

Before the Proposed Central Hawke's Bay District Plan Hearings Panel

Under the Resource Management Act 1991 (the Act)

In the matter of the Proposed Central Hawke's District Plan – Hearing Stream 3:
Rural Environment:
Rural Land Resource, General Rural Zone, Rural Production Zone, Rural Lifestyle Zone, and Subdivision - Rural.

Between **Central Hawke's Bay District Council**
Local authority

And **Transpower New Zealand Limited**
Submitter 79 and Further Submitter FS18

**Statement of Evidence in Chief of Dougall Campbell for
Transpower New Zealand Limited
Dated 31 May 2020**

Executive Summary

1. Transpower New Zealand Limited (**Transpower**) operates the National Grid, which transmits electricity throughout New Zealand. The National Policy Statement on Electricity Transmission 2008 (**NPSET**) requires the National Grid to be appropriately recognised in the Proposed Central Hawke's Bay District Plan (the "Proposed Plan"). The Proposed Plan must give effect to the NPSET.
2. This means that the Proposed Plan must include provisions to recognise and provide for the national significance of the National Grid, manage the effects of the National Grid, and manage effects of the National Grid. Transpower adopts a thorough and systematic approach to planning for and establishing new National Grid assets. While a resilient National Grid remains at the heart of New Zealand's energy future, climate change has become a central issue for governments globally and hence for Transpower as a responsible owner and operator of the National Grid on behalf of New Zealanders.
3. With regard to managing the effects of land use and development on the National Grid, corridors around the National Grid are necessary to:
 - a) Ensure the network can be efficiently operated, maintained, developed and upgraded by providing the working and access space to do this;
 - b) Manage reverse sensitivity effects;
 - c) Ensure sensitive activities are generally not provided for in the area directly under lines; and
 - d) Protect the safety of both the National Grid and people working or living close to it.
4. Transpower's approach to NPSET implementation is to ensure that it only seeks the minimum district plan restrictions necessary to ensure the NPSET is given effect. Under this approach, Transpower seeks different size setbacks depending on the asset type (for example whether it is on poles or towers). Activities are considered very specifically, so that only

those activities which have a real potential to compromise the integrity of the National Grid are sought to be non-complying, with everything else permitted (except subdivision and certain earthwork activities).

5. Transpower wishes to see appropriate planning provisions included in the Proposed Plan to ensure that Transpower is able to develop, upgrade, operate, and maintain the National Grid to enable a sustainable, secure and reliable supply of electricity to the Central Hawke's Bay District and nationally.
6. Transpower considers that the amendments and additions set out in **Ms Whitney's** evidence will best give effect to the objective and policies of the NPSET. **Ms Whitney** supports many of the recommendations within the s42A report but seeks some amendments to give effect to the NPSET. I concur with the amendments sought in **Ms Whitney's** evidence.
7. The provisions Transpower seeks in Central Hawke's Bay District are generally consistent with the provisions Transpower seeks elsewhere around New Zealand to give effect to the NPSET.
8. In addition to the health and safety risks of activities occurring near the National Grid assets, activities can also directly compromise the ability for Transpower to operate, maintain and upgrade its assets through restricting access or adverse effects on the National Grid assets themselves. Transpower experiences a range of reverse sensitivity effects from those who carry out activities or wish to develop land near its assets. These complaints are, for instance, about visual or noise effects or effects on agricultural operations. A particular focus is also on restricting sensitive activities within proximity of the assets given the increased exposure and electrical hazard risk such activities are subject to and increased risk of harm and incidents. Restriction of sensitive and incompatible development near the lines will reduce the likelihood of reverse sensitivity effects, harm to people, as well ensuring security of supply.

9. The corridor and yard provisions sought by Transpower go beyond compliance with NZECP34:2001. However, this Code of Practice made under the Electricity Act and Regulations, relates to electrical safe distances - it does not address the resource management matters in Policies 10 and 11 of the NPSET. Transpower does not support simple reliance upon NZECP34:2001. NZECP34:2001 will not ensure the National Grid infrastructure and surrounding land are proactively and sustainably managed for the future.

Introduction

10. My full name is Dougall James Campbell. I am the Environmental Policy and Planning Group Manager at Transpower. My relevant experience, qualifications, and commitment to comply with the code of conduct for expert witnesses are included in **Appendix A**.
11. I confirm that I am authorised to give this evidence on behalf of Transpower.

Scope of Evidence

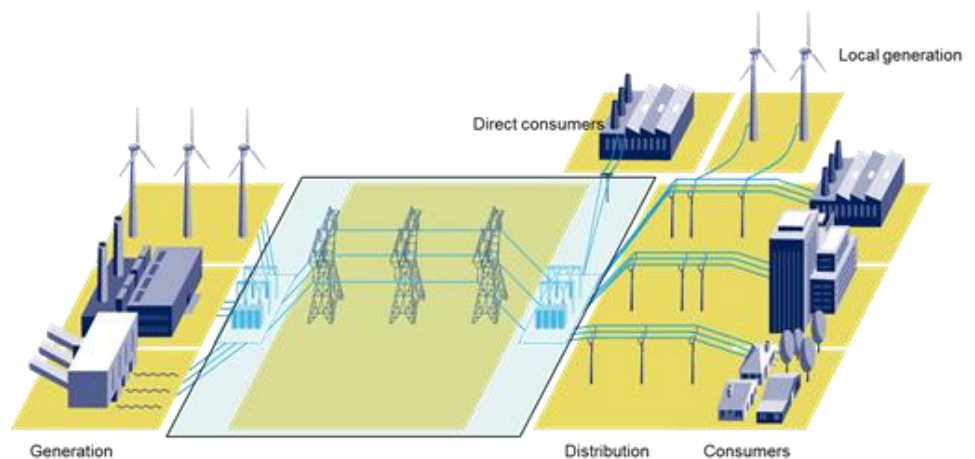
12. My evidence will address the following:
 - a) Transpower and the National Grid;
 - b) New Zealand's Paris Commitment and Decarbonisation;
 - c) Transpower's assets within Central Hawke's Bay District;
 - d) Transpower's approach to National Grid Yards and Corridors and implementing the NPSET; and
 - e) The New Zealand Electricity Code of Practice for Safe Distances 34:2001 (NZECP34:2001).

Transpower and the National Grid

13. Transpower is a State-Owned Enterprise that plans, builds, maintains, owns and operates New Zealand's high voltage electricity transmission network – the National Grid. The National Grid links generators to distribution companies and major industrial users. It extends from Kaikohe in the North Island down to Tiwai in the South Island and carries electricity throughout New Zealand.
14. New Zealand has become increasingly dependent on electricity. It is an intrinsic part of living and working in the 21st century. Electricity now accounts for about 25% of all energy used in New Zealand. Each year, \$5 billion worth of electricity is traded on the wholesale electricity market. Transpower, whose main role is to ensure the delivery of a reliable and

secure supply of electricity to New Zealand, has a fundamental role in the industry and in New Zealand's economy.

15. Transpower is not a generator of electricity and has no retail sales of electricity. It can be considered to be a 'freight company' for electricity, in that it carries bulk electrical energy from where it is generated by companies such as Contact Energy, Mighty River Power and Genesis to the local lines distribution companies (for example Centralines Limited in Central Hawke's Bay) and some major users of electricity (for example NZ Steel at Glenbrook and Tiwai Point Aluminium Smelter).
16. Transpower also manages New Zealand's power system in real time. In its role as System Operator, Transpower operates the electricity market to ensure electricity transmitted through the National Grid is delivered whenever and wherever it is needed, 24 hours a day, seven days a week.
17. Transpower's main role is to ensure the reliable supply of electricity to the country. Transpower plays a significant part in New Zealand's economy, with all major industries, cities and communities being reliant on a secure and reliable supply of electricity.



Source: Electricity Commission, *Electricity in New Zealand*, 2009

Figure 1: Electricity industry in New Zealand

18. As a State-Owned Enterprise, Transpower's principal objective is to operate as a successful business. It must operate within certain legislative constraints and report regularly to its shareholding Ministers.

Transpower is required to deliver and operate a National Grid that meets the needs of users now and into the future.

19. One of Transpower's key objectives therefore is to maintain and develop the National Grid, which contributes to New Zealand's economic and social aspirations. This objective is reflected in the single objective in the NPSET, as outlined in Ms Whitney's evidence.
20. Prudent investment in the National Grid (including for maintenance), long term transmission planning strategies, and developing technologies are crucial to ensure the most can be made from existing infrastructure. This will, in turn, help to limit the cost and environmental footprint of the National Grid for future generations. This is more critical than ever in the context of the Climate Change Response (Zero Carbon) Amendment Act 2019, which I expand on later in this evidence.

The National Grid

21. The National Grid comprises some 11,000 km of transmission lines and over 170 substations across the country. This is supported by a telecommunications network of some 300 telecommunication sites, which help link together and communicate with the components that make up the National Grid.
22. The National Grid comprises a high voltage backbone which runs the length of the country and links major generation (such as the geothermal power stations near Taupō) to major loads in the main cities. The bulk of the National Grid backbone was built around 60 years ago and comprises most of the 220 kilovolt (kV) lines throughout New Zealand, along with the High Voltage Direct Current (HVDC) link between the North and South Islands.
23. Connected to this National Grid backbone are regional National Grid lines (also owned or operated by Transpower) which connect smaller generation stations and supply regional communities. In the Central Hawke's Bay region, transmission lines traverse the countryside. A district map showing National Grid substation and transmission lines is included in **Appendix B** to this evidence.

24. The National Grid is an interlinked network. Electricity flows along transmission lines via lines supported by towers (pylons) or poles and can vary in any instant, depending on actual generation at power stations and the demand for electricity across New Zealand. As System Operator, in operating the electricity market, Transpower uses real-time information about electricity use by consumers and electricity generation available from generators to balance electricity demand and supply, ensuring optimum performance of the network.
25. The National Grid provides connectivity between all sources of generation and consumers. Without the National Grid, consumers across New Zealand would be dependent on locally generated electricity which would be more expensive and less reliable. As such, the National Grid plays an important role in the sustainable management of natural and physical resources.

Transmission Tomorrow

25. Transpower's 2016 publication "Transmission Tomorrow" (updated in 2018) sets out Transpower's strategy for the future development of the National Grid for the next 30 years and beyond. Transmission Tomorrow documents Transpower's view that there is an enduring role for the National Grid. Transpower's lines and substations will be required for many years into the future to power the economy while enabling New Zealand's continued reliance on renewable forms of electricity generation, including from the power stations along the Waikato River, and the new geothermal stations commissioned near Taupō.

New Zealand's Paris Commitment and Decarbonisation

26. In early 2018 Transpower published its white paper "Te Mauri Hiko – Energy Futures" (Te Mauri Hiko). This project closely examined a range of electricity supply, demand and future technology scenarios and began exploring what will be required for New Zealand to maximise the potential of the energy opportunity it is facing, including meeting its Paris Climate Accord commitments. Greenhouse gas emission reduction targets were agreed by New Zealand at the 2016 Paris Climate Accord and have been

translated into climate policy via the Climate Change Response (Zero Carbon) Amendment Act 2019.

27. An updated strategy underlining the need to decarbonise New Zealand's economy, *Transmission Tomorrow*, was published in 2018. *Transmission Tomorrow* sets out how Transpower will go about planning and the developing the transmission system as demand for electricity increases as the transport and process heat sectors are electrified, and as new renewable generation is added to the system.
28. Since then, in 2020, Transpower released a further document "*Whakamana i Te Mauri Hiko – Empowering our Energy Future*" which sets out a blueprint for how New Zealand might get to a zero-carbon future. It is consistent with the findings of both the Interim Climate Change Committee and the Productivity Commission that the greatest opportunities for emissions reductions outside of agriculture lie in the energy sector; specifically around increasing the proportion of renewable electricity in the system and the electrification of emissions intensive transport and process heat sectors.
29. While a resilient National Grid remains at the heart of New Zealand's energy future, climate change has become a central issue for governments globally and hence Transpower as a responsible owner and operator of the National Grid on behalf of New Zealanders. Technology continues to advance rapidly. Electricity is increasingly positioned as an energy source for whole economies, rather than just homes and some business processes.
30. As the economy electrifies in pursuit of the most cost efficient and renewable sources, the *Whakamana i Te Mauri Hiko* base case predicts that electricity demand is likely to increase around 55% by 2050. *Whakamana i Te Mauri Hiko* suggests that meeting this projected demand will require significant and frequent investment in New Zealand's electricity generation portfolio over the coming 30 years, including new sources of resilient and reliable grid connected renewable generation. In addition, new connections and capacity increases will be required across the transmission system to support demand growth

driven by the electrification of transport and process heat. Simply put, New Zealand's electricity transmission system is the infrastructure on which our zero-carbon future will be built.

31. This work supports Transpower's view that there will be an enduring role for the National Grid in the future, and the need to build new National Grid lines and substations to connect new, renewable generation sources to the electricity network.
32. In terms of a brief summary, the National Grid:
 - a) Transports electricity across the country (connecting generation to consumers);
 - b) Supports New Zealand's national and regional economic growth;
 - c) Plays an essential role in maintaining reliability and security of supply of energy;
 - d) Provides a basis for investment decisions to be made by both suppliers and consumers of electricity;
 - e) Enables competition among suppliers and retailers of electricity, thereby providing the basis for competitively priced electricity;
 - f) Assists the development of new electricity generation technologies, including renewable energy, by providing access to markets;
 - g) Enables the electrification of transport and process heat, without which there is no way in which our Paris Agreement and net-zero carbon economy commitments can be met; and
 - h) Is predicted to play a key role in the decarbonisation of the economy.

Transpower's assets within Central Hawke's Bay District

33. The National Grid lines that traverse the Central Hawke's Bay District are:
 - a) Fernhill - Woodville A 110kV transmission line (FHL-WDV A); and

- b) Fernhill - Woodville B 110kV transmission line (FHL-WDV B);
34. Both the above lines are primarily on single circuit poles, with single and double circuit steel towers used for river crossings.
35. In addition to the transmission lines, Transpower owns and operates the following substation within the Central Hawke's Bay District, of which is designated:
- a) Waipawa Substation on Ongaonga Road
36. These assets are shown on the map in **Appendix B** to my evidence.

Operating, upgrading and maintaining the National Grid

37. The National Grid has operational requirements and engineering constraints that both dictate and constrain the way it is managed. The operational requirements relating to the National Grid are set out in various legislation, rules and regulations governing the National Grid, including the Electricity Act 1992 and the Electricity Industry Participation Code.
38. The National Policy Statement on Electricity Transmission 2008 ("**NPSET**") expressly recognises the technical, operational and security requirements associated with the transmission network, and that these can limit the extent to which it is feasible to avoid or mitigate all adverse effects on the environment from the National Grid. The NPSET recognises that the National Grid is a physical resource of national significance. **Ms Whitney's** evidence discusses the NPSET in more detail.
39. Transpower also undertakes many activities in accordance with the Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009 ("**NESETA**"). The NESETA applies to National Grid transmission lines existing as at January 2010. It specifies that activities relating to operation, maintenance, upgrading, removal or relocation of existing transmission lines are permitted subject to conditions. It also identifies resource

consent requirements for activities that do not meet the conditions. The NESETA prevails over any more stringent rules in a plan.

40. Transpower has a duty to maintain, upgrade and develop the National Grid. To meet that duty, it runs an extensive programme of inspections and maintenance, and actively plans for the future.
41. Clearly, the National Grid has developed over time, and has an aging asset base. However, Transpower's asset strategy is that all transmission lines have (with the right maintenance) a perpetual life, and that all substation sites are required indefinitely. Transpower has a continuous programme of work to maintain and enhance its assets, and the Central Hawke's Bay District is no exception.
42. The NPSET recognises that the efficient transmission of electricity via the National Grid plays a vital role in the wellbeing of New Zealand, its people and the environment. In Transpower's view, the amendments set out in **Ms Whitney's** evidence are necessary to ensure the Plan gives effect to the NPSET.

Transpower's Approach to National Grid Yards and Corridors and implementing the NPSET

43. In order to manage issues and risks associated with activities in proximity of National Grid assets, Transpower has developed a National Grid corridor approach around transmission lines (as is required by Policy 11 of the NPSET) in the form of a buffer corridor approach comprising National Grid Yards and National Grid Subdivision Corridors. The corridor approach has eight important purposes for the Central Hawke's Bay District:
 - a) *To ensure that sensitive activities, such as residential development, are generally not provided for near National Grid structures and lines:* Sensitive activities include the establishment of dwellings, schools and papakainga close to the National Grid. The purpose of Policy 11 of the NPSET is to prevent sensitive activities (including the expansion of existing sensitive activities) such as these from being established near the National Grid.

- b) *To manage reverse sensitivity effects:* These effects occur when people undertake activities close to an existing line or structure. For example, National Grid lines can cause noise (especially in damp weather), reduced visual amenity, radio and television interference, perceived effects of electric and magnetic fields from the lines, and interference with landowners' business activities beneath the lines. These effects often lead to requests by neighbouring land users to impose constraints on existing lines. These complaints and constraints are reverse sensitivity effects and can constrain the operation, maintenance and upgrade of existing National Grid assets.

- c) *To protect the integrity of the National Grid (structures and lines):* Structures, earthworks and other land use activities that are too close to a line can affect the stability of that line and contribute to electricity outages. The presence of these structures and activities can also increase the need for, and thereby the risk associated with, mobile plant (such as cranes, forestry haulers and excavators) and other equipment. Transpower wishes to ensure that safe distances are maintained so the risk of coming into contact with the lines is minimised.

- d) *To enable efficient and safe maintenance and operations:* National Grid Yards/Corridors provide a relatively clear area for line workers to gain access to the line and structures in order to conduct operational maintenance on high voltage equipment, sometimes at great heights. The Yards also limit the need for costly workarounds (for example, bypass lines), when maintaining and operating the National Grid.

- e) *To allow for any future potential upgrade requirements of the asset:* For example, Transpower must be able to control "non-sensitive" large scale buildings and buildings that are intensively used (regardless of scale) under the lines, as these can inhibit upgrade activities. This reflects Policy 10 of the NPSET.

- f) *To provide the residential, rural, commercial and industrial electricity users in the Central Hawke's Bay District with a reliable and secure supply of electricity.*
 - g) *To provide the community, Council and Transpower with the knowledge and confidence that the lines are being managed in a safe and sustainable manner.* To provide certainty as to how that management is being achieved within the NPSET framework.
 - h) *To minimise safety hazards:* Electricity transported at high voltages can cause serious, or even fatal, injuries to people who come in close contact to lines. Corridor management is therefore of paramount importance as it provides for the wellbeing, health and safety of people.
44. The Proposed Plan will regulate activities for the foreseeable future and Transpower considers it is important to look at possible future activities even if they do not currently exist.
45. Transpower values its relationship with councils, the community and landowners and endeavours to work with them to reach the best outcome for all parties concerned. Transpower works with councils around the country prior to, and after notification of plan changes intended to give effect to the NPSET. Transpower continues to engage with councils once operative plan provisions are in place, including involvement in the resource consent process.

**New Zealand Electricity Code of Practice for Safe Distances 34:2001
(NZECP34:2001)**

46. NZECP34:2001 seeks to protect persons, property, vehicles and mobile plant from harm or damage from electrical safety hazards by setting out minimum safe electrical distances.
47. Some members of the public and interest groups around the country have asserted that compliance with NZECP34:2001 should be enough to ensure the safe and efficient use of land near the National Grid.

48. However, those assertions are incorrect. This is because they fail to acknowledge the range of electricity transmission issues covered by the NPSET. For example, NZECP34:2001 does not address the other electrical safety hazards and the potential effects of the lines on activities in close proximity to them.
49. Further, NZECP34:2001 does not protect the integrity of the National Grid from the effects of other activities. For example, it does not restrict the subdivision of land near the lines, and it allows underbuilding. In addition, NZECP34:2001 does not distinguish between sensitive and non-sensitive activities, and therefore it does not prevent the types of inappropriate development contemplated by the NPSET from occurring.
50. To emphasise the point, NZECP34:2001 does not consider the environmental effects of activities on the National Grid, or the potential environmental effects of the National Grid on third party activities.
51. I note however that the National Grid Yard and Corridor sought by Transpower will not replace the requirement to comply with NZECP34:2001; nor will these provisions eliminate all risks. The provisions sought will reduce risks, but anyone near the National Grid needs to be continually alert to the hazards associated with this infrastructure.

Conclusions

52. The National Grid is critical to the social and economic wellbeing of the Central Hawke's Bay District and our nation generally. The NPSET requires that the National Grid be recognised and provided for in the Proposed Plan.
53. Policies 10 and 11 of the NPSET also require that other activities around the National Grid do not compromise the operation, maintenance, development and upgrading of the infrastructure, that reverse sensitivity effects are managed, and that sensitive activities are generally not provided for around the infrastructure. Transpower has refined its approach to the implementation of the NPSET in districts around the country. For the reasons set out above, Transpower requests that the

Proposed Plan include the provisions appended to **Ms Whitney's** evidence.

54. This relief will ensure integrated management of activities through the District Plan to provide for sustainable development of both the National Grid infrastructure and other natural and physical resources, both of which are critical for the future development of the Central Hawke's Bay.



Dougall Campbell
31 May 2022

Appendix A – Relevant Experience and Qualifications

1. I am the Environmental Policy and Planning Group Manager at Transpower. My Group's responsibilities include:
 - a) Strategic planning. This planning is achieved through the development and implementation of Transpower's approach to the NPSET at a national level and local level.
 - b) Delivering Transpower's policy approach on environmental regulations, legislation and council planning documents.
 - c) Ensuring the on-going and future protection of Transpower's network.
 - d) Ensuring that all environmental approvals are obtained for Transpower's physical works.
 - e) Managing third party interactions to ensure that Transpower's interests are appropriately maintained.

2. I have been employed by Transpower for 18 years, and during this time I have had experience working in various roles; including:
 - a) As a Grid Programme Delivery Specialist. This role involved developing a "lessons learned" and continuous improvement strategy and process for Grid Projects.
 - b) As the Environmental Planning and Stakeholder Manager on the Alliance Management Team of the Transpower Alliance. I was responsible for the environmental planning, strategy and policies, and processes to deliver and monitor all the necessary environmental approvals for the 400kV capable overhead line section of the North Island Grid Upgrade Project (NIGUP). This line traverses 185km from Whakamaru (North Taupo) to Brownhill Road (South Auckland).

- c) Carrying out stakeholder relationship responsibilities of the Transpower Alliance, ensuring that key stakeholders are informed, risks are identified, and reputations are enhanced.
 - d) As a Senior Environmental Planner/Environmental Project Manager for NIGUP. My responsibilities included developing strategy for consenting major projects, managing the environmental consortium appointed to deliver NIGUP, through to the final Notices of Requirement, managing the resource consent documentation and the Board of Inquiry process.
 - e) Providing planning advice to support the implementation of Transpower's Grid Vision investigations and its System Integration investigations.
3. I have a Bachelor of Regional Planning Degree and a Diploma in Business Studies from Massey University. I have over 25 years' experience working as an environmental planner and I am a member (Intermediate) of the New Zealand Planning Institute.
4. I confirm I have read the 'Code of Conduct for Expert Witnesses contained in the Environment Court Consolidated Practice Note 2014. As I am employed by Transpower, I acknowledge I am not independent; however, I have sought to comply with the Code of Conduct. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Appendix B – National Grid Assets within the Central Hawke’s Bay District

Transpower Assets

Central Hawke's Bay District

Legend

Territorial Land Authority

Boundary

NZ Roads

Highways

Transpower Assets

Cable Protection Zone

Overhead Fibre Cable

Underground Fibre Cables

Site

ACSTN

COMMS

HVDC

TEE

Transmission Line

0kV Overhead

11, 66kV Underground

11, 33, 66 kV Overhead

110kV Underground

110 kV Overhead

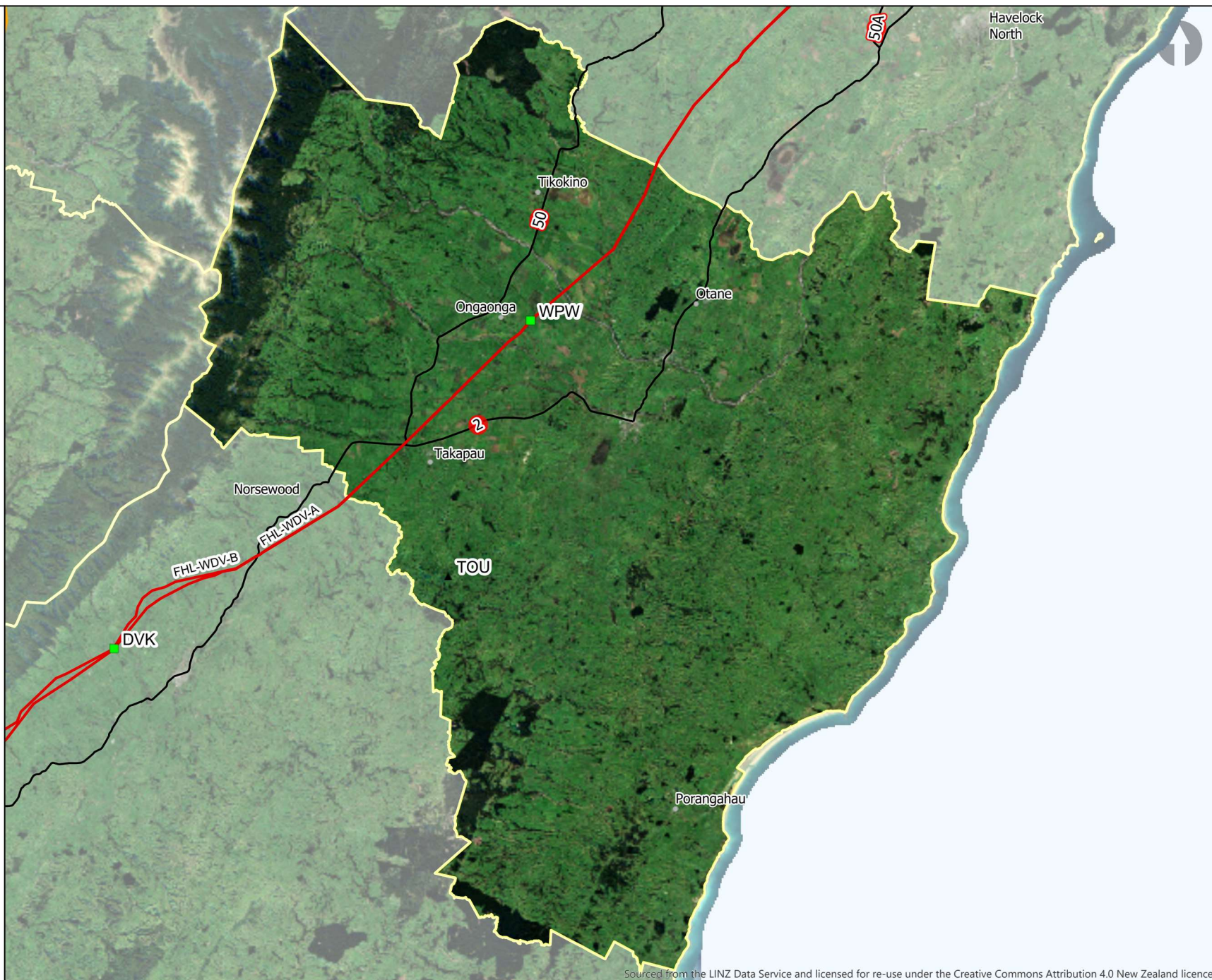
220kV Underground

220 kV Overhead

350 kV Overhead

350kV Submarine

400kV Overhead



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