# Rehabilitation Management Plan

## Mahinerangi Wind Farm Stage 2

### Tararua Wind Power Limited

Prepared by:

**SLR Consulting New Zealand**

SLR Project No.: 810.031205.00001

6 October 2025

Revision: 1.0

## Revision Record

| Revision | Date | Prepared By | Checked By | Authorised By |
|---|---|---|---|---|
| 1.0 | 6 October 2025 | Steve Rate | Hamish Dean<br>Keren Bennett | Steve Rate |

# Basis of Report

This report has been prepared by SLR on the instructions of our Client, in accordance with the agreed scope of work. It is intended to support the Client's application under the Fast Track Approvals Act 2024 and may be relied upon by the Expert Panel and relevant administering agencies for the purposes of assessing the application. While SLR has exercised due care in preparing this report, it does not accept liability for any use of the report beyond its intended purpose. Where information has been supplied by the Client or obtained from external sources, it has been assumed to be accurate unless otherwise stated.

# Table of Contents



# Appendices

# 1.0 Introduction

Tararua Wind Power Limited ("TWP"), a fully owned subsidiary of Mercury NZ Limited, is progressing Stage 2 of the Mahinerangi Wind Farm which is to be known as "Puke Kapo Hau" ("the Project", "Puke Kapo Hau" or "MWF Stage 2").

The MWF is located on the eastern foothills of the Lammermoor Range, situated approximately 5 km north of Lake Mahinerangi and approximately 50 km west of Dunedin.

Land use consent RM1409 condition 25C requires preparation of a Rehabilitation Management Plan:

i) *The Rehabilitation Management Plan shall be prepared by an independent and suitably qualified and experienced person and provided to the Planning and Environment Manager, Clutha District Council one month prior to the commencement of construction activities.*

*The Rehabilitation Management Plan shall define the scope and methodology for rehabilitation of the areas affected by the construction activities and the on-going maintenance of the rehabilitation work and shall be implemented under the supervision of a suitably qualified, experienced and independent person.*

ii) *The consent holder shall undertake rehabilitation and revegetation of areas affected by construction activities to achieve an outcome generally in accordance with the following objectives:*

(a) *In the short-term to create stable landforms by establishing vegetation cover (which may include pasture) and erosion-resistant surfaces that have characteristics that favour growth of sustainable plant communities and manage run off and sediment generation;*

(b) *To prevent weeds and pests invading the site in a manner that is consistent with the weeds and pests control programme required pursuant to condition 31.*

iii) *The Rehabilitation Management Plan shall provide details and methodologies for achieving the rehabilitation objectives set out in 25C(ii) above, and those to be adopted during construction and operation of the wind farm and the post-construction phase, in order that compliance with all other conditions of the resource consent can be achieved.*

iv) *The Rehabilitation Management Plan shall, as a minimum, address the following:*

(a) *The rehabilitation objectives set out in condition 25C(ii) above.*

(b) *The personnel who will be on-site and their responsibilities, such that the provisions of the plan can be implemented at all times.*

(c) *The means by which weeds will be controlled and targets for weeds met during the wind farm construction and operation stages in accordance with the control programme required pursuant to condition 29.*

(d) *The methodology for rehabilitation shall include but not be limited to:*

i. *Scrappy Pines Block, Wetland and Aquatic Compensation Sites and other areas listed as Stage 1 exceptions in 25(i)[1]: removal of tussock for direct transfer, storage and maintenance of tussock, replacement of tussock vegetation in the Wetland and*

[1] The exceptions in 25(i) are:

- *turbine locations 63, 64, 65, 66, 68, 69, and 70 being development within the covenanted area, and turbine locations 97, 98, 99 and I00 being development within high quality snow tussock referred to as the Thomas Block and as marked on BMP W07190/1*
- *access tracks in two areas as marked "D" on BMP W07190/1 which are within or near areas of high ecological value*
- *access tracks and associated earthworks within ecological buffer areas as generally marked on BMPW07 I 90/1; and*
- *any sediment controls and associated earthworks that need to be located within ecological buffer areas to avoid adverse effects upon adjacent areas of high ecological value.*

*Aquatic Compensation Sites, planting of additional tussock and other species as necessary such that a community is reestablished and is similar to that which existed prior to construction commencing as determined in accordance with (e) below.*

ii. *Pasture grassland and turbine sites: recontouring, regrassing, erosion controls, control of woody weeds.*

iii. *Softening of batters by hydroseeding (on steep batters) or by direct transfer and/or planting (on gentle slopes) to match the vegetation of the adjacent terrain.*

(e) *The survey methodology to be employed prior to works commencing to characterise the vegetation communities present in the 'Scrappy Pines Block', Wetland and Aquatic Compensation Sites, and other areas listed as Stage 1 exceptions in 25(i), such that the percentage cover, and the species present are confirmed.*

v) *The Rehabilitation Management Plan shall contain completion criteria, that, when met, will show that rehabilitation has succeeded.*

*These criteria, shall include, as a minimum, measures which confirm:*

(a) *Establishment of snow tussock communities on the 'Scrappy Pines Block', Wetland and Aquatic Compensation Sites and areas that are specified as Stage 1 exceptions in condition 25(i), which are of similar species composition and percentage cover of the vegetation that was present, prior to the works commencing (as identified in (iv)(e) above;*

(b) *Establishment of pasture grassland in all other areas.*

(c) *Management of runoff and sediment generation;*

(d) *The outcomes for weed and pest control* programmes.

In addition, due to the difficulties in establishing snow tussocks on compacted substrates around turbines and changes to land use in the working farm, a variation to condition 25C of the consent (RM1409/03) was granted in 2017:

vi) *The Stage 1 Mahinerangi Wind Farm Rehabilitation Plan (dated July 2010) shall be updated within three months to replace the individual turbine locations (turbines 1, 5, 6, 7 & 9) stipulated for snow tussock rehabilitation under Table 1 of the MWF Stage 1 Pre-construction Vegetation Survey (dated September 2010) with the proposed, rehabilitation methodology and targets and the rehabilitation sites(s) identified in Figure 1, (section 1.2, Page 3) of the s.127 'Mahinerangi Wind Farm – Request for changes of Vegetation Rehabilitation' application document received by Council on 16 August 2017, as approved and attached to this consent.*

This variation permitted rehabilitation of snow tussock grassland in the covenanted area/Scrappy Pines Block instead of from the areas where it was cleared near turbine sites 1, 5, 6, 7, and 9.

# 2.0 Objectives

This Rehabilitation Management Plan (the 'Plan') applies to to the entire MWF Stage 2 area, including the Transmission Corridor. The objectives are to:

- In the short-term, create stable landforms by establishing vegetation cover (which may include pasture) and erosion-resistant surfaces that have characteristics that favour growth of sustainable plant communities and manage run off and sediment generation;
- Prevent weeds and pests invading the site in a manner that is consistent with the weeds and pests control programme required pursuant to condition 31;
- Provide methods for rehabilitation of snow tussock in the Wetland and Aquatic Compensation Sites.

The Plan therefore provides direction on rehabilitation of pasture and winter forage, snow tussock grasslands and stream wetland vegetation. This Plan should be read and implemented in conjunction with the Wetland and Aquatic Compensation Management Plan (SLR 2025a).

Based on the rehabilitation issues experienced in Stage 1, rehabilitation of snow tussock grassland in Stage 2 will occur within a protected area or areas away from the turbine sites.

This Rehabilitation Management Plan for Stage 2 of the Mahinerangi Wind Farm is an update of the Stage 1 Rehabilitation Management Plan (Golder Associates 2010). It has been prepared to satisfy the conditions of consent and to be included in the Ecological Monitoring and Management Plan.

# 3.0 Key Personnel

Consent Condition 25C(iv) requires the Rehabilitation Management Plan to state: (b) The personnel who will be on-site and their responsibilities, such that the provisions of the plan can be implemented at all times:

- The lead Civil Balance of Plant (CBoP) contractor will implement rehabilitation work for Stage 2 of the wind farm construction.
- The project ecologist will oversee this implementation.
- An Environmental Advisor and the Site Manager of Mercury will be the on-site overseer for Tararua Wind Power Limited.

# 4.0 Sedimentation and Runoff Control

## 4.1 Sediment Management

Consent Condition 25C(ii) states

*(a) In the short-term to create stable landforms by establishing vegetation cover (which may include pasture) and erosion-resistant surfaces that have characteristics that favour growth of sustainable plant communities and manage run off and sediment generation.*

Following practical completion of earthworks, disturbed areas and fill batters will be stabilised by respreading locally stockpiled topsoil (stockpiled for a duration <12 months) to a minimum depth of 300 mm, and applying grass seed (or hydro seed) using non-invasive grass species such as brown top or rye grass.

Once 80% grass strike has been achieved (in accordance with GD05), erosion and sediment control measures can be decommissioned. Areas affected by the decommissioning of the

sediment control measures will be rehabilitated as appropriate and will not be subject to any further earthwork activities.

Consent Condition 25C(d) states:

*iii. Softening of batters by hydroseeding (on steep batters) or by direct transfer and/or planting (on gentle slopes) to match the vegetation of the adjacent terrain.*

The steeper cut batters will be stabilised with hydro seed (no topsoil), including polymer additives for erosion control where required. Rock cut batters will be left in their natural state i.e. no stabilisation measures are required.

## 4.2 Stockpiling of Topsoil

During the construction of roads and turbines, the removed topsoil will be stockpiled for rehabilitation. Topsoil stockpiles will be located away from construction areas to ensure they do not impede works, and on flat land away from gullies containing wetlands, watercourses or indigenous vegetation to minimise the risk of sedimentation in these areas. Stockpiled topsoil must be immediately stabilised to prevent losses from erosion, either by seeding with pastoral grasses or covering with plastic sheeting or other stabilisation material. Sediment control measures (silt fences or similar) are to be placed around the margins of topsoil stockpiles.

# 5.0 Vegetation Rehabilitation

## 5.1 Existing Vegetation

The predominant vegetation types in the Stage 2 area of the Mahinerangi Wind Farm are developed pasture/crops and snow tussock grasslands.

Snow tussock grassland in proximity to the Stage 2 area is present on gully walls, generally as small patches. Snow tussock grassland is also present on some ridge tops, particularly between turbine sites 12 and 21. Exotic grassland with sparse snow tussocks is relatively common throughout. The snow tussock grasslands in the Stage 2 area are generally of low quality with few indigenous inter-tussock species and grazing and disturbance by stock.

The pasture areas are generally located on ridge tops where cultivation (e.g., ploughing) can occur, although exotic-dominant grassland also extends into the gullies. At some sites, winter forage crops such as turnips are also sown. These areas transition from pasture to bare soil, to mature feed crops, back to bare grazed ground, after which they are resown as pasture.

## 5.2 Rehabilitation of Pasture

All works sites within the Stage 2 area will be revegetated in pasture. Pasture will be surface sown and rolled.

For weed management purposes, sowing of pasture areas is recommended to be undertaken in autumn when the likelihood of weed establishment is low. This also avoids the dry summer period when the germination and establishment of grass seed may be limited. Nitrogen fertiliser can be used to supplement soil nutrients, especially prior to sowing and after first grazing, to improve strike rate and production in the newly sown pasture.

Rehabilitation will comprise the following steps:

- Construction of silt fencing, if not already in place from the construction activity, or other soil retention mechanisms along the downslope areas of rehabilitation areas to prevent sedimentation of gullies.

- Replacement of topsoil over the exposed rock and subsoil.
- Erection of temporary fencing to exclude stock from rehabilitated areas until pasture is well established (first grazing should only occur once the plant has begun to tiller out and is at least 10 cm high).
- Seeding of rehabilitation areas with appropriate mix of pasture grasses and clover species.
- Monitoring rehabilitated areas for woody and herbaceous weeds and spot spraying of weeds as required on a monthly basis until completion criteria is met.
- Removal of silt and stock fencing when grass sward or winter feed crop has developed to a condition comparable to that found in adjacent undisturbed pasture areas and all weed species are absent or reduced to a level equal to or less than the surrounding farmland.

## 5.3 Rehabilitation of Snow Tussock Grassland

### 5.3.1 Overview

Rehabilitation of snow tussock grassland will be achieved by carefully removing snow tussocks from earthworks in areas of mapped snow tussock grassland (see SLR 2025c) and planting them in areas of exotic grassland on gully walls within the Wetland Compensation Site and along the edge of the stream channel in the Aquatic Compensation Site (SLR 2025a), after which they will be monitored for condition and survival.

The direct transfer of snow tussocks will be progressive i.e. follow works as they move through the Stage 2 area. Once planting of the minimum area required is completed (see below), rehabilitation will be complete.

The benefits of undertaking all snow tussock rehabilitation within the compensation sites are that the rehabilitation sites will be permanently fenced to exclude stock and legally protected, which will prevent damage from grazing and potential future clearance that could occur if rehabilitation sites were located in the Stage 2 area.

### 5.3.2 Area to be planted in the Wetland Compensation Site

There are several areas (covering 1.5 ha) on the gully walls within the Wetland Compensation Site that do not have indigenous vegetation present. These areas are large enough to receive all the required snow tussocks potentially affected by Stage 2, estimated from GIS mapping as 1.3 ha at 1.5 m spacings[2]. Planting of this area will require approximately 6,600 snow tussocks.

### 5.3.3 Area to be planted in the Aquatic Compensation Site

Snow tussocks will be planted along both sides of the stream channel within the fenced Aquatic Compensation Site. They will be planted as close to the edge of the stream channel as possible so that they will shade the stream. A minimum of 115 snow tussocks will be required to plant a single line of snow tussocks at 1 m spacings in two 50 m strips, one on either side of the stream channel. Snow tussocks will be planted at 1 m spacings at this site to ensure that adequate shading of the stream is achieved.

[2] Based on the Stage 2 turbine, cable reticulation, and track sites located in mapped snow tussock grassland, with an estimated 1 m wide rehabilitation strip on both sides of roads and 25% of turbine sites being rehabilitated (estimate from observations at rehabilitation sites in Stage 1).

### 5.3.4 Sourcing and Transport of Snow Tussocks

Prior to construction, turfs will be removed with topsoil and snow tussocks intact. Some other indigenous species are also likely to be growing in the tussock bases. To prevent damage to root systems, turfs will be at least 20 cm deep. After removal, snow tussocks should be immediately transported to and planted at the compensation site, which reduce requirements for snow tussock storage and double handling, as well as increase survival rates. Careful planning will be required to achieve this.

### 5.3.5 Storage of Snow Tussocks

Storage of snow tussocks should be avoided where practicable.

If snow tussocks cannot be taken directly to a rehabilitation site, they will need to be stored on site until a rehabilitation site becomes available. Tussocks should not be stored for longer than three months. Stockpiles should be located away from construction areas to ensure they will not impede works, and on flat land away from gullies containing wetlands, watercourses or areas of good quality indigenous vegetation to minimise the risk of sedimentation in these areas.

Storage sites should be surrounded by stock proof fencing. Stored snow tussocks should be stacked tightly together and protected from wind exposure (e.g. with wind cloth) that could desiccate plants. The tussocks will require regular watering, especially in windy, dry summers. Trimming of the tussock leaves (up to half their length) may be undertaken to minimise plant respiration which will minimise water loss. Any storage areas will be monitored weekly for the need for watering, snow tussock health, and weeds, and appropriate management (e.g. increased watering frequency) undertaken to remedy any problems encountered.

### 5.3.6 Planting of Snow Tussocks

Snow tussocks will be planted 1.5 m apart (centre-to-centre) at the Wetland Compensation Site and 1 m apart at the Aquatic Compensation Site. At the Wetland Compensation Site, it is recommended that planting holes are prepared prior to transfer (e.g. with a hand-held post hole borer) to speed up the process and avoid tussock storage which may reduce tussock survival rates. Snow tussocks should be placed in holes and the soil excavated from the planting holes used to gently firm them into place using the front part of the foot. There should not be any voids left in the holes. If the planting holes are too small for the tussocks, then a spade can be used to enlarge the hole, or the tussock can be carefully trimmed or divided before planting. Snow tussock divisions should be a minimum of 10 cm diameter where the leaves/sheathes meet the ground (Figure A) and roughly circular, as smaller divisions will affect survival and take longer to grow. As much of the root ball should be maintained as possible. After planting, snow tussock condition will need to be monitored and any requirements for watering and/or weed control assessed.

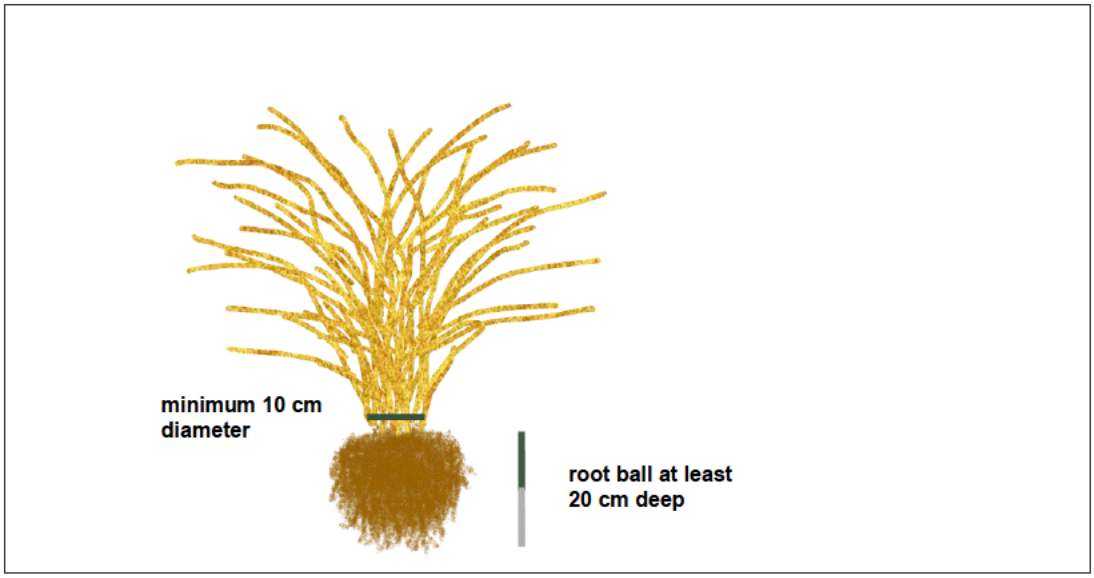



**Figure A: Minimum size of snow tussocks and tussock divisions to be planted.**

# 6.0 Stream/Wetland Rehabilitation

At the two stream/ wetland sites mapped in Figures B1 and B2 in Appendix B, rehabilitation will comprise:

- Careful removal of existing tracks and culverts in order to retain any natural peaty soils which may have been retained under the fill.
- If practical and if wetland soils are no longer present at the existing crossing, stockpiling of peaty soils removed from the new road/culvert works sites and reinstating these at the adjacent wetland rehabilitation sites.
- Contouring of the banks of the waterways and dry margins of the wetlands to blend into existing natural contours
- Excluding farm stock from rehabilitation sites until the closure criteria are met.
- Maintaining natural stream courses, bends, and gradients.
- Rehabilitation/retention of the natural hydrology by avoiding alteration of natural landforms.
- Sowing stream banks, wetland margins, and any bare wetland peat soils in pasture grasses immediately following works to prevent erosion.

# 7.0 Monitoring

### 7.1.1 Snow tussock grassland in the Wetland and Aquatic Compensation Sites

To illustrate the works undertaken and inform review and reporting purposes, photographs will be taken at the Wetland and Aquatic Compensation Sites following fence construction, and at 1- and 2-years following snow tussock transfer/planting.

Annual monitoring in snow tussock transfer areas within the Wetland Compensation Site will comprise measuring the survival of tussocks in 25 $m^2$ quadrats. The number of plots will be

proportional to the area of pasture or snow tussock grassland within each rehabilitation area. All sites will be walked through to determine the presence of woody weeds and vegetation/tussock condition.

Annual monitoring in snow tussock transfer areas within the Aquatic Compensation Site will comprise measuring the survival of all transplanted tussocks, and woody weed monitoring as above. Monitoring at both Compensation Sites will continue until the closure criteria are met.

### 7.1.2 Pasture rehabilitation sites and Stream/Wetland Rehabilitation sites

Photographs will also be taken at pasture rehabilitation sites and Stream/Wetland Rehabilitation sites pre- and post-works.

Pasture rehabilitation sites are to be monitored annually until the closure criteria are met. Monitoring in pasture areas will comprise a visual inspection of strike rates and the cover of vegetation and bare ground at 6-month intervals.

### 7.1.3 Monitoring Response

Monitoring may result in the need for additional management which could include, but not be restricted to, the need for additional grass sowing, replacement of snow tussocks which have died, woody weed control, and application of fertiliser.

# 8.0 Completion Criteria

## 8.1 Criteria for Rehabilitation of Pastoral Land and Wetland/Stream Rehabilitation Sites

The objective of pasture rehabilitation is the return of the rehabilitated areas to a productive pasture grass sward. Closure criteria for pasture are:

- >85% vegetation cover.
- <10% cover of bare ground.
- No woody weeds.
- Vegetation in healthy condition (even growth, no disease).
- No evidence of erosion.

## 8.2 Criteria for Snow Tussock Grassland Rehabilitation

The objective of the rehabilitation is to return the rehabilitated areas to snow tussock grassland. Closure criteria for snow tussock transfer areas are:

- 90% survival rate of transferred snow tussocks 2 years after planting. The survival rate is to be determined using the percentage of live plants.

## 8.3 Criteria for Management of Runoff and Sediment

These criteria are provided in the Earthworks Management Plan (Riley 2025).

## 8.4 Criteria for Weed and Pest Animal Management

These criteria are provided in the Woody Weed Management Plan (SLR 2025b) and Mammalian Pest Control Plan (Boffa Miskell 2025).

# 9.0 References

Boffa Miskell. 2025. Mammalian Pest Control Plan. Mahinerangi Wind Farm Stage 2. Prepared for Tararua Wind Power Limited.

Golder Associates. 2010. Mahinerangi Wind Farm Rehabilitation Management Plan July 2010. Report Number. 1078405206. Prepared for TrustPower Ltd, Tauranga.

Riley. 2025. DRAFT Earthworks Management Plan. Mahinerangi Wind Farm Stage 2, Otago. Riley contract report 240034-G. 32pp.

SLR. 2025a. Wetland and Aquatic Compensation Plan. Mahinerangi Wind Farm Stage 2. Prepared for Tararua Wind Power Limited.

SLR. 2025b. Woody Weed Management Plan. Mahinerangi Wind Farm. Prepared for Tararua Wind Power Limited.

SLR. 2025c. Vegetation, Wetland, and Terrestrial Invertebrate Assessment. Mahinerangi Wind Farm Stage 2. Prepared for Tararua Wind Power Limited.

# 10.0 Closure

Sincerely,

**SLR Consulting New Zealand**

**Steve Rate**
Senior Ecologist

**Hamish Dean**
**Principal Ecologist**

**Keren Bennett (Reviewer)**
Technical Director - Ecology

# Appendix A Areas labelled “D” on map BMP W07190/1

## Rehabilitation Management Plan

**Mahinerangi Wind Farm Stage 2**

**Tararua Wind Power Limited**

SLR Project No.: 810.031205.00001

6 October 2025


**Figure A1: Area labelled "D" on map BMP W07190/1. Note: Redrawn from map BMP W07190/1 and overlain with the Stage 2 layout.**


**Figure A1: Area labelled "D" on map BMP W07190/1. Note: Redrawn from map BMP W07190/1 and overlain with the Stage 2 layout.**

# Appendix B Sites where existing tracks and culverts will be removed

## Rehabilitation Management Plan

**Mahinerangi Wind Farm Stage 2**

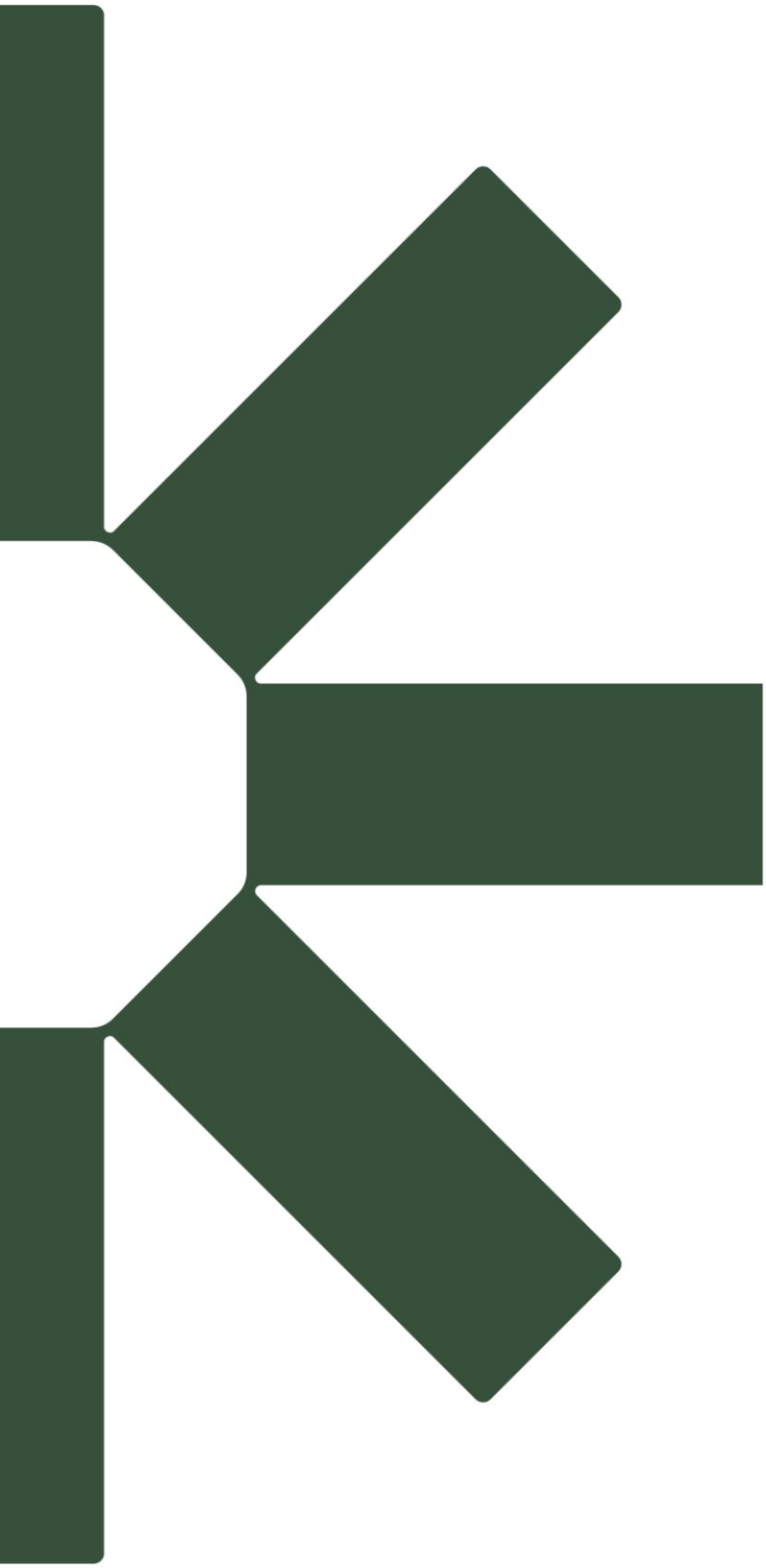
**Tararua Wind Power Limited**

SLR Project No.: 810.031205.00001

6 October 2025


**Figure B1: Track and culvert to be removed south of turbine 9.**


**Figure B2: Track and culvert to be removed south of turbine 20.**



Making Sustainability Happen