

Before the proposed Otago Regional
Policy Statement hearings panel

Under the Resource Management Act 1991

In the matter of submissions lodged on the proposed Otago Regional Policy
Statement (Freshwater parts)

**EVIDENCE IN CHIEF OF JULIA MARIANNE KENNEDY ON BEHALF OF TRANSPOWER
NEW ZEALAND LIMITED (FPI013)**

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1. EXECUTIVE SUMMARY

- 1.1** Transpower has many assets within, or in close proximity to, freshwater bodies in the Otago region. Additionally, many of the access tracks that Transpower uses are in proximity to freshwater bodies (and frequently cross over freshwater bodies).
- 1.2** Given the location of existing assets, which are critical infrastructure, Transpower needs to be able to undertake certain activities in these locations. Further, Transpower also requires a clear consenting pathway to develop and upgrade the National Grid within proximity to freshwater bodies. This will particularly be the case if the Government proceeds with the planned renewable generation scheme at Lake Onslow.
- 1.3** I consider it important for the security of electricity supply that the pORPS is framed in a way that directs and enables a planning framework that permits National Grid activities, where appropriate, or otherwise provides a clear and supportive consenting pathway for National Grid activities, both existing and new.

2. INTRODUCTION

Qualifications and experience

- 2.1** My full name is Julia Marianne Kennedy.
- 2.2** I am employed by Transpower as the Environmental Consents and Compliance Team Leader, based in Hamilton, where I manage a team of Environmental Advisors. The role of my team is to support the service delivery teams who carry out maintenance and other routine activities on National Grid assets, including obtaining any necessary resource consents and associated monitoring and compliance.
- 2.3** I have a degree in Resource and Environmental Planning with honours from Massey University and have had 23 years' experience in planning

and environmental management of which nearly 11 years have been with Transpower.

2.4 Before Transpower, my environmental and planning experience included working at Otago Regional Council as a Compliance Officer, a planning consultant with Kingett Mitchell Limited and Golder Associates as well as a Development Planning Officer at two boroughs in London.

2.5 I am generally familiar with the National Grid assets within the Otago Region and I am familiar with the activities that occur, or may need to occur, within or in close proximity to fresh waterbodies in order for those assets to be maintained, replaced, upgraded or removed.

Code of Conduct

2.6 I confirm that I have prepared this evidence in accordance with the Code of Conduct for Expert Witnesses Code of Conduct for Expert Witnesses contained in Part 7 of the Environment Court Practice Note 2023. The issues addressed in this statement of evidence are within my area of expertise except where I state that I am relying on the evidence or advice of another person. The data, information, facts and assumptions I have considered in forming my opinions are set out in the part of the evidence in which I express my opinions. I have not omitted to consider material facts known to me that might alter or detract from the opinions I have expressed.

3. SCOPE OF EVIDENCE

3.1 My evidence sets out the work that Transpower is required to carry out in and around freshwater, to provide context for the relief sought or supported by Transpower. Specifically, I will address the following matters:

- (a) The types of activities that Transpower carries out within, or in close proximity to freshwater bodies; and

- (b) The barriers faced to enable activities to commence when there may be effects on freshwater bodies.

4. TRANSPOWER'S ACTIVITIES IN PROXIMITY TO FRESHWATER BODIES

4.1 Mr Noble's evidence in chief dated 23 November 2022 provides a description of the National Grid in the Otago Region at paragraphs [4.1] – [4.5]. I refer to that description, which provides context for Transpower's activities in the Otago Region that are in proximity to freshwater bodies.

4.2 The transmission assets within Otago are nationally significant. They provide regional and local electricity, and they also have the important job of conveying electricity northbound where it eventually crosses to the North Island.

4.3 There are two important grid injection points, which are points at which electricity flows into the National Grid from generation. The points are located at the hydro generation sites of Clyde and Roxburgh. Clyde Substation is located as part of the Contact Energy hydro generation station within the bed of the Clutha River; while Roxburgh Substation is located less than 20 metres from the edge of the Clutha River. Berwick Substation, while a grid injection point, is not located close to a freshwater body.

4.4 In addition to Transpower's existing assets, future growth in demand may require new assets, and access tracks to them, to be constructed. **Mr Noble's** evidence, filed with the Panel in the non-freshwater hearings,¹ sets out in Section 7.1 that:

- (a) Transpower needs to respond to any increase in demand and subsequent generation; and

1 Evidence in Chief of Roy Noble dated 23 November 2022.

(b) flexibility is required in terms of connections to the National Grid, given the linear nature of the infrastructure.

4.5 Such new generation may include a grid injection point at Lake Onslow near Roxburgh. If the Lake Onslow scheme was to proceed, there is a high probability of National Grid assets, and access to it, that would be located within or near freshwater bodies. An enabling policy and rule framework for this, and other potential new assets, is therefore critical given this would be supporting renewable energy generation and transmission.

4.6 The transmission lines that are located in the Otago region span waterbodies including rivers, streams, lakes, tributaries and wetlands.

4.7 Some structures are located within and on the bed of water bodies. For example the tower shown in Figure 1 is on the Roxburgh to Three Mile Hill A 220kV transmission line located at Lake Onslow.



Figure 1: Tower at Lake Onslow

4.8 Transpower needs to plan for the possibility that some of the waterbodies that its assets are located in, or in proximity to, will be mapped as outstanding water bodies.

Typical activities in proximity to waterbodies

4.9 Mr Noble's evidence explains the typical operation, maintenance and minor upgrading activities that Transpower undertakes on National Grid assets, and I do not repeat those activities here.² However, I provide a general description of the specific activities associated with that work, and which I consider require a permitted activity or consenting pathway in order for the National Grid to continue to function well in the future.

4.10 In general, the types of activities that are carried out in and around freshwater bodies on existing assets include:

- (a) **Earthworks along transmission lines:** earthworks can be necessary for foundation strengthening, replacement or removal of structures, levelling to accommodate crane pads, improvements and upgrades to access tracks, earthworks associated with vegetation clearance and mid-span earthworks to rectify ground clearance violations.
- (b) **Earthworks at substations:** this work would include accommodating extensions to switchyards to enable replacements, upgrades or new equipment such as transformers.
- (c) **Disturbance of lakes and riverbeds:** associated with activities including foundation strengthening, access tracks next to and within riverbeds, and replacement or installation of structures to enable access such as bridges, culverts and fords. Transpower is continuously assessing and mapping known river crossings used to access the National Grid. For reference, there are currently 687 bridges and 4,639 combined culverts and fords that Transpower uses that are mapped throughout New Zealand; of which there are 25 and 226 in the Otago region respectively. Disturbance activities may also need to be carried

² Noble EIC dated 23 November 2022 at [5].

out where substations are located near waterbodies and there is a risk of flooding or scouring. Transpower's Stoke Substation near Nelson is an example of where bed disturbance, including extraction of gravel, is required on a regular basis due to both flooding and scouring issues. These issues have arisen due to land use changes upstream and increased flooding events.

- (d) **Works within or near wetlands:** similarly to (a) to (c) above there are National Grid assets located within or in close proximity to natural inland wetlands³ where earthworks are required to carry out work on structures⁴, remove vegetation, or if needed, create new access or new and replacement structures.
- (e) **Diversions of waterbodies:** these are required from time to time, either temporarily or permanently, to either carry out activities on assets or divert waterbodies that are causing inundation of structures. Figures 2 and 3 show an example of a tower at threat from a waterbody, where the waterbody's course has altered since the tower's installation. I note the example provided is not in the Otago region but is close by in South Canterbury on the Otaio River, along one of the main transmission lines taking electricity north from Roxburgh. The Otaio River had changed course (to the red line in Figure 2) and caused exposure of foundation piles of the tower (Figure 3). The river was diverted back to its former course (yellow line in Figure 2).

3 As per the definition in the National Policy Statement for Freshwater Management (**NPS-FM**).

4 Structures that are included as specified infrastructure as per the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (**NES-F**).



Figure 2 (image credit: Electrix)



Figure 3

- (f) **Discharges:** There are potential discharges to freshwater from Transpower’s activities including sediment from earthworks, water from dewatering or rainwater diversion, discharges from abrasive blasting of towers and foundations, stormwater and treated water from oil interceptor and treatment systems at

substations, discharges from contaminated land⁵ and discharges from septic tank systems. There are also potential discharges from carrying out diversions or placing new structures, such as culverts, within freshwater bodies. I note that these discharges do not occur at every site but could potentially need to occur. Whether a discharge is required depends on location and topography, the weather at the time of earthworks, and (in the case of substation discharges) the type of treatment and discharge system in place. For example, stormwater may discharge to a reticulated system, to ground, or less likely, to surface water.

- (g) **Emergency work:** Transpower periodically needs to rely on sections 330 and 330A of the Resource Management Act 1991 (**RMA**) to carry out work in freshwater bodies. Unfortunately, what we have experienced more recently is that emergency work is needing to be carried out more regularly. This can include remedial work such as responding to tower failures when the Rangitata River in Canterbury flooded in December 2019 (see Figure 4), or preventative measures such as identifying where a waterbody may be changing course and may affect National Grid assets, such as the Otaio River example I mentioned earlier.
- (h) **Resilience work:** events such as the emergency events mentioned in (g) above, will trigger wider investigations of potential 'at-risk' assets in a region. By way of example, Transpower has recently commenced investigating at-risk structures within braided river systems following extensive and regular flooding events in the South Island over the past five years. The investigation covers some braided rivers in Otago. Two structures that are being investigated are: structure 0122 on the Cromwell to Frankton A transmission line, located in the flood plain of the Shotover River at Queenstown (see Figure 5) which has potential erosion risk; and structure 0006 on the

5 Transpower's substations are included as sites that are contaminated, or potentially contaminated as per the Ministry for the Environment's Hazardous Activity and Industry List (**HAIL**).

Glenavy to Oamaru A transmission line located within the lower Waitaki River (see Figure 6) which is at risk of scour. Depending on the outcome of these investigations, Transpower may need to strengthen, carry out protection works (for example groins or rock protection work) or even move them.

- (i) **Vegetation control:** From time to time there may be a need to trim or completely remove vegetation from within freshwater bodies or in close proximity, such as along riverbanks. Vegetation work may be necessary to ensure required clearance distances from the transmission lines are met, to remove risks of trees falling on assets, to maintain use of existing access tracks or create new ones.

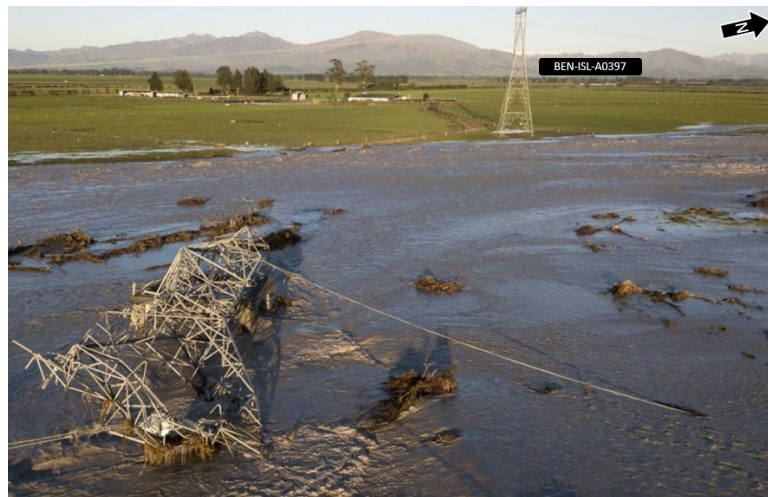


Figure 4 (image credit: John Bisset, Stuff)



Figure 5

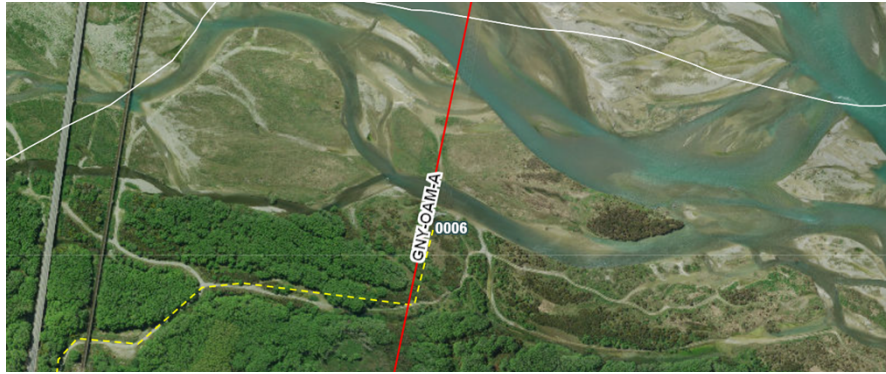


Figure 6

- 4.11** These activities are subject to the provisions of regional plans, district plans and/or national environmental standards⁶. Some activities are permitted by these instruments, but depending on the activity, often resource consents are needed, particularly given activities within or near to freshwater bodies typically have more conservative rule frameworks.
- 4.12** I understand that Mr Noble has given oral evidence on the work that Transpower continuously carries out to assess the condition of assets and access tracks and such work will need to take place in or near to freshwater bodies in the future. Due to the constraints on the location of the National Grid, this may include:
- (a) major upgrades or moving/realigning existing assets (e.g., accommodating climate change and severe weather events such as the braided river investigation I mentioned);
 - (b) the construction of new assets to support renewable energy generation; and
 - (c) other maintenance or minor upgrades.

⁶ Being the Resource Management (National Environmental Standard for Electricity Transmission Activities) Regulations 2010 (**NES-ETA**), the Resource Management (National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (**NES-CS**) and the Resource Management (National Environmental Standards for Freshwater) Regulations 2020 (**NES-F**).

Access tracks

- 4.13** In addition to the activities above, Transpower needs to use access tracks to reach its National Grid sites. There are approximately 15,500 km of existing tracks used to access the National Grid across New Zealand; of which there are approximately 1,710 km in Otago. These tracks are predominantly farm tracks on privately-owned land.
- 4.14** The use of access tracks is critical and a necessity. Without good and useable access tracks, the ability to carry out work at National Grid sites can be problematic. Alternative ways of accessing sites, such as by helicopter, can create delays and can have substantial costs, or may not be possible at all.
- 4.15** Transpower uses access tracks to carry out condition assessments on the assets. Upgrades to access tracks may need to occur so that heavy vehicles can access sites so that work on structures can take place. Vehicles that may need to access sites include concrete trucks (to set new foundations), cranes (to lift new structures into place), and other heavy vehicles (such as vehicles that carry new conductors that are replacing old ones). These activities often involve heavy and/or long vehicles and access tracks need to be able to accommodate them.
- 4.16** Upgrading waterway crossings along existing access tracks is often required, which may involve replacing bridges so that they can meet the correct weight holding capabilities or replacing culverts for a similar reason, or there may be scouring, erosion and cracking of culverts making them unsuitable for use. Sometimes, works within or close to, the bed of rivers to enable access may also be needed. By way of example, I refer back to Figure 6, which shows the access track to structure 0006 of the Glenavy to Oamaru A transmission line, which is next to, if not within the bed of the Waitaki River.

4.17 While not an example in Otago, I also refer to Figures 7 and 8 showing an example of a bridge replacement along an access track that Transpower maintains. Figure 7 shows the bridge in its original condition, which at the time was unsafe to carry farm vehicles and therefore needed upgrading to carry heavier vehicles and equipment (for example concrete trucks) that needed to access a structure nearby for foundation strengthening. Figure 8 shows the replacement bridge.



Figure 7



Figure 8

- 4.18** New access tracks will also need to be created – including within or in close proximity to freshwater bodies. New access could be needed if existing access tracks become unsafe for use, are washed or have slipped away, or where a change in land use results in the existing access being restricted. New access will also be needed to access new National Grid assets, both for construction and ongoing maintenance, development and upgrade. Transpower will, where possible, create new access tracks which have the least impact on the environment, such as freshwater. In some cases, Transpower can plan for new access points that result in less adverse effects than if the former track was used. For example, Transpower aims to locate new tracks outside of a suspected natural wetland.
- 4.19** Finally, routine minor maintenance work must be carried out along access tracks, such as filling in potholes or trimming back vegetation.

5. BARRIERS TO ENABLING ACTIVITIES ON THE NATIONAL GRID WITHIN OR CLOSE TO FRESHWATER BODIES

- 5.1** It is important that there are rules that enable works on the National Grid to take place, and that there are clear permitted activity or consenting pathways where work may take place in or close to freshwater bodies. It is also important that policies are enabling and rules do not prevent work needing to be carried out, especially where this is required in a timely manner to avoid failures and loss of electricity supply.
- 5.2** Transpower relies heavily on the NES-ETA for carrying out activities on existing transmission lines. The NES-ETA in general enables Transpower to undertake some of the activities that it needs to, but there are exceptions to this. For example, for any work on bridges and culverts, consents can be required under regional plan rules and the NES-F.
- 5.3** Transpower relies heavily on publicly available information, such as data on the existence of water bodies and their values. Useful data relating to

wetlands has been particularly problematic since the NES-F came into force in 2020. While there are obvious regionally or nationally significant wetlands mapped by councils, a significant proportion of wetlands are not yet mapped⁷ or possibly not even known about.

- 5.4** This is particularly concerning given there is a lack of certainty around whether structures on the National Grid (specified infrastructure) or their access routes are located in close proximity to wetlands, or if they are even within them. Specialist wetland ecologists are not always readily available to carry out assessments and once this has happened there can be months of waiting for the preparation of resource consent applications, council processing times and pre-works monitoring before work can commence.
- 5.5** The process can be particularly frustrating with significant time delays and costs for project teams who may have certain timeframes to meet, for example to replace derelict structures or to access structures to carry out much needed work on specified infrastructure. Alternatives to carrying out the work might include moving the structures out of the wetland, potentially causing greater adverse effects.
- 5.6** I refer to Case Study 1 which is a 'live' case happening in the North Island. While this is not an example in the Otago region, it could happen anywhere across New Zealand where the National Grid traverses.
- 5.7** In addition to wetlands, Transpower also installs, replaces and upgrades bridges and culverts along access tracks. Similar to the constraints identified with wetlands, compliance with and consenting of culverts under the NES-F can also pose time and cost barriers.
- 5.8** I consider that the consenting process for works within or near freshwater bodies is currently challenging. Any changes to the pORPS that create or lead to greater stringency without recognising and counterbalancing the

⁷ Regional Councils have seven years remaining to map all natural wetlands over 500 square meters in area in accordance with the NPS-FM.

requirements of the National Grid, as nationally significant infrastructure, are likely to make it more difficult to carry out necessary and critical work in a timely manner. This could have an impact on the security of electricity supply at a regional and national level.

6. CASE STUDY 1: UPGRADING ACCESS TRACK ON THE BUNNYTHORPE TO WILTON A TRANSMISSION LINE

6.1 Transpower and our consultants are currently assessing the potential impacts on a wetland system as part of upgrading an access track to carry out required tower painting on two transmission towers⁸ on the Bunnythorpe to Wilton A transmission line. Access currently exists across private rural property but requires upgrading to enable heavy vehicle access for the tower painting crews and to remedy scouring and erosion of the track. Culverts have been blocked over time, causing a stream to partially flow down the access track and has also created a series of wetlands.

6.2 The wetlands are not mapped and were reported by the tower painting providers following a site walkover as potential wetlands requiring assessment by Transpower's Environmental Advisor.

6.3 It was determined that to upgrade one of the culverts, this would allow for improved fish passage, divert the stream back to its original course and away from the access track but could also reduce water flow to the wetlands. Transpower's wetland ecologist is currently in the process of further assessing the value of the wetland system, with resource consent applications⁹ looking to be lodged, following consultation with the landowner and iwi, in September this year.

8 Tower painting involves wet abrasive blasting of towers and repainting to reduce corrosion and prolong the life of the steel.

9 Resource consents likely to be required under Regulation 47 of the NES-F for earthworks within 10m of a natural wetland and the diversion of water from within 100m of a natural wetland, and possibly under Regulation 71 for replacement of culverts, associated with the maintenance of specified infrastructure.

6.4 The work on the access was originally planned for pre-winter 2023 so that tower painting could take place in spring/summer 2023/2024. However, access work has been delayed while awaiting the resource consents.

6.5 While this work is subject to the NES-F and not regional plan rules, the pORPS still requires consideration under section 104 of the RMA and has the potential to lead to additional or amended regional plan rules in due course. Accordingly, it is still important that there is an enabling policy framework for work on the National Grid and access tracks to be carried out efficiently and recognising that work in or in close proximity to wetlands and other freshwater systems will be required.

7. CONCLUSION

7.1 The pORPS needs to provide and lead to an enabling framework for National Grid activities within or close to freshwater bodies. This includes work on existing assets, new assets and access to them. Avoiding adverse effects on freshwater bodies is not always possible, nor is it always possible to locate assets away from waterbodies given the linear nature of the infrastructure. Existing assets are simply located where they are, and new assets need to be located at connection points, whether this is at existing substations, or at sites of new generation.

7.2 A framework that permits activities, where appropriate, or otherwise provides a clear and supportive consenting pathway for National Grid activities, both existing and new, is necessary in order for Transpower to be able to carry out its functions as Grid operator. It is therefore important in my view that the pORPS is framed in a way that clearly directs and enables such a framework.

Julia Marianne Kennedy

Date: 28 June 2023