REPORT

Tonkin+Taylor

Lake Pūkaki Fast Track Consent Substantive Application

Lizard Management Plan

Prepared for
GHD Limited
Prepared by
Tonkin & Taylor Ltd
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1 Introduction

Meridian Energy Limited (Meridian) hold consents to operate the Waitaki Power Scheme (WPS) for hydroelectric power generation. Lake Pūkaki is part of the WPS and is in the Mackenzie Basin of the South Island of New Zealand.

Meridian is seeking approval under the Fast Track Approvals Act (FTAA) to temporarily enable access to water stored in Lake Pūkaki below 518 m RL, without the currently applicable security of supply triggers. In addition, Meridian is seeking consent to undertake associated dam armouring works at the dam face of Lake Pūkaki during periods of lower water level, when the works zone can be accessed. The consenting period sought for the dam armouring works is 35 years.

Ecological assessments of the Project site have been undertaken to inform the FTC application (Tonkin & Taylor Ltd (T+T) 2025). Native lizards have been identified as potentially present in the project area from a desktop assessment. Targeted lizard surveys have yet to be undertaken due to seasonal limitations that exclude lizard surveys during the winter period.

All native lizards are protected under the Wildlife Act (1953). This Lizard Management Plan (LMP) has been prepared for the Wildlife Approval Application to accompany the FTC Substantive Application. Schedule 7 of the FTAA includes a list of information required for wildlife approval. Section 1.8 outlines the information requirements set out in Clause 2(1) of Schedule 7 and the relevant section of the LMP where the information requirement is addressed.

This work has been undertaken in accordance with Variation 01 (VO1) dated 27 June 2025[1] to the original contract (Letter of Engagement (LOE) dated 19 December 2024).[2]

1.1 Purpose and scope

This LMP outlines the approach to survey and assess lizard ecological values at the site, potential adverse effects on native lizards and recommended effects management actions in accordance with the effects management hierarchy as per the National Policy Statement for Indigenous Biodiversity 2023 (NPS-IB). The NPS-IB does not apply to renewable electricity generation but provides a useful framework for the assessment and management of native lizards. The LMP includes the following key sections:

- Wildlife approvals sought under the FTAA (Section 1.4).
- Lizard ecological values (based on desktop assessment) and potential adverse impacts (Section 2).
- Proposed lizard survey methods (Section 3).
- Recommended effects management measures (Section 4).
- Preliminary high-level salvage approach if Threatened species are recorded on site (Appendix D).

This management plan will be updated following results collected during the proposed lizard survey. The LMP has been developed in accordance with recommendations described in the Project Ecological Impact Assessment (EcIA) (T+T, 2025).

[1] T+T (27 June 2025). Variation 01: Fast Track Substantive Reporting. Job no. 1097626.0000.
[2] T+T (19 December 2024). Letter of Engagement. Blue Cascade: Lake Pūkaki technical assessments. Job no. 1097626.0000.

1.2 Associated documents

This report should be read in conjunction with the Ecological Impact Assessment (EcIA) for the project (T+T, 2025).

1.3 Description of project activities that may impact lizards

1.3.1 Dam armouring works

To enhance the Pūkaki Dam's resilience, protective rip rap on the face of the dam will be installed on the slopes of the Pūkaki Dam's Main Dam Face (High Dam) and Left and Right Abutments (Figure 1.1). Construction works will involve the following:

- Constructing access tracks and ramps.
- Transporting rock armour from the current location to a designated stockpile area.
- Constructing work benches.
- Constructing toe/key along High Dam.
- Rock placement on High Dam.
- Rock placement on abutments.
- Temporary building.
- Decommission of site.

These works are proposed to occur during periods where the dam water level is at a sufficiently low level to access the works area. Material for the riprap will be sourced from nearby stockpile areas located off Twizel Town Tracks and Tekapo-Twizel Road (Figure 1.1). The stockpile areas are approximately 6.3 ha and 0.8 ha in size.

Figure 1.1: Dam armouring works preliminary design footprint and stockpile locations (GHD, August 1, 2025).

1.4 Statutory context and approvals sought

Native lizards are protected by the Wildlife Act 1953. A project referred for FTC may apply to the Environmental Protection Authority (EPA) for a wildlife approval under section 42(4)(h) of the Fast-track Approvals Act 2024 as part of a Substantive Application.

Wildlife approvals authorise activities that would otherwise be an offence under the Wildlife Act 1953. Specifically, the wildlife approvals requiring authorisation for this project relate to protected native lizards and include:

- Catch and handling.
- Accidental killing.

1.5 Term

The term for which the wildlife approval is sought is 35 years. This timeframe allows for the consenting period and period in which dam armouring works may be required.

A request for a 35 year term is sought but with a review of this LMP and dam armouring works progress every 10 years. A short report will be prepared and delivered to DOC every 10 years with a request to continue to manage the works under the existing wildlife approval.

1.6 Responsibilities

A lizard survey will be undertaken by a suitably qualified ecologist with a Wildlife Act Authority (WAA) to survey native lizards. A summary of suitably qualified ecologists' background and experience are provided in Appendix B. Other ecologists may undertake the work under direct supervision of the lead ecologist listed in Appendix B.

1.7 LMP implementation programme

The programme presented in Table 1.1 provides a summary of the proposed lizard survey, lizard management measures outlined in this management plan (if required) and key personnel required at each stage.

Table 1.1: LMP survey implementation programme

Deliverables	Timeframe	Personnel	Completed
Pre-construction lizard survey (Inclusive 1 October – 30 April)			
Manual habitat searches	Any time prior to works commencing during October to April inclusive during suitable weather.	Lead ecologist authorised to survey lizards, with assistance from support ecologists.	
Visual encounter surveys	Any time prior to works commencing during October to April inclusive during suitable weather.		
eDNA survey	Any time prior to works commencing during October to April inclusive during suitable weather.		
Funnel trapping	Any time prior to works commencing during October to April inclusive during suitable weather.		
Lizard salvage (if required by Threatened species findings) (1 October – 30 April)			
Relocation site investigations including lizard survey	Any time prior to works commencing during October to April inclusive during suitable weather.	Lead ecologist authorised to salvage lizards, with assistance from support ecologists.	
Lizard salvage (refer to Appendix D)	Any time prior to works commencing during October to April inclusive during suitable weather.		
Lizard monitoring	Five years following relocation.		
Pest mammal control (if required)	Ten years following relocation.		

Deliverables	Timeframe	Personnel	Completed
Reporting (if native lizards are recorded)			
Incident reporting (if required)	Completed within five working days following incident.	Lead ecologist authorised to survey or salvage lizards, with assistance from support ecologists.	
Update of this LMP	As soon as possible following survey.		
WAA reporting	In accordance with WAA requirements.		
Amphibian and Reptile Distribution Scheme (ARDS) Card	Completed within 30 working days following survey completion.		

1.8 Schedule 7 of the Fast Track Approvals Act requirements

Schedule 7 of the Fast Track Approvals Act outline the necessary information required to assess a Wildlife Approval. These are outlined in Table 1.2 below along with the associated Section of this LMP (or other document) where the information is provided.

Table 1.2: Fast Track Approvals Act Schedule 7 requirements

Schedule 7 requirement	Where this requirement has been addressed and/or justification
(1) For the purposes of section 43(3)(h), an application for a wildlife approval must— (a) specify the purpose of the proposed activity:	Section 1.3
(b) identify the actions the applicant wishes to carry out involving protected wildlife and where they will be carried out (whether on or off public conservation land):	The actions requested include: • Catch and handle wildlife • Translocate wildlife • Kill wildlife (incidental)
(c) include an assessment of the activity and its impacts against the purpose of the Wildlife Act 1953:	The purpose of the Wildlife Act 1953 is to protect wildlife and manage game bird hunting in New Zealand. The Wildlife Act 1953 provides absolute protection to all native lizard species. The project activity relating to dam armouring works may result in injury or mortality to native lizards. Effects management measures include avoid, minimisation, remedy and compensation measures (Section 4).
(d) list protected wildlife species known or predicted to be in the area and, where possible, the numbers of wildlife present and numbers likely to be impacted:	Refer to Section 2.1
(e) outline impacts on threatened, data deficient, and at-risk wildlife species (as defined in the New Zealand Threat Classification System):	Refer to Section 2.2

Schedule 7 requirement	Where this requirement has been addressed and/or justification
(f) state how the methods proposed to be used to conduct the actions specified under paragraph (b) will ensure that best practice standards are met:	Methods proposed will be in accordance with DOC Herpetofauna Inventory and Monitoring Toolbox for lizard survey and salvage.
(g) describe the methods to be used to safely, efficiently, and humanely catch, hold, or kill the animals and identify relevant animal ethics processes:	Methods proposed will be in accordance with DOC's Inventory and Monitoring Toolbox: Herpetofauna for lizard survey and salvage.
(h) state the location or locations in which the activity will be carried out, including a map (and GPS co-ordinates if available):	Dam armouring access tracks: 44°11'24.7"S 170°08'31.6"E Stockpile south (6.3 ha): 44°11'37.0"S 170°08'39.4"E Stockpile north (0.8 ha): 44°11'16.7"S 170°09'02.4"E Refer to Figure 3.1 showing lizard management areas.
(i) state whether authorisation is sought to temporarily hold or relocate wildlife:	Avoid, minimise and remediation measures are proposed for At Risk and Threatened species (Section 4). The authorisation is sought to relocate wildlife only if Threatened species are recorded during lizard surveys. Compensation measures are proposed to manage adverse effects protected native lizards of any Conservation Status.
(j) list all actual and potential wildlife effects (adverse or positive) of the proposed activity, including effects on the target species, other indigenous species, and the ecosystems at the site:	Refer to Section 2.2. Refer to the Ecological Impact Assessment (EcIA; T+T, 2025) for a full assessment of actual and potential effects of the proposed activity.
(k) where adverse effects are identified, state what methods will be used to avoid and minimise those effects, and any offsetting or compensation proposed to address unmitigated adverse effects (including steps taken before the project begins, such as surveying, salvaging, and relocating protected wildlife):	Refer to Section 4.
(l) state whether the applicant or any company director, trustee, partner, or anyone else involved with the application has been convicted of any offence under the Wildlife Act 1953:	The applicant and company direct, trustee, partner or anyone else involved have not been convicted of any offence under the Wildlife Act 1953.
(m) state whether the applicant or any company director, trustee, partner, or anyone else involved with the application has any current criminal charges under the Wildlife Act 1953 pending before a court:	The applicant and company direct, trustee, partner or anyone else involved do not have any current criminal charges under the Wildlife Act 1953 pending before a court.
(n) provide proof and details of all consultation, including with hapū or iwi, on the application specific to wildlife impacts:	Refer to the full application.
(o) provide any additional written expert views, advice, or opinions the applicant has obtained concerning their proposal.	The project received a response from DOC during the referral application. This response is provided in Appendix E.

2 Summary of lizard ecological values, impacts and impact management

2.1 Lizard ecological values

For the purposes of dam armouring works, the project footprint includes:

- The existing dam face through which access tracks are proposed (Photograph 2.1, Photograph 2.2).
- The Punatahu Visitor Centre carpark and surrounding grasslands which may be used as laydown area for construction materials (Photograph 2.3).
- Material stockpile areas (6.3 ha and 0.8 ha respectively) located approximately 1 km from the dam face (Photograph 2.4; Figure 1.1).

The existing dam face includes large boulder habitat. Sparsely distributed native planted shrubland and short grass is located on the top of the dam face. These habitats are considered tentative lizard habitat due the short grassland, general disturbance by people and vehicles, and the fact the dam revetment becomes inundated during high lake levels. The interstitial spaces on the rock revetment may also be too large to effectively safeguard native lizards from predators.

The material stockpiles (6.3 ha and 0.8 ha) were established in 2014 and may have incidentally provided effective lizard habitat in the form of stacks of rock material.

Lizard ecological values in proximity to Lake Pūkaki were assessed as part of re-consenting of the scheme by Boffa Miskell (2022) and EcIA for this project (T+T, 2025). A total of 11 lizard species were recorded across the wider scheme (Table 2.1).

Potential species at the Lake Pūkaki dam face and stockpile areas include McCann's skink (*Oligosoma maccani*; Not Threatened; Hitchmough et al. 2021), Canterbury grass skink (*O. aff. polychroma* Clade 4; At Risk – Declining) and Southern Alps gecko (*Woodworthia "*Southern Alps*"*; At Risk – Declining). Notably, DOC has also recorded Mackenzie skink (*Oligosoma prasinum;* Threatened – Nationally Vulnerable) and lakes skink (*Oligosoma aff. chloronoton "west Otago";* Threatened – Nationally Vulnerable) within 100 m of the stockpiles[3].

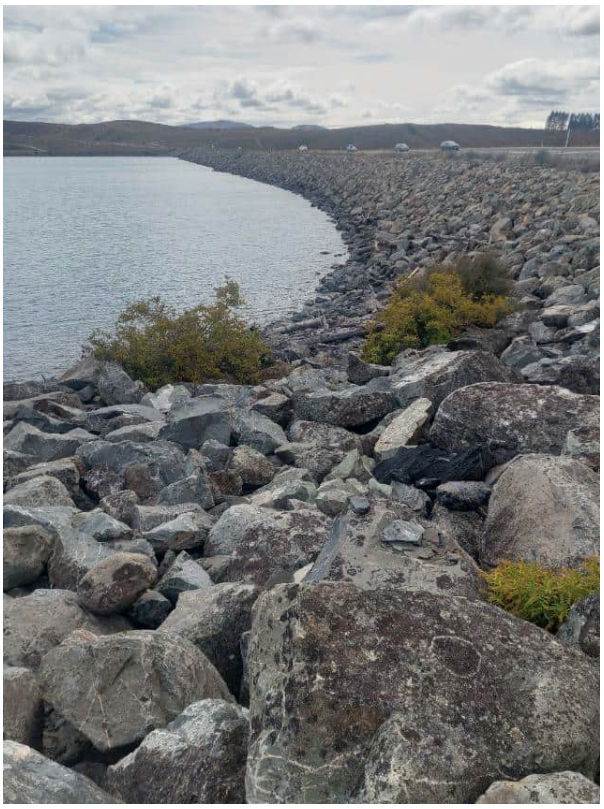
As a result of their Conservation Status (Hitchmough et al. 2021), lizard species (if present) range in value from **low to very high** in accordance with EIANZ criteria (Roper-Lindsay et al. 2018)**.**

[3] Fast-track Pre-lodgement Consultation Summary.

Table 2.1: Lizard species list recorded on Pūkaki River and wider area (30 km radius) (Boffa Miskell, 2022), conservation status and ecological value. Shaded cells indicate species potentially present

Common name	Species name	Conservation status (Hitchmough et al. 2021)	Ecological value (Roper-Lindsay et al. 2018)	Habitat preference (from NZHS, 2025)	Likely presence in rock armouring or stockpile footprint
Lakes skink	*Oligosoma* aff. *chloronoton* "West Otago"	Threatened – Nationally Vulnerable	Very high	Terrestrial/ saxicolous, and typically inhabit lowland or alpine tussock grassland, riverine debris (eroded stone), and screes/talus with woody vegetation.	Potential, not recorded on Pūkaki River but records in wider area. DOC has stated records within 100 m of stockpiles.
Southern long-toed skink/ Roamatimati skink	*Oligosoma* aff. *chloronoton* "southern"	At Risk - Declining	High	Saxicolous, rocky habitats in alpine environments (screes, gravel or boulder talus slopes, dry streambeds, and rock piles amongst low growing vegetation).	Unlikely, not recorded on Pūkaki River but records in wider area.
Cryptic skink	*Oligosoma inconspicuum*	At Risk - Declining	High	Terrestrial, variety of habitats. Rocky habitats, including rocky beaches, shrubland, screes, and tallus, although they do also occur in heavily-vegetated habitats.	Unlikely, not recorded on Pūkaki River but records in wider area.
McCann's skink	*Oligosoma maccanni*	Not Threatened	Low	Inhabit rock tor systems, boulderfields, tallus, scree, rocky herbfield, exotic grasses, herbfield, and tussockland.	Likely – nearby records and common in the local environment.
Mackenzie skink	*Oligosoma prasinum*	Threatened – Nationally Vulnerable	Very high	Open/sunny areas such as open grassy areas, tussock grassland, rock piles, and scree slopes.	Potential, known from Pūkaki River. DOC has stated records within 100 m of stockpiles.
Canterbury grass skink	*Oligosoma* aff. *polychroma* Clade 4	At Risk - Declining	High	Rock piles, grassland, tussock, shrubland, screes, forest margins tussock and modified agricultural habitats where there is sufficient cover.	Likely – nearby records and common in the local environment.

Common name	Species name	Conservation status (Hitchmough et al. 2021)	Ecological value (Roper-Lindsay et al. 2018)	Habitat preference (from NZHS, 2025)	Likely presence in rock armouring or stockpile footprint
Southern grass skink	*Oligosoma* aff. *polychroma* Clade 5	At Risk - Declining	High	Wetlands, grassland, shrublands, rocky shrubland/herbfield, screes, tussock, stony river beds.	Unlikely, not recorded on Pūkaki River.
Scree skink	*Oligosoma waimatense*	Threatened – Nationally Vulnerable	Very high	Boulderfields, screes, tallus, stoney river terraces and banks, rocky shrubland, and rocky bluffs.	Potential, known from Pūkaki River.
Jewelled gecko	*Naultinus gemmeus*	At Risk - Declining	High	Indigenous forests, shrublands, and tussock grasslands.	Unlikely – unsuitable habitat.
Southern Alps gecko	*Woodworthia* "Southern Alps"	At Risk - Declining	High	Terrestrial and saxicolous. Stable bases of scree slopes, rocky river terraces and shattered outcrops in dry sub-alpine.	Likely – nearby records and common in the local environment.
Korero gecko	*Woodworthia* "Otago/Southland Large"	At Risk - Declining	High	Beech forest, podocarp/hardwood forests, rocky grasslands, and rocky alpine areas.	Unlikely – unsuitable habitat.



Photograph 2.1: Proposed access track with sparsely distributed vegetation.

Photograph 2.2: Sparsely distributed vegetation located adjacent to existing dam wall.

Photograph 2.3: Car park and material laydown area.

Photograph 2.4: Rock stockpile where material will be sourced from and which may comprise lizard habitat.

2.2 Potential impacts on lizards

Potential impacts of dam armouring works on native lizards include:

- Lake Pūkaki dam face and laydown areas: temporary impacts to approximately 915 m^2 of sparsely distributed shrubland and short-stature grassland, to be remediated following works.
- Lake Pūkaki dam face: temporary impacts to up to 1,200 m^2 of exposed boulder rock revetment removed and to be remediated following works.
- Two areas of approximately 6.3 ha and 0.8 ha of boulder material stockpiles will be drawn from for construction use (Figure 1.1). The areas comprise grassland and shrubland interspersed with rock material stockpiles.
- Disturbance, injury or mortality during the construction of the dam.
- The existing rock stockpiles were established in 2014 and during this time may have incidentally provided effective lizard habitat. This lizard habitat will be lost for the purposes of dam remediation works. Any lizards present may be displaced into adjacent areas potentially less suitable.

2.3 Lizard management measures

To address potential adverse impacts on lizards, the following measures are recommended:

- A pre-construction lizard survey to determine species presence, distribution and relative abundance (see Section 3).
- This LMP will be updated as required following the survey outlining the findings and proposed management effects measures depending on species present.
- Avoidance, minimisation and remedying measures are recommended where nationally At Risk or Threatened native species are recorded. These include prioritisation of stockpile material use to avoid lizards to the extent practicable. In addition, dam works areas will be remediated following works completion.
- If native lizards are recorded during the pre-construction survey, and salvage and translocation is deemed impractical, compensation is proposed (see Section 4.2).
- Boulders across the dam armouring works area will be re-established following armouring works.

If lizards are not recorded during pre-construction surveys and potential lizard habitat is determined to be of low/negligible value, no further lizard management is required (except accidental discovery protocols). However, where lizards are recorded, the magnitude of effect on lizards could potentially be **moderate** due to loss of habitat and injury or mortality during construction.

A **low to very high** ecological value for lizards combined with a **moderate** magnitude of effect results in an overall **low to high** level of effect (depending on the species present). Appropriate effects management will be required, the extent of which will be dependent on the species and relative abundance detected during the proposed lizard survey (Section 3).

3 Lizard survey methods

To determine lizard presence, lizard surveys will be undertaken in general accordance with the Principles of Lizard Management (Appendix C; DOC Technical Advisory Group, 2019; Appendix C) as outlined in the following Sections and outlined in Table Appendix C.1. Where this plan varies from the principles, justification is provided in Table Appendix C.1.

3.1 Wildlife Act Authority

All survey methods and reporting requirements will be undertaken in accordance with a suitable Wildlife Act Authority (WAA) for the location and species present.

3.2 Survey area

Surveys will be undertaken across all potential dam armouring works management areas (Figure 3.1). Survey designs have been developed for the dam armouring works management areas and adjacent habitats including:

- North laydown area
- South laydown area
- North stockpile area
- South stockpile area

Refer to the figures in Appendix A for detailed survey designs for each area listed above.

Figure 3.1: Survey design for all management areas. VES = Visual Encounter Survey, Man = manual survey, DNA = eDNA tunnel, F = funnel trap.

3.3 Seasonal constraints and weather requirements

Lizard surveys will only be undertaken between October and April inclusive during suitable weather. Surveys are planned to commence from late October for this site as temperature thresholds are

generally too low for surveys during October. This is particularly important for the detection of cryptic Threatened species such as lake skink, Mackenzie skink and scree skink.

Suitable weather conditions will comprise:

- Minimum 15°C average temperature for daytime surveys.
- General weather conditions that are fine, overcast or with light showers.

3.4 Pre-construction survey methods

3.4.1 Survey aims

The key survey aims will be:

1 Are any lizards using the rock stacks or proposed access track and stockpile laydown areas.

2 Are At Risk or Threatened species using the rock stacks or proposed access track/stockpile laydown areas and how are they distributed.

3 What is the level of usage of rock stack and access track areas/stockpile laydown areas by lizards compared to nearby 'natural' areas.

3.4.2 Survey methods

The methods for the lizard survey will include manual habitat searches, visual surveys and deployment of eDNA tunnels[4].

The specific methods have been designed to survey the suite of potential lizard species known in proximity to the site. They allow for the detection of nationally Threatened species including lakes skink, Mackenzie skink and scree skink.

Manual habitat searches will be undertaken in accordance with standard systematic searching protocols (DOC, 2012a). Manual habitat searches will include the turning of cover objects and systematically searching through shrubs or other suitable vegetation.

Visual encounter surveys (VES) will target rock stacks using binoculars. Visual surveys will be used to identify lizards basking or moving about habitat, targeting morning and late afternoon periods.

A limited number of funnel traps may be implemented in targeted areas for trapping specific species such as lakes skink. Funnel trapping will not be suitable for targeted salvage of Mackenzie skink due to their sensitivity to mortality during trapping. Funnel trapping will be undertaken in accordance with standard protocols (Department of Conservation, 2012b).

Funnel traps shall be installed in appropriate lizard micro-habitats. Funnel traps are to be deployed with torn grass compressed into each end, and two slices of pear per trap. Each trap is to be covered with grass or shade cloth to ensure shading and encourage use, and rocks may be used to hold trap in place. A damp sponge is to be deployed in each trap to avoid lizard desiccation. Traps will be checked daily (every 24 hours) or twice-daily.

The methods are summarised in Table 3.1 below and presented in Appendix A figures. The approach may be updated following on-site refinement of methods (i.e. number of transects, transect length, number of funnel traps etc.) in order to maximise lizard detections and answer the aims of the survey.

[4] Funnel and pitfall traps are not recommended as a survey method as the Threatened MacKenzie skink (if present) is susceptible to mortality in live traps.

Table 3.1: Lizard survey methods across dam armouring management areas

Location	Search method	eDNA method
Access tracks and laydown areas	Manual and visual search: 20 m x 20 m plot searches (4 total), combined with opportunistic targeted habitat searching (e.g. tors or focal features)	
Rock stacks	Manual search: • Transect searches 20 m long x 2 m wide on edge of stacks. Funnel traps: • Limited, funnel traps targeting specific habitat types. Visual encounter survey: • 50 m long transects for binocular basking search each morning and/or late afternoon. • Approximately 16 transects split across 4 stack clusters[5], with interior and exterior stacks within each cluster. • Each sample will be repeated twice where time allows.	Lizard scat: • Lizard scat collection across rock stacks. Approximately 8 collection sites across all rock stacks with aggregation of samples from specific clusters or rock stacks. eDNA tunnels • Placement of 4 tunnels in each of the 4 clusters[5] (16 tunnels total). Samples will be aggregated for analysis.
Adjacent access track and rock stack areas	Manual search: • Sampling of non-rock stack areas. • Transects 20 m long x 2 m wide (approximately 4 per each of the 4 clusters[5], 16 total). Funnel traps: • Limited, targeted funnel traps. Visual encounter surveys: • 50 m long transects for binocular basking search each morning and/or late afternoon.	

3.5 Data collection

Each native lizard captured will be assigned a number and the following information will be recorded:

- Date and time of capture.
- Weather conditions at time of capture.

[5] Stack clusters defined as a general group of rock stacks. There is one cluster at the northern stockpile site, and three clusters across the southern site.

- Capture methodology.
- Capture and release locations (GPS coordinates), broad habitat types and microhabitat types.
- Species, sex (where possible), reproductive status for females, age class, snout to vent length (SVL), tail status (regenerating or original tail) and overall health and condition.
- A minimum of one photograph of each captured lizard, including at least one photograph showing the dorsal surface clearly.

All lizards will be held for a short time only and in accordance with best practice handling techniques.

3.6 Accidental injury or mortality of native lizards

The following steps will be implemented if any injured or dead native lizards are found during the survey:

- The Project Ecologist will notify the local DOC office at the earliest opportunity within 24 hours after an injured or dead lizard found. If the local DOC office is not available, the DOC emergency hotline will be contacted instead (0800 DOC HOT/0800 362 468).
- Any lizard mortality of Threatened, At Risk, or Data Deficient species shall be sent to Massey University Wildlife Post-mortem Service for necropsy if requested by DOC (or alternative address if provided by DOC). The body is to be chilled if it can be delivered within 24 hours, frozen if longer than 24 hours to deliver.
- Injured lizards found during survey will be taken by an ecologist to a suitably qualified vet as soon as possible for assessment and treatment. Injured lizards will be kept in an appropriate portable enclosure (i.e., a clean, well-ventilated plastic container) under the direction of the Project Ecologist to ensure the animal is handled appropriately until the lizard(s) can be assessed and treated.
- Lizards assessed by the vet or alternative specialist as uninjured, or otherwise in suitable condition for release, will be released into habitat suitable for the species being relocated.
- Euthanasia of an injured lizard shall only be undertaken under direction from DOC.

The reasons behind the injury or mortality will be assessed by the Project Ecologist. The Project Ecologist will implement management measures to reduce further injury or mortality where possible.

4 Effects management measures

The proposed effects management measures will depend on the results of the lizard survey. However, assuming several of the likely species are found during the survey, recommended effects management measures have been provided as outlined in this Section.

4.1 Avoid, remedy and minimise

Measures to avoid, remedy and minimise potential adverse effects are proposed where nationally At Risk and Threatened species are recorded during surveys. These measures are outlined in Table 4.3 and summarised below:

- Where an At Risk or Threatened species is found in the stockpile areas:
  - The habitat in which the At Risk or Threatened species are found will be delineated.
  - It will not be possible to completely avoid the use of the stockpiles as all of the material is required for construction. However, stockpile areas which do not host the At Risk or

Threatened species will be preferentially utilised before stockpile areas with the At Risk or Threatened species.

Lizard salvage has not been proposed unless Threatened species are recorded for the following reasons:

- The scale of material being established and removed from each of the dam armouring works area and stockpile area. Material will be taken from the stockpile area through regular machine and truck operations, resulting in continual disturbance to the area for the period of armouring works. This would make any salvage impractical.
- Works will be undertaken whenever the lake is low enough to support the construction of the armouring works. This means that works may occur at any time of year. Lizards are not typically salvaged during winter months due to being in a state of torpor.
- Material will need to be sourced from the stockpile at all times of the year to support construction (i.e. whenever the lake is at low levels).
- Difficulty in salvaging native lizards from existing rock piles (which would require extensive machine-assisted salvage).
- Potential continual re-invasion of lizards to stockpiles from nearby stockpiles and habitats.

A targeted salvage and relocation may be required if Threatened species (lakes skink, Mackenzie skink or scree skink) are detected. High-level salvage methods are described in Appendix D, in accordance with industry standard best-practice methods for lizard salvage. These methods will be refined and updated following the lizard survey results. The salvage methods will need to be tailored for the specific species present, abundance and/or distribution.

The purpose of the salvage will not be to rescue every individual (due to limitations given the scale of the stockpile areas), rather to establish a secure population in another area where the population can be safeguarded.

4.1.1 Proposed potential relocation site

Salvage and relocation efforts will be required if Threatened species (e.g., lakes skink, Mackenzie skink or scree skink) are detected through the surveys undertaken during the implementation of this LMP. A potential relocation site has been identified adjacent to the North stockpile. Table 4.1 provides site location, centre co-ordinates and a brief description of the relocation site option.

Relocation site location and suitability will be based on lizard survey results which will be appended to the LMP once completed. Any pre-construction lizard survey will be completed as per Table 1.1 and Section 3. This will enable an accurate determination of relocation site suitability for any species identified during these surveys. Any changes to the proposed relocation sites will follow the procedures described in Section 5.

It should be noted that DOC is undertaking management of lizards within the Pūkaki River, therefore an opportunity exists to tie in any relocation sites (or efforts) to this ongoing work.

Table 4.1: Relocation site location and description.

Site location	Centre Co-ordinates	Description
North stockpile relocation site	Lat: -44.188143; Long: 170.152066	Located adjacent to the eastern edge of North stockpile site. Habitat type is suitable for the potential lizard species present and is primarily a mix of boulders, scree, and shrubs.

4.2 Residual impacts management measures

If lizards are present, residual adverse effects, even after avoid, minimise and remedying measures, including limited salvage, are expected due to:

- Lizard injury or mortality during construction works and/or stockpile use.
- Loss of lizard habitat.

If any native lizards are found, compensation is recommended to address residual adverse impacts and manage fauna protected by the Wildlife Act 1953.

Recommended compensation contributions are provided in Table 4.2. If no lizards are recorded in pre-construction surveys, no compensation is proposed. The financial contribution is proportional with what would be required for a typical one-off salvage. Increasing contributions reflect higher impacts to those species with greater threat conservation statuses.

It is recommended that funds are ring-fenced for targeted lizard predator control and lizard monitoring to benefit the species present at the impact site. Predator control to benefit native lizards, and lizard monitoring, is recommended to be implemented on another population of lizards in the local environment. The funds could be used to gain further insight into the population dynamics or habitat use of Threatened lizards in the area.

A Lizard Compensation Plan (as part of this LMP) is recommended to described and outline the use of any compensation fund following the pre-construction lizard survey.

Table 4.2: Proposed lizard compensation threshold table

Pre-construction survey results	Proposed financial contribution (one-off payment)
No lizards recorded	No financial contribution required
Not Threatened species recorded	$20,000
At Risk species recorded	$30,000
Threatened species recorded*	$40,000

*Note: If the pre-construction surveys detect Threatened species, proportionate salvage and translocation works may be required, where practicable. The compensation fund can be used to support this salvage and associated relocation site enhancement works.

4.2.1 Effects management summary

Effects management considerations in accordance with the effects management hierarchy (Roper-Lindsay et al. 2018) are summarised in Table 4.3 below. The proposed effects management measures may be subject to change following survey results.

Table 4.3: Effects management measures for native lizards

Effects management	Action	Justification
Avoid and minimise	Where At Risk or Threatened species are recorded, minimisation measures will include provision of a lizard distribution map to the construction team. Material will be removed from stockpiles not hosting lizards initially, to the extent practicable. Where Threatened species are recorded, selective salvage and translocation may be required, in discussion with DOC, and may require release site management or funding.	There are limited opportunities to avoid impacts: • Stockpiles have been placed specifically for dam armouring works. • Works may occur in any given year, at any time (likely winter) i.e. whenever the dam is low enough to access the armouring works area.
Remedy	No remediation works are proposed for the stockpile area. Dam armouring access tracks, temporary building, and stockpile laydown areas will be remediated following works.	All rock material is required for the dam armouring works.
Offset	No offset is proposed.	Implementing offset for native lizards is difficult due to their cryptic nature and the difficulty in obtaining robust, quantifiable information required for offsetting.
Compensate	Compensation fund to support targeted lizard monitoring and management in the local area. Increased compensation amounts have been provisioned for species with a higher Conservation Status (Hitchmough et al. 2021).	Compensation measures have been proposed to address impacts to native lizards protected by the Wildlife Act 1953.

5 Changes to this LMP

To achieve the best outcomes for native lizards, and to align with any future changes to the Wildlife Act, including changes to the specific species protected by the Act, changes may need to be made to this LMP. The rationale behind any changes must be based on robust management techniques consistent with DOC guidelines, changes to legislation and only following confirmation from the Project Ecologist. Any changes to the LMP will also require confirmation with DOC.

6 Reporting requirements

A compliance report will be prepared and submitted to DOC and Environment Canterbury 30 working days from the completion of lizard pre-construction surveys.

The report shall include the following:

- Confirmation that lizard surveys were undertaken in accordance with the LMP and any associated conditions.
- Survey results including any lizard injury or mortality.
- Representative photographs of the survey methodologies and lizards captured.
- Any other additional reporting requirements stipulated in the relevant consent and wildlife authority.
- Confirmation of the compensation financial contribution.

An Amphibian and Reptile Distribution Scheme (ARDS) card will be completed within 30 working days of the lizard survey and sent to DOC. The ARDS card will also be included in compliance reporting.

7 Applicability

This management plan has been prepared for the exclusive use of our client GHD Limited and Meridian Energy Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of an application under the Fast-track Approvals Act 2024 and that an Expert Panel as the consenting authority will use this report for the purpose of assessing that application. We understand and agree that this report will be used by the Expert Panel in undertaking its regulatory functions.

Compliance with the Environment Court Practice Note 2023: Sam Heggie-Gracie

I confirm that, in my capacity as author of this report, I have read and abided by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses contained in the Practice Note 2023.

I am a Senior Ecologist at Tonkin & Taylor Ltd (T+T), where I specialise in terrestrial and wetland ecology. I have worked at T+T since 2017. Prior to joining T+T, I was an ecologist at Auckland Council.

I have 10 years' experience in terrestrial and wetland ecology. I am a Member of Birds New Zealand and the New Zealand Plant Conservation Network (NZPCN).

Recent relevant projects and services that I have been involved with include:

- Belfast to Pegasus Motorway and Woodend Bypass Fast-track Approvals Act application.
- Auckland Regional Landfill consent application.
- The reconsenting of the water discharge consents at the NZ Steel Glenbrook Steel Mill.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor Ltd by:
[redacted].....	[redacted].....
Sam Heggie-Gracie	Rob Van de Munckhof
Senior Ecologist	Project Director

S Heggie-Gracie
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Appendix A Survey design figures

Figure Appendix A.1: Survey design for all management areas. VES = Visual Encounter Survey, Man = manual survey, DNA = eDNA tunnel, F = funnel trap.

Figure Appendix A.2: Survey design across the north laydown area. Man = manual survey.

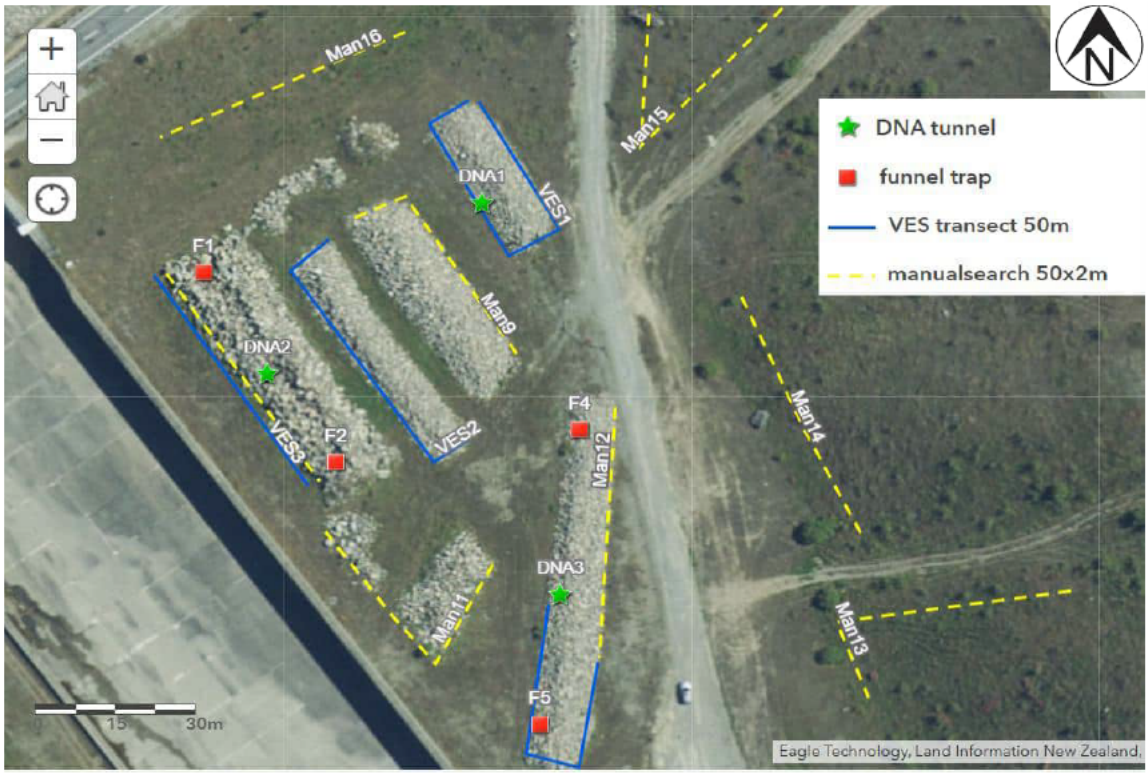

Figure Appendix A.3: Survey design across the north stockpile area. VES = Visual Encounter Survey, Man = manual survey, DNA = eDNA tunnel, F = funnel trap.

Figure Appendix A.4: Survey design across the south laydown area. Man = manual survey.

Figure Appendix A.5: Survey design across the south stockpile area. VES = Visual Encounter Survey, Man = manual survey, DNA = eDNA tunnel, F = funnel trap.

Appendix B Suitably qualified ecologists

B1 Summary

Ecologists with lizard experience are provided below. Lead ecologists will lead the initial survey works and be available for assistance where required. A lead ecologist will be named on the Wildlife Act Authority under which the lizard survey of the site will be undertaken, and (if required) lizard salvage is undertaken. Support ecologists will support the lead ecologists during the initial stages of survey. Support ecologists may be approved to lead surveys following the first one or two days of survey and if confirmed by the lead ecologist.

Other ecologists may undertake the work under direct supervision of the lead ecologists listed below.

B1.1 Lead ecologists

Graham Ussher – PhD (Conservation Ecology); MSc (1st Class Hons – ecology), BSc (ecology)

- 30 years' experience surveying reptiles and frogs in NZ, including for DOC, Councils, and commercial developers.
- Qualifications: PhD (Conservation Ecology) University of Auckland.
- Affiliations/ membership; SRARNZ, NZ Eco Society, EIANZ.

Previous/ Current Authorities held (in the name of Graham Ussher):

- Auckland Region Survey & salvage/ relocation: DOC file ref NHS 02-28-03; Permit number AK-13724 FAU; and DOC permit 37031 FAU NHS-12-03, 47967 FAU and 78350- FAU. Current regional Authority for Auckland is 101814- FAU, and 119558-FAU.
- Wellington/ Nelson Region: survey only 91417-FAU
- Wellington salvages: 91371-FAU, 118190-FAU, 119475-FAU, 119897-FAU, 119503-FAU
- Tasman (Pohara) salvage: 97668-FAU
- Mt Cass windfarm: multi-programme salvage: 81670-FAU and 86276-FAU
- Mackenzie Basin survey: 91677-FAU
- Current survey permits (as of October 2025)
  - Auckland
  - Waikato- Taranaki 117741-FAU
  - Hawkes Bay 119797-FAU
  - Wellington 117825-FAU
  - Nelson/ Top of South 117824-FAU
  - Canterbury 117740-FAU
  - Otago/ Southland 119794-FAU
  - West Coast 117742-FAU

Experience summary:

- Project manager & field lead for tuatara translocations to Whale Island (1996), Tiritiri Matangi (2003) and Motuihe Islands (2012).

- Lizard island surveyor (on contract) for DOC Auckland (1993 – 2000) undertaking spotlight, pitfall, ACO surveys of rare and threatened lizards on Mercury Islands, Alderman Islands, Hen & Chickens Islands and other outer Hauraki Gulf islands.
- Lizard surveys in Otago, Canterbury (Mt Cass wind farm) and MacKenzie Basin sites for windfarm and irrigation projects during 2003-2007.
- Currently managing major lizard survey, salvage, relocation, post-release monitoring and research programmes at sites in Christchurch (Mt Cass wind farm), Wellington (various land development projects), and Otago (Matakanui Gold Mine project).

Graham has undertaken approx. 75 other survey, salvage, rescue/relocations on private property from 2007 – 2025.

Graham has prepared more than 80 lizard management plans for consented development projects and has undertaken salvage works for most of those (some consented developments have not gone ahead).

B1.2 Support ecologists

Sam Heggie-Gracie – MSc (Biosecurity and Conservation), CEnvP (General):

Sam holds a MSc in Biosecurity and Conservation and has eight years' experience as an ecological consultant. Sam is experienced in undertaking lizard salvaging on large construction projects such as the Pūhoi to Warkworth Motorway, Matawii Water Storage Reservoir and O Mahurangi - Penlink. Sam's experience surveying skinks and geckos has included a number of techniques including spotlighting, manual habitat searching, construction-assisted salvaging, tracking tunnels, Artificial Cover Objects, pitfall trapping, closed cell foam covers and funnel trapping. Sam has experience with a variety of species including copper skink, ornate skink, southern grass skink, Canterbury grass skink, striped skink, egg-laying skink, shore skink, Raukawa gecko, Pacific gecko, and forest gecko, with training experience from herpetologist Dr. Matt Baber. Sam has also undertaken monitoring and habitat mapping of Hochstetter's frog with Dr. Matt Baber and herpetologist Dylan Van Winkel. Sam has authored Lizard Management Plans including those for large construction projects such as Te Ahu a Turanga: Manawatū Tararua Highway, Te Ara o Te Ata – Mt Messenger Bypass and Auckland Regional Landfill.

Sam holds a personal lizard survey permit for the Auckland region (117239-FAU). Sam is a Certified Environmental Practitioner – General (CEnvP) and holds a Certificate in Tikanga (Mātauranga Māori) Level 3.

David Pickett – BSc (Ecology & Statistics), BFA (Hons):

David has 6 years' experience in terrestrial ecology at locations across New Zealand. David's reptile survey experience includes the use of artificial refuges (ARs), pitfall traps and manual searches for skinks, and spotlighting, funnel traps, CCFC's and manual searches for geckos. Over the past 3 years David has been leading an ecology team as the Lead Project Ecologist for Te Aha a Turanga: Manawatū Tararua Highway and has undertaken and overseen all of the lizard-related search and salvage on this significant construction project. Work on this project has included establishment of the relocation site, skink monitoring using ACOs, gecko monitoring through spotlighting and CCFC's, and a plague skink incursion management plan. David has also undertaken salvage and relocation of herpetofauna on road projects including the Mt Messenger Bypass, and the Hamilton section of the Waikato Expressway. David has been involved with herpetofauna identification of lizard bycatch for Auckland Council. David has also designed several surveys to detect lizard presence/absence in the Wellington region and regularly provides advice to clients regarding their obligations to protect this taonga under the Wildlife Act. David's lizard salvaging experience has involved a variety of species

including copper skinks, Raukawa/common geckos, moko kākāriki barking gecko, Ngahere gecko/mokopirirakau, Northern grass skink and Southern grass skink.

Tarryn Wyman - PhD, BSc (Hons) (Ecology), BBS, CEnvP:

Tarryn is an Ecologist with ten years' post graduate experience working in a range of environmental consultancy, advisory and analytical roles, both in New Zealand and the U.K. Tarryn holds a PhD in Ecology from the University of Canterbury. As a Certified Environmental Practitioner (CEnvP), Tarryn's high professional standards are recognised by the Environmental Institute of Australia and New Zealand.

Tarryn has conducted many lizard habitat assessments and lizard surveys and salvaging, and authored lizard management plans and Ecological Impact Assessments for projects throughout New Zealand. This has exposed her to a range of lizard species and industry-standard methods. Tarryn has experience undertaking lizard surveying and salvaging using a variety of techniques including spotlighting, pitfall traps, gee minnow traps, manual habitat searching, construction-assisted salvaging, artificial cover objects, closed cell foam covers, and tracking tunnels. This work has been carried out on construction projects such as the Manawatū Tararua Highway, Mt Messenger Bypass, O Mahurangi – Penlink, Silverstream Landfill (107260-FAU), Spicer Landfill, Southern Landfill (114761-FAU), KiwiRail Tunnel 1 (107270-FAU), Massey Road seawall renewal (117912-FAU), Houghton Bay retaining wall renewal (111487-FAU), Weld Road bridge/pathway (114767-FAU), and Otaki to North Levin highway (118286-FAU). Tarryn has volunteered for the Whitireia Park Restoration Group who run a long-term lizard monitoring programme, where she took part in pitfall trapping and ACO checks, including handling of copper skinks, Raukawa geckos, and northern grass skinks and undertook training from Angus Hulme-Moir. She also participated in a lizard training course run by Marieke Lettink (Fauna Finders) in November 2023, to upskill in lizard handling, identification and processing, and use of different survey methods, including catching lizards from artificial retreats (ACOs), identifying lizard sign and presence in rocky areas, extracting geckos from crevices, and visual searching for arboreal geckos.

Nicki van Zyl (MSc Zoology):

Nicki holds a MSc in Zoology and has over 8 years of experience working in the terrestrial ecology space throughout New Zealand. Nicki has experience in undertaking lizard salvaging on large construction projects such as Mount Messenger Bypass (Taranaki) and O Mahurangi – Penlink (Auckland); as well as smaller construction projects around Hamilton, Auckland, East Cape, New Plymouth and Rotorua. Nicki's experience of surveying skinks and geckos ranges over a number of techniques including spotlighting, manual habitat searching, construction-assisted salvaging, tracking tunnels, Artificial Cover Objects, pitfall trapping and funnel trapping. Nicki has experience with a variety of species including copper skinks, ornate skinks, pacific geckos, forest geckos, Auckland green gecko, Otago skinks and grand skinks.

Nicki also has ex-situ management experience with a variety of gecko (including Auckland green gecko and Duvaucel gecko) and skink species (Otago and grand) as well as tuatara at a variety of institutions (Pūkaha Mount Bruce, West Coast Wildlife Centre and Queenstown Kiwi Park).

Sam Mulcock (BSc Env Sci):

Sam has a BSc in Environmental Science and Biological Sciences and has 3 years' experience in ecology in New Zealand. Sam has been involved in lizard surveys and salvage for small and large projects in the Auckland and Taranaki region. Sam's lizard surveying experience includes spotlighting, manual habitat searching, pitfall trapping, tracking tunnels, Artificial Cover Objects, and machine assisted salvaging on construction sites. Sam has worked with a number of species including copper skinks, ornate skinks, shore skinks, Raukawa geckos, elegant geckos, and forest

geckos. Sam has some experience in surveying Hochstetter's frog population with herpetologists Dr Matt Baber and Dylan Van Winkel.

Holly Madden (BSc Env Sci):

Holly is a passionate ecologist with a background in field conservation and 5 years' experience in the ecological consulting, pest management, and biosecurity sectors. Her technical skills and experience span terrestrial and freshwater ecology including wetlands, streams, freshwater fauna, botany, herpetofauna, and avifauna, from base inventory surveys, through to effects assessments, construction monitoring, and compliance reporting.

Holly is lead ecologist/ herpetologist on several complex dam, wind farm, and mining projects, and has a personal portfolio of smaller projects where she provides end-to-end delivery. While she works across New Zealand, her focus is on infrastructure, extraction, energy generation, and land development in the South Island.

Holly strives to deliver positive ecological outcomes and forges strong relationships with clients and stakeholders. She is very organised, efficient, and applies a laser focus to client's needs.

Holly has a growing breadth of skills and experience with New Zealand herpetofauna, having worked solidly on lizard projects over the past three years, from small scale surveys and salvage, through to managing wind farm lizard salvage and monitoring programmes and a large mine site (survey area 4,300 ha) in Otago that has involved many of the same species of lizards as possibly present at this Lake Pukaki site.

For lizard projects, Holly has undertaken surveys, habitat assessments, post-release monitoring programmes, salvage and relocations, and overseen the establishment of habitat creation within lizard release sites on small and large-scale projects. She has prepared many lizard management plans and completed dozens of lizard-focussed technical reports. Holly has been exposed to a wide range of lizard species, in particular across the Canterbury and Otago regions, and has used this knowledge to adapt methods and techniques to ensure best practise standards are met for each target species, including helping develop new techniques and trial new lizard sampling technologies.

Appendix C Principles of Lizard Management

Table Appendix C.1: Principles of Lizard Management (DOC Technical Advisory Group, 2019)

Nine Principles of Lizard Management (Department of Conservation Lizard Technical Advisory Group, 2019)	How/where each principle is addressed in this LMP [*example text*]
1. Lizard species' values and site significance must be assessed at both the impact (development) and receiving sites.	Lizard values have been assessed at the impact site through desktop assessment and on-site habitat assessment. A pre-construction survey will be undertaken to determine which species are present.
2. Actual and potential development-related impacts and their significance must be assessed.	Actual and potential impacts described in Section 2.2.
3. Alternatives to moving lizards must be considered.	Rock armouring works cannot avoid potential lizard habitat. The access tracks will be kept as narrow as practicable to avoid potential lizard habitat. Only nationally 'Threatened' lizards will be moved if detected.
4. Threatened lizard species require more careful consideration than less-threatened species.	The compensation financial contribution will be raised if nationally 'Threatened' species are recorded. Measures to avoid, remedy and minimise will be implemented for Threatened species, potentially including salvage.
5. Lizard salvage, transfer and release must use the best available methodology.	Selective salvage and translocation may be implemented depending on survey results. Salvage methods will be implemented in accordance with the DOC Herpetofauna Toolbox methods.
6. Receiving sites and their carrying capacities must be suitable in the long term.	An assessment for a suitable relocation site and carrying capacity will be undertaken prior to any salvage occurring.
7. Monitoring is required to evaluate the salvage operation.	The financial contribution will be used to establish a monitoring/pest mammal control programme to protect a known population of lizards of the same species at the impact site. Monitoring is recommended for any Threatened lizard salvage works.
8. Reporting is required to communicate outcomes of salvage operations and facilitate process improvements.	Reporting will be undertaken as outlined in Section 6.
9. Contingency actions are required when lizard salvage and transfer activities fail.	Only salvage of Threatened species has been proposed due to limitations outlined in the LMP (Section 3.6).

Appendix D Draft Threatened species salvage protocol

D1 Introduction

The salvage protocol outlines, at a high level, the general salvage approach that may be undertaken if Threatened species are recorded during the initial lizard survey. The overall approach will depend on the species, abundance and distribution recorded during the lizard survey. This salvage protocol will be updated following the survey results.

Protocols for lizard salvaging and relocation specified below are consistent with the methodologies described in DOC's Inventory and Monitoring Toolbox: Herpetofauna (Department of Conservation, 2012) and principles for lizard salvage and transfer in New Zealand (Department of Conservation Lizard Technical Advisory Group, 2019). The methodologies detailed below have been adapted for local site conditions:

- Artificial Cover Objects (ACOs).
- Pitfall traps.
- Funnel traps.
- Manual destructive habitat searches.

D1.1 Purpose

The purpose of the Threatened species salvage is to secure a proportion of the population of Threatened native lizards at the site before dam armouring works commence. As many individuals will be salvaged as is feasible within a standard salvaging timeframe, and to ensure a sufficient founding population.

D1.2 Salvaging footprint

The salvaging footprint will be targeted across the known locations of Threatened lizards species as determined from the initial pre-construction survey.

D1.3 Suitable weather conditions

Lizard salvage will only be undertaken between October and April inclusive during suitable weather. Suitable weather will comprise:

- Minimum 15°C for daytime surveys.
- Maximum of 25°C for daytime surveys.
- Overnight minimum temperature (i.e. for funnel trapping surveys) of 10°C.
- General weather conditions that are fine, overcast or with light showers.

D1.4 Artificial Cover Objects

ACOs shall be deployed in accordance with standard ACO deployment protocols (Department of Conservation, 2012c). ACOs shall be deployed in suitable microhabitats targeting ground and rock-dwelling lizards. Each ACO will consist of a corrugated Onduline sheet measuring approximately 400 mm x 300 mm. ACOs are to be deployed a minimum of eight weeks prior to salvage in each area of suitable lizard habitat. ACOs will be double or triple stacked.

D1.5 Funnel traps

Funnel trapping will be undertaken in accordance with standard protocols (Department of Conservation, 2012b). Funnel trapping will not be suitable for targeted salvage of Mackenzie skink due to their sensitivity to mortality during trapping.

Funnel traps shall be installed in appropriate lizard micro-habitats. Funnel traps are to be deployed with torn grass compressed into each end, and two slices of pear per trap. Each trap is to be covered with grass or shade cloth to ensure shading and encourage use, and rocks may be used to hold trap in place. A damp sponge is to be deployed in each trap to avoid lizard desiccation. Live traps may be closed and other methods preferentially used if high mouse densities are recorded during trapping.

Traps are to be checked daily (every 24 hours) for a minimum of four consecutive days.

D1.6 Pitfall traps

Pitfall trapping will be undertaken in accordance with standard pitfall trap protocols (Department of Conservation, 2012d).

Pitfall traps will comprise 4L metal paint tins (metal so large lizards cannot escape) dug flush with the ground. The traps shall be filled with sticks and other debris for the first week to establish and to allow lizards to freely enter and exit the trap. After the first week, debris shall be removed except for a layer of leaves to provide shelter at the base of the trap. Traps are to be baited with tinned pear. A damp sponge shall be deployed in each trap to avoid lizard desiccation. Several holes (less than 5 mm diameter) shall be drilled into the base of traps to prevent flooding. Traps may need to be checked twice a day if trapping for Mackenzie skink.

Where traps are closed pre-maturely within any four-day trapping period, additional trap days shall be implemented so that a total minimum of four trap days are undertaken. Live traps may be closed and other methods used if high mouse densities are recorded during trapping.

Traps shall be checked daily (every 24 hours) for a minimum of four consecutive days.

D1.7 Manual destructive habitat searches

Manual habitat searches include:

- Turning over rocks and logs.
- Searching of rock piles and crevices.
- Tools such as electrical wire may be used to encourage lizards out of rock crevices.

D1.8 Level of effort

The exact number of devices and level of manual salvage effort will depend on the results of the pre-construction survey but will be in general accordance with best practice DOC Inventory and Monitoring Toolbox: Herpetofauna methods.

The level of effort will likely include lizard survey devices deployed at 5 to 10 m spacings across suitable habitat. Manual salvaging will likely comprise 10 person-hours per ha of potential habitat.

D1.9 Salvage population aim

The aim will be to salvage a minimum of 50 individuals of each relevant species to ensure a sufficiently large founding population at the relocation site[6]. This may not be feasible due to the

[6] This estimate acknowledges the lack of information in New Zealand, particularly for Threatened species, of the minimum number of individuals required to effectively secure a new population.

local population size and distribution, and effectiveness of salvage methods. This target may also be updated following survey results.

D2 Lizard relocation protocol

D2.1 Capture, handling and transport

The following steps will be overseen by one of the personnel listed on the Wildlife Act Authority. Capture, handling and transport of lizards will be undertaken in accordance with the following methodologies:

- All field equipment that indigenous lizards may come into contact with (e.g. plastic enclosures, collection bags, scales, etc.) will be sterilised.
- Hand sterilisation will be undertaken.
- Salvaged lizards will either be placed in cloth bags (only during salvage, not during transportation), or in suitable ventilated plastic containers.
  - Vegetation/leaf litter will be added to plastic containers to shelter and protect lizards during transportation.
  - Cloth bags will be kept in the shade to ensure a constant ambient temperature is maintained for the lizards.
- Where practical, indigenous lizards will be placed into ventilated two litre or larger plastic containers for no longer than four hours for transportation and relocation.
  - Larger individuals will not be placed in the same container as smaller individuals to prevent aggressive interactions or predation.
  - Any injured lizards will be kept separate to other lizards.
  - Different species will be kept separately.
- Salvaged lizards will be released into appropriately prepared and protected habitat suitable for the species being relocated.

D2.2 Lizard relocation protocols

D2.2.1 Relocation site

It will be critical to select a suitable relocation site appropriate for the Threatened species detected. Relocation site selection will be undertaken through an on-site habitat assessment. A lizard survey will be undertaken at the relocation site to determine any resident lizard population species richness and abundance.

The relocation site will include, as a minimum, the following attributes:

- Protection in perpetuity.
- Of a suitable size for the relocated population.
- Pest mammal control including mice control for a period of 10 years to increase the carrying capacity and protect salvaged individuals. A Pest Mammal Management Plan may be required if the area is not already managing pest mammals.
- Stock exclusion (unless stock are maintaining suitable lizard habitat).
- Habitat enhancement. Habitat enhancement measures may include rock deployment or native plant establishment.

D2.2.2 Monitoring

Annual monitoring will occur over a period of five years. The purpose of the monitoring will be to assess relative abundance at the site following relocation.

The following will be required:

- Preparation and implementation of an annual monitoring plan.
- The specific monitoring methods will be determined based on the number and species that have been relocated.
- Annual monitoring will be conducted between the months of October-April inclusive.

A summary report of pest management and annual monitoring will be submitted to DOC annually.

D3 Reporting

A compliance report will be prepared and submitted to DOC annually, within 30 working days from the completion of lizard salvage works.

The report shall include the following:

- Confirmation that lizard salvaging and relocation operations were undertaken in accordance with the LMP and any associated conditions.
- Salvage and relocation results including any lizard injury or mortality.
- Recommendations for changes to the LMP to improve the effectiveness of lizard management.
- Representative photographs of the salvage methodologies, lizards captured, salvage site and relocation site.
- Any other additional reporting requirements stipulated in the relevant Wildlife Act Authority and/or Resource Consent.

An Amphibian and Reptile Distribution Scheme (ARDS) card will be completed and sent to DOC following salvage completion. The ARDS card will also be included in compliance reporting.

Appendix E Fast-track pre-lodgement consultation summary

Fast-Track Pre-Lodgement Consultation Summary

Purpose - This document provides a summary of information from DOC following a pre-lodgement consultation request.

Project Details

Project name:	Lake Pūkaki Hydro Storage and Dam Resilience Works
Engagement type:	Consultation for referral application
Applicant/agent:	Meridian Energy Limited
Proposal overview:	The following activities are proposed: - Permanant placement of rock armouring at Pūkaki Dam to enhance the resilience of the dam when operating at low lake levels. - Temporary approval (for three consecutive years immediately following the granting of consent) to ease access restrictions on Lake Pūkaki contingent storage, allowing it to operate between 518 mRL and 513 mRL (metres above mean sea level).
Location:	Lake Pūkaki, Mackenzie District.
Date pre-lodgement request received:	11 June 2025
Summary of pre-lodgement Consultation	
Fast track project lead DOC:	Amelia Wilkinson – Permissions Advisor – Fast-track (National Office)
DOC specialist input required:	Fast Track Project Lead RMA Planner Statutory Manager (Regional Office) Technical Advisors Ranger (Twizel)
DOC Permissions/ Approvals Identified by applicant in pre-lodgement request as potentially required:	• Authority under Wildlife Act 1953 For the disturbance of lizard habitat, and the capture, holding and relocation of any lizards present to an alternative area of established habitat.

DOC Commentary on Fast Track approvals and permissions identified: **Note DOC's role in relation to specific**	**Wildlife Act Permissions** <u>Potential issues to consider:</u> To install/construct the rock armour during lower than the status quo lake levels, several activities are proposed over habitats of indigenous lizards. These activities will have actual and potential adverse effects on lizard populations and their habitats, including mortality. The Project area and surrounds is known to provide habitat for five indigenous lizard species, four of which are At Risk or Threatened. Field surveys will be required to confirm if lizards are present within the project area. Known populations of Mackenzie skink and Lake's skink occur directly adjacent (within ca. 100 m) to both stockpiles. Given the length of time stockpiles have been present (11 years), there is a high chance these lizards have colonised the stockpiles. Disturbance of these may result in injury, death and/or displacement of lizards occupying these areas. There are multiple opportunities to avoid adverse effects on lizard populations and their habitats. Avoidance actions should be informed by robust best-practice survey and take precedence over attempts to move/relocate lizards. Avoidance of adverse effects should be prioritised over relocation for any Mackenzie or Lake's skink (both Threatened – Nationally Vulnerable) populations detected through survey. <u>To mitigate some of the highest risk activities of the proposal the following is recommended:</u> • Seek to avoid rocky habitat for stockpile sites, choose area over existing hard surfaces where no lizard habitat exists. Suggest project herpetologist to approve stockpile site. • Investigate alternative sources of rock for armouring work, if not possible appropriate methods of relocation (including identification of release site) will need to be provided. • Suggest spoil disposal sites are selected by the project herpetologist or failing this, are confined to already disturbed sites. Spoil disposal should avoid rocky areas and areas of vegetation including exotic grasslands • Consider risks that lowering of the lake for extended periods may have on lizards inhabiting the area i.e.lizards may colonise exposed rock as lake levels are lowered and be at risk of drowning if water levels are raised during winter months (when they are not active).

	Information requirements: The substantive application should contain a Lizard Managment Plan containing the information requirements specified in Schedule 7 of the Fast-track Approvals Act (including details of proposed avoidance and mitigation measures). This should adhere to relevant Department of Conservation lizard salvage principles and be informed by a best practice lizard survey. If lizard salvage is proposed a suitable release site will need to be identified. Guidance for applying for a wildlife approval under the Fast-track Approvals Act 2024 can be viewed here:Guidance for applying for a wildlife approval
Treaty partners:	DOC is aware of the following Treaty partners with interests that may be relevant to this site: • Te Rūnanga, Ngai Tahu We encourage the applicant to engage directly with relevant Māori groups as required by section 29 of the Act.
Treaty Settlement implications/considerations:	DOC is aware of the following Treaty settlement obligations that may be relevant to this site: • A Statutory Acknowledgement applies to Lake Pūkaki and provides formal acknowledgment of the relationship that Ngāi Tahu have with Lake Pūkaki. • DOC notes species known or likely to be present on the project area include Taonga Species listed in a schedule to the Ngāi Tahu Claims Settlement Act 1998 and that the Act requires DOC work together with Te Rūnanga to discuss the approach to resource management issues. • Te Rūnanga o Ngāi Tahu participates in the Species Recovery Group for kakī (a taonga species), with DOC.
Section 4 Conservation Act 1987 implications/considerations	In the time available, DOC has not carried out a process to identify section 4 implications/ considerations specifically relevant to this site
Potential Resource Management Act (RMA) considerations and effects: *Note: DOC's role in relation to 53(2)(m)(i) FTAA*	The proposed activity of lowering the lake levels may result in adverse impacts to indigenous lakeshore turf and wetland plant communities (including Threatened and At-Risk plant species). Understand the effects the activity may have on braided riverbed. If the project is referred, appropriate conditions should be included in the substantive application that ensure lake levels are managed in a way that means current time periods at high levels are maintained. Return to high

	lake levels is particularly important in Spring to minimise weed invasion and erosion. Ongoing monitoring of lakeshore turfs and wetlands, particularly those supporting threatened species, should also be a condition in order to inform lake level management strategies and minimise adverse effects.
DOC Statutory Planning Document considerations in relation to site (e.g. CGP/CMS/CMP):	The alignment of the proposed project's impacts on wildlife with statutory planning documents should be considered as part of the overall assessment, noting the site is not (but is adjacent to) public conservation land. Canterbury (Waitaha) Conservation Management Strategy 2016.
Any specific information requests to applicant(s)/agent for pre-app engagement at this point:	Recommend further engagement prior to lodging substantive application if the project progresses as this would allow us to give more focused feedback on the application.
Any further information/considerations:	Extended periods of low lake levels may impact the feeding habitat for kakī and other braided river bird species. DOC recommends that any extension of the legal operating range of Lake Pūkaki is accompanied by ongoing monitoring of the responses of kakī. Monitoring should focus on the number of kakī that use the Tasman Delta and ultimately on their survival and breeding success. Additional mitigation measures may be required to account for any observed impacts. In addition to the information required for the wildlife approval, the substantive application should also include the following information: • A full ecological assessment, including assessment of actual and potential effects on vegetation, wetlands, freshwater, and fauna including avifauna and lizards. • Proposed consent conditions, including details of lakeshore turf, wetland and avifauna monitoring and mitigation, including any adaptive management requirements.

Additional Notes:	While DOC will assist applicants as much as we can when they engage in pre-lodgement consultation, it is the applicants' responsibility to comply with the FTAA and to ensure they have applied for all permissions they need. Note that a panel will invite the statutory bodies listed in clause 4 of Schedule 7 to comment on the application (NZCA, conservation boards, Fish and Game Council, and Game Animal Council). We encourage applicants to engage with these bodies in advance of filing a substantive application. It is recommended that the information contained in the application documents addresses each of the information requirements for the various approval sought, including any additional information requirements for listed projects. A checklist of information requirements is attached, including checklist E (Wildlife Approval information requirements). Use of clear headings for each information requirement would assist with navigating the documents.

Fast-Track Pre-Lodgement Consultation Summary

Purpose - This document provides a summary of information from DOC following a pre-lodgement consultation request.

Project Details

Project name:	Lake Pūkaki Hydro Storage and Dam Resilience Works
Engagement type:	Consultation for referral application
Applicant/agent:	Meridian Energy Limited
Proposal overview:	The following activities are proposed: - Permanant placement of rock armouring at Pūkaki Dam to enhance the resilience of the dam when operating at low lake levels. - Temporary approval (for three consecutive years immediately following the granting of consent) to ease access restrictions on Lake Pūkaki contingent storage, allowing it to operate between 518 mRL and 513 mRL (metres above mean sea level).
Location:	Lake Pūkaki, Mackenzie District.
Date pre-lodgement request received:	16 September 2025

Summary of pre-lodgement Consultation

Fast track project lead DOC:	Amelia Wilkinson – Permissions Advisor – Fast-track (National Office)
DOC specialist input required:	Fast Track Project Lead RMA Planner Statutory Manager (Regional Office) Technical Advisors Ranger (Twizel)
DOC Permissions/ Approvals Identified by applicant in pre-lodgement request as potentially required:	• Authority under Wildlife Act 1953

Department of Conservation *Te Papa Atawhai*

Te Kāwanatanga o Aotearoa
New Zealand Government

Information provided by the applicant	10 October 2025 • Lake Pūkaki Fast Track LMP – Draft DOC Review • EcIA Lake Pūkaki draft for consultation 13 October 2025 • Meridian Conditions-lizards-Wildlife-Permit 131025 Clean This pre-lodgement feedback focuses on information provided within the documents listed above. Please refer to the consultation document provided on 4 July 2025 for additional comments relating to the proposal.
DOC Commentary on Fast Track approvals and permissions identified: **Note DOC's role in relation to specific**	**Wildlife approval** The information requirements for a wildlife approval as part of a substantive application are set out in clause 2(1) of Schedule 7 of the Act. Table 1.2 addresses these information requirements; however, DOC makes the following observations: As part of the substantive application for the wildlife approval, the location or locations in which the activity will be carried out, including a map (and GPS co-ordinates if available) is to be stated (Clause 2(1)(h) and 2(1)(b) of Schedule 7). The LMP identifies lizard management areas in Figure 3.1, however this does not include reference to the proposed release site for any threatened lizards found and salvaged. **This information is required.** With respect to clause 2(1)(a) it should be noted that the purpose of the proposed activity should relate to the activities for which the wildlife approval is sought, rather than the purpose of the project. The LMP should be updated to reflect this. **Further comments** Page 4 of the LMP mentions that the LMP will be updated following the results of the survey. Section 5 of the LMP also suggests that changes to the LMP will be made in confirmation with DOC – it is not clear what is meant by confirmation. DOC is not the decision maker under the FTAA. Applications submitted under the Act should be complete and capable of being approved at the time of lodging, subsequent approvals are not easily enabled under the Fast-track approvals process it is unclear how amendments to the LMP are proposed to be authorised after the panel has made its decision. There is no information about how the updated plan is to be approved, or on what basis. The Wildlife Act applies to all native lizards, not just threatened ones. The LMP needs to include reasonable steps to be taken in the case of all protected wildlife in order to comply with the Wildlife Act, which in this case means taking reasonable steps to salvage them before carrying out the activity that may kill

	them incidentally. Compensation alone is not adequate to comply with section 53A and section 53B(4) WA. DOC notes there is not a firm commitment to salvage threatened species of lizard, only where practical. Given the longevity of the term sought, DOC would like to see a firm commitment to salvage threatened lizard species. At 2.3 the LMP proposes that the test for compensation is whether salvage and translocation is "deemed impractical". DOC has some concerns about how this will be determined and by who. It is recommended a Lizard Compensation Plan is developed and included in the LMP as part of the substantive application (as in 4.2 of LMP). It is understood that new rockpiles (possible lizard habitat) will be constructed throughout the duration of the 35 years for which the approval is sought. DOC anticipates that new lizards may be discovered and that it would be practicable to salvage these individuals. Future salvage is not proposed or addressed in the LMP. DOC recommends the applicant consider this as part of approval sought. Remediation is highlighted in the LMP but no detail on how this will positively impact on lizards is provided. It is recommended additional information be provided to address this. It is noted that the draft LMP refers to 'ecologists' rather that 'herpetologists', DOC recommends the wildlife approval name appropriately qualified herpetologists who will implement the LMP if salvage of threatened species occurs. Due to the threat status of lizards likely to be salvaged, this work should only be undertaken by suitably qualified and experienced person with sufficient expertise in lizards. DOC supports the proposal to review the LMP every 10 years of the term for which the approval is sought. The LMP proposes a report be produced as part of this, DOC recommends the LMP provide further detail about reporting objectives. **Other minor observations** The LMP relies on the EIANZ criteria (section 2.1) to state that McCann's skinks are "low value". This is not relevant, because they are absolutely protected under the Wildlife Act. The low to high assessment under the EIANZ criteria is also applied to understand population level effects at 2.3 of the LMP. But that analysis ignores that the Wildlife Act applies to both populations and individuals. There are some inconsistencies relating to pest control measures within the LMP. Table 1.1. Lizard salvage states: Pest mammal control 'if required' at the lizard release site. This will be required as per the Salvage guidelines DOC2019. This is picked up in Appendix D2.2 – just needs to be clarified in Table 1.1 by the removal of "if required". Also, Table 1.1 as read indicates pest control at 10 years from relocation instead of for 10 -years from relocation– again this is picked up in Appendix D2.2 but Table 1.1 is incorrect. Incident reporting is proposed; however 'incident' is not defined in the LMP. While reference to injury/death of lizards is made in section 3.6, there is no

	reference to incidents during construction. Additional information is recommended to address this. Within the LMP, it is specified that capture and handling methods being undertaken in accordance with the DOC Herpetofauna Inventory and Monitoring Toolbox. In addition to this, DOC recommends this is expanded to include alignment with the Key principles for lizard salvage and transfer in New Zealand. Reference is made to accidental discovery protocols is section 2.3 of the LMP, however information about these protocols has not been identified within the documents provided. Detail of accidental discovery is important given the sensitivity of the lizard environment around this project and its longevity. In 35 years, some of these species may be Nationally Critical. The LMP refers to Canterbury grass skink being potentially present and affected. The species present is southern grass skink not Canterbury grass skink based on DOC recent genetics mapping of grass skinks. Canterbury grass skink are likely to be much further north. Consider contingency mitigation - describe actions to be undertaken in the event that monitoring of lizards indicates that the mitigation does not achieve its objectives - to align with best practice LMP. The LMP and EcIA make extensive reference to the EIANZ guidelines that are not supported by the RMA formally, nor by ECAN technical experts. This has been expressly stated in ECAN's expert evidence relating to the Waitaki Power Scheme reconsenting. Instead, reference should be made to significance criteria and related policies in the Canterbury Regional Policy Statement. For example, habitats within the works footprint that support At Risk or threatened lizard species is significant, and needs to be 'protected' through application of the 'avoid, remedy, mitigate' hierarchy. DOC best practice LMPs generally take this approach too. Within the EcIA there is reference to the salvage of threatened lizards as an 'avoid and minimise' action. DOC considers salvage to be a minimise action under the Fast-track approval Act, and more generally, a mitigation action. There appears to be an error in the section 3 references to Appendix C as this does not outline lizard survey methods. It is assumed this will be corrected within the substantive application. Temporary rock storage areas and construction ramps should be included in section 2.1 of the LMP. DOC considers the lowering of the lake to be a potential effect on lizards in the variable zone, this is not discussed in the LMP. It is noted this section 5.5.3.1 of the EcIA refers to these effects but discounts them as unimportant but also notes a displacement effect for Southern Alps gecko. In this way the LMP and EcIA are out of step and inconsistent. **Proposed Wildlife Approval conditions** DOC notes there is an absence of conditions for compensation, remediation and avoidance. These have significant weight as effects management tools

	within the proposal. DOC expects these are reflected in the conditions provided within the substantive application. DOC is reviewing the proposed conditions and will provide copy of these with tracked changes in addition to this summary.
Treaty partners:	DOC is aware of the following Treaty partners with interests that may be relevant to this site: • Te Rūnanga, Ngai Tahu We encourage the applicant to engage directly with relevant Māori groups as required by section 29 of the Act.
Treaty Settlement implications/considerations:	DOC is aware of the following Treaty settlement obligations that may be relevant to this site: • A Statutory Acknowledgement applies to Lake Pūkaki and provides formal acknowledgment of the relationship that Ngāi Tahu have with Lake Pūkaki. • DOC notes species known or likely to be present on the project area include Taonga Species listed in a schedule to the Ngāi Tahu Claims Settlement Act 1998 and that the Act requires DOC work together with Te Rūnanga to discuss the approach to resource management issues. • Te Rūnanga o Ngāi Tahu participates in the Species Recovery Group for kakī (a taonga species), with DOC.
Potential Resource Management Act (RMA) considerations and effects: *Note: DOC's role in relation to 53(2)(m)(i) FTAA*	Refer to previous feedback provided.
DOC Statutory Planning Document considerations in relation to site (e.g. CGP/CMS/CMP):	The alignment of the proposed project's impacts on wildlife with statutory planning documents should be considered as part of the overall assessment, noting the site is not (but is adjacent to) public conservation land. Canterbury (Waitaha) Conservation Management Strategy 2016.
Any specific information requests to applicant(s)/agent for pre-app engagement at this point:	

Any further information/considerations:	Extended periods of low lake levels may impact the feeding habitat for kakī and other braided river bird species. DOC recommends that any extension of the legal operating range of Lake Pūkaki is accompanied by ongoing monitoring of the responses of kakī. Monitoring should focus on the number of kakī that use the Tasman Delta and ultimately on their survival and breeding success. Additional mitigation measures may be required to account for any observed impacts. In addition to the information required for the wildlife approval, the substantive application should also include the following information: • A full ecological assessment, including assessment of actual and potential effects on vegetation, wetlands, freshwater and fauna including avifauna and lizards. • Proposed consent conditions, including details of lakeshore turf, wetland and avifauna monitoring and mitigation, including any adaptive management requirements.
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