

BEFORE THE PROPOSED GORE DISTRICT PLAN HEARINGS PANEL

Under the Resource Management Act 1991 (the
Act)

In the Proposed Gore District Plan: Hearing
matter of Stream 1 – Introduction, General
Provisions and Urban Form and
Development

Between **Gore District Council**
Local Authority

And **Transpower New Zealand Limited**
Submitter 101 and Further Submitter 030

**Statement of evidence of John Vincent Sutherland on behalf
of Transpower New Zealand Limited**

Dated 21 May 2024

1 Executive Summary

- 1.1 Transpower New Zealand Limited ("**Transpower**") is a State-Owned Enterprise that owns and operates New Zealand's National Grid and has the primary role of ensuring the delivery of reliable and secure electricity supply across the country.
- 1.2 National Grid assets in the Gore District ("**the District**") serve communities at a local, regional and national scale. There are two substations and eight high voltage National Grid transmission lines ranging from 110 kilovolts ("**kV**") to 220kV.
- 1.3 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. In this role, Transpower will play a critical role for New Zealand in meeting its zero carbon aspirations, by both investing in its existing National Grid assets and enabling connections to new sources of renewable energy.
- 1.4 Transpower wishes to see appropriate planning provisions included in the Proposed Gore District Plan ("**PDP**") 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 Gore District and nationally.
- 1.5 **Ms Ainsley McLeod's** evidence addresses recommendations in the section 42A (of the Resource Management Act 1991 ("**RMA**")) reports for Hearing 1 "Introduction, General Provisions and Urban Form and Development". **Ms McLeod** largely agrees with the conclusions in the s42A reports and recommends that some further amendments are necessary and the most appropriate (in terms of the requirements of s32 of the RMA) to achieve consistency with, and give effect to (as appropriate), higher order provisions; to improve the efficiency, clarity and usability of the PDP and achieve the purpose of the RMA. I concur with the amendments sought in **Ms McLeod's** evidence.

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2 Qualifications and experience

- 2.1 My full name is John Vincent Sutherland.
- 2.2 I am employed by Transpower as an Environmental Planner (in Transpower's Environment Group). My relevant experience, qualifications, and commitment to comply with the Code of Conduct for Expert Witnesses are included in **Appendix A**.
- 2.3 I confirm that I am authorised to give this evidence on behalf of Transpower.
- 2.4 I have read the statement of evidence of **Ms McLeod** and support the planning solutions which her evidence recommends.

3 Scope of evidence

- 3.1 My evidence will address the following:
 - a. Transpower and the National Grid;
 - b. Transpower's assets and projects within the Gore District;
 - c. The National Grid's role in Aotearoa New Zealand's energy future; and
 - d. Conclusions
- 3.2 The primary focus of my evidence for this is to provide contextual information on Transpower and the role and importance of the National Grid ahead of future hearings on matters of greater detail.

4 Transpower and the National Grid

Transpower

- 4.1 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 to Tiwai in the South Island and carries electricity throughout New Zealand.
- 4.2 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

approximately 26% of all energy used in New Zealand.¹ Each year, \$6 billion worth of electricity is traded on the wholesale electricity market.² 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.

- 4.3 Transpower's role is distinct from electricity generation, distribution or retail. It can be considered a 'freight company' for electricity, in that it carries bulk electrical energy from the point of generation (Meridian and Genesis Energy, for example) to where it is used – be that large industrial 'direct connect' customers (such as Tiwai Point Aluminium Smelter and NZ Steel at Glenbrook) or the local lines distribution companies – which for the Gore District is The Lines Company. These users may be a considerable distance from the point of generation.
- 4.4 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. This requires balancing electricity supply and demand in real time.
- 4.5 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. Figure 1 is a schematic of the electricity industry in New Zealand, with the National Grid assets being represented as '*Transmission*' and '*Substations*'.

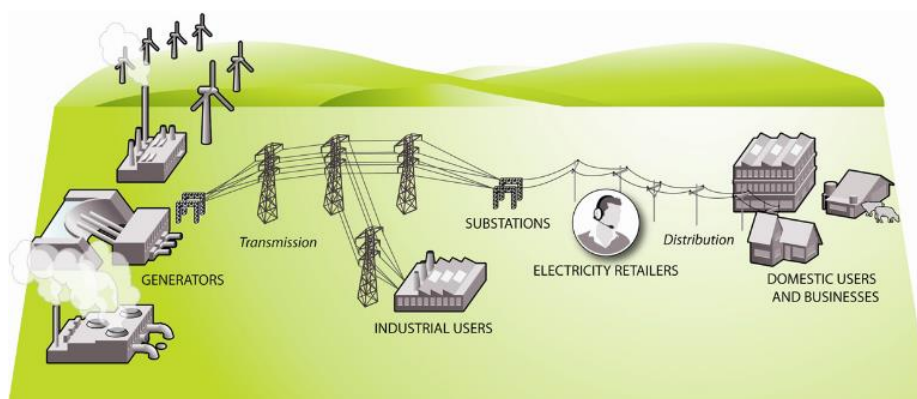


Figure 1: Electricity Industry in New Zealand. Source: Ministry of Business, Innovation and Employment.

¹ [Energy statistics | Ministry of Business, Innovation & Employment \(mbie.govt.nz\)](https://www.mbie.govt.nz/energy-statistics)

² [Clearing manager | Electricity Authority](https://www.electricityauthority.govt.nz/clearing-manager)

- 4.6 As a State-Owned Enterprise, and as per Transpower's Statement of Corporate Intent for 1 July 2023, 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 (of which there are two: the Minister for State-Owned Enterprises and the Minister of Finance). Transpower is required to deliver and operate a National Grid that meets the needs of users now and into the future.
- 4.7 One of Transpower's key functions is to maintain and develop the National Grid, which contributes to New Zealand's economic and social aspirations.
- 4.8 Prudent investment in the National Grid, long term transmission planning strategies, and developing technologies are crucial to ensure the most can be made from existing National Grid infrastructure. Routine maintenance and access to the Grid is essential to defer the need for new lines and substations and to create better options for when building new National Grid infrastructure is required. 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 Network

- 4.9 The National Grid comprises some 11,000 circuit kilometres of transmission lines supported by towers and poles, and over 170 substations across the country. This is supported by a network of some 300 telecommunication sites, which help link together and communicate with the components that make up the National Grid.
- 4.10 The National Grid has a high voltage backbone which runs the length of the country and links major generation (such as the South Island hydro lakes and central North Island hydro and thermal generation sources) to major loads in the main cities and regions. The bulk of the National Grid backbone was built around 60 years ago and comprises most of the 220 kV lines throughout New Zealand, along with the High Voltage Direct Current (HVDC) link which connects the North and South Islands.

5 Transpower's Assets and Projects within the Gore District

National Grid Assets in the Gore District

- 5.1 There are eight National Grid transmission lines that traverse the Gore District, and two substations located within it. Full details of these assets are provided as **Appendix B** of my evidence (and are listed on page 4 of Transpower's original submission).
- 5.2 Figure 2 (page 5) of Transpower's submission included a map showing these National Grid assets in the Gore District. A copy has been attached as **Appendix C** to my evidence.
- 5.3 The Grid is an interlinked network. Electricity flows along transmission lines via lines supported by towers (pylons), poles or pi poles and can vary in any instant, depending on actual generation at power stations and the demand for electricity across New Zealand. In operating the electricity market as System Operator, 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.
- 5.4 For Transpower's transmission planning purposes, the Gore District is located within the Otago-Southland region as set out geographically below in **Figure 2**.



Figure 2: Transmission in the Otago-Southland Region (Source: Transpower Transmission Planning Report 2023)

- 5.5 The Otago-Southland region includes a mix of provincial cities (Dunedin and Invercargill) together with the smaller but significant tourist and rural service centres of Queenstown, Wanaka, and Cromwell. The region supports the

country's largest consumer of electricity, being the New Zealand Aluminium Smelter at Tiwai Point.

- 5.6 Transmission within the Otago-Southland region primarily comprises 220 kV and 110 kV transmission circuits, with interconnecting transformers at Cromwell, Gore, Halfway Bush, Invercargill, and Roxburgh Substations. The 220 kV transmission circuits form part of the National Grid backbone.
- 5.7 The Otago-Southland regional peak demand is forecast to decline by an average of 2.7 per cent per annum over the next 15 years, from 1,136 megawatts ("**MW**") in 2023 to 903 MW by 2038. This rate of decline is based on the assumption that the Tiwai Point Smelter is retired at the end of 2034. Apart from Tiwai Point, the remainder of the region is forecast to grow from 556MW in 2023 to 900 MW by 2038, a growth rate of 3.3 per cent per annum. This is greater than the average growth rate across all regions of 2 per cent per annum.
- 5.8 In contrast to most regions, Otago-Southland has many industries with considerable potential for decarbonising their businesses. Decarbonising industry can increase electricity demand by either converting directly to electric heating or converting to biomass, which is also often paired with partially electrifying processes (such as heat pumps for low temperature heat). The Otago-Southland region is also attracting interest from new electricity-dependent enterprises, such as data centres and hydrogen production, due to the region's access to renewable energy and a favourable climate (for cooling).
- 5.9 Within the Gore District, peak demand is forecast to almost double at Gore Substation over the next 15 years (from ~41 MW in 2023, to 77 MW in 2038) due to the electrification of the Mataura Valley Milk factory (a boiler was installed in March 2024), HWR Hydrogen refuelling, and the ongoing operation of the Alliance Group Mataura Plant.

Transpower's Projects in the Gore District

- 5.10 Transpower continues to invest in the National Grid in terms of both maintenance and enhancement of its asset base. Transpower's development and investment strategy is centred on maximising the use of existing infrastructure, therefore maintaining the environmental footprint for as long as possible before the introduction of new infrastructure.

5.11 Transpower is also carrying out business as usual maintenance and upgrade works on its assets within the District. Regular maintenance works will continue to occur on transmission lines such as pole replacements, vegetation maintenance, access track works, foundation strengthening, tower painting and flood protection works.

6 The National Grid's Role in Aotearoa New Zealand's Energy Future

Transmission Tomorrow (2016)

6.1 Transpower's 2016 publication "*Transmission Tomorrow*"³ sets out Transpower's strategy for the development of the National Grid for the next 30 years and beyond. It 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 South Island hydro lakes.

Te Mauri Hiko – Energy Futures (2018)

6.2 Greenhouse gas emission reduction targets were agreed by New Zealand at the 2016 Paris Climate Accord and have been translated into domestic climate policy via the Climate Change Response (Zero Carbon) Amendment Act 2019. In early 2018 Transpower published its white paper "*Te Mauri Hiko – Energy Futures*" ('Te Mauri Hiko')⁴. 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.

6.3 *Transmission Tomorrow* was updated in 2018 and underlined the need to decarbonise New Zealand's economy⁵. *Transmission Tomorrow* sets out how Transpower will go about planning and the developing the transmission system as demand for electricity increases following electrification of the transport and

³ [Transpower - Transmission Tomorrow26052016_0.pdf](#)

⁴ [TP Energy Futures - Te Mauri Hiko 11 June'18.pdf \(transpower.co.nz\)](#)

⁵ *Transmission Tomorrow* was subsequently updated in 2023 but confirmed that the 2018 conclusions remained valid.

process heat sectors, and as new renewable generation is added to the system.

Whakamana i Te Mauri Hiko – Empowering our Energy Future (2020)

6.4 In 2020, Transpower published a further document, “*Whakamana i Te Mauri Hiko – Empowering our Energy Future*” (2020)⁶ which sets out a blueprint for how New Zealand may achieve getting 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 the emissions-intensive transport and process heat sectors.

6.5 As the economy electrifies in pursuit of the most cost efficient and renewable sources, the Whakamana i Te Mauri Hiko base case forecasts that electricity demand will increase by 68% 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 decades, 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. Transpower estimates that 50 to 70 new grid scale connections, each requiring new lines and potentially new substations, will be required between now and 2035 with this trend continuing through to at least 2050. Simply put, the National Grid is the infrastructure on which New Zealand’s zero-carbon future will be built. This work supports Transpower’s view that there will be an enduring role for existing National Grid assets in the future, and the need to build new National Grid lines and substations to connect new, renewable generation sources to the electricity network.

7 Conclusions

7.1 The National Grid is critical to the social and economic wellbeing of the Gore District and our nation generally. It will also play a critical role in New Zealand’s carbon zero commitment and mitigating the effects of climate change. This will

⁶ [Whakamana i Te Mauri Hiko - Empowering our Energy Future | Transpower](#)

necessitate the upgrade of existing, and construction of new, National Grid assets in the future. As an infrastructure asset of national significance, the NPSET requires that the National Grid be recognised, provided for and protected in the PDP.

- 7.2 Transpower's relief sought through the PDP hearing process will ensure integrated management of activities through the District Plan to provide for the sustainable development of both the National Grid infrastructure and other natural and physical resources, all of which are critical for the future development of the Gore District and Aotearoa New Zealand.

John Sutherland

21 May 2024

Appendix A: Relevant Experience and Qualifications

1. I am an Environmental Planner employed at Transpower, within the Environment Group. The Environment Group's responsibilities include:
 - a. Delivering Transpower's strategic policy approach on environmental regulations, legislation, and council planning documents;
 - b. Developing and implementing Transpower's corridor management programme at a national and local level;
 - c. Ensuring that all necessary environmental approvals are obtained for Transpower works, and internal staff, consultants/service providers are aware of, and able to comply with, their environmental obligations; and
 - d. Internal external stakeholder engagement including with government officials, councils, iwi, industry stakeholders, developers and customers.
2. I have been employed by Transpower for over 6 and half years, and during this time my responsibilities have included:
 - a. preparing environmental planning assessments, developing strategy and policies, and processes to deliver and monitor all the necessary environmental approvals for numerous major capex projects concerning both transmission lines and substations across the country.
 - b. working with customers to secure the necessary environmental approvals to enable new generation and local electricity distribution connections to the National Grid.
 - c. responding to landowners and developers to ensure that reverse sensitivity effects of any development are managed, and the National Grid is not compromised, and more importantly, people are not harmed.
 - d. partnering and working with stakeholders, ensuring that key relationships are informed, risks are identified, and reputations are enhanced.
3. I have a Master of Resource and Environmental Planning from Massey University and a Bachelor of Arts in English and Geography from Victoria University. I have over 6 and half years' experience working as an Environmental

Planner, and I am an Intermediate member of the New Zealand Planning Institute.

4. Although this matter is not before the Environment Court, I confirm that I have read the 'Code of Conduct for Expert Witnesses' contained in the Environment Court Consolidated Practice Note 2023. As I am employed by Transpower, I acknowledge I am not independent; however, I have sought to comply with the Code of Conduct when preparing my written statement of evidence and will do so when I give oral evidence before the Hearings Panel. 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: List of National Grid Assets Within the Gore District

The following National Grid assets are within the Gore District:

Transmission Lines:

- Brydone - Deviation A (BDE-DEV-A) 110kV transmission line;
- Gore - Halfway Bush A (GOR-HWB-A) 110kV transmission line;
- Gore - Invercargill A (GOR-INV-A) 110kV transmission line;
- Gore - Roxburgh A (GOR-ROX-A) 110kV transmission line;
- North Makarewa - Three Mile Hill A (NMA-TMH-A) 220kV transmission line;
- Invercargill - Roxburgh A (INV-ROX-A) 220kV transmission line;
- Invercargill – Roxburgh B (INV-ROX-B) 220kV transmission line;
- Gore Tee (GOR-TEE-A) 220kV transmission line

Substations:

- Brydone Substation (although not owned by Transpower and not subject to an existing designation); and
- Gore Substation

Appendix C: Map of National Grid Assets Within the Gore District

