BEFORE THE HEARINGS PANEL

UNDER THE	Resource Management Act 1991
IN THE MATTER OF	the Proposed Kaipara District Plan

STATEMENT OF EVIDENCE OF SHAUN BROWN ON BEHALF OF NORTHPOWER

HEARING STREAMS 17, 18 AND 19 – NATURAL ENVIRONMENT VALUES

Electrical Engineering

22 May 2026

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1 INTRODUCTION

1.1 My full name is Shaun Brown. I am the General Manager - Engineering and Delivery at Northpower Limited (**Northpower**). I have held this role for one and a half years and have worked for Northpower for a total of eleven years.

1.2 I am responsible for planning, delivery and maintenance of Northpower's electricity distribution network, including ensuring the safe and reliable supply of electricity to communities across the Kaipara District.

1.3 My qualifications and experience are as set out in my evidence for Hearing Stream 11 (Sites and Areas of Significance to Māori). In summary, I have over 11 years of experience in electricity distribution engineering, asset management, and infrastructure delivery.

Code of conduct

1.4 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. 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 Northpower's submission (#283) and further submission (#FS82) on the Proposed Kaipara District Plan (**PDP**) in relation to Hearing Streams 17 (Ecosystems and Indigenous Biodiversity), 18 (Natural Character) and 19 (Natural Features and Landscapes). In the PDP and throughout my evidence, "Natural Environment Values" refers collectively to provisions relating to ecosystems and indigenous biodiversity, natural character, natural features and landscapes, including mapped overlays.

2.2 My evidence will discuss:

(a) the extent to which Northpower's existing electricity distribution network is located within areas subject to Natural Environment Value overlays;

(b) the importance of enabling the ongoing operation, maintenance, repair and upgrading of existing infrastructure within these areas;

(c) the operational and functional need to provide new infrastructure within these areas to service existing and future communities;

(d) the importance of enabling the upgrading of infrastructure, including where this may extend beyond the existing footprint to accommodate modern technologies and safety requirements;

(e) the need to enable vegetation clearance for the operation, maintenance, repair and upgrading of existing infrastructure within these areas; and

(f) the need to enable earthworks for the operation, maintenance, repair and upgrading of existing infrastructure within these areas.

3 NORTHPOWER'S NETWORK WITHIN NATURAL ENVIRONMENT VALUE AREAS

3.1 Northpower owns and operates an extensive electricity distribution network across the Kaipara District, including regionally significant 33kV and 11kV assets.

3.2 As shown in the figure below, a number of these assets traverse areas proposed in the PDP as having Natural Environment Values, including areas subject to the following overlays:

(a) Outstanding Natural Landscapes;

(b) Outstanding Natural Features;

(c) High Natural Character Areas; and

(d) Outstanding Natural Character Areas.

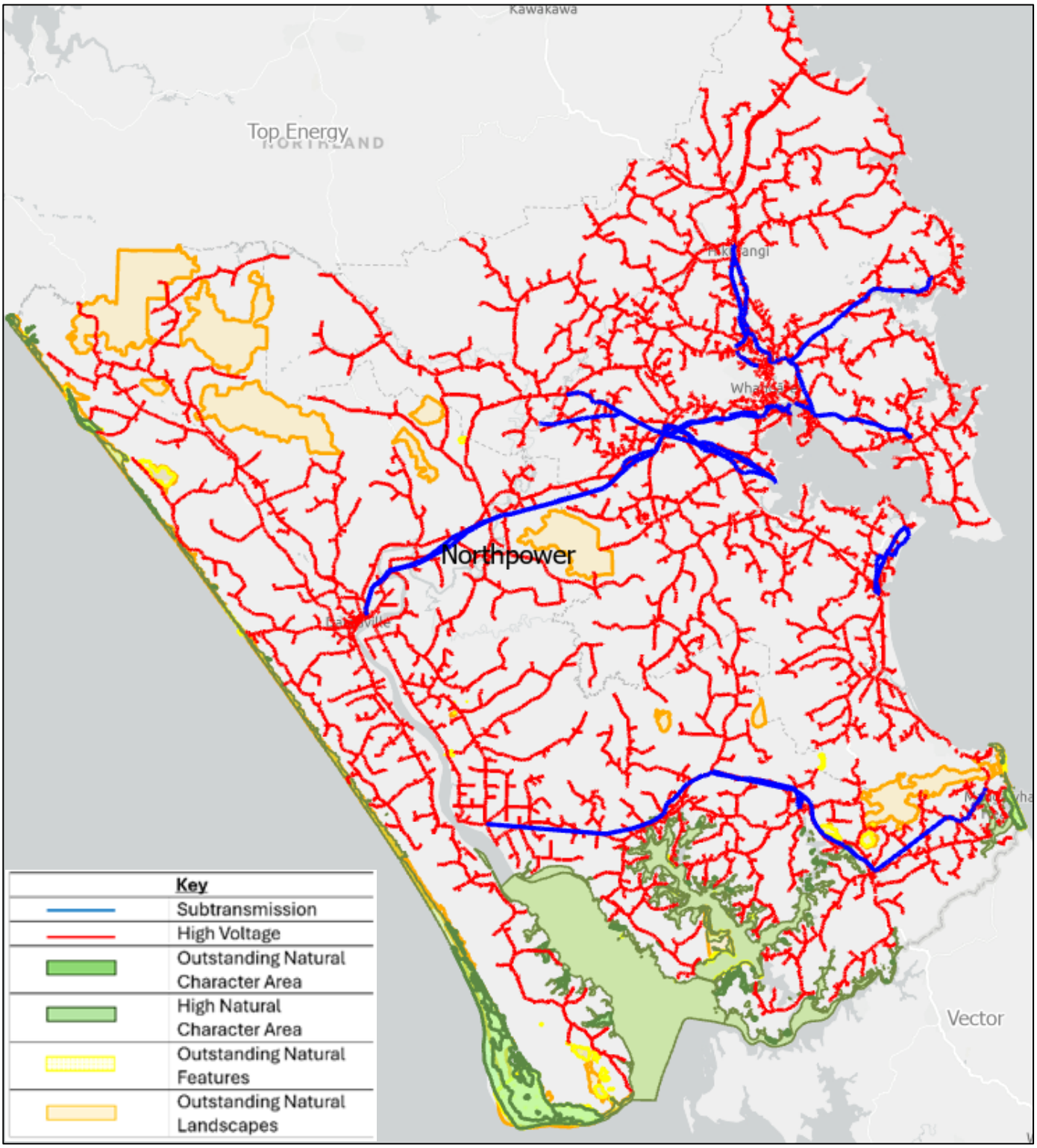

Figure 1: Map showing the intersection of Northpower's network (High Voltage = 11kV and Subtransmission = 33-50kV) with Natural Environment Values overlays.

3.3 I understand that areas of significant indigenous vegetation and significant habitats of indigenous fauna will be identified and mapped separate to the PDP process. So, it is unclear how extensive these areas will be.

3.4 As a result, the PDP provisions relating to Natural Environment Values have the potential to directly affect Northpower's ability to operate, maintain, upgrade and expand its network. As an example, a large area of land in the Waipoua Forest is mapped as an Outstanding Natural Landscape in the PDP (shown as the most northern Outstanding Natural Landscape in the above image). Our network runs through this area and a range of assets, including 54 Poles, 2 Pole Mounted transformers and 4.5km of Overhead Conductors, will be affected by the Natural Landscapes provisions.

4 ENABLING ONGOING OPERATION, MAINTENANCE, REPAIR AND UPGRADING OF INFRASTRUCTURE WITHIN NATURAL ENVIRONMENT VALUE AREAS

4.1 Northpower has been servicing the community since the 1920s. Consequently, we have assets of all ages and stages in their life cycle, and communities have grown with and around them. Many of these communities within the Kaipara District are isolated and vulnerable with little or no alternative if these assets failed. We have a responsibility to ensure continuity of supply, and we cannot simply remove existing assets without a significant cost to the community. Therefore, ongoing operation, maintenance, repair and upgrading of these assets is essential to continue supply.

4.2 Routine operation, maintenance, repair and upgrading activities can involve:

(a) Operation: Generally, our assets operate independently with no onsite intervention. However, we may be required to access the asset to manage work/activities on the network (e.g. de-energisation, isolation, safety checks). This often involves accessing the asset using a vehicle.

(b) Repair: This covers fault work and is responsive. It can encompass a range of activities such as repairing lines, replacing structures and associated hardware and cable repair.

(c) Maintenance: This covers our inspections (preventative maintenance) and planned asset restoration (corrective maintenance). This can involve replacement and repair of all assets such as poles, transformers, cross-arms and cables.

(d) Upgrading: As part of our corrective maintenance processes, the repair and/or replacement of our assets will meet modern standards and materials, which may result in an upgrade of the asset (i.e. increasing the capacity, efficiency, safety, security and/or resilience of the existing infrastructure). This is required as part of our safety obligations, including to meet our certification requirements under ISO 9001, ISO 14001, ISO 55001 and NZS 7901.

4.3 These activities are essential to maintain network performance and respond to outages, storms and other unplanned events. If they are not appropriately provided for, there is a risk that:

(a) fault response times are delayed;

(b) network reliability and resilience are compromised; and

(c) health and safety risks increase for both workers and the public.

4.4 As a 100% community-owned company, Northpower works hard to use its resources efficiently to provide a reliable and resilient electricity network while maintaining an efficient business. By minimising costs, including consenting costs, all consumers connected to the Northpower network will benefit.

5 OPERATIONAL AND FUNCTIONAL NEED FOR NEW ASSETS WITHIN NATURAL ENVIRONMENT VALUE AREAS

5.1 When planning network expansion to meet the growing demand of the Kaipara district, Northpower works hard to find the best available route and minimise adverse effects on the environment, including avoiding

sensitive areas. However, there are circumstances where new infrastructure must be located within Natural Environment Value areas due to operational and functional need, including where:

(a) there are existing assets within a Natural Environment Value area;

(b) development occurs within a Natural Environment Value area;

(c) infrastructure must connect directly to properties within the overlay; or

(d) there are no practicable alternative routes.

5.2 The assets installed in these situations are typically small-scale but are essential to enable electricity supply. These include:

(a) poles;

(b) overhead conductors/lines;

(c) pole mounted or ground mounted transformers;

(d) pole mounted or ground mounted switchgear;

(e) cables; and

(f) earth banks.

5.3 In **Schedule 1**, I provide photos showing examples of these assets within our network (excluding cables and earth banks, which are installed underground).

6 PROVIDING FOR UPGRADES WITHIN NATURAL ENVIRONMENT VALUE AREAS

6.1 Northpower's submission requested that the rules in the Natural Environment Values chapters provide for upgrading alongside maintenance, operation and repair of existing infrastructure as a permitted activity. Further detail on this is provided in David Badham's evidence.

6.2 As I mentioned above, upgrades are an essential part of our ongoing asset maintenance programme and are necessary to maintain existing levels of service, resilience, safety and network security. When an asset reaches its end of life and requires replacing, we will do this using modern technologies and methods, which generally results in the asset getting some form of upgrade. This is best industry practice that ensures our network is safe and efficient. Therefore, upgrades should be given the same enabling provisions in the PDP as the other routine works listed in paragraph 4.2 above.

6.3 In addition, it is important that the PDP provides flexibility to accommodate upgrades that may extend beyond the existing infrastructure footprint. This is because upgrades to Northpower's assets will adopt modern technologies and methods that provide the safest and most efficient means to achieve operational, safety, capacity or resilience outcomes. When an upgrade occurs using modern technologies the materials will change and there will generally be a change in footprint, although in many cases this change is small. For example:

(a) Replacing an old pole with its modern equivalent, using modern materials, will result in a slightly different width at the base (i.e. 375mm x 188mm to 430mm x 240mm). Also, when overhead lines are modernised their thickness and weight are increased, so the strength of the pole often needs to be increased, which sometimes requires two poles bolted together.

(b) Transformers (pole mounted or ground mounted) are also generally bigger due to modern materials.

(c) Ring main units are now required under safety standards to have arc venting (to cool arc energy and prevent people being burnt), which increases the height and width compared to older ring main units.

6.4 In the Section 42A Report for Natural Character, the Reporting Officer proposes permitting the following activities:

(a) External additions or alterations to an existing lawfully established above ground network utility, and:

(i) Are no greater than 10m high or the height of the existing building or structure.

(ii) Are no greater than 20% of the ground floor area (**GFA**) of the existing building or structure.

(iii) Do not involve replacing a pole with a pi pole.

(b) Infrastructure no greater than 10m high within a road provided any pole:

(i) Is a single pole (monopole); and

(ii) Is not a pi-pole or a steel-lattice tower.

6.5 In my view, the proposed parameters are inappropriate because they do not reflect the practical realities of electricity asset design in environmentally constrained areas. In particular:

(a) 10m height limit on poles: We generally use poles ranging between 9.2m-10.4m above ground. However, operational requirements can require heights greater than this. Modern design requirements can require increased conductor sag due to factors such as heavier conductors, higher operational loads, design for climate change, and reducing vibration on conductors. In addition, longer spans, ground clearance requirements over roads or other features, and accommodating other infrastructure (e.g. telecommunications) can also increase the required pole height. These factors typically result in the need for taller poles to safely meet clearance standards and operational requirements. A height limit of 12.5m would allow for these situations and better reflect industry practice.

(b) 20% of the (**GFA**) of the existing structure: As I discussed above, changes in footprint are dictated by operational requirements. When considering the width of a pole, 20% leaves little flexibility. The example I gave in 6.3(a) above,

where we need to bolt two poles together, would breach this requirement.

(c) Not allowing pi poles: Pi poles are required when conductors span long distances between poles and we need to split the conductors apart to avoid them clashing (i.e. in high winds). The alternative to a pi pole is to use a higher pole, which is generally our preference but would then breach the Reporting Officer's proposed 10m height limit. In some cases, we could add a new pole mid-span, however, this could result in greater land disturbance and isn't possible where a line is spanning from ridge top to ridge top.

7 VEGETATION CLEARANCE WITHIN NATURAL ENVIRONMENT VALUE AREAS

7.1 Northpower has sought to enable vegetation clearance for the operation, maintenance, repair and upgrading of infrastructure in Natural Environment Areas.

7.2 We commonly undertake vegetation clearance for the following reasons:

(a) To clear access tracks through a site to reach our assets: We will first inspect our asset either on foot or using a drone (drones have increased our ability to minimise disturbance). This happens every 5 years. If any work is required on the asset, then we need to get vehicles, men and equipment on site. The frequency that this occurs varies significantly. In many cases, our assets can be left alone for a long time. For example, a typical pole life is 80 plus years, while a cross-arm often needs replacing after around 35 years. However, fault work can be required at any time. When we clear vegetation for access tracks, the extent of clearance required is generally the vehicle clearance width. We choose the less disruptive vehicle that can safely get the task done. For smaller jobs, e.g. replacing a cross arm, we could use a side by side (e.g. Polaris) with ladders. For larger jobs, e.g. pole replacement, we need to allow for truck access.

(b) To accommodate equipment and vehicles around assets: For total replacement jobs, the space around an asset needs to accommodate multiple vehicles, including a truck with a crane (e.g. a Hiab) to lift poles and hold conductors, a ute to transport people and equipment, and a bucket truck (elevated work platform) to do the work up the pole. These are all safety requirements for undertaking a pole replacement.

(c) To maintain conductor clearance: Under the Electricity (Hazards from Trees) Regulations 2003, we must ensure that trees do not breach specified growth limit zones measured either side and below a conductor. These growth limit zones include 0.5m for a 400/230V uninsulated conductor, 1.6m for a 11kV uninsulated conductor, and 2.5m for a 33kV conductor. These are safety standards that we have no control over and cannot breach.

7.3 I understand that the Reporting Officer for Natural Character has recommended that vegetation clearance be subject to a threshold of 50m^2 per site. Given that the size of a site and, therefore the number of our assets within a site, can vary significantly this threshold seems arbitrary. It would also be unworkable for Northpower in many cases because, as highlighted above, vegetation clearance needs vary due to site and asset requirements. For example, where a structure is in the middle of a large and vegetated site, 50m^2 wouldn't be sufficient to clear an access track to the asset. Also, it would only allow approximately 7x7m around the asset, which in a pole replacement job would not accommodate the required vehicles.

7.4 I also understand that the Reporting Officer for Ecosystems and Indigenous Biodiversity considers that vegetation clearance should not be permitted for upgrades due to the new footprint of the infrastructure. However, the vegetation clearance involved in upgrading an asset would be very similar to what is required for the maintenance or repair of an asset. We would need to access the same site and would likely need the same equipment. We also generally avoid requiring wider vegetation corridors along our conductor routes because it has other repercussions such as requiring variations to easements, which could be costly. So, where we are replacing a conductor and the modern

equivalent is bigger, we will raise the height of the poles to avoid tree growth limit zones.

8 EARTHWORKS WITHIN NATURAL VALUE AREAS

8.1 Northpower undertakes earthworks for various reasons, including digging pole foundations and installing underground reticulation (e.g. digging foundations for pillars or ground mounted transformers and switch gear, and laying cables to those assets).

8.2 I understand that the Reporting Officer for Natural Character has recommended imposing volumetric thresholds and cut or fill limitations on earthworks for the upgrade, operation, maintenance, repair or removal of existing infrastructure. I also understand that the Reporting Officer for Natural Features and Landscapes supported enabling earthworks for operation, maintenance and repair of infrastructure but not upgrading.

8.3 It is difficult to predetermine the extent of earthworks that are reasonable for Northpower's activities because site conditions, such as topography, land stability, geotechnical conditions and spoil management requirements vary throughout the district. The scope of work will also vary job to job and pose different constraints, including access to assets. For example, a small transformer site feeding one customer will require less earthworks than a power line that stretches across many kilometres and supplies a community. There are also health and safety considerations when undertaking earthworks. For example, excavation boundaries around underground cables must consider the zone of influence and allow for safe access and egress from the trench.

8.4 These considerations mean that it is not simply a change in footprint (i.e. in the case of an upgrade) that will result in more or less earthworks being required. In many cases, the earthworks required for an upgrade would be similar to, if not the same as, earthworks required for replacement or repair of a like for like asset. Any differences would also be minimal when considering the small-scale nature of these assets.

8.5 Therefore, I consider it would be unreasonable to impose volumetric thresholds and cut or fill limitations on earthworks, and/or exclude upgrades from permitted earthworks.

9 CONCLUSION

9.1 For the above reasons, I support Northpower's proposed new objectives, policies and rules for Infrastructure provision within the Natural Environment Values chapters, as is further outlined in the planning evidence of Mr Badham. These will enable Northpower to continue to provide a safe and resilient electricity supply to the Kaipara district.

SHAUN BROWN
22 May 2026

Schedule 1 – Photos showing examples of small-scale assets

Figure 1: Overhead Reticulation comprising of; Pole structure, Overhead Transformer and 11,000V and 400V Conductors.

Figure 2: Overhead Reticulation comprising of; Pole Structure, Overhead Switchgear, Stay Wire and 11,000V and 400V Conductors.

Figure 3: Underground Reticulation Standard Service Pillar

Figure 4: Underground Reticulation, Ground Mounted Switchgear

Figure 5: Underground Reticulation, Ground Mounted Transformer