroche.com)

Level 6, Hayman Kronfeld Building
15 Galway Street
Auckland 1010
PO Box 106006
Auckland 1143

1 INTRODUCTION

- 1.1 My full name is Nishan Sooknandan. I am the Engineering and Planning Manager with Top Energy Networks (*Top Energy*), an Electricity Provider in the Far North Region. I am based in the Kerikeri office.
- 1.2 I am a qualified and experienced Electrical Engineer with a Bachelor's Degree in Electrical Engineering. I am also a Chartered Member of Engineering New Zealand. I have 17 years of experience in the Electrical Distribution Industry and have worked at Top Energy for almost 3 and a half years.

Code of conduct

- 1.3 Although this is not an Environment Court proceeding, I have read and am familiar with the Environment Court's Code of Conduct for Expert Witnesses, contained in the Environment Court Practice Note 2023, and agree to comply with it. My qualifications and expertise are set out above. Other than where I state that I am relying on the advice of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

2 SCOPE OF EVIDENCE

- 2.1 My evidence addresses the submission (#483) and further submission (#FS369) by Top Energy on the Proposed Far North District Plan (*PDP*), as relevant to Hearing Stream 11, and in particular addresses the following discrete issues:
- (a) Rule I-R7 – New overhead lines and associated poles, telecommunication and attached antennas, or towers;
 - (b) Rule I-R12 – New buildings or structures, and extensions to existing buildings or structures, and earthworks within 10m of a Critical Electricity Lines Overlay; and
 - (c) Standards I-S1 and I-S2 – Radio Frequency Fields and Electric and Magnetic Fields.

3 RULE I-R7 – New overhead lines and associated poles, telecommunication and attached antennas, or towers

- 3.1 Top Energy made a submission seeking various amendments to Rule I-R7, including with respect to the height standard applied to poles and towers.
- 3.2 The Section 42A Reporting Officer (*Reporting Officer*) has recommended the insertion of new height limits for poles that vary across all zones in Rule I-R7 PER-1. I have no issue from a technical perspective with the height limits recommended by the Reporting Officer, and consider that they align with Top Energy's operational and functional needs within these zones.
- 3.3 The concern that I have is with the 15m height limit proposed for towers in PER-2. I consider this limit to be inappropriate from an engineering perspective for the following reasons:
- (a) Top Energy has existing towers on its network that are approximately 22 to 24m tall (*Towers*) – see **Figure 1** below. These are considered critical electricity lines as they convey electricity at transmission Voltage levels i.e. 110kV to Top Energy's wider network.
 - (b) The Towers by nature are designed to this height to increase the span length in difficult terrain and across hill tops. They are designed to a high degree of strength to handle the tensile forces, wind loading and electrical forces that occur as part of everyday operation.
 - (c) It is illogical in my opinion to allow an up to 25m height limit for poles within other zones (e.g., such as the Rural Production Zone and other zones listed in Rule I-R7 PER-1) but to have a lesser 15m height limit for towers across all zones. As I have outlined above, towers have an operational and functional need to be more than 15m high, and imposing such an arbitrary limit will lead to unnecessary non-compliances. I understand Mr Badham addresses the impact of this within his planning evidence on this topic.



Figure 1 example of a typical Tower located at Mangamuka West, Site Number B0491 on Top Energy's network. These are usually 22m+ in height.

3.4 For the above reasons, I support a 25m height limit for towers being applied under Rule I-R7 PER-2, as is further outlined in the planning evidence of Mr Badham.

4 RULE I-R12 – New buildings or structures, and extensions to existing buildings or structures, and earthworks within 10m of a Critical Electricity Lines Overlay

4.1 Top Energy made a submission seeking amendments to PER-1 of Rule I-R12.

4.2 The Reporting Officer has recommended an amendment to Rule I-R12 to provide that buildings or structures of less than 3m in height above ground level are permitted within 10m of a Critical Electricity Lines Overlay.

4.3 From an engineering perspective, I consider that any building or structure, regardless of whether it is less than 3m in height above ground level, should not be able to locate within 10m of a Critical Electricity Lines Overlay as a permitted activity for the following reasons:

- (a) Table 2 of the New Zealand Code of Practice for Electrical Safe Distances (NZECP34:2001) (*Code of Practice*), as reproduced below, is prescriptive with respect to what constitutes a safe electrical distance from conductors without Engineering advice. Allowing a 3m tall building or structure within 10m of a Critical Electricity Line (which has a typical circuit voltage of 33kV and 110kV has the potential to compromise the operation of the Critical Electricity Line in accordance with the requirements of the Code of Practice.

TABLE 2 SAFE DISTANCES FROM CONDUCTORS WITHOUT ENGINEERING ADVICE

Circuit voltage	Maximum span length (m)	Minimum distance beneath conductors under normal conditions (m)	Minimum distance to the side of conductors under normal conditions (m)
Not exceeding 1 kV	50	4	3.5
Exceeding 1 kV but not exceeding 11kV	80	5.5	5
Exceeding 11 kV but not exceeding 33 kV	125	7	8.5
Exceeding 33 kV but not exceeding 110 kV	125	7.5	9.5
Exceeding 110 kV but not exceeding 220 kV	125	8.5	11
275 kV d.c. & 350 kV d.c.	125	8.5	7.5
Not exceeding 33 kV	250	8	12
Exceeding 33 kV but not exceeding 110 kV	250	8.5	12.5
Exceeding 110 kV but not exceeding 220 kV	250	10	14
275 kV d.c. & 350 kV d.c.	250	10	11
Not exceeding 33 kV	375	9.5	20.5
Exceeding 33 kV but not exceeding 110 kV	375	10	21
Exceeding 110 kV but not exceeding 220 kV	375	11	22.5
275 kV d.c. & 350 kV d.c.	375	10.5	18
For all other spans		Engineering advice required	

(voltages are a.c. except where specified as d.c.)

- (b) Each site is unique and the Code of Practice encourages any person to seek engineering advice to review the site specific variables to determine what will constitute a safe distance. On this basis, I consider it a better approach to simply require compliance with the Code of Practice in any situation.
- 4.4 For the above reasons, and as further set out in the planning evidence filed by Mr Badham on this topic, I consider that PER-1 of Rule I-R12 should be deleted.

5 STANDARDS I-S1 AND I-S2 – Radio Frequency Fields and Electric and Magnetic Fields

- 5.1 Top Energy made a submission seeking amendments to various rules requiring a non-complying activity status for noncompliance with the applicable standards for radio frequency fields and electric and magnetic fields. I understand that Top Energy sought a discretionary activity status.
- 5.2 The Reporting Officer has recommended rejecting this relief and retaining the notified non-complying activity status.
- 5.3 Mr Badham has addressed Top Energy's submission on this matter in his planning evidence filed on this topic.
- 5.4 From an engineering perspective:
- (a) With regards to standard NZS 2772:Part 1:1999 and the International Commission Guidelines, I am not aware of any instance where Top Energy has not complied with this standard. The designs and standards we use are based on Engineering Best Practice which ensures we do not encroach on the limits posed within NZS 2772:Part 1:1999 and other applicable international standards.
 - (b) However, I note that this standard is old, and best practice in this space can change over time. If a new standard was to arise with better outcomes with regards to the management of radio frequency and electric magnetic fields, then I consider there

should be a pathway to allow that to be accepted, as further addressed in the evidence of Mr Badham.

Nishan Sooknandan

14 April 2025