DRAFT

Draft Avifauna Management Plan for the Point Solar Farm at Twizel, Canterbury

Contract Report No. 6621h-i

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Contract Report No. 6621h-i

March 2026

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1.0 Introduction

Far North Solar Farms Ltd (FNSF) is preparing an application under the Fast Track Approvals Act (2024) for a proposed solar farm located near the township of Twizel in the Mackenzie Basin. The proposed solar farm site is located on approximately 687 hectares of flat land, bordered by farmland to the north and rivers on the eastern and western boundaries.

Wildland Consultants Ltd (Wildlands) has previously prepared an Assessment of Ecological Effects (AEE, Wildlands 2025), which identified important ecological values at the site, including Threatened and At Risk birds. The AEE also identified a need for specific management plans to manage effects on flora and fauna at the site, and to inform future management strategies in the context of the development. This includes developing an Avifauna Management Plan (AMP).

This AMP sets out measures to avoid and minimise effects on indigenous avifauna and forms one of five ecological management plans for the development.

2.0 Site Description

2.1 Project site and context

The project footprint covers 687 hectares and is located approximately 10 kilometres to the southeast of Twizel in the Mackenzie Basin, within the wedge that forms the Ōhau Tekapo Delta and is immediately adjacent to an Important Bird Area (IBA)[1] that includes the Ōhau, Pukaki, Twizel, and Tekapo Rivers (Figure 1).

The site is mostly flat and is underlain with alluvial gravels. Most of the site is currently grazed farmland, and part of it is cultivated and cropped seasonally.

2.2 Summary of previous and concurrent surveys

Wildlands has prepared several reports for this site, including an Assessment of Ecological Effects (AEE; Wildlands 2025). Surveys conducted for the AEE in December 2022, and a follow-up survey in February 2026, confirmed the presence of Threatened and At Risk bird species at the site. A summary of results is provided in Section 4 below.

3.0 Methods

A desktop survey of the site was conducted by searching the online eBird database (maintained by Cornell University) for bird records within a five-kilometre radius of the proposed site (January 2021 to January 2023) and in the surrounding area.

A site visit was undertaken on 14 December 2022, which involved conducting three discrete walking transects. All bird species seen and heard were recorded, and any additional species detected while travelling between the transects were noted as incidental counts. The locations of Threatened and At Risk species were recorded as GPS waypoints.

[1] Forest & Bird 2016: New Zealand Seabirds - Sites on Land, Rivers, estuaries, coastal lagoons & harbours. The Royal Forest & Bird Protection Society of New Zealand, Wellington. 177 p.

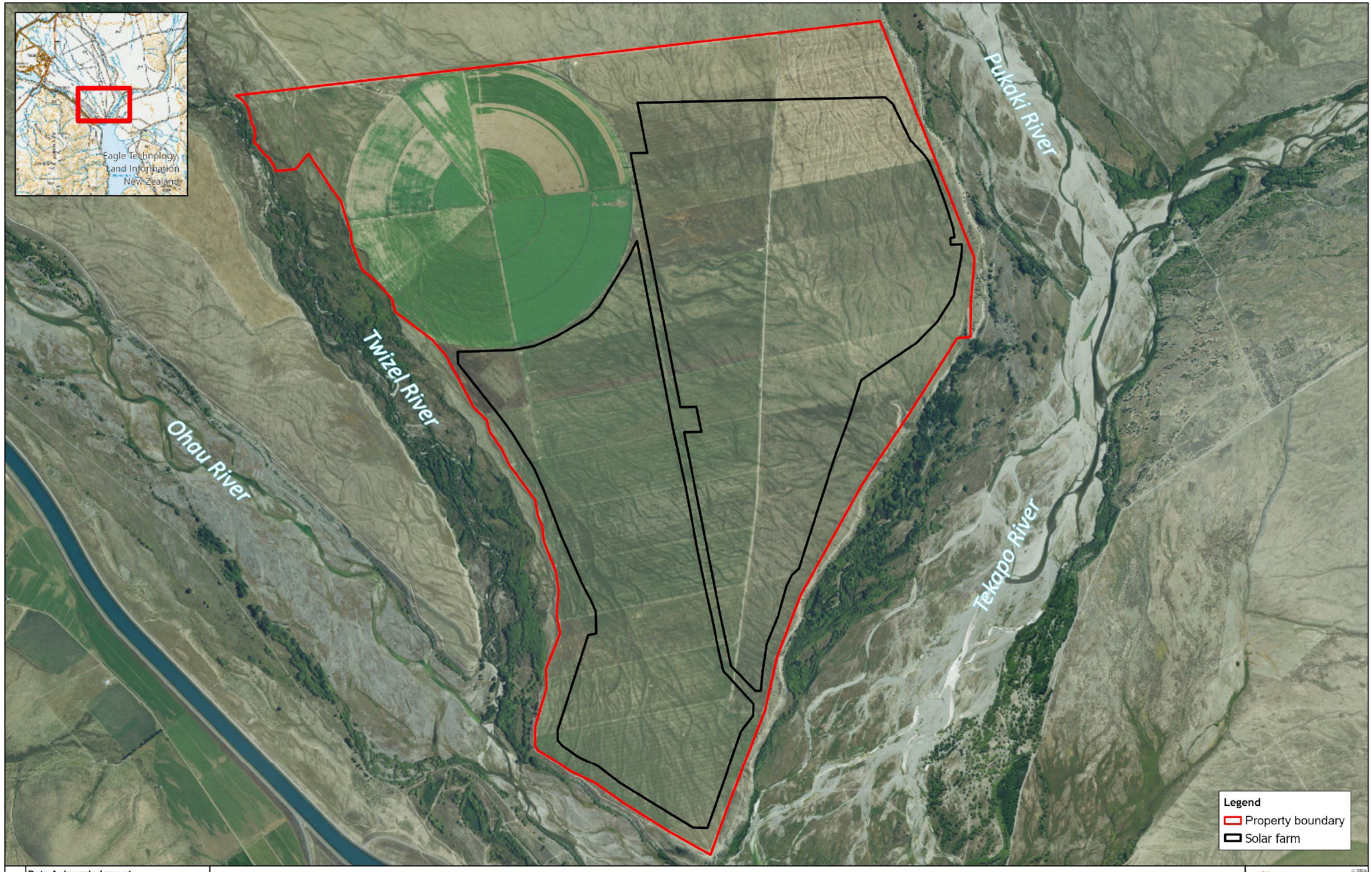

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Figure 1. Location of the proposed Point Solar Farm, MacKenzie Basin

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An additional survey was undertaken between 11 and 13 February 2026. In addition to completing three more transect surveys, twelve 15-minute flight height surveys were conducted on site to record the height, direction of travel, and flock size of flying birds. Eight five-minute bird counts (5MBCs) were also conducted outside the boundary of the proposed solar farm at adjacent areas of importance to avifauna, including Lake Benmore, the Ōhau River, the Twizel River, and the Pukaki River/Tekapo River. The 5MBCs were undertaken to provide recent information about birds using adjacent habitat that may transit over the site or move into habitat on-site.

4.0 Results

Forty-eight bird species and two hybrid taxa were detected in the desktop survey and during the two site visits. This included 32 indigenous species (eight Threatened, eight At Risk, and 16 Not Threatened) and 16 exotic species. Of these, 38 species were seen during the 2022 and 2026 on-site surveys, including one Threatened - Nationally Endangered (tarapirohe/black-fronted tern, *Chlidonias albostriatus*) and five At Risk species, including Declining: pīhoihoi/New Zealand pipit (*Anthus novaeseelandiae novaeseelandiae*), pohowera/banded dotterel (*Charadrius bicinctus bicinctus*), and tarāpuka/black-billed gull (*Chroicocephalus bulleri*) and Relict: kawaupaka/little shag (*Phalacrocorax carbo novaehollandiae*) and māpunga/black shag (*Phalacrocorax carbo novaehollandiae*). Twenty-two bird species were seen off-site during the 2026 survey, including one Threatened and four At Risk species.

Bird species recorded during the transect and 5MBC surveys in 2022 and 2026, and their protection statuses, are summarised in Appendix 1. Figure 2 shows the area surveyed during the 2026 survey and the avifauna observed.

During the flight height surveys conducted in February 2026, 14 observations of flying birds belonging to six species were observed (Appendix 2); two of which were indigenous (kāhu/swamp harrier, *Circus approximans,* Not Threatened; spur-winged plover, *Vanellus miles*, Not Threatened) and four exotic, including common redpoll (*Acanthis flammea*), common starling (*Sturnus vulgaris*), European goldfinch (*Carduelis carduelis britannica*), and Eurasian skylark (*Alauda arvensis*). Of the indigenous species, kāhu/swamp harrier had flight heights of 90-100 metres, while spur-winged plover had a flight height of 20 metres.

5.0 Ecological Values for Avifauna

Areas within and surrounding the site provide important habitat for avifauna. These included tarapirohe/black-fronted tern and pohowera/banded dotterel. Both species observed during the field survey. The site also provides potential foraging and breeding habitat for other Threatened and At Risk species (Appendix 1). These include kakī/black stilt (*Himantopus novaezelandiae*, Threatened – Nationally Critical), tōrea/South Island pied oystercatcher (*Haematopus finschi*, At Risk – Declining), and pīhoihoi/New Zealand pipit. These species can use habitats such as the cocksfoot grassland, brome-hawkweed-sheep sorrel grassland/herbfield and brassica cropland on-site to forage and breed.

Wetland and river areas adjacent to the site provide habitat for a range of avifauna species. Wetland birds such as matuku-hūrepo/Australasian bittern (*Botaurus poiciloptilus*, Threatened – Nationally Critical) and kotoreke/marsh crake (*Zapornia pusilla*, At Risk – Declining) may utilise these areas, as the *Carex* and *Juncus* wetlands provide suitable breeding and foraging habitat, notwithstanding that these highly cryptic species were not detected during field surveys.

The IBA adjacent to the site is part of the Department of Conservation's Project River Recovery programme, providing habitat for a diverse range of avifauna species.

6.0 Potential Effects on Avifauna

There are five potential effects on avifauna from the proposed solar farm construction:

- Loss of avifauna habitat.
- Disturbance to indigenous breeding avifauna during construction.
- Death or injury to indigenous breeding avifauna during construction.
- Ongoing disturbance to avifauna.
- Risk of bird strike with panel arrays.

These effects are discussed in more detail in the AEE (Wildlands 2025).

The purpose of this management plan is to outline ways to minimise these effects.

7.0 Management of Effects

7.1 Limit construction during the breeding season

Ideally, as much construction work as possible should occur between 2 March and 30 June, outside the breeding season of Threatened and At Risk birds (1 July – 1 March inclusive), as construction activities could injure or kill breeding birds, eggs, and chicks through land clearance and movement of machinery and vehicles. However, due to the size of the project and extended breeding season (approximately eight months) of birds likely to inhabit the area, some construction work will inevitably take place during this period. The following management measures are designed to minimise impacts on breeding and nesting birds both during and outside of the breeding season. Table 1 provides details on the breeding seasons of the Threatened and At Risk birds identified during the site visit or noted from the desktop survey.

7.2 Pre-works surveys

A suitably qualified avifauna ecologist (SQAE) should undertake a pre-works survey no more than eight days prior to works commencing during the breeding season (1 July to 1 March inclusive) to determine whether birds are nesting on-site. If works stop for more than eight days, or if works are to start in a new area/stage, an avifauna survey is required no more than eight days prior to works recommencing/commencing during the breeding season.

7.3 Setbacks

Any nests of protected ground-nesting avifauna species must be avoided by establishing setback distances (buffer zones). In open areas, this setback should be a minimum of 100 metres for Threatened, At Risk[1] and protected species (as per the Wildlife Act 1953), and should be clearly demarcated. Buffer zone distances may be reduced for intermittent, short-duration work if the nests or chicks are not visible from the source of disturbance (e.g. if vegetation or topographic features screen the source of disturbance from the nest or chicks). This adjustment is subject to approval by a SQAE and should be documented in writing.

[1] Threat classifications are from Robertson *et al.* (2021).

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Figure 2. 2022 and 2026 avifauna survey and results at The Point Solar Farm

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Date: 20/02/2026
Cartographer: LW
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Table 1 - **Breeding seasons of Threatened and At Risk bird species. *Asterisk identifies birds that could potentially be encountered at the site.**

Bird Species	Breeding/Nesting Habitat	Breeding Season											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kakī/black stilt*	Inland braided river								✓	✓	✓	✓	✓
Kōtuku/white heron	Trees (in Okarito)									✓	✓	✓	
Matuku-hūrepo/ Australasian bittern	Wetland vegetation	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Tarapirohe/black-fronted tern*	Inland braided river	✓									✓	✓	✓
Pārera/grey duck*	Inland braided river								✓	✓	✓	✓	✓
Pūteketeke/Australasian crested grebe	Freshwater	✓	✓	✓	✓	✓				✓	✓	✓	✓
Taranui/Caspian tern*	Sand or shingle	✓								✓	✓	✓	✓
Ngutu pare/wrybill*	Inland braided river								✓	✓	✓	✓	✓
Kotoreke/marsh crake*	Wetland vegetation									✓	✓	✓	✓
Pihoihoi/New Zealand pipit *	Open country/ tussock	✓	✓						✓	✓	✓	✓	✓
Pohowera/banded dotterel*	Open country/ tussock	✓						✓	✓	✓	✓	✓	✓
Tarāpuka/black-billed gull*	Inland braided river	✓	✓						✓	✓	✓	✓	✓
Tōrea/South Island pied oystercatcher *	Inland braided river	✓							✓	✓	✓	✓	✓
Kawaupaka/little shag*	Roosting in overhanging trees	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Māpunga/black shag*	Roosting in overhanging trees			✓	✓	✓	✓	✓	✓				
Australian coot	Freshwater	✓	✓	✓						✓	✓	✓	✓

Construction activities must not occur within the setback area until (i) chicks have fledged and are independent of the nesting site, or (ii) the nest has been abandoned, as determined by a SQAE.

The river delta at the southern corner of the site, the wetlands at the northwest of the site, and the braided riverbeds bordering the site to the east, west, and south are particularly important avifauna habitats and must be avoided. A setback distance of 100 metres should be maintained between the near edge of rivers/wetlands and any area where machinery and power tools are used. These buffers should be total exclusion areas and cannot be used for vehicle access to the construction site.

7.4 Avoid the creation of bare ground during construction

All efforts should be made to prevent the creation of areas of bare ground 10 square metres or larger during the construction phase, as this could attract some species to attempt to nest, e.g. poaka/pied stilt (*Himantopus himantopus*, Not Threatened), spur-winged plover, and pohowera/banded dotterel.

If areas are being cleared for landscape plantings, the plantings should be implemented immediately after the site preparation phase, or the area should be covered until planting can take place.

If creating areas of bare ground is unavoidable and the area remains inactive for more than eight days, then passive measures to deter birds from using them must be implemented. The following techniques could be used:

- The use of reflective tape can be very effective in the short term and will deter various bird species (Avery and Werner 2017). Reflective tape can reflect light, disorienting or irritating birds, and make noise when the tape flaps in the wind. However, this is a short-term solution as birds can habituate to the deterrent over time. If the area is large enough for birds can access it without seeing the tape, then it will not work.
- Barriers and screening could be implemented to restrict or remove access to bare ground. However, it is essential that barriers and screens do not pose an entrapment risk to birds, so mesh-type products should not be used.

If passive deterrence measures are unsuccessful and protected species begin nesting in the area, the setback measures identified in Section 7.2 above must be implemented.

7.5 Reduce construction noise and vibration

To minimise the disturbance to avifauna from the construction adjacent to the braided rivers, noise and vibration levels should be kept to a minimum. While construction noise is unavoidable, machinery must not be left running when not in use. Additionally, music from radios should not be played loudly on site as this can disturb nesting or roosting birds and their chicks.

7.6 Reduce the risk of impact trauma (bird strike)

To reduce the risk of impact trauma arising from collision with structures at the solar farm, the following has been incorporated into the proposed concept design:

- The panel design incorporates spacing between panels of 3.8 to 4.8 metres, depending on the degree of tilt.
- The PV panels include a standard anti-reflective coated front glass.

- The panels will have a 55-degree night rest position from after sunset until before sunrise in order to minimise reflectivity at night. If practicable, the panels will be positioned in directions away from sources of polarised moonlight.

During monitoring, the effectiveness of these mitigation techniques should be assessed to see how birds are using the spacing between panels, and that the anti-reflective coating is less attractive to birds.

7.7 Manage pest mammal control

Pest mammal control should be implemented on site, guided by the accompanying Pest Mammal Management Plan (Wildlands 2025a), with regular bait checks and monitoring for the lifetime of the solar farm. Pest mammal control will reduce predation pressure on avifauna and other significant taxa present within and adjacent to the site. Trapping should focus on high-value areas for avifauna, such as the wetland and along the southern border of the site.

7.8 Prevent encroachment into high-value habitat

To prevent ongoing disturbance to avifauna, including nesting birds, there should be no encroachment into high value habitat (wetlands, rivers or river deltas bordering the site). This means that construction activities should not occur in or impact these habitats. Encroachment into adjacent wetland and river habitats should be prevented by following the setback distances set out in Section 7.3.

7.9 Reduce vehicle speed on site

Vehicle movement is likely to cause ongoing disturbance to avifauna nesting within the site during the breeding season. Vehicles must drive slowly within the solar farm, as birds will breed in gravel areas and could use the vehicle tracks as breeding sites. This can lead to disturbance, mortality, or birds colliding with vehicles. If birds are incidentally discovered, the incidental discovery protocol must be followed (Section 7.10).

7.10 Implement Incidental Discovery Protocol when necessary

7.10.1 Overview

The following protocols outline the steps for incidental discoveries of nesting birds, nests, and injured birds, during construction and ongoing maintenance.

7.10.2 Incidental nest discovery

- If nests or nesting avifauna are discovered within the footprint of the site, all works within 100 metres of Threatened and At Risk species (as confirmed by a SQAE), must immediately stop and the discovery must be reported to the Site Manager.

- Record the following details:
  - Date and time of discovery.
  - Location (GPS coordinate marked).
  - Description of the finding (e.g., species identification, nest type, or remains).
  - Photos, if feasible, without disturbing the nest.

- No works shall resume within this area until a SQAE has viewed the photos and/or assessed the nest and associated birds and determined the appropriate setback to avoid adverse effects.

7.10.3 Injured birds

- If an injured Threatened or At Risk indigenous bird is found within the site footprint, the injured bird should be placed in a cool, dark, material-lined box and taken to a vet immediately.
- The local DOC office or DOC hotline (if after hours) should be contacted no later than two hours after the injured bird is found. The DOC hotline is 0800 DOCHOTLINE (0800 362 468).

7.11 Undertake surveys during construction

A nesting bird survey should be undertaken by a SQAE no more than eight days before construction under the following circumstances:

- Works cease for a period of eight consecutive days or more during the avifauna breeding season (1 July – 1 March inclusive).
- When a new construction phase begins.
- Development begins on areas of the site that were previously undeveloped, as birds may start nesting in areas of the site that have experienced less disturbance.

Any nests of Threatened, At Risk, and protected bird species found during these surveys will have the appropriate setbacks applied as discussed in Section 7.3.

7.12 Bird Monitoring

7.12.1 Overview

Avifauna monitoring should occur in locations within, and adjacent to, the site. Monitoring should occur monthly for a minimum of six months prior to construction, weekly during construction and, once construction has ended, monitoring should continue at least on a bi-monthly basis for a minimum of three years. Monitoring locations should be designated by a SQAE, based on the avifauna values present. Results from avifauna monitoring should be reported annually.

Where possible, monitoring should occur during the early morning or late afternoon, when birds are most active at these times. Surveys should be avoided during strong winds or heavy rain where practicable.

During monitoring, the following information should be recorded:

- Date and time of survey.
- Location.
- The total number of birds observed across all species.
- The behaviours and habitat use of all birds present (e.g. roosting on panels, feeding on bare ground under panels, flying overhead).
- For birds flying overhead, the approximate height (e.g. <10 metres, 10-30 metres, >30 metres), direction of the flight, and size of the flock (if applicable).

If a carcass is discovered during monitoring, the methods outlined in sections 7.13.2 and 7.13.4 will be followed.

7.12.2 On-site monitoring and preparation of an Avifauna Carcass Monitoring Programme

Monitoring

A SQAE will systematically monitor the birds present within the site prior to construction, throughout the construction period and post-construction. This will allow for a proactive response, such as changes to construction protocols and the avoidance of nesting birds or chicks, if changes in abundance or behaviour of Threatened, At Risk, or protected bird species are observed.

Avifauna monitoring should be conducted at representative locations within the solar farm as determined by a SQAE. Location selection must provide good visibility and coverage of the solar farm site, including areas adjacent to potentially important avifauna habitat such as wetlands or braided rivers.

Avifauna monitoring should occur **monthly** for a minimum of six months prior to construction commencing, to provide baseline data about bird distributions at the site. Monitoring should occur **weekly** during the construction phase, as the most significant changes to the site will occur during this period. Once construction is completed, monitoring should be continued each **fortnight** for at least three years following the completion of construction. This will be extended under recommendation from a SQAE if Threatened, At Risk, or protected bird species are frequently observed on the solar farm site or have been recorded as fatalities. As adaptive management changes are implemented, monitoring may continue at least bi-monthly for the life of the solar farm.

Avifauna Carcass Monitoring Programme

Prior to commencement of construction and following the completion of pre-construction avifauna monitoring, an Avifauna Carcass Monitoring Programme (ACMP) will be prepared and submitted to DOC for certification. The ACMP will be developed by a SQAE in collaboration with a suitably qualified biostatistician and will be designed in advance to ensure statistical robustness. The programme will enable estimation of true collision mortality rates by incorporating appropriate correction factors, including those relating to detection probability.

The monitoring design will adopt a stratified sampling framework that divides the solar farm into monitoring strata reflecting relative collision risk. As a minimum, these strata will include high-risk perimeter areas (such as edges adjacent to waterways or wetlands), infrastructure risk areas (including fencing, substations, buildings, lighting, and above-ground cabling), interior panel arrays, and any additional risk zones identified by the SQAE. Monitoring effort will be proportionally weighted toward higher-risk strata to maximise detection probability and ensure that monitoring intensity aligns with assessed collision risk.

7.12.3 Off-site monitoring

Monitoring should occur at representative sites in adjacent areas known to be important to avifauna, following the methods outlined in sections 7.12.1 and 7.12.2. Off-site monitoring will provide recent information about birds using adjacent habitat that may transit over the site or move into habitat on-site.

Off-site areas for monitoring could include:

- Ōhau Tekapo Delta
- Ōhau River
- Pukaki River
- Twizel River
- Tekapo River

7.13 Post-Construction Carcass Monitoring

7.13.1 Incidental carcass discovery

- All incidental discoveries of dead birds at the site should be recorded, including the following details:
  - Date and time of discovery.
  - Location (GPS coordinate marked).
  - Species
  - Signs of injury and cause of death.
  - Photos of the carcass at multiple angles.
- If the bird is identified as a Threatened or At Risk species, the local DOC office should be contacted.
- If the bird species identification cannot be determined, swabs should be taken for DNA identification.
- If cause of death is unclear, the carcass should be kept for autopsy.

7.13.2 Systematic carcass searches

- Systematic carcass searches should be conducted at representative locations throughout the solar farm as per the ACMP. The specific methods used for carcass searches will be determined by the analysis of a suitably qualified biostatistician, who will provide advice around factors including:
  - The proportion of the solar farm that should be surveyed (e.g. 30%, 50% or 100%), and how the area surveyed should be varied during each survey round.
  - The frequency of surveys.
- Observer efficiency trials, carcass detection trials, and carcass persistence trials should be undertaken and analysed by a suitably qualified biostatistician to inform modelling of bird strike frequency.
- Monthly carcass searches should occur for at least six months prior to the commencement of construction, to determine whether birds are striking any structures, fences, power or transmission lines or other structures already present at the site. Once construction has been completed, carcasses searches should then occur monthly for the life of the solar farm. If possible, carcass searches should include the use of carcass detection dogs.
- Results from carcass monitoring should be reported after the completion of each survey, to ensure appropriate adaptive management can be undertaken if required, and an annual summary of results should be provided.
- Monitoring should include risk-stratified sampling with increased effort at the edges of the solar farm and around ancillary infrastructure.
- The following details should be recorded:
  - Date and time of discovery.
  - Location (GPS coordinate marked).
  - Species (if known)
  - Cause of death (if known).
  - Photos of the carcass at multiple angles.
- If the bird is identified as a Threatened or At Risk species, the local DOC office should be contacted.
- If carcasses of Threatened or At Risk species are identified, a SQAE may recommend that monitoring continue for an additional period.
- DNA samples of any bird carcasses that cannot be identified based on their morphology, along with any signs of bird strike of panel arrays, should be collected following the methodology outlined in Waugh *et al.* (2010). This involves using sterile sampling kits to collect blood samples or tissue, which are then sent to a laboratory for DNA barcoding.
- If the cause of fatality of a bird cannot be determined, the carcass will be collected and sent for autopsy, if deemed sufficiently intact.

7.13.3 Trigger levels

An independent review by a SQAE will be triggered if either of the following is discovered:

- The injury or mortality of a Nationally Critical or Nationally Endangered species.
- The injury or mortality of two Nationally Vulnerable or Nationally Increasing birds within one survey, or of three within a 12-month period.
- The injury or mortality of three At Risk birds within one survey, or of five within a 12-month period.
- The injury or mortality of five Not Threatened indigenous birds within a survey, or of 15 within a 12-month period.

The SQAE will consult with DOC during the review, and the report should be provided to FNSF, DOC, and the Mackenzie District Council for review. The independent review will determine whether further effects management is needed, which could include changes to on-site protocols such as the use of appropriate bird deterrent devices or compensation for off-site breeding areas of certain species. Monitoring will occur throughout the life of the consent, unless reduced following statistical demonstration that collision risk is demonstrably low and stable.

8.0 Summary of Avifauna Management and Timing

By following the prescribed recommendations and timing summarised in Table 2 below, any potential effects on indigenous avifauna arising from activities during construction and subsequent operation of the proposed solar farm can be appropriately managed.

Table 2 – Summary of avifauna management procedures to be undertaken during the development and operational phases of the solar farm development.

Action	Timing of Implementation	Reference Section
Planning Phase		
Plan construction to occur outside of the avifauna breeding season (1 July-1 March inclusive) where possible	During works scheduling	7.1
Plan and implement speed limits	Before construction begins	7.9
Pre-works nest and chick survey	No more than eight days prior to works commencing	7.2
Development Phase		
Avifauna surveys	Between 1 July and 1 March inclusive, no more than eight days before works (i) recommence after stopping for more than eight days, or (ii) begin in a new area/stage	7.2; 7.11
Incidental discovery protocol	Any time a nest, nesting bird, or injured bird is discovered	7.10
Establishment of setbacks for nesting birds	Any time protected nesting birds are found on site	7.3
Monitor birds on site and at adjacent sites of importance to avifauna	Weekly during construction	7.12
Avoid creation of bare ground	During construction	7.4
Reduce construction noise and vibration	During construction, particularly when using heavy machinery	7.5
Solar Farm Operational Phase		
Monitor birds on site and at adjacent sites of importance to avifauna	Fortnightly for at least three years post-construction	7.12
Pest mammal management	Continuing throughout the life of the project	7.7
Record bird carcasses	Any time a bird carcass is found throughout the life of the solar farm, it should be recorded	7.13
Systematic carcass monitoring	Monthly throughout the life of the solar farm.	7.13
Report injuries or mortalities to Department of Conservation	Any time an injured or dead bird from a Threatened or At Risk species is discovered	7.13
Independent review by SQAE	Any time an injured or dead bird from a Threatened or At Risk species is discovered; or if five or more injured or dead birds of any Not Threatened or protected species are discovered within 12 months where the incident relates to a similar hazard.	7.13

References

Avery, M.L. & Werner, S.J. (2017). Frightening devices. USDA National Wildlife Research Center - Staff Publications. University of Nebraska. 17 pp.

Robertson, H.A., Baird, K.A., Elliott, G.P., Hitchmough, R.A., McArthur, N.J., Makan, T.D., Miskelly, C.M., O'Donnell, C.J., Sagar, P.M., Scofield, R.P., Taylor, G.A., & Michel, P. (2021). Conservation status of birds in Aotearoa New Zealand, 2021. Department of Conservation. https://www.doc.govt.nz/globalassets/documents/science-and-technical/nztcs36entire.pdf

Waugh, J., Evans, M.W., Millar, C.D., & Lamberts, D.M. (2011) Birdstrikes and barcoding: can DNA methods help make airways safer? *Molecular Ecology Resources, 11*, 38-45.

Wildland Consultants (2025). Assessment of ecological effects of the proposed solar farm between the lower reaches of the Tekapo and Twizel Rivers, Mackenzie District. Wildland Consultants Contract Report No. 6621c. Prepared for Far North Solar Farms Ltd. 57 pp.

Appendix 1

Bird species detected during the desktop assessment and site visits for the proposed The Point Solar Farm (Wildlands 6621c). Birds seen on-site are indicated by an Asterisk

Common names, scientific names, and threat classification are from Robertson *et al.* (2021) and protection status from the Wildlife Act 1953.

Common Name(s)	Scientific Name	Threat Classification 2021	Likelihood of Presence at Site	Location(s) During Off-Site 5MBCs	Protection Status
Indigenous					
Kakī/black stilt	*Himantopus novaezelandiae*	Threatened – Nationally Critical	Highly likely		Protected
Kōtuku/white heron	*Ardea alba modesta*	Threatened – Nationally Critical	Possible		Protected
Matuku-hūrepo/Australasian bittern	*Botaurus poiciloptilus*	Threatened – Nationally Critical	Possible		Protected
Tarapirohe/black-fronted tern*	*Chlidonias albostriatus*	Threatened – Nationally Endangered	Seen during visit (2022 and 2026)	Pukaki River/Tekapo River	Protected
Ngutu pare/wrybill	*Anarhynchus frontalis*	Threatened – Nationally Increasing	Likely		Protected
Pārera/grey duck	*Anas superciliosa*	Threatened – Nationally Vulnerable	Likely		Protected
Pūteketeke/Australasian crested grebe	*Podiceps cristatus australis*	Threatened – Nationally Vulnerable	Unlikely		Protected
Taranui/Caspian tern	*Hydroprogne caspia*	Threatened – Nationally Vulnerable	Highly likely		Protected
Kotoreke/marsh crake	*Zapornia pusilla affinis*	At Risk – Declining	Likely		Protected
Pīhoihoi/New Zealand pipit*	*Anthus novaeseelandiae novaeseelandiae*	At Risk – Declining	Seen during visit (2026)	Pukaki River/Tekapo River	Protected
Pohowera/banded dotterel*	*Charadrius bicinctus bicinctus*	At Risk – Declining	Seen during visit (2022)	Pukaki River/Tekapo River	Protected
Tarāpuka/black-billed gull*	*Chroicocephalus bulleri*	At Risk – Declining	Seen during visit (2022)		Protected
Tōrea/South Island pied oystercatcher	*Haematopus finschi*	At Risk – Declining	Likely		Protected
Kawaupaka/little shag*	*Microcarbo melanoleucos brevirostris*	At Risk – Relict	Seen during visit (2022)	Lake Benmore	Protected but can be hunted

Common Name(s)	Scientific Name	Threat Classification 2021	Likelihood of Presence at Site	Location(s) During Off-Site 5MBCs	Protection Status
Māpunga/black shag*	*Phalacrocorax carbo novaehollandiae*	At Risk – Relict	Seen during visit (2022 and 2026)	Lake Benmore	Protected but can be hunted
Australian coot	*Fulica atra australis*	At Risk – Naturally Uncommon	Unlikely		Protected
Grey duck – mallard hybrid	*Anas superciliosa × platyrhynchos*	Not Threatened	Seen during visit (2022 and 2026)	Pukaki River/Tekapo River, Lake Benmore	Protected but can be hunted
Kāhu/swamp harrier	*Circus approximans*	Not Threatened	Seen during visit (2022 and 2026)	Twizel River, Ōhau River, Ōhau/ Benmore delta	Protected but can be hunted
Kakīānau/black swan	*Cygnus atratus*	Not Threatened	Seen during visit (2022 and 2026)		Protected but can be hunted
Karoro/southern black-backed gull	*Larus dominicanus dominicanus*	Not Threatened	Seen during visit (2022 and 2026)	Lake Benmore, Pukaki River/Tekapo River	Not protected
Kuruwhengi/Australasian shoveler	*Spatula rhynchotis*	Not Threatened	Highly likely		Protected but can be hunted
Matuku moana/white-faced heron	*Egretta novaehollandiae*	Not Threatened	Highly likely	Pukaki River/Tekapo River	Protected
Pāpango/New Zealand scaup	*Aythya novaeseelandiae*	Not Threatened	Highly unlikely	Lake Benmore	Protected
Pied stilt x black stilt hybrid	*Himantopus himanoptus x novaezelandiae*	Not Threatened	Likely		Protected
Pīpīwharauroa/shining cuckoo	*Chrysococcyx lucidus lucidus*	Not Threatened	Seen during visit (2022)		Protected
Pīwakawaka/South Island fantail	*Rhipidura fuliginosa fuliginosa*	Not Threatened	Seen during visit (2022 and 2026)	Pukaki River	Protected
Poaka/pied stilt	*Himantopus himantopus leucocephalus*	Not Threatened	Seen during visit (2022 and 2026)		Protected
Pūkeko	*Porphyrio melanotus melanotus*	Not Threatened	Unlikely		Protected but can be hunted
Pūtangitangi/paradise shelduck	*Tadorna variegata*	Not Threatened	Seen during visit (2022 and 2026)		Protected but can be hunted
Riroriro/grey warbler	*Gerygone igata*	Not Threatened	Seen during visit (2022 and 2026)	Pukaki/Tekapo River, Twizel River, Lake Benmore, Ōhau/ Benmore delta	Protected
Spur-winged plover	*Vanellus miles novaehollandiae*	Not Threatened	Seen during visit (2026)	Pukaki River/Tekapo River	Not protected
Tauhou/silvereye	*Zosterops lateralis lateralis*	Not Threatened	Seen during visit (2022)		Partially protected

Common Name(s)	Scientific Name	Threat Classification 2021	Likelihood of Presence at Site	Location(s) During Off-Site 5MBCs	Protection Status
Tētē-moroiti/grey teal	*Anas gracilis*	Not Threatened	Seen during visit (2026)		Protected but can be hunted
Warou/welcome swallow	*Hirundo neoxena neoxena*	Not Threatened	Seen during visit (2022)	Pukaki River/Tekapo River	Protected
Exotic					
Australian magpie	*Gymnorhina tibicen*	Introduced and Naturalised	Seen during visit (2022 and 2026)	Pukaki River/Tekapo River	Not protected
California quail	*Callipepla californica*	Introduced and Naturalised	Seen during visit (2022)		Not protected
Canada goose	*Branta canadensis*	Introduced and Naturalised	Seen during visit (2022 and 2026)	Ōhau River	Not protected
Chaffinch	*Fringilla coelebs*	Introduced and Naturalised	Seen during visit (2022 and 2026)	Ōhau/Benmore delta	Not protected
Common redpoll	*Acanthis flammea*	Introduced and Naturalised	Seen during visit (2022 and 2026)	Ōhau/Benmore delta	Not protected
Common starling	*Sturnus vulgaris*	Introduced and Naturalised	Seen during visit (2022 and 2026)		Not protected
Dunnock	*Prunella modularis*	Introduced and Naturalised	Seen during visit (2022 and 2026)	Ōhau River	Not protected
Eurasian blackbird	*Turdus merula*	Introduced and Naturalised	Seen during visit (2022)	Pukaki River	Not protected
Eurasian skylark	*Alauda arvensis*	Introduced and Naturalised	Seen during visit (2022 and 2026)		Not protected
European goldfinch	*Carduelis carduelis britannica*	Introduced and Naturalised	Seen during visit (2022 and 2026)	Twizel River, Pukaki River	Not protected
European greenfinch	*Chloris chloris*	Introduced and Naturalised	Seen during visit (2022)		Not protected
House sparrow	*Passer domesticus*	Introduced and Naturalised	Seen during visit (2022 and 2026)	Pukaki/Tekapo River, Twizel River, Ōhau River, Ōhau/ Benmore delta	Not protected
Mallard	*Anas platyrhynchos*	Introduced and Naturalised	Likely		Protected but can be hunted
Passerine sp.	*Passeriformes* sp.	Introduced and Naturalised	Seen during visit (2022)		
Rock pigeon	*Columba livia*	Introduced and Naturalised	Seen during visit (2022 and 2026)		Not protected
Song thrush	*Turdus philomelos*	Introduced and Naturalised	Seen during visit (2022)		Not protected

Common Name(s)	Scientific Name	Threat Classification 2021	Likelihood of Presence at Site	Location(s) During Off-Site 5MBCs	Protection Status
Yellowhammer	*Emberiza citronella*	Introduced and Naturalised	Seen during visit (2022)		Not protected

Appendix 2

Birds detected during 12 flight height surveys for the proposed The Point Solar Farm.

Common Name(s)	Scientific Name(s)	Threat Status	Flock Size	Direction of Travel	Flight Height (m)
Kāhu/swamp harrier	*Circus approximans*	Not Threatened	1	Circling	100
Kāhu/swamp harrier	*Circus approximans*	Not Threatened	1	Southwest	90
Kāhu/swamp harrier	*Circus approximans*	Not Threatened	1	Southeast	90
Spur-winged plover	*Vanellus miles novaehollandiae*	Not Threatened	2	North	20
Common redpoll	*Acanthis flammea*	Introduced and Naturalised	1	Northwest	25
Common starling	*Sturnus vulgaris*	Introduced and Naturalised	20	North	20
Common starling	*Sturnus vulgaris*	Introduced and Naturalised	1	East	10
Eurasian skylark	*Alauda arvensis*	Introduced and Naturalised	1	South	10
Eurasian skylark	*Alauda arvensis*	Introduced and Naturalised	3	East	15
Eurasian skylark	*Alauda arvensis*	Introduced and Naturalised	1	North	10
European goldfinch	*Carduelis carduelis britannica*	Introduced and Naturalised	1	Southwest	5
European goldfinch	*Carduelis carduelis britannica*	Introduced and Naturalised	1	Northwest	7
European goldfinch	*Carduelis carduelis britannica*	Introduced and Naturalised	1	West	30
European goldfinch	*Carduelis carduelis britannica*	Introduced and Naturalised	2	Northwest	7

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