TĪTOKI LANDCARE | Specialist Ecological Restoration

Friday, 5 June 2026

Georgia Cummings
Senior Ecologist
Tītoki Landcare Ltd
[redacted]

David Deans
Renewable Project Development Manager
Meridian Energy Limited

RE: Western Bays Solar Development proposal: adverse effects on long-tailed bats

Scope

The purpose of this memo is to describe the anticipated and known adverse effects on long-tailed bats/pekapeka-tou-roa (*Chalinolobus tuberculatus*) of the proposed Western Bays Solar Development (Project) to inform the Referral application for the Fast-track Approvals Act (2024).

Summary

The known and anticipated effects of the Project on long-tailed bats are:

- Vegetation clearance/ tree removal;
- Potential disturbance (namely noise and light) both during construction and operation of the Project; and
- Long-term habitat modification, placing photovoltaic panels and associated infrastructure over approximately 305 ha of what is currently improved pasture.

It is our opinion that these anticipated effects of the Project on long-tailed bats can be appropriately managed. This is particularly the case as the key habitats being impacted are already highly modified and can be easily recreated on the Project Site.

While the management framework has not been finalised at this point in the Project, potential measures include:

- Habitat avoidance, recommendations may include avoiding habitat assessed as **High** value.
- Providing set-backs between retained woody vegetation and the solar infrastructure.
- Implementing DOC Bat Roost Protocols prior to the removal of mature trees to minimise potential for injury or mortality to roosting bats.
- Replanting shelterbelt trees required for removal in areas where solar panels are not proposed.
- Limiting artificial lighting across the Site at night and applying light sensitive design parameters where/when lighting is required.
- Applying limits to the construction timing to reduce potential disturbance from construction noise when bats are active.

To conclude, it is our opinion that appropriate implementation of a selection of the management options outlined above will enable the adverse effects of the Project on bats to be managed to **Low** - **Moderate** levels, avoiding significant adverse effects.

Project Description

Meridian Energy Limited (Meridian) is seeking approvals to construct, operate and maintain the Project on the western side of Lake Taupō. The Solar Farm will generate up to 420MW (enough to power 113,000 homes annually).

The Project will consist of the following key components and their associated supporting infrastructure and facilities:

1) Solar Farm – this will consist of solar photovoltaic panels, inverters and related electrical infrastructure (such as an internal electricity network of 33kV underground cables) across an area of approximately 620ha. There will also be an onsite 33/220kV substation and associated operational facilities and buildings.
2) Transmission Line Corridor – a 220kV double circuit transmission line approximately 9.5 km in length supported by towers of up to 60m in height. The transmission line will connect the solar farm substation to the Grid Injection Point.
3) Grid Injection Point (GIP) – a 220kV switchyard. The GIP will connect the Solar Farm, via the Transmission Line and GIP infrastructure, to the National Grid (specifically, Transpower New Zealand Limited's (Transpower) Bunnythorpe-Whakamaru (BPE-WKM) A and B 220 kV lines).

Site Description

For a comprehensive site description refer to the Ecological Assessment prepared by Beca Ltd. (2026). The description below focuses on the features of the site most relevant to long-tailed bats (henceforth referred to as bats).

The Western Bays Solar site ("the Site") is approximately 620 ha and is located on the Western Bays of Lake Taupō, approximately 1 km from the lakeshore at its closest point. The Site covers a single working dairy farm and is characterised by exotic pasture interspersed with planted shelterbelts that are almost entirely compromised of mature exotic trees such as Eucalyptus and poplar species. The public Karangahape Rd runs east west through the middle of the Site. The landform is overall very flat and open water within the Site appears to be limited to an artificial farm pond (which is discussed in the Beca assessment).

The *c.* 9.7 km long transmission line and Grid Injection Point (GIP) will traverse similar pastoral habitat to what is available on the Site. Only very small areas of non-pasture vegetation will be directly impacted. This non-pasture vegetation includes mature exotic trees and shorter stature mixed native exotic scrub on the SH32 and Karangahape roadsides, and along the Orongopioi stream.

Surrounding habitats

Areas of native forest and scrub in proximity to the Site to the north, east, and south, are identified as Significant Natural Areas (SNAs) in the Taupō District Plan. The SNAs to the north (SNA 063) and

east (SNA 233) of the Site are comprised of secondary native forest and are located within 1.5 km of the Site boundaries. Regenerating manuka scrub (SNA 062) marks the southern boundary and extends into the southeastern corner of the Site.

Pureora Forest Park lies about 10 km west of the Site. Pureora Forest is a large tract (c.78,000 ha) of primarily native forest that is managed by the Department of Conservation (DOC) and supports colonies of both long-tailed and short-tailed bats.

Value of the Site and surrounds to bats

Site investigations

A desktop review of the National Bat Database administered by the Department of Conservation (DOC) was undertaken. Additionally, three acoustic surveys were undertaken across the site and the surrounds between November 2024 and April 2025. Nineteen acoustic recorders (ARs) were deployed during the first survey session, and 26 ARs the following two sessions. A subset of the ARs targeted open pasture and the remainder were deployed along the edges of woody vegetation.

Effects assessment methodology

The value of the habitats available on site to bats, and the level of anticipated effects have been assessed using the Ecological Impact Assessment (EcIA) framework prepared by the Environment Institute of Australia and New Zealand Inc. (EIANZ). Refer to the EIANZ EcIA guidelines[1] for additional detail.

Results of Site Investigations

A desktop review of the National Bat Database administered by the Department of Conservation (DOC) showed that both bat species have been detected within 30 km of the site. However, the only records of short-tailed bats within 25 km of the site were all more than 25 years old.

The acoustic bat surveys detected long-tailed bats at almost all survey locations across the Site and surrounds during all three survey sessions. Short-tailed bats were not detected in the first acoustic survey. The Site is highly modified and is considered unsuitable for short-tailed bats, consequently the data from surveys 2 and 3 was not analysed for short-tailed bats[2]. Henceforth, the findings and effects relate only to long-tailed bats.

Key findings of these three surveys are summarised as follows:

1. There was a clear distinction between the activity recorded at survey locations in open pasture compared to along woody vegetation edges. The average number of bat passes per night recorded across the open pasture locations ranged from 0.0 - 2.0 passes across all three survey periods. In comparison, the average number of bat passes per night recorded across the woody vegetation survey locations ranged from 0.5 - 132.7 passes.

[1] Roper-Lindsay, J., Fuller S.A., Hooson, S., Sanders, M.D., Ussher, G.T. 2018. Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems. 2nd edition.

[2] A comprehensive description of the analysis methods will be provided in the long-tailed bats effects assessment.

2. Open pasture habitat on site appeared to be used only for movement to tree habitat. The average number of bat passes per night was <1.0 at 76% of open pasture survey locations across the three survey periods, and no feeding activity was recorded at any pasture location.
3. Tree habitat features (e.g. treelines/tree stands) provide the greatest resource for bats. These features provide foraging habitat, roosting opportunities and are likely to facilitate movement through the wider landscape.
4. A consistent activity hot spot was detected at the shelterbelt that runs along the northern boundary of the site.

Based on these findings, the habitats across the Site, the transmission corridor, and the GIP have been valued using the EcIA framework. These values are summarised in Table 1 below.

Anticipated and known adverse effects of the project on bats

Activities required to facilitate the development and operation of the solar farm that could potentially adversely impact bats are:

- Vegetation clearance/ tree removal;
- Potential temporary disturbance (artificial lighting, noise and vibration) during construction;
- Potential ongoing disturbance from artificial lighting and background noise produced by the operation of the power storage and conversion infrastructure distributed across the solar farm; and
- Long-term habitat modification, placing photovoltaic (PV) panels and associated infrastructure over approximately 305 ha of what is currently improved pasture.

Long-tailed bats are assessed as **Very High** value species due to their Nationally Critical threat status[3]. Different habitats available across the site have also been valued to contextualise the assessment of the magnitude of the impacts. The anticipated magnitude of effects without mitigation are summarised in the Table 1 below.

Bats are highly mobile and utilise a variety of habitats to move around their home range which can cover hundreds, sometimes thousands of hectares. So, while assessing habitats individually is necessary to guide how the development can best manage effects on bats, it is also important to maintain a holistic view of how bats interact with the Site as a whole. While improved pasture is used by bats primarily for dispersal to preferred habitats, the combination of pasture and treelines that currently comprises the Site has value in facilitating the movement of bats across the wider landscape.

[3] Roper-Lindsay, J., Fuller S.A., Hooson, S., Sanders, M.D., Ussher, G.T. 2018. Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems. 2nd edition.

Table 1: A summary of the construction and operational activities of the Western Bay Solar Development with an assessment of the magnitude of the effects of these activities will likely have on long-tailed bats using the Site.

Activity required to construct and operate the Western Bays Solar Development	Value of habitat to long-tailed bats	Actual and potential effects on long-tailed bats	Magnitude of effects[1] without mitigation	Reasoning
Removal of *c.*6.2 km of mature woody vegetation/ shelterbelts on the Site. Removal of *c.*130 m of tall trees, and ongoing trimming of *c.*8600 m^2 (0.86 ha) of scrub within the transmission corridor.	**Moderate - High** • The Northern Shelterbelt has been assessed as **High** value due to the consistently high activity recorded along it coupled with its length (*c.*2.6 km) making it the longest contiguous treeline on the Site. • Other shelterbelts and patches of trees within the Site and along the transmission corridor have been assessed as **Moderate**.	• Physical removal of foraging and potential roosting habitat. • Potential avoidance of the area due to a decrease in habitat quality. • Potential injury or mortality resulting from the felling of active roost trees. • Potential severance of commuting pathways/ habitat fragmentation.	**High**	• Proposed removal of mature shelterbelt trees in the Site is a large shift from baseline conditions. • Acoustic surveys have demonstrated this is preferred habitat for bats using the site. • Roost trees are generally considered a limited resource for bats and cannot be replaced in the short-term. • The vegetation proposed for removal comprises exotic shelterbelt trees. While the removal is a considerable shift from baseline conditions, this type of habitat is readily replaceable in the medium term compared to the removal of intact, or even secondary, native forest.

Activity required to construct and operate the Western Bays Solar Development	Value of habitat to long-tailed bats	Actual and potential effects on long-tailed bats	Magnitude of effects[1] <u>without</u> mitigation	Reasoning
Temporary removal, and long term cover of approx. 305 ha of open pasture with ground mounted photovoltaic panels and associated infrastructure.	**Low** • Open pasture.	• Potential avoidance of the open/ commuting habitat across the site. • Habitat fragmentation.	**Low - Moderate**	• Modifying approximately 300 ha of open pasture through the installation of PV panels does represent a major alteration to the baseline conditions. However, in terms of disturbance to bats the magnitude is lessened for the following reasons: – While the presence of the solar arrays will impact how bats perceive the area, the change is unlikely to exclude them from the Site compared to say a housing development that would be lit at night. – Open pasture is a low value habitat and is very common in the surrounding landscape. – While the pasture is Low value habitat, it likely forms a large component of the habitat matrix that comprises the affected bat population's home range. Covering *c.*305 ha of this habitat type with PV panels could influence how bats using the site access other higher value habitats across their range.

Activity required to construct and operate the Western Bays Solar Development	Value of habitat to long-tailed bats	Actual and potential effects on long-tailed bats	Magnitude of effects[1] without mitigation	Reasoning
Temporary disturbance during construction (namely noise and light)	**Moderate - High** • Potential for bats to be roosting in the remaining trees.	• Potential temporary avoidance of the area due to a decrease in habitat quality.	**Low**	• Construction works will be temporary. • Construction works will be largely undertaken during daytime hours, as such there will be very little overlap with times when bats are active. • The Site will not be lit at night during construction (unless required during an emergency). • The daytime noise and vibration of construction could disturb bats roosting on, or near the Site. This is only likely to occur when construction is in vicinity of the Northern Shelterbelt, making this a very temporary effect relative to the construction timeframe for the entire 620 ha Site.
Long term disturbance during operation (namely noise and light)	**Low - High** • Considering the importance of the *whole* Site as bats habitat.	• Potential permanent avoidance of the area due to a decrease in habitat quality.	**Low**	• There will be a slight increase in nighttime noise levels relative to baseline conditions. This increase will be minor, and the persistence of bats in highly modified areas demonstrates that they can adapt to noisy environments. • The site will not be lit at night. Temporary lighting will only be used on occasion in specific areas of the Site for unplanned, urgent night maintenance and in case of emergencies.

[1] Refer to Ecological Impact Assessment Guidelines 2nd Edition (Roper-Lindsay et al. 2018) for a description of how the magnitude of effects are assessed.

Proposed management and mitigation

The details of the proposed management measures are not confirmed at this stage of the Project. Management recommendations to reduce the potential adverse effects on long-tailed bats will be detailed in the EcIA and may include:

- Limiting the removal of treelines and other habitat identified across the Site. Recommendations may include avoiding habitat assessed as **High** value.
- Providing set-backs between retained woody vegetation and the solar infrastructure.
- Implementing DOC Bat Roost Protocols prior to the removal of mature trees to minimise potential for injury or mortality to roosting bats.
- Replanting shelterbelt trees required for removal in areas where solar panels are not proposed.
- Limiting artificial lighting across the Site at night and applying light sensitive design parameters where/when lighting is required.
- Applying limits to the construction timing to reduce potential disturbance from construction noise when bats are active.

Anticipated effects after management framework applied

If not managed appropriately, the removal of approximately 6.2 km of mature exotic tree shelterbelts coupled with transition of approximately 305 ha of pasture to photovoltaic panels, could have notable impacts on bats using the Site.

It is our opinion however, that the potential adverse effects of the Project on bats could be effectively managed using a selection of the management measures summarised above so that the effects are Low - Moderate, consequently avoiding significant adverse effects on long-tailed bats. This is particularly the case as the key impact is the removal of shelterbelt trees, this habitat is easily replaceable in the medium term compared to the removal of native forest ecosystems.

Georgia Cummings



Senior Ecologist