BATHURST
RESOURCES LIMITED

Avifauna Management Plan

Buller Plateaux Continuation Project

August 2026

BPCP-ENV-PLN-003 v1.0

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Glossary

Specific terms	
AEMP	Aquatic Ecology Management Plan (BPCP-PLN-ENV-006)
AvMP	Avifauna Management Plan
BCPC	Buller Coal Continuation Project ('The Project')
BDC	Buller District Council
BOMP	Biodiversity Outcome Monitoring Plan
CCI	Chew Card Index
CH	Camera hours
Disruptive site walkover	A disruptive site walkover for birds is a proactive, purposeful physical intrusion across a development or work site which uses human presence (and perhaps a trained conservation dog) as well as localized noise to deter birds from settling or nesting in a specific zone before construction begins
DOC	Department of Conservation
EIANZ	The Environment Institute of Australia and New Zealand
ESC	Erosion and Sediment Control
REMR	Residual Effects Management Report
LMP	Lizard Management Plan
NZTCS	New Zealand National Threat Classification System
OKTA	Oparara Kiwi Treatment Area associated with Cypress Mining Area
ONE	Operation Nest Egg
Peak avifauna breeding season	1 August -31 December inclusive
Relocation	The deliberate, human-assisted movement of individual organisms from one area to another nearby within the same ecological district.
RMA	Resource Management Act
SQEP	Suitably qualified and experienced person for the task they are assigned (e.g., experience in weka capture and translocation).
Translocation	The deliberate, human-assisted movement of individual organisms from one area to another located some distance from the original location and outside the original ecological district.
VDT	Vegetation Direct Transfer
High Risk Area	In relation to birds, high risk areas are areas with a high or very high likelihood of occupancy for a particular species (see Section 4.2.2). High risk areas include vegetation types which provide suitable primary habitat (including foraging and nesting habitat) for the species under consideration and support permanent populations at higher densities than other habitats.
WCRC	West Coast Regional Council
General terms	

Biodiversity	The variety of life on Earth at all its levels, from genes to ecosystems, and can encompass the evolutionary, ecological, and cultural processes that sustain life
Ecology	The study of the relationships between living organisms, including humans, and their physical environment.
Site description	
Project area	The Project area is shown in Figure 1, and includes the land within the proposed land use consent boundary outlined in yellow, and the pest exclusion fenced areas outlined in green dash.

1.0 Project Description

1.1 Overview

Bathurst Resources Limited (BRL) is a publicly listed New Zealand coal mining company with a focus on people and long-term environmental sustainability. BRL is New Zealand's largest coal mining company, producing over 2 million tonnes of coal each year and employing over 550 people. Through its majority owned joint venture company BT Mining Limited, BRL operate the Stockton coal mine on the West Coast of the South Island, and Rotowaro and Maramarua coal mines in the North Island. The remaining estimated mine life at the Stockton Mine is currently approximately 5 – 7 years.

BRL are seeking approvals through the Fast-track Approvals Act 2024 ('FTAA') for the Buller Plateaux Continuation Project ('BPCP', or the Project). The purpose of the Project is to reconsent the existing infrastructure and mining operations associated with the Stockton Mine and provide access to additional coal mining areas across the Buller Plateaux. The coal resource in the current Stockton operations is close to depletion, and further coal resources for blending are required.

1.2 Project Location

The BPCP includes parts of both the Denniston and Stockton Plateaux, collectively referred to here as 'the Buller Plateaux' and is located approximately 15km northeast of Westport. The BPCP is a complex proposal which seeks to enable a mix of ongoing and new mining activities. The land tenure is a mix of Crown, private and BRL owned land. The authorisations required for the proposed activities are being bundled into a single application to proceed through the FTAA process.

As shown in Figure 1, the Project has been divided into five project sub-areas for the purpose of the FTAA application:

- Stockton (including the Ngakawau Coal Handling Facility and Aerial Ropeway, 'Stockton');
- Cypress Mining Area ('Cypress');
- Mount Frederick South ('MFS');
- Escarpment Extended (including the Waimangaroa Storage Area, 'ESE');
- Transport Corridor known as the Upper Waimangaroa Haul Road ('UWHR').

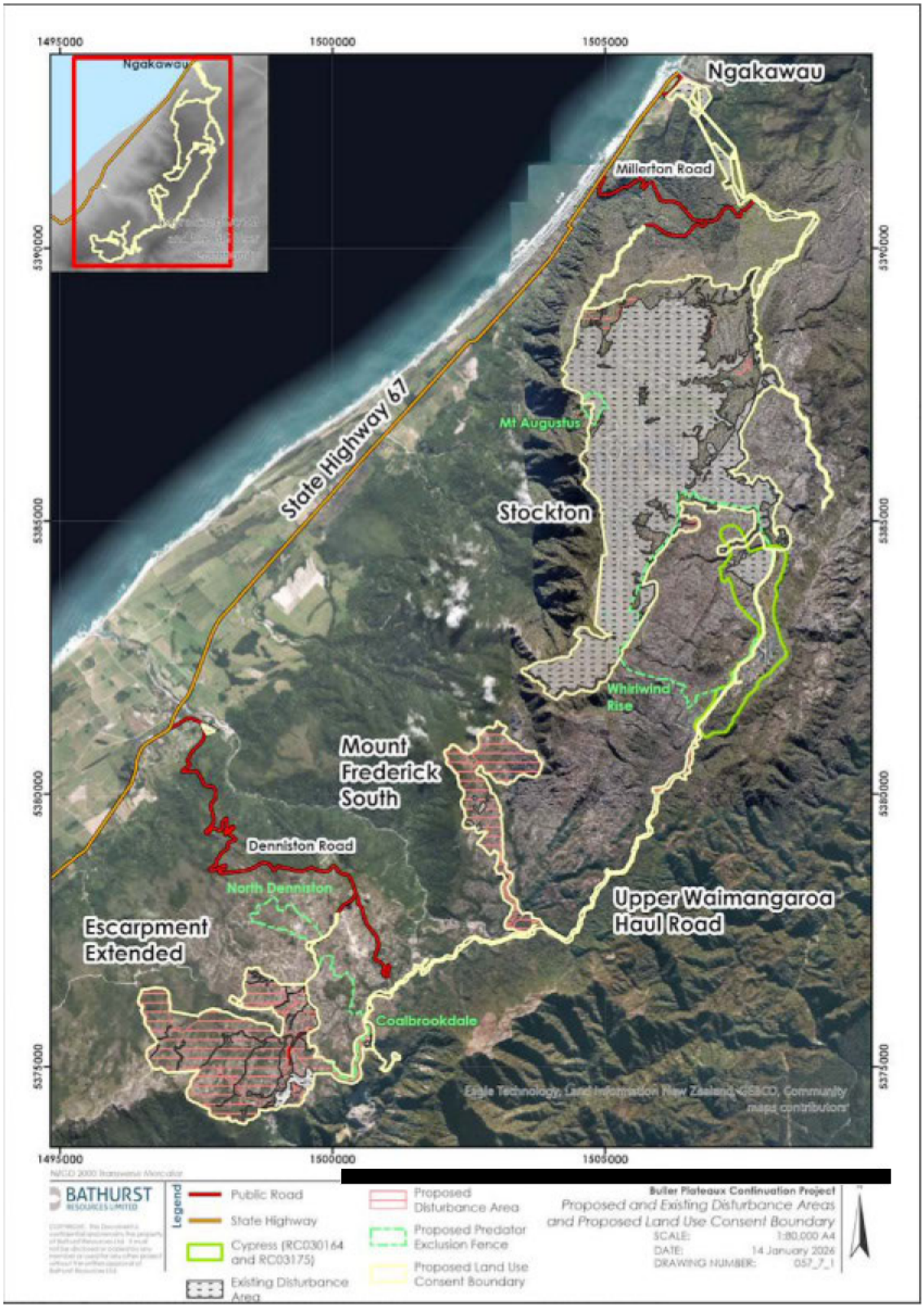


Figure 1: The Buller Plateaux Continuation Project (BPCP) sub-areas

1.3 Environmental Setting

1.3.1 Ecological Context

The Buller Plateaux lies within the Ngakawau Ecological District ('ED') and North Westland Ecological Region. The boundaries of the Ngakawau ED are defined by a line connecting Te Kuha to Mount Rochfort; Mount William and a peak west of Mt Lyall in the south; the Glasgow Range in the east and the Mōkihinui River in the north. The coastal escarpment marks the boundary of the district to the west. The district covers approximately 48,710ha and the boundaries were defined on the basis of geology, topography, and vegetation (McEwen 1987, F. Overmars pers. comm. to G. Bramley 2012).

Ngakawau is the only ED in New Zealand defined by the presence of extensive, elevated coal measures geology. The Brunner coal measures encompass approximately 10,300 hectares surrounding and including the Stockton and Denniston Plateaux. Soils overlying the sandstones of the Brunner coal measures are infertile, lacking in organic matter and acidic (pH 4-4.9) with poor drainage. At higher elevations, the soil becomes skeletal (shallow and lacking horizons), and exposed rock/sandstone pavement is common. This geology supports a mosaic of vegetation communities, unlike the surrounding taller forests overlying granite, gneiss, and greywacke geology. Coal measures vegetation is characterised by a mosaic of tussockland, mānuka shrubland, and distinctive low forest. The most extensive vegetation communities on the exposed gently sloping rock pavements are dominated by prostrate shrub and tussock communities. Notably, these communities include alpine and subalpine species typically restricted to higher elevations.

Analyses of survey data within the Ngakawau ED, mainly on the Buller Plateaux, have identified at least 542 species of terrestrial plant, 56 species of bird (including 29 native species), 458 species of bryophytes (345 liverworts, 123 mosses, five hornworts), four species of lizards, more than 300 species of terrestrial invertebrates and 186 taxa of aquatic invertebrates (Ecological Solutions Limited 2026a). There are also at least five naturally uncommon ecosystems present within the Ngakawau ED, all of which occur on the Buller Plateaux, including pākihi wetlands, boulderfields of acidic rock, sandstone erosion pavement, tarns and seepages and flushes.

1.3.2 Birds present

Both recent (2021-2024) and historical surveys undertaken within the Project area confirm a relatively high bird diversity with low-moderate abundance. This description also fits the Buller Plateaux more generally. The relatively high diversity likely reflects the corresponding high diversity of vegetation types on the Buller Plateaux and surrounding adjacent areas. Vegetation type (i.e. presence of habitat) is the major driver of bird abundance and distribution, with different species having particular habitat preferences and therefore occurring to varying degrees within different vegetation types. For example, the pīhoihoi/New Zealand pipit (*Anthus novaeseelandiae*), prefers more open vegetation types, whilst mātātā/South Island fernbird (*Poodytes punctatus*) prefer shrubland habitats, including pākihi. Both species are considered 'At Risk – Declining (Robertson et al. 2021). A greater diversity of birds, including others of conservation concern, generally prefer forest types, though they may occupy the full range of vegetation types across the Plateaux at times.

1.4 Effects

The proposed mining activities will result in the loss of habitat for bird species (including core habitat such as burrows/nesting habitat and foraging areas) and could in turn result in territory displacement and possibly pair bond disruption and injury or mortality attributable to falling vegetation and machinery/vehicle strikes. The actual and potential adverse effects of the mining activities on avifauna are:

- Loss of habitat;
- Risk of injury or mortality during vegetation clearance and stripping;
- Risk of injury or mortality due to vehicle collision during mine vehicle movements;
- Disturbance through artificial noise and lights; and
- Increased risk of predation.

1.5 Purpose

The purpose of this AvMP is to describe the measures to be undertaken so as to avoid, minimise and remedy adverse effects on indigenous birds during construction and operation of mining at the BPCP. The AvMP outlines the management approach, scope, objectives, specific management activities and monitoring and reporting requirements needed to effectively manage adverse effects on avifauna resulting from the BPCP.

1.6 Management Approach

An integrated approach to managing adverse effects on indigenous birds within the BPCP will be taken. Specific management activities aimed at 'Threatened' and 'At-Risk' species will be undertaken where required in accordance with the effects management hierarchy (NPS-IB 2023) and BPCP will be located within sustained intensive pest control across c. 27,500 ha. Pest control associated with the BPCP includes pest-exclusion fenced areas, ground-control areas, and a wider aerial and ground-suppression halo. The combined management actions in these areas are proposed as the main methods to address residual adverse effects on birds that cannot otherwise be avoided or completely mitigated.

The specific management activities making up the overall approach for mitigating effects on avifauna within the BPCP will be delivered in coordination with the strategies and activities of other relevant management plans. On that basis this AvMP should be read in conjunction with the:

- **Annual Work Plan** which provides the annual mining activity programme, including scheduling, description of activities and the location and extent of affected areas, as well as monitoring and surveillance to be undertaken.
- **Rehabilitation Management Plan (BPCP-ENV-PLN-002, the RMP)** which provides detail on how the staged rehabilitation of habitat for avifauna within the project footprint will be achieved. Effective site rehabilitation (remediation) will contribute to addressing adverse effects on avifauna.

- **Pest Control and Elimination Plan (BPCP-ENV-PLN-022, the PCP)** which provides detail about how habitats surrounding the site will be enhanced through control of pest animals. The PCP also sets out how habitats within the Project Area will be enhanced through elimination and exclusion of mammalian pests and weka (*Gallirallus australis*) within pest exclusion fenced areas for the protection of indigenous fauna including *Powellliphanta* snails, lizards and small forest birds (Alliance Ecology 2025a).
- **Residual Effects Management Report** which outlines the habitat enhancement, restoration and protection measures proposed to manage the identified residual adverse effects associated with the BPCP (Alliance Ecology 2026).
- **Biodiversity Outcome Monitoring Plan (BPCP-ENV-PLN-009, the BOMP)** which outlines the comprehensive biodiversity outcome monitoring proposed to track actual biodiversity outcomes against predicted outcomes, and to inform adaptive management or contingency actions required.

The equivalent management plans for Cypress Consented Area which outline the management of kiwi and other birds in the Cypress Consented Area and the associated Wider Habitat Enhancement Area ('WHEA') have been incorporated into the activities associated with the BPCP. The Oparara Kiwi Treatment Area (OKTA) associated with the Cypress Consented Area will remain and management there is described in Attachment 1 of this management plan.

1.7 Scope

This AvMP sets out specific management strategies for avifauna which will be informed by ongoing monitoring and surveillance to refine the objectives and management approach as mining activities proceed within the five Project sub-areas of the BPCP.

Specifically, this AvMP:

- Identifies the 'Threatened' and 'At-Risk' birds recorded within the BPCP and sets out the current understanding of their distribution;
- Outlines the objectives and performance indicators for the management of adverse effects on indigenous avifauna due to the BPCP.
- Describes the specific management measures to be implemented to:
    - Avoid, minimise, and remedy adverse effects on 'Threatened' and 'At Risk' avifauna species within the BPCP, including linkage to residual effects management measures.
    - Manage weka within the pest exclusion fenced areas to protect snails and lizards, including capture and translocation;
    - Use monitoring results, incidental data and audit findings to inform adaptive management (including review and update of methods where required);
    - Identify "high risk areas" where pre-clearance avifauna searches are required for avifauna, including roroa/great spotted kiwi (*Apteryx maxima*). This includes breeding habitat and high-use areas;

- Respond to indigenous bird injury and mortality via protocols including notification, triage, handling, record keeping, and reporting; and

- Sets out compliance monitoring and reporting requirements, including the content and timing of the Annual Avifauna Monitoring Report.

1.8 Objectives

The objectives for avifauna management are to:

- Ensure that within 35 years of the commencement of the consents, the project will be net positive for avifauna abundance in accordance with the BOMP (BPCP-ENV-PLN-009) via:
  - Minimising adverse effects of vegetation clearance on avifauna via:
    - Avoiding vegetation clearance during the peak bird breeding season (1 August to 31 December inclusive) to the extent practicable. Controls to be applied when vegetation clearance and tree felling is scheduled to occur within the peak avifauna breeding season;
    - Where vegetation clearance within a "high risk area" must occur during the peak breeding season, implementing nesting deterrence for non-site attached bird species;
    - Use of pre-clearance detection, including radio-tracking, of roroa and shepherding birds out of harm's way;
    - Translocation of any roroa whose home ranges are substantially removed by mining and transfer of any eggs and chicks recovered in association with vegetation stripping to Operation Nest Egg (ONE) for captive rearing and later release.
    - Capture and relocation (or translocation) of mātātā/South Island fernbird and kakaruwai/South Island robin at ESE, MFS and Stockton, where necessary and practicably achievable, in advance of vegetation clearance;
    - Identifying high-risk operational zones and implementing specific management there (e.g., areas where roads intersect known bird habitats and informing all drivers of the location of these areas and the need to drive with care).
  - Partial remediation of habitat loss for roroa through the creation of suitable burrows and roosts within rehabilitated areas as outlined in the Rehabilitation Management Plan (BPCP-ENV-PLN-002).
  - Managing residual adverse effects on avifauna that otherwise cannot be avoided, minimised or remedied through the:
    - Enhancement of c. 1,505ha of avifauna habitat at the Blackburn Pākihi management area via implementation of intensive ground-based mammalian pest control and weed management.

- Enhancement of c. 23,843ha of suitable habitats within the wider aerial 1080 and ground-suppression halo.
- Removal of 100% of weka (*Gallirallus australis*) within the Denniston, Coalbrookdale, Mt Augustus, and Whirlwind Rise predator exclusion fenced areas immediately following construction so as to eliminate the predation risk to resident *Powelliphanta* snails and lizards. These weka will be translocated to sites elsewhere.
- Monitor survival of weka translocated from predator exclusion fenced areas for up to 12 months post-release to confirm survival rates and post-translocation behaviour and inform future weka management.

- Monitoring progress towards achieving the objectives through a combination of:
  - Real-time reporting of all wildlife incidents, with quarterly monitoring reporting.
  - Annual monitoring and reporting as set out in the Biodiversity Outcome Monitoring and Management Plan (BPCP-ENV-PLN-009).
  - An independent audit of progress every five years to verify the response to management and the long-term success and sustainability of the avifauna population.

1.9 Responsibilities and Competencies

BRL holds overall responsibility for implementation of, and compliance with this plan and any associated Wildlife Act Authority (WAA) conditions.

All ecologists and sub-contractors implementing the protocols outlined in this plan shall be appropriately trained and suitably experienced for the tasks they are responsible for.

A suitably qualified and experience person (SQEP) will be appointed to provide technical direction for all AvMP actions that affect or involve avifauna (including pre-clearance checks, species handling, monitoring and any capture/translocation activities). The SQEP must have demonstrated experience in:

a. Avifauna management and translocation; and

b. the management of 'Threatened' and 'At Risk' avifauna species, including roroa.

In the event that the appointed SQEP is unavailable for more than 20 working days, an alternative SQEP will be nominated.

2.0 Statutory Requirements

2.1 Relevant Approval Conditions

This Avifauna Management Plan gives effect to the following proposed substantive approval conditions:

Consent conditions to be inserted upon issue of final decision.

Condition No.	General Conditions	AvMP Reference

2.1.1 Associated Resource Consent Conditions

Activities in the Cypress Consented Area are governed by land use consents RC031751/1 to RC031751/21 (West Coast Regional Council) and RC03/164 (Buller District Council) which do not expire until 2040.

Condition No.	General Conditions	AvMP Reference
C32	Kiwi Habitat Enhancement – the Consent Holder shall undertake a programme of great spotted kiwi management, which shall have two objectives: a. To minimise the effects from mining activities on great spotted kiwi living within or immediately alongside Cypress Mine; and b. To enhance the survival rates of great spotted kiwi within the treatment area shown on Attachment 1, while mining operations are in progress (subject to the one year delay allowed by Condition 39(a)), and for a period of 20 years, plus the extended period referred to in Condition C39(a), following cessation of coal extraction from the site.	Attachment 1
C39(a)	The Consent Holder shall undertake a programme of predator control which shall consist of measures to enhance the survival rates of great spotted kiwi and other forest birds in the great spotted kiwi predator control area shown on Attachment 1. Baseline monitoring within the great spotted kiwi predator control area shown on Attachment 1, shall be completed within one year of the commencement of mining activities. The predator control programme within the great spotted kiwi predator control area shown on Attachment 1, shall commence immediately following completion of the baseline monitoring, and shall continue throughout the duration of mining operations and for a period of 20 years, plus an equivalent period to that between the commencement of mining activities and the	Attachment 1

	commencement of predator control, following cessation of coal extraction from the site.	

2.2 Wildlife Act Authorisation

All native birds, with the exception of those listed in Schedules 1, 2, 3 and 5 of the Wildlife Act (1953) are absolutely protected under the Wildlife Act (1953). Any activity that involves the taking, killing, capture, handling, and releasing of absolutely protected wildlife requires an authorisation from the Department of Conservation's Director-General of Conservation. A Wildlife Act Authorisation (WAA) will include various conditions primarily to ensure that any activity interacting with protected species remains consistent with the Wildlife Act 1953 and its protective purpose.

Before this plan becomes operational, BRL will have obtained the necessary Wildlife Act authorisation(s) to cover all activities outlined in this plan which are expected to involve the disturbance of absolutely protected birds, including capture, handling, banding, temporary containment, radio tagging and translocation as necessary. The Wildlife Act authorisation will also allow for incidental killing of indigenous bird species where there is no practicable alternative.

This AvMP will be updated as required to be consistent with any WAA conditions.

2.3 National Policy Statement for Indigenous Biodiversity

The National Policy Statement for Indigenous Biodiversity (NPS-IB) is intended to protect, maintain and restore indigenous biodiversity in Aotearoa/New Zealand (MfE, 2023). Therefore, any activities outlined in this AvMP will comply with the NPS-IB. Of particular importance is preliminary provision 1.7 (Maintaining indigenous biodiversity) which states the following:

(1) Maintaining indigenous biodiversity requires:

(a) the maintenance and at least no overall reduction of all the following:

(i) the size of populations of indigenous species:

(ii) indigenous species occupancy across their natural range:

(iii) the properties and function of ecosystems and habitats used or occupied by indigenous biodiversity:

(iv) the full range and extent of ecosystems and habitats used or occupied by indigenous biodiversity:

(v) connectivity between, and buffering around, ecosystems used or occupied by indigenous biodiversity:

(vi) the resilience and adaptability of ecosystems; and

(b) where necessary, the restoration and enhancement of ecosystems and habitats.

Section 2.2 of the NPS-IB sets out the policies. The relevant policies are:

Policy 1: Indigenous biodiversity is managed in a way that gives effect to the decision-making principles and takes into account the principles of the Treaty of Waitangi.

Policy 3: A precautionary approach is adopted when considering adverse effects on indigenous biodiversity.

Policy 5: Indigenous biodiversity is managed in an integrated way, within and across administrative boundaries.

Policy 17: There is improved information and regular monitoring of indigenous biodiversity.

Implementation of this AvMP will satisfy these policies as follows:

- Policy 1 and 5 through consultation with Ngāi Tahu/Te Rūnanga o Ngāti Waewae, councils, Department of Conservation and other key stakeholders;
- Policy 3 through monitoring to inform management of birds within and adjoining the Project Are to confirm management outcomes and inform management adjustments as required; and
- Policy 17 through regular data collection and annual reporting.

All proposed residual adverse effects management for indigenous biodiversity, as referenced in this management plan and detailed in the Residual Effects Management report (Alliance Ecology 2026) follows the principles outlined in Appendix 3 of the NPS-IB.

3.0 Stakeholder Consultation

A draft of this management plan was supplied to relevant regulators as part of the FTAA pre-consultation engagement.

The stakeholder consultation regarding associated technical reports and this management plan has been summarised in the Stakeholder Consultation section of the BPCP FTAA main application.

Once this management plan is approved, this section will document all future stakeholder engagement undertaken for subsequent versions.

4.0 Avifauna and Avifauna Habitats within the BPCP

4.1 Avifauna

Thirty-nine species of birds have been recorded throughout the Buller Plateaux, including 29 indigenous species, nine of which have a conservation status of either 'Threatened' or 'At Risk' (Robertson et al. 2021). Table 1 summarises the 'Threatened' and 'At Risk' birds known to inhabit the BPCP (i.e., known to occur or are likely to visit and/or may attempt to nest there in future).

The abundance and distribution of birds within the BPCP varies considerably due to the variety of habitats present (e.g., subalpine forest, pākihi, tussockland, rushland, wetland, coal measures shrubland and sandstone pavement) as well as the degree of human disturbance due to current and historical mining and other activities.

Table 1: Threatened and At-Risk Birds within the BPCP.

Common Name	Scientific Name	Conservation Status
Roroa/great spotted kiwi	*Apteryx maxima*	Threatened – Nationally vulnerable
Pīhoihoi/New Zealand pipit	*Anthus novaeseelandiae*	At Risk – Naturally uncommon
Kākāriki/Yellow-crowned parakeet	*Cyanoramphus auriceps*	At Risk – Declining
Koekoeā/long-tailed cuckoo	*Eudynamys taitensis*	Threatened – Nationally vulnerable
Kārearea/New Zealand bush falcon	*Falco novaeseelandiae ferox*	At Risk - Recovering
Kea	*Nestor notabilis*	Threatened – Nationally Endangered
Kakaruwai/South Island robin	*Petroica australis*	At Risk – Declining
Kawaupaka/Little shag	*Phalacrocorax sulcirostris*	At Risk - Relict
Mātātā/South Island fernbird	*Poodytes punctatus punctatus*	At Risk – Declining

4.2 Avifauna Habitats

4.2.1 Vegetation Types

The relatively high diversity of birds within the BPCP likely reflects the corresponding diversity of vegetation types on the Buller Plateaux and surrounding adjacent areas. Vegetation type, or habitat, is the major driver of bird abundance and distribution, with different species having particular habitat preferences and therefore occurring to varying degrees within different vegetation types.

Terrestrial and wetland vegetation types of the BPCP was surveyed, mapped and described by Ecological Solutions Limited (2026b). The extent of each vegetation type within the BPCP to be removed is summarised in Table 2. A further c. 128 ha would be affected by edge effects.

Table 2: Vegetation types present within the BPCP.

Type/Classes	Mean Height (m)	Height Range (m)	Extent to be removed (ha)
Forest			
Mixed beech-podocarp-broadleaved forest	12.4	3.4-30	5.5
Southern rātā-mountain beech-podocarp forest	7.5	3-11.2	177.1
Silver beech-mountain beech forest	5.4	4-6.8	5.5
Shrubland			
Mānuka-mountain beech-podocarp shrubland	3.9	2.2-6.0	84.7
Mānuka/Gahnia-wire rush shrubland	2.8	2.25-4.0	9.7
Weedy shrubland	2.01	0.65-4.0	12.5
Mānuka-tussock-wire rush shrubland	0.83	0.1-4.0	104.2
Mānuka-mountain flax/wire rush shrubland	0.73	0.2-1.63	3.7
Low vegetation			
Low pākihi	0.3	0.07-1	213.9
Tussock-mountain flax shrubland	0.93	0.48-1.7	1.7
Exotic grassland	0.31	0.18-0.45	0.8
Non-vegetated land cover			
Bare Rock			63.6
Vegetation cleared			69.8
Water			2.1
Total			**754.2**

4.2.2 High Risk Areas

High risk areas are different for different species and are defined as areas with a high or very high likelihood of occupancy for that species. Higher value habitats for 'Threatened' and 'At Risk' species have been identified and mapped taking into account the likelihood of occupancy for particular bird species within different vegetation types (i.e. habitats) and taking into account their likely temporal and spatial use of those habitats as well, since avifauna move across the Buller Plateaux and wider landscape using a variety of habitats at different times at different scales and with varying frequency. This mobility varies between avifauna groups and to a lesser extent among species, although the high heterogeneity of the habitats within the Buller Plateaux means that even less mobile species such as roroa may travel between several habitats regularly. Specifically, high risk areas have been defined as vegetation types which provide suitable primary habitat (including foraging and nesting habitat) for

the species under consideration and support permanent populations at higher densities than other habitats.

The specific details of the scoring for vegetation types and modelling used in the assessment of avifauna habitat risk are outlined in section 2.5 of the Conservation Prioritisation for Buller Plateaux report (Ecological Solutions Limited 2026c). Maps of high-risk areas for 'Threatened' and 'At Risk' avifauna species within each of the Project sub-areas are provided in Attachment 2.

5.0 Management of Threatened and At-Risk Birds

5.1 Introduction

The management of 'Threatened' and 'At-Risk' birds within the BPCP will include measures to avoid (where practicable), minimise and remedy any direct adverse effects of the mining activities, while supporting avian population persistence and resilience through the implementation of extensive residual effects management including site rehabilitation and habitat restoration and enhancement measures in the form of weed and pest control beyond (surrounding) the Project disturbance area. These habitat restoration and enhancement measures, including a network of fenced pest exclusion areas, intensive ground-based mammalian control supplemented with wider aerial control using 1080 and ground control and targeted weed management are expected to generate overall net positive ecological benefits for the avian species present within BPCP, including the 'Threatened' and 'At-Risk' species present (Alliance Ecology 2026). The 'Threatened' and 'At-Risk' birds present are set out in Table 1 above.

The key management actions to address adverse effects on 'Threatened' and 'At-Risk' avian species will include:

- **Avoidance**
    - Scheduling vegetation clearance outside the peak breeding season (August to December) where practicable.
    - Where clearance does take place within the peak breeding season, establishment of ecological setbacks from known nests.
- **Minimisation**
    - If vegetation clearance within the peak bird breeding season is unavoidable, then:
        - Pre-vegetation clearance surveys to ensure resident birds are out of harm's way.
        - Nesting deterrence for non-site attached species prior to and during the peak avian nesting period.
    - Capture and relocation of site attached adult kakaruwai/South Island robin and mātātā/South Island fernbird to predator exclusion fenced areas in advance of vegetation clearance.

- Radio tracking and shepherding of roroa (great spotted kiwi) out of areas to be stripped immediately prior to vegetation clearance commencing.

- **Remediation**
  - The RMP (BPCP-ENV-PLN-002) sets out the remediation actions proposed including but not limited to:
    - Revegetation in the form of VDT and planting to create self-sustaining vegetation similar to the pre-mining vegetation.
    - Prioritisation of the use of fresh soils and jumble dump to maintain earthworm and soil fauna viability.
    - Creation of burrows/roosts for kiwi in vegetation rehabilitation areas.

- **Residual effects management**
  - The establishment and implementation of a mammalian pest control regime as detailed in the PCP (BPCP-ENV-PLN-022) in order to enable recovery and maintenance of 'Threatened' and 'At-Risk' and 'Not Threatened' bird species. The pest management regime would target multiple species within:
    - 911 ha of pest-exclusion fenced areas.
    - 1,505 ha intensive predator ground control within the Blackburn – Pakihi management area.
    - Approximately 25,000 ha of pest suppression across the landscape surrounding the pest exclusion fenced areas.
  - The establishment of a 9,431 ha weed management area within high value habitat types as set out in the Weed Management Plan (BPCP-ENV-PLN-008) for the Project.

5.2 Avoidance

While avoidance of high-quality habitats for birds during mining is usually impractical due to the fixed geological location of the mineral resources which are distributed within the same forest, shrubland, and wetland ecosystems occupied by 'Threatened' and 'At-Risk' species, mine planning can minimise impacts through seasonal timing of activities and the application of buffer zones or setbacks.

Avoidance measures to be applied will include:

- Where practicable, vegetation clearance will be undertaken outside the peak breeding season (August to December inclusive) so as to reduce the risk of mortality of eggs or chicks.
- Where vegetation clearance is undertaken during the peak breeding season, setbacks will be implemented from known nests of 'Threatened' and 'At Risk' species.

5.3 Minimising effects

5.3.1 Approach

Minimising effects of mining activities on birds and their habitats will employ a toolbox approach. The toolbox will include:

- Pre-clearance surveys;
- Bird deterrence; and
- Capture and relocation (and perhaps translocation) of 'Threatened' and 'At Risk' species.

Each of these actions is described in more detail below.

5.3.2 Pre-clearance surveys

The purpose of pre-clearance surveys is to identify active nests, breeding territories and roosts of 'Threatened' or 'At Risk' avifauna within the area to be cleared, so that avoidance, buffers, deterrence or salvage/capture measures can be implemented as required. There may be more than one pre-clearance survey to inform avian management.

Where vegetation clearance within habitats of 'Threatened' and 'At Risk' birds identified by a SQEP as being 'High Risk' (in accordance with the criteria outlined in Section 4.2.2) cannot be achieved outside the peak bird breeding season (August to December inclusive), deterrents will be put in place to encourage birds to nest elsewhere (noting that deterrents are usually only effective for a short period of time) and pre-clearance surveys will be used to identify the presence of breeding adults i.e., those showing nesting or other breeding behaviours such as territorial singing and calling, courtship displays, pair bonding, nest construction, active nesting and nest defence/protection. Identifying breeding adults and the stage of breeding will enable targeted timing of operations (e.g. delaying until chicks are fledged) or planning and design of additional effects minimisation measures such as nesting deterrence, implementing setbacks, capture and relocation or radio tracking to confirm location in relation to mining activities.

- The avifauna pre-clearance surveys must be undertaken by, or under the supervision of, a SQEP and must be proportionate to the scale and risk of the proposed clearance for the particular 'High-Risk' area being checked.
- A pre-clearance survey will be completed no more than 72 hrs before the commencement of clearance, and repeated if clearance does not commence within that 72-hr period or resumes following a pause of seven days or more. Vegetation clearance activities will not commence until pre-clearance surveys, deterrents and or relocations as necessary are completed and the SQEP has submitted a recommencement notice to the BPCP environmental manager.
- Surveys will be targeted to the species of interest and could include a combination of modified 5-minute bird counts (5MBC) in accordance with Hartley and Greene (2012) at 100 m spaced listening posts, slow-paced (2km/h) area-searches along mapped transects covering the clearance zone and automated acoustic recorders and targeted call playback for site attached species such as roroa and matātā/fernbird at times when the target species is likely to be

active and responsive. Additional detail on roroa specific pre-clearance searches is provided in Section 6.1.2.

Pre-clearance detection surveys will enable mitigation measures such as species-specific deterrents, and relocation to be actioned so as to minimise disruption, injury or mortality. Vegetation clearance activities will not commence until:

- the 'Threatened' and 'At Risk' species that may be affected by imminent vegetation clearance have been identified.
- the number of individuals that may require mitigation actions has been established to aid in future planning (e.g. in the case of translocation and radio tracking).
- the presence and size of active territories within the area to be cleared has been established.
- whether individuals have initiated breeding and the current stage of breeding is known.
- the exact locations of any current nesting activity are known to enable nest protections e.g. avoiding clearance, implementing buffers.
- vegetation which is not being used for nesting and therefore is able to be cleared without risk of injury/mortality to avifauna is identified.
- Likely timeframes and locations where active breeding will have concluded are confirmed to aid in planning for future clearance.

During detection surveys, observers should move slowly through habitat, using binoculars to identify any species present, with particular attention to any signs of breeding including behavioural signs. Observers should be familiar with the likely species present within the area to be cleared, their usual habitat use patterns and likely breeding behaviours including:

a) whether species use cryptic nesting behaviours

b) the particular nesting habitat typically used by the species and

c) whether biparental care or sex-specific parental care is expected.

All birds seen or heard will be recorded, and their approximate location will be marked using a GPS. Recorded data should include:

- Species
- Number of individuals observed
- Age and sex of individuals if possible
- Location
- Behaviour (including territorial calling/singing, territorial aggression, nuptial feeding, nest building (carrying nest material), or parental care (carrying food items)

If nest building or parental care is observed, animals exhibiting those behaviours will be followed at an appropriate distance so as to not to disturb behaviour until the nest is located and the location can be marked using a GPS.

If potential nests of 'Threatened' or 'At Risk' avifauna species are detected within a 'High Risk' area (e.g., via adult agitation, faecal deposits, or direct observation), follow-up checks will occur within 24–48 hours using passive observation (30–60 minutes per site) or thermal imaging at dawn/dusk to confirm activity without disturbance.

If active nests of 'Threatened' and 'At Risk' avifauna species are confirmed within 'High Risk' areas, then a 20 m no-go setback, where no vegetation clearance will occur, will be established with daily monitoring until either relocation feasibility is assessed (and implemented if feasible) or fledging/abandonment occurs.

Prior to vegetation clearance commencing within 'High Risk' habitat a pre-clearance survey record will be completed by the SQEP and submitted to the BPCP environmental manager. The pre-clearance record will include:

- The date(s) of the pre-clearance surveys and the area checked;
- Any 'Threatened' or 'At Risk' avifauna identified;
- The location and status of any confirmed active nests and the buffers/controls applied; and
- Any specific mitigation measures implemented or recommended.

5.3.3 Bird deterrence

Techniques for deterring birds such as strategic manipulation, noise or visual disturbances, are intended to encourage birds to relocate voluntarily before clearance commences. Deterrent selection will use a graduated approach tailored to pre-clearance survey findings and species-specific behaviours.

In vegetation with an average canopy height exceeding 3 m (i.e., all forest types and mānuka-mountain beech-podocarp shrubland as well as any localised areas of taller vegetation)., the initial approach will use selective felling of tall vegetation (e.g., trees with epiphytes for kārearea) and dense understory (e.g. for kakaruwai) which would be used for nesting by a wide range of indigenous birds, to be completed outside of the nesting season. This will reduce the nesting suitability for most forest birds and decrease the risk of nesting during vegetation stripping prior to mining. All trees greater than 3 m will be felled prior to the nesting season, where practicable.

Where selective felling outside the peak breeding season is not practicable, or where suitable nesting habitat exists regardless (i.e., shrubland and ground nesting habitat), nesting will be discouraged within these habitats using one or more of the following methods:

- Complete regular disruptive site walkovers between the 1 August and 30 December. A disruptive site walkover is a proactive, purposeful physical intrusion across a development or work site which uses human presence (and perhaps a trained conservation dog) as well as localized noise to deter birds from settling or nesting in a specific zone before construction begins
- Install visual deterrents such as reflective streamers/flagging tape, helium balloons that flutter in the wind, and predator decoys (e.g., kārearea for pipit) within breeding habitats to deter birds from nesting. Reflective streamers/flagging tape will be hung in a c. 20mx20m grid

formation. Note that this method is effective within smaller areas and over the short term (up to three weeks) and decreases over time as birds become accustomed to it.

- Deploy auditory bird repellents such as the No More Birds Mega Blaster Sonic Repeller which emit intermittent predator calls or distress signals (e.g., species-specific for roroa), or Pestrol Bird Scare Cannons.
- Parking earthworks machinery in future stage locations, starting the engine from time to time, or simulating human activity by combining with daily disruptive site walkovers and low-level noise.

At least weekly checks by a SQEP will be used to verify efficacy of deterrents while clearance is pending. If 'Threatened' or 'At Risk' avifauna species are identified actively nesting and cannot be avoided the SQEP will signal the need for escalation (and what that would involve) if required.

5.3.4 Capture and relocation

5.3.4.1 Background

Where pre-clearance detection surveys identify kakaruwai /South Island robin and/or mātatā/South Island fernbird within proposed vegetation clearance areas in advance of breeding and avoidance and deterrence measures are most likely to prove unsuccessful, a capture and relocation programme will be implemented. Any capture and relocation programme will be undertaken in accordance with the best practice techniques for the translocation of the species concerned (e.g. Collen et al. 2014 for kakaruwai/robins) and any relevant Wildlife Act Authorisation conditions.

The success of any capture and relocation programme depends on the experience and skills of the ecologists undertaking the capturing and handling, relocation site selection, timing, capturing methods, housing and transporting, and post-release monitoring.

5.3.4.2 Capture and relocation team

The team of ecologists undertaking the capture and relocation will be led by the SQEP and supported by ecologists that are suitably qualified and experienced in the capture, handling, holding and release techniques to be used. When handling wildlife, the animal welfare provisions of the Animal Welfare Act 1999 and its welfare codes[1] (e.g. Transport within New Zealand) must be met.

5.3.4.3 Relocation site selection

Successful population establishment and growth depend on site connectivity, site security in the form of predator control, and habitat quality. Connectivity to surrounding forested areas for kakaruwai/South Island robin and low, dense shrubby cover with emergent vegetation for the moderately gap-limited mātātā/South Island fernbird can influence initial site establishment post release. Predator presence and release site size can limit natal dispersal, mate-finding, gene flow between isolated patches and ultimately population growth (Collen et al. 2014; Innes et al. 2022).

[1] www.biosecurity.govt.nz/regs/animal-welfare/stds/codes

Relocation sites will be within the proposed Buller Plateaux pest exclusion fenced areas and the Blackburn Pakihi intensive mammalian pest control programme area. The Buller Plateaux comprises a mix of gentle upland ridges, dissected valleys, and low-gradient basins supporting a complex mosaic of vegetation types. There will be four separate pest exclusion fenced areas which will be built in a staged manner to coincide with mine disturbance and construction activities.

The proposed release sites include:

- The Denniston North Pest Exclusion Fence (~47 ha) on Denniston Plateau.
- The Coalbrookdale Pest Exclusion Fence (~`154 ha) on Denniston Plateau.
- The Mt Augustus Pest Exclusion Fence (~15 ha) on the Stockton Plateau.
- The Whirlwind Rise Pest Exclusion Fence (~695 ha) on the Stockton Plateau.
- The Blackburn Pākihi intensive mammalian pest control programme area (~1505 ha)

5.3.4.4 Timing

Capture and relocation programmes will be coordinated with the availability of pest exclusion fence areas and implemented March to May (outside the peak breeding season and in advance of any clearance planned) due to the abundant food available, longer days, and lower breeding activity at that time of the year. January to March can target juveniles for translocation, but requires careful observation to avoid catching dependent young.

The timing of the pest exclusion fence construction schedule will influence which release site is used for particular capture and translocation programmes. The timing of predator exclusion fences will be:

- Denniston North Pest Exclusion Fence will be built immediately upon project approval (anticipated to be 2027) in Year 1 and will serve as the primary release site for any high value native fauna required to be relocated/translocated during disturbance in the initial stages of the Project.
- Coalbrookdale Exclusion Fence - construction will commence prior to the commencement of stage 3 of ESE or MFS, whichever is first. Habitats within the Coalbrookdale exclusion fence include forest, shrubland and low growing habitats suitable for both kakaruwai and mātātā.
- Mt Augustus Exclusion Fence – construction will commence prior to the commencement of Stage 5 of ESE or MFS, whichever is first. The Mt Augustus habitats are suitable for mātātā/South Island fernbird, but do not include forest habitat for robins.
- Whirlwind Rise Exclusion Fence – construction will commence prior to the commencement of Stage 7 of ESE or MFS, whichever is first. Habitats within the Whirlwind Rise exclusion area include forests, shrublands and low vegetation suitable for kakaruwai and mātātā.

5.3.4.5 Capture methods

Mātātā/South Island Fernbirds

Mātātā can be challenging to capture due to their secretive, skulking behaviour and their preference for dense wetland cover. The most effective method of capture for small birds like mātātā is mist-

netting. Mist-nets are typically 12–16 m lengths, 16–30 mm mesh made of terylene netting and are suspended in the air between vertical poles along tracks, edges, or gaps within flax-reedbeds, pākihi shrubland, or tussock wetlands at dawn/dusk when birds are vocal. Mist netting can also be combined with taped playback calls with playbacks of local dialect duet calls broadcast at 70–80 dB for 10–15 min cycles to lure territorial pairs into nets (Cleminson and Nobel 2012; Southerland et al. 2004).

Targeted sweep-netting through dense vegetation can supplement capture rates for foraging birds, while spotlighting capture at night can exploit their ground-level habits.

Kakaruwai/South Island Robin

Kakaruwai are fairly easy to capture, particularly if pre-conditioning (training) is used to assist. It is helpful to pre-feed with mealworms to 'train' robins to associate specific noises with food availability and to encourage them to come close and enter traps. Females are more evasive and can be harder to locate, so pre-conditioning can assist in attracting more females.

Clap traps, in conjunction with mealworm lures, will be the primary method used to capture robins. Secondary or contingency methods to be used in combination with clap traps will include mist nets, hand nets, or drop traps to improve capture rates (Collen et al. 2014).

Clap traps are to have lightweight, three-sided metal frames with a string top edge to reduce the risk of injury to birds. Trap locations are to be cleared of ground debris to ensure mealworms are clearly visible and that the trap edges lay flat when triggered to reduce the risk of birds escaping, especially if the ground is uneven. Making a leaf litter buffer around the trap edges also assists in further preventing escapes. To prepare the buffer, trigger the trap and then make a buffer of leaf litter that is 10–15 cm wide and approximately 10 cm high, and which sits just under the perimeter of the sides, top and bottom of the net. Effective training, proper trap setup, timing, and patience are key to maximizing capture success while minimizing injury to birds (Collen et al. 2014).

Alternative trap methods such as hand nets, mist nets and drop traps have also proven successful in capturing robins under certain circumstances and will be used to supplement the clap traps where habitat structure and population characteristics require additional effort. Hand nets have also been used to capture adult robins where robins have become habituated to people, for example on South Island inshore islands or Tiritiri Matangi in the north; however, hand nets can also be used to capture young birds, particularly naïve fledglings or juveniles (Collen et al. 2014). The use of mist nets in combination with clap traps has proven a successful strategy for targeting robin pairs, particularly the females (Collen et al. 2014; Ward-Smith & Stephenson 2008) and drop traps with bait or lures can also be used to capture robins safely. Drop traps are five-sided wire frames that with mesh covering the sides and top, and a flap on one side to enable easy retrieval of captured robins. The trap is propped up on one side with a stick that is attached to fishing line, which is pulled to drop the trap down over the bird. Similar to the clap trap, lures such as mealworms must be placed near the base of the trap where the frame is in contact with the ground. As the robin approaches the mealworm it is well positioned inside the trap and likely looking down to pick up the mealworm. The stick is then pulled away and the robin is safely trapped inside (Collen et al. 2014).

5.3.4.6 Capture effort

Mātātā/fernbirds and kakaruwai/robins are highly territorial during the breeding season. Estimating bird density within an area to be stripped in order to better understand the capture rate needed to minimise risk to breeding birds within a given operational area will be undertaken prior to attempts to capture birds are made. Kakaruwai densities will be estimated based on the number of birds observed during the pre-conditioning (training) measures prior to commencement of trapping whilst acoustic call surveys will be used to estimate densities of mātātā in advance of clearance.

Robins are highly responsive to food and the counting of birds during the training period will provide a reasonable estimate of bird numbers within the specific operational area to be stripped. Fernbirds are responsive to acoustic call playbacks during the breeding season. Call playback surveys will be undertaken as close as practicable to the proposed capture period in order to estimate fernbird densities. Training counts (for kakaruwai) and call playback counts (for mātātā) will be used to derive an asymptote in specific catch effort curves for each species and area to be stripped so as to confirm the minimum level of effort required to capture the majority of fernbird and robin populations occupying affected areas.

5.3.4.7 Housing and transporting

Once captured, fernbirds and robins will be transferred immediately to a black, soft cloth bird bag with only one bird per bag. Captured birds in bags must never be placed directly on the ground. If transport of captured birds is not immediate, bags will be securely hung in a shady tree for no more than 30 minutes while other birds are being caught and processed. All captured birds will be banded for future identification and monitoring. Bagged birds will be transported in a cardboard box with a suspension perch allowing for a maximum of five bagged birds to be suspended per transport box. Bagged birds will be transported to the release site within one hour of capture.

If transport is delayed (e.g., a large number of birds captured or the release site is some distance away, remote or hard to get to) captured birds will be held in temporary containment boxes with one bird per box. Birds have been temporarily contained for up to five nights without injury or death in such boxes with appropriate care. Birds in temporary containment must be housed with strict attention to minimising stressors such as loud noises, and unnecessary activity in close proximity and the like. Temporary containment boxes will be made up of modified cat carriers or similar as shown in Figure 2 below (Collen el al. 2014; Lovegrove 2008; Davies et al. 2010; Hegg & Jamieson 2010).

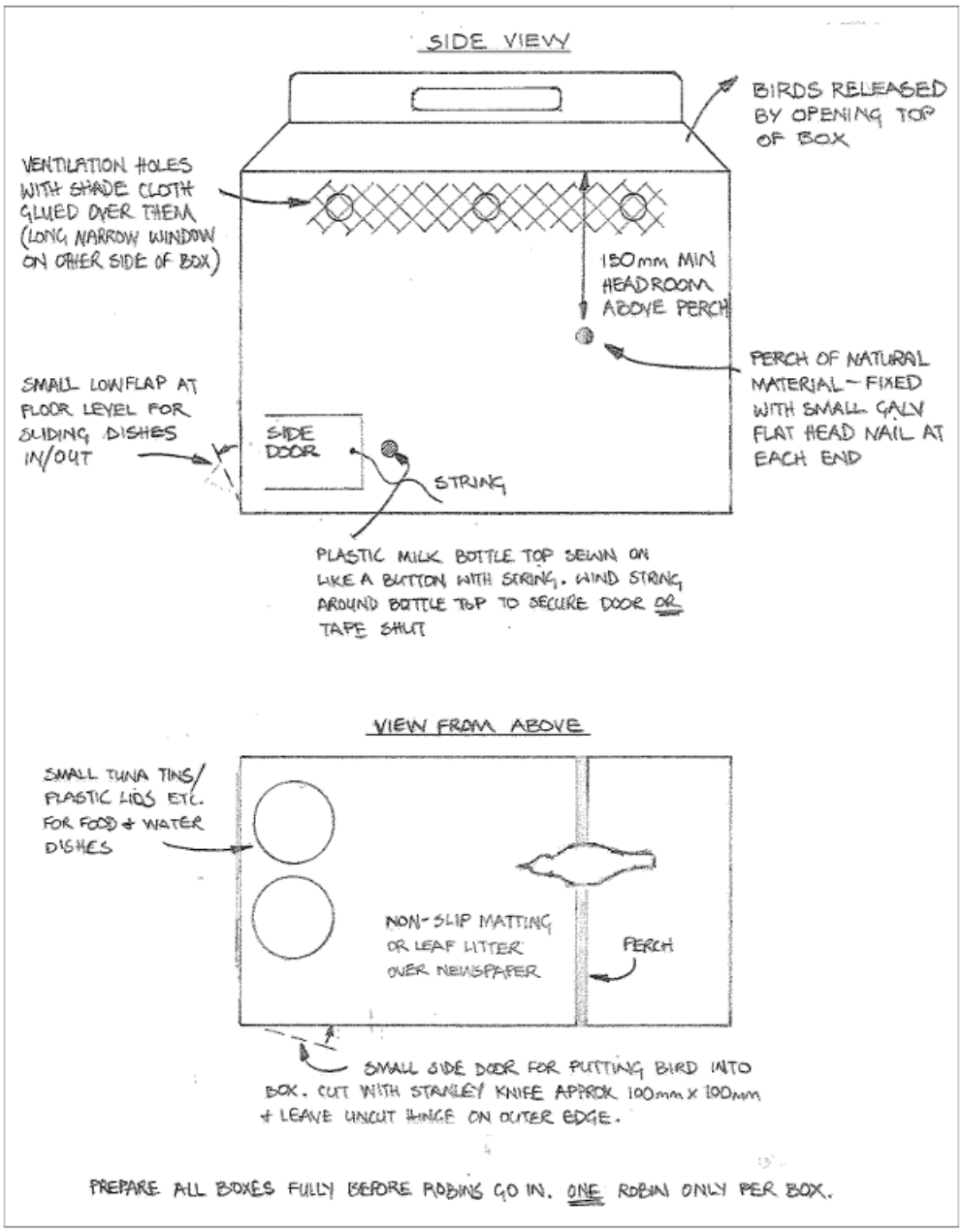


Figure 2: Design features of temporary containment box for fernbird and robin – designed by Tim Lovegrove (Collen et al. 2014).

Transport of birds to the release site will be done using the temporary containment boxes. During transport the boxes will be kept away from wind or draughts, well shaded and noise/vibrations will be minimized to the extent practicable. The boxes will be placed in transport vehicles in such a way as to not block ventilation holes while ensuring they are stable and safely secured to prevent movement. Transport vehicle windows will be covered with dark cloth/tint to minimise direct sunlight on the boxes. Alternatively, transporting birds at night may minimise stress with reduced light levels and at a time when birds are normally at rest (Collen et al. 2014).

5.3.4.8 Release

Captured birds will be released the same day if release can be achieved prior to 2 pm. If this is not possible, birds will be held in their temporary containment boxes and released as early as possible the following morning to ensure they have adequate day light hours to acclimatise to their new surroundings, find food and shelter before sundown (Collen et al. 2014; Hegg & Jamieson 2010).

Birds will be 'hard' released with no specific post release support or temporary enclosure. Transport boxes will be placed on the ground and oriented towards clear, open spaces with easy escape routes and no people in the way. The boxes will be opened from behind and captured birds allowed to fly out in their own time. Birds will not be manually or forcefully removed from the boxes.

5.4 Timeline of Avifauna Management Activities

General avifauna management activities are scheduled according to periods of least risk to avifauna as a result of mining activities and will be undertaken according to the indicative timeline for avian management activities shown in Table 3.

Table 3: Indicative timeline of general bird species management activities in Year 1.

Task	Month											
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
Pre-Clearance Surveys						X	X	X	X	X	X	X
Selective Felling			X	X	X	X	X					
Simulated Activity/Disturbance							X	X	X	X	X	X
Capture and Relocation				X	X	X	X					
Roroa burrow/roost creation	As set out in the Rehabilitation Management Plan (BPCP-ENV-PLN-002) and summarised below in Sec 9 - Remediation											
Mammalian/weed control	In accordance with the Residual Effects Management Report (Alliance Ecology 2026), Pest Control Plan (BPCP-ENV-PLN-022), Weed Management Plan (BPCP-ENV-PLN-008) and Biosecurity Management Plan (BPCP-ENV-PLN-007)											
Monitoring and Reporting	Annual as set out in the Biodiversity Outcome Monitoring Plan (BPCP-ENV-PLN-009)											

6.0 Management of Roroa

6.1 Roroa Distribution

Roroa are continuously but sparsely distributed across the Buller Plateaux with call rates indicating that the population is at lower density than in areas of 'core' habitat (Kingett Mitchell & Landcare Research 1997, Thomas & Toft 1997, Buckingham 2002, Wildlife Surveys 2002, Wildlife Surveys 2008, Wildlife Surveys 2010, Wildlife Surveys 2011, McLennan 2020, Toy et al. 2021). Figure 3 and Figure 4 show the location of roroa surveys and the location of roroa recorded respectively.

Roroa on the Buller Plateaux have large territories (≥ 80 ha), which can cover the full range of habitats and vegetation types, with high value habitats for foraging and burrowing located in the deeper and more fertile soils of gorges and tall forests. Red tussock grasslands in the upper Waimangaroa Valley are also higher value feeding habitat (McLennan 2020). Roroa roost and nest in shallow burrows, rock crevices, the hollow base of trees, or logs on the forest floor and amongst dense vegetation. They move frequently between a large number of burrows forming a complex network across their territory. Roroa can be sensitive to human disturbance, particularly when nesting. They are territorial and sedentary, demonstrating strong habitat fidelity. Their movements are generally limited to foraging within their established territory with no large-scale wandering or migration.

Although roroa occur across all habitat types present within the BPCP, much of the Project Area is considered less valuable in terms of foraging and breeding habitat than surrounding forest, due to the shallow and poorly productive soils which are typical over sandstone pavement geology.

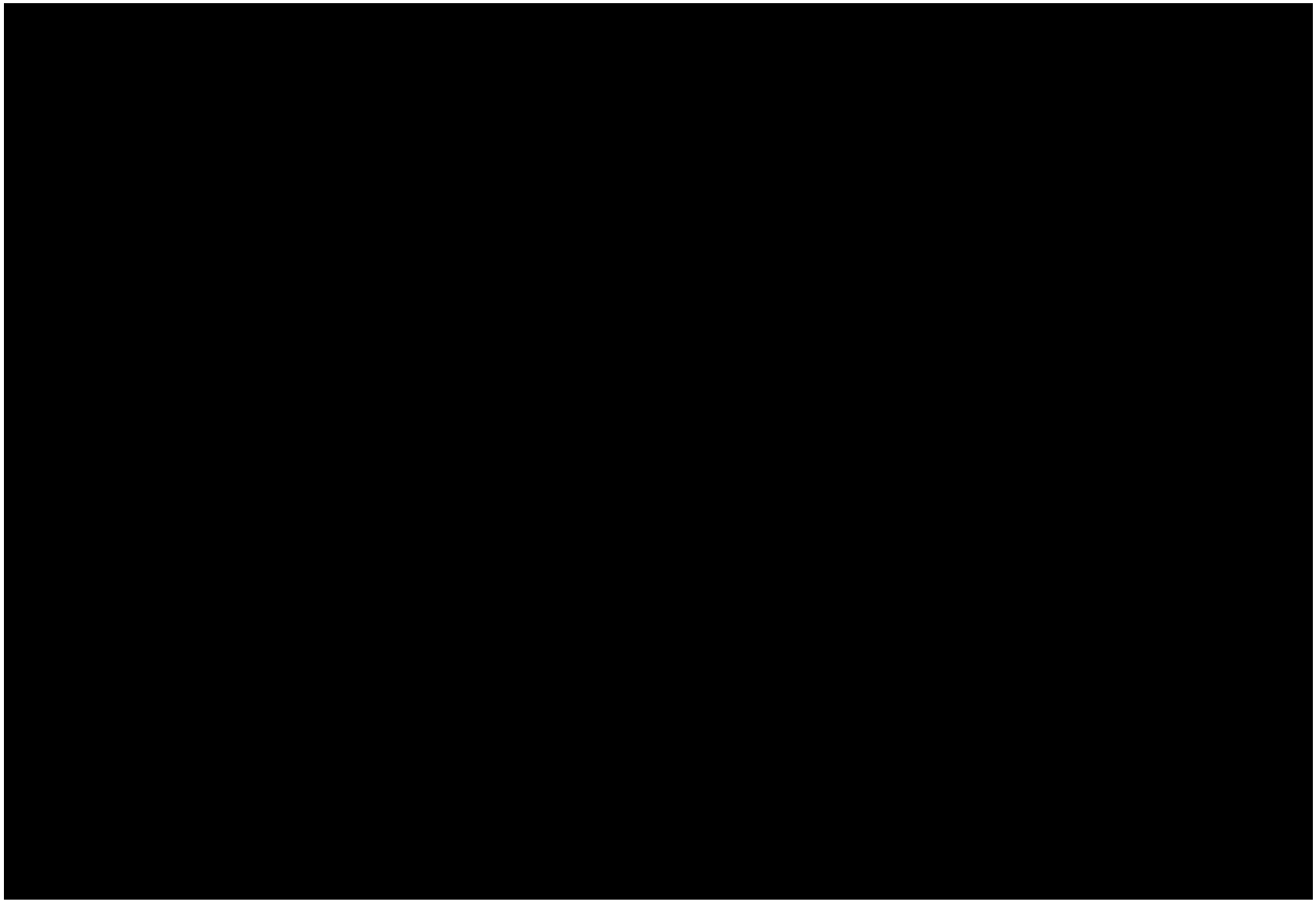


Figure 3: Location of previous roroa surveys

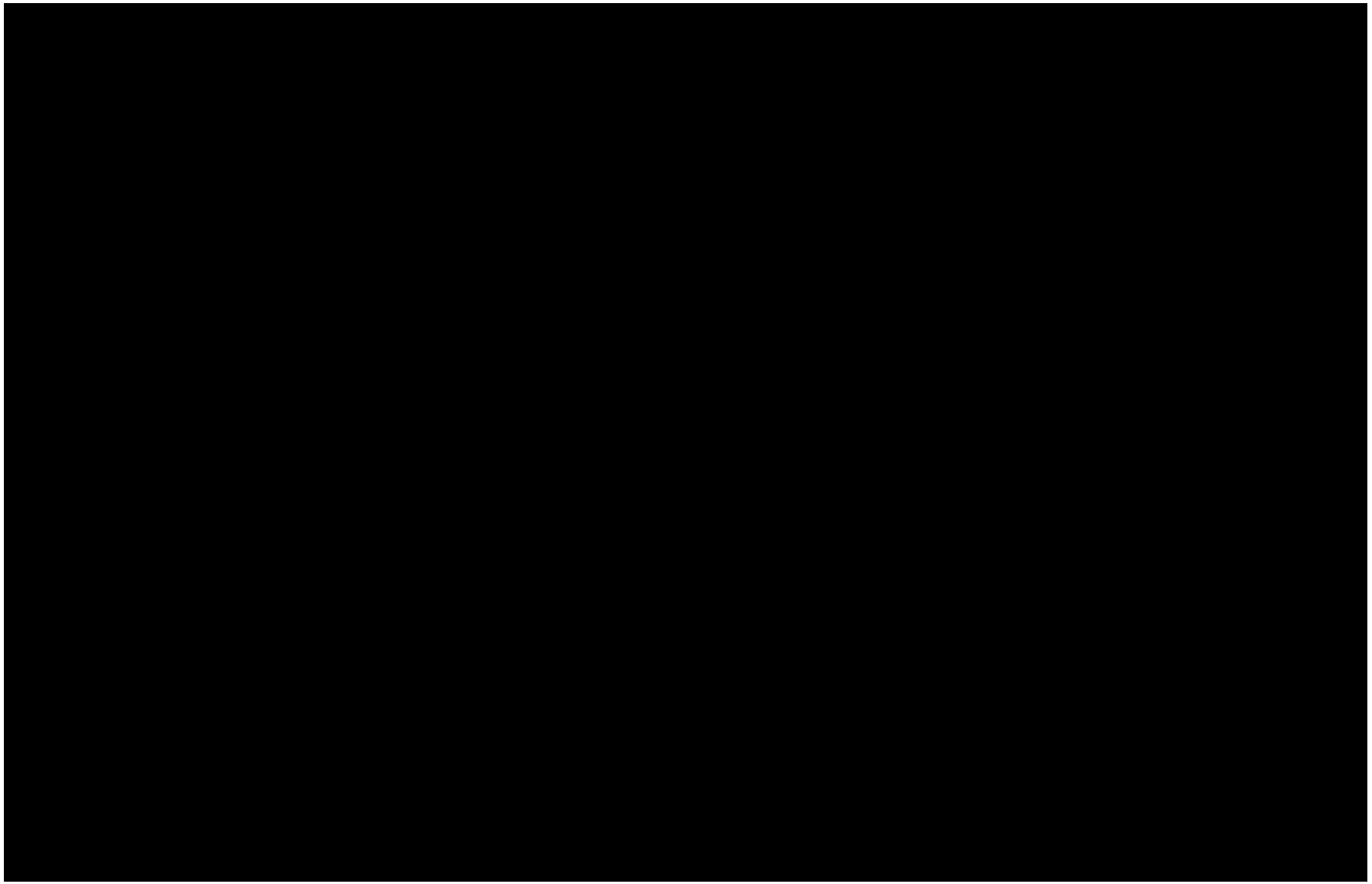


Figure 4: Indicative roroa locations derived from call count surveys

6.2 Management Approach

6.2.1 Rationale

While it remains unknown how many roroa currently inhabit the Project Area, roroa are known to use the BPCP sub-areas and surrounds and there will be a loss of roroa habitat and disturbance of individual roroa as a result of the Project. The effects of habitat loss and disturbance will vary for individual roroa depending on how their territories are positioned relative to the mining areas. The most likely scenario is that birds will flee as disturbance increases (i.e., as people or machinery approach them); however, those located on the mine boundary will be affected quite differently to those with territories entirely within the mine footprint. In order to manage roroa effectively, it will be necessary to understand the extent and boundaries of territories and the location of roosting burrows within and outside of the areas to be affected mining. This information will be acquired via capture and radio-tracking of roroa identified during pre-clearance surveys. Social disruption caused by birds adjusting their territory boundaries will affect an unknown number of roroa, but in general, leaving roroa in place and allowing them to reconfigure their territory will be the preferred management option based on BRL's experience at Stockton and Cypress.

Monitoring of roroa at Cypress Mining Area since before mining began there in October 2013 has shown that resident adults have successfully reconfigured their home range to adapt to the loss of habitat and no radio transmitter carrying birds are known to have been killed by vegetation clearance or subsequent mining and no birds have been relocated to protect them. It remains unknown how much habitat loss or disturbance roroa can tolerate without undue harm, but any roroa whose territory is located mostly within the mine footprint are expected to be successfully 'shepherded ' on, while those whose territories fall largely outside the mining operations or further away will be left *in situ*, closely monitored and only 'shepherded' on if their territories are subsequently found to be significantly affected by the mining operations.

Based on BRL's recent local experience with management of roroa in the existing Stockton Mine and Cypress Mining Area, where mining has resulted in the loss of parts of individual bird's home ranges, the affected individuals have been found to reconfigure territories into surrounding habitats, juveniles and chicks survive and are recruited to the breeding population, and the condition of birds captured in the vicinity of the mine, including those which have lost parts of territories, has generally been good (Bathurst Resources Limited 2015, 2023).

Determination of the level of management expected to provide the best outcome for individual roroa will consider:

- The recommendations of affected parties including Department of Conservation and Ngāti Waewae;
- Territory locations. Individuals whose territories are wholly or partly affected by the mine operation, those with small territories, roroa with neighbours on all sides, and a high probability of losing more than 50% of their territory during mining will be the most likely candidates for more intensive management, the specifics of which will depend on the situation.

- A review of the management outcomes for affected roroa at Stockton and Cypress.

Potential effects on roroa productivity due to social changes resulting from the chosen management approach are to be addressed via the residual effects management measures developed for the project which are intended to result in a net positive in the number of roroa over the life of the project (Alliance Ecology 2026).

6.2.2 Pre-clearance searches

Targeted searches for roroa will be carried out at least 90 days prior to vegetation clearance, where practicable, with certified specialist kiwi dogs and handlers (i.e., a kiwi team) to locate and catch those roroa known to be in proximity of the disturbance areas based on roroa territory estimates and any identified locations during targeted nocturnal call playback surveys or the automated acoustic recorders as outlined in Section 6.3.2.

Trained kiwi dogs and handlers are the most effective means of locating kiwi. Trained kiwi dogs and handlers will make use of both diurnal and nocturnal searches within clearance areas where the SQEP considers that there is a reasonable likelihood of unmonitored roroa being present. The personnel and dogs involved will be certified by the Department of Conservation.

The Department of Conservation certification programme requirements, steps and standard operating procedures are outlined in their Conservation Dog Programme procedures and Handler Standard Operation Procedures (Department of Conservation 2016). Details of kiwi dog requirements and best practice methods are provided in the Kiwi Best Practice Manual (Colbourne et al. 2020) and these will be adhered to at all times during roroa management, including any search and capture effort.

If specialist certified kiwi team(s) and a certified conservation dog are unavailable, alternative search efforts will be undertaken by experienced ecologists under the direction of the SQEP. Alternative search efforts will include greater reliance on infra-red imaging cameras, nocturnal playback surveys, and more frequent/higher density visual sweeps in the last few hours of darkness of each night. These alternative search efforts will aim to identify locations where roroa are known or thought to be roosting.

6.2.2.1 Timing

Pre-clearance checks will be completed no more than 72 hours before clearance commences and repeated if clearance does not commence within that 72-hour period or resumes following a pause of seven days or more. Vegetation clearance activities will not commence until pre-clearance checks and or relocations as necessary are completed and the SQEP has submitted a recommencement notice to the BPCP environmental manager.

6.2.3 Capture and radio-tagging

Pre-clearance radio-tagging of roroa will be used to better understand the location, extent and composition of individual territories which could be affected by proposed mining activities. Catching kiwi is stressful for the birds and can cause injury to the bird or handler. All kiwi captures will be made

by suitably accredited handlers and in accordance with the Kiwi Best Practice Manual (Colbourne et al. 2020) and relevant Wildlife life Act Authorisation conditions.

An attempt will be made to capture and radio-tag approximately 50% of kiwi within the disturbance areas (one bird from each known or inferred pair). GSK Smart diagnostic transmitters will be used, which will provide movement data that can be interpreted. For adult kiwi, reasonable effort will be made to check the transmitter harness and radio transmitters and replace them after six months to reduce the risk of failure or injury. This will be done twice per handling season. On juvenile birds, the transmitter and straps will be checked and changed more frequently, depending on the age of the bird and its growth rate.

To determine home ranges of radio-tagged roroa and the extent to which they overlap, territory mapping will be undertaken within eight weeks prior to disturbance in accordance with DOCCM-5597576 Birds: kiwi territory mapping v1.0 (Robertson 2018).

Once affected roroa within the Project Area have been identified and radio-tagged, these birds will become the focus of monitoring throughout mining activities. Radio-tracking of kiwi will show where the kiwi territories are located and subsequent maps will be produced to guide the timing and implementation of mining activities and actions to protect radio-carrying birds.

6.2.3.1 Timing

The capture and tagging of kiwi will commence late autumn or early winter (i.e., April to June, outside the breeding season) immediately following Project Approval and Wildlife Act Authorisations being obtained.

6.2.4 *In situ* Management of Roroa

Before any vegetation clearance within specific disturbance areas, telemetry data and territory maps will be reviewed. The area to be cleared will be searched for roroa using radio telemetry sweeps and a trained kiwi dog to determine if any kiwi (tagged or untagged) have moved/strayed into the area. This search will take place at the start of each day prior to any vegetation clearance. Any birds along the margins of the disturbance area will be left to move to another part of their territory of their own volition. The most likely scenario is that birds will flee as disturbance increases (i.e. people or machinery approach them). Where birds are found within the area to be cleared, they will be 'shepherded' away by an accredited kiwi handler to encourage the roroa to move in a safe direction away from the clearance, or relocation to a safe area of their known territory. To minimise disturbance, birds will be approached in such a way that they flee in the appropriate direction (i.e., away from the mine development) to avoid a need to chase them.

6.2.5 Breeding season

Vegetation clearance during the roroa egg laying season (1 July to 31 December inclusive) will be avoided to the extent practicable in areas identified as "high risk" for roroa.

Where vegetation clearance cannot be scheduled to avoid egg laying season a SQEP will determine whether clearance can proceed based on the following criteria:

a) the extent of the vegetation clearance. Small or highly localised areas (including, but not limited to, drill sites and linear access tracks) may be cleared;

b) the vegetation to be cleared is within habitats identified as low risk in accordance with the criteria in the AvMP; and

c) the potential effects on roroa (including eggs) can be appropriately managed through the implementation of the applicable pre-clearance detection, deterrence and mitigation measures outlined in the AvMP.

Prior to vegetation clearance during egg laying season it will be necessary to search for nests and salvage any eggs or young chicks found. Nesting behaviour will be detected through radio tracking and use of a trained kiwi dog. If a recently established nest with eggs is found in a disturbance area, any mining activities within 20 m of the nest will cease until the eggs can be safely uplifted at 40+ days of age.

Throughout the roroa breeding season, the signals from 'egg timer' transmitters on male birds will be checked weekly to determine which birds are incubating and inform an estimate of when they began doing so. Affected roroa (i.e. those within 20m of mining activities) will be identified and left to incubate *in-situ* until the risk of disturbance escalates (e.g., whereby mining activities encroach within 20m of an active nest).

Where construction activities encroach within 20m, active nests will be precisely located, and their eggs/chicks removed in accordance with the project Wildlife Act Authorisation, the standard protocols for capture, and handling set out in Colbourne et al. (2020) and consultation with the Department of Conservation and Ngāti Waewae. In all cases, any egg to be salvaged will only be removed after being incubated *in-situ* for at least 40 days. Eggs taken before this time generally have low hatch rates. Eggs in a single nest can be laid up to three weeks apart, so the age of each individual egg needs to be known before it can be moved (Colbourne 2020).

All eggs and young chicks recovered from nests will be taken to a Department of Conservation approved incubation and chick-rearing facility. Any resulting offspring will be released back into the wider intensively managed predator control halo, or elsewhere as directed by the Department of Conservation. Specific release sites within the intensively managed predator control halo will be determined by the SQEP in accordance with Ngāti Waewae and Department of Conservation advice.

Where clearance is undertaken during the egg laying season the SQEP's determination and the management measures implemented will be documented in the pre-clearance record and reported in the Annual Avifauna Monitoring Report.

6.3 Associated Roroa Management Plans

Management of roroa in the Oparara Kiwi Treatment Area (OKTA) as outlined in the Kiwi Management Plan for Cypress Mining Area (Bathurst Resources Limited 2018) is set out in Attachment 1.

The OKTA has been subject to ongoing management and monitoring since resource consents were granted for the Cypress Mining Area in 2006. The management and monitoring aims to determine to

what level kiwi are enhanced by the predator control programme, determine whether kiwi decline in the OKTA has been arrested, and evaluate whether an average of at least 50% of the chicks hatched or sourced from the OKTA, over each five-year period, survive to the critical weight of 1,000g.

Intensive periodic predator control in the form of ground-based trapping and aerial applications of 1080 targeting rats, possums and mustelids has been undertaken since mining at Cypress commenced in 2016. There have been four surveys including a baseline survey in 2015, with results showing that most of the area's forest birds, including roroa, have either maintained numbers or increased since the baseline survey (McLennan and Jones 2024). Management and monitoring for the OKTA as set out in Attachment 1 will continue as part of the compensation measures for the Cypress Mine.

7.0 Management of Weka

7.1 Rationale

Western weka (*Gallirallus australis australis*) occupy the full variety of habitats across the Buller Plateaux including pakihi wetlands, low podocarp-beech forest, and shrublands. They are particularly common at the margins of different habitats, such as where forest meets wetland or shrubland, using dense cover for refuge. Weka can breed throughout the year, and normally rear 1 – 4 chicks per clutch and both parents are involved in chick rearing (Bramley 1994). Weka generally maintain year-round home ranges, which they may defend when densities are high. Weka are omnivorous, with a varied diet that includes large invertebrates and the eggs of other ground nesting birds. Consequently, their presence within the predator exclusion fenced areas could have an adverse effect on the 'Threatened – Nationally Critical' land snails *Powelliphanta augusta* and *P. patrickensis*, any resident lizards (Meads et al. 1984; Carpenter et al. 2020) and other ground nesting birds.

7.2 Options for Weka Management

Within the BPCP disturbance areas weka will be managed in accordance with the species management measures outlined in Section 5. However, within the predator exclusion fenced areas, which are designed to protect *Powelliphanta* snails and lizards and collectively occupy c. 911ha, weka will be removed to reduce the risk of snail predation. Weka removal will immediately follow the construction of the predator exclusion fences and occur prior to the removal of mammalian pests.

Complete weka removal within fenced areas ranging from 15ha to 700ha will be challenging. Progressively capturing and translocating weka from specific areas is hampered by their cryptic behaviour, strong territoriality and ability to persist in difficult terrain. Some weka removal programmes which implemented intensive, prolonged efforts including trapping and poisoning have resulted in only partial success (Harper 2007; Carpenter et al. 2020). Alternatives to live capture and translocation for the final c. 5% of a weka population within the predator exclusion fenced areas may be required if the remaining birds prove too difficult to catch or the level of effort and timeframe required conflicts with snail translocation needs. Alternatives could include customary harvest or even culling of weka. Māori have long harvested weka for food and other cultural uses (Edwards & Logan 1999; Miskelly & Beauchamp 2004; Carpenter 2020). Culling of weka via poisoning or shooting

will only be considered in consultation with Ngāti Waewae, the Department of Conservation and in accordance with the appropriate Wildlife Act Authorisation conditions.

7.2.1 Capture and translocation

7.2.1.1 Background

The capture and translocation of weka from the predator exclusion fenced areas will be planned and implemented in consultation with Ngāti Waewae and the Department of Conservation Weka Recovery Group. Weka will be systematically and safely captured and translocated to a suitable location(s) within the wider intensive pest control halo area receiving aerial 1080 and ground-based control. Potential weka release locations are shown in Figure 5.

The expected outcome for translocated weka remains uncertain. With the exception of translocations to offshore islands, most (>90%) of previous weka (primarily North Island weka (*G. a. greyi*)) translocations have generally been unsuccessful (Miskelly & Powlesland 2013), likely due to a combination of predation by exotic mammals and widespread dispersal by released birds, although few releases have monitored birds after release to establish the cause of failure (Bramley 1994; Bramley and Veltman 1998, Watts et al. 2017; Carpenter et al. 2020). Monitoring of translocated weka will be critical to interpret the outcome of translocation attempts and will be useful to inform future weka management.

The uncertainty associated with weka translocation outcomes will be addressed via the Residual Effects Management Plan and the implementation of large-scale mammalian predator control with an expected net-positive outcome for avian populations (Alliance Ecology 2026). In addition to these residual effects management outcomes, it is proposed to establish a research project as part of the operational translocation and monitoring of weka. The research aim will be determine the outcome of the translocations and assist in better understanding the failure of weka translocations to date and reduce the level of uncertainty in future translocations. Since the translocations will be staged, it is expected that the level of uncertainty associated with translocation outcomes will reduce over time as lessons from previous translocations can be applied.

This research would contribute to conservation management of other sub-species of weka where the populations are smaller and range restricted, making them more vulnerable to sudden irreversible declines (particularly North Island weka and buff weka (*G. a. hectori*)) both of which are considered to be ‘At Risk – Relict’ indicating the populations were formerly more widespread and abundant). A suitable research approach will be confirmed prior to commencement of the capture and translocation programme.

7.2.1.2 Weka-proof fences

Within the predator exclusion fenced areas, prior to construction of the fences themselves, a number of 0.5ha weka-proof fenced areas will be created with the aim of having weka-free areas prior to the salvage and relocation of lizards and snails so that predator free habitat is available to receive them. Prior to the completion of the weka-proof fence and establishment of trapping, as many weka as possible will be shepherded out to minimise the amount of weka left to trap. Shepherding will be done using a systematic grid search method, where a line of people move from the farthest area of the

fenced area towards the gate with the aim of moving any weka out and towards the gate. After this, trapping can commence using methods outlined in the below sections. If shepherding and trapping fails to remove all weka from the weka-proof fenced areas, removal via poisoning may have to occur.

7.2.1.3 Trap Type

Weka will be captured using live capture cage traps. These traps have been selected for their ability to safely capture an animal without causing harm (Bramley 1994). There is no direct contact between the animal and any moving parts (with the exception of the treadle that triggers the trap), unlike devices such as leg hold traps. Other methods, such as traditional snares, may be used as appropriate and under the direction of Ngāti Waewae. The use of chick distress calls has also been effective in attracting adult weka, which could then be caught with a hand net (G Bramley, unpublished data).

7.2.1.4 Trap Density

Population densities of weka are generally poorly understood (Beauchamp et al., 1999), and can be highly variable (Beauchamp 1987; Beauchamp and Chambers 2000). It remains unknown how many weka inhabit the four predator exclusion fenced areas. Island populations have been recorded with densities of 1.98 weka per hectare (Beauchamp et al. 1999), while mainland populations have been recorded as low as 0.3 weka per hectare (Beauchamp 1987) and as high as 0.98 weka per hectare (Freeman 2010).

Higher density weka populations could be prohibitive because placing one trap per potential bird, would likely be too labour intensive to check all traps in a large exclosure area in a timely fashion. Coleman et al. (1983) had success trapping weka in live capture traps set at 300m intervals along a transect. A similar approach is proposed, with as many transects as practicable (accounting for animal welfare concerns detailed below) within the predator exclusion fenced areas as they are constructed. This will include a line of traps on the inside of the fenced perimeter to capture any birds moving along the newly constructed fenceline.

7.2.1.5 Pre-baiting

Weka can be averse to traps when first encountered. Prior to capture, weka will be trained to build trust and associate the traps and bait with a reliable and safe food source through a pre-baiting programme. Live capture cage traps will be baited and set (but unable to be triggered) in the predator exclusion fenced areas up to two weeks before trapping begins. A meat/protein-based bait such as dried meat, fish, eggs or cheese will be used to attract weka. This will allow the weka to habituate to the traps before they are made live.

7.2.1.6 Trapping

Once traps are set and armed, they must be checked within 12 hours of sunrise in accordance with the Animal Welfare Act 1999. During trapping sessions, set and armed traps will be checked twice each day – in the morning prior to mid-day and in the evening. No specific weka monitoring is proposed to inform the trapping programme, but weka will be detected during roroa and other bird surveys which form part of site environmental management. The results from these surveys, wildlife camera monitoring for predators and any sightings of weka or weka sign will be used to evaluate performance of the trapping programme and confirm whether additional trapping is required to

remove all weka from each predator exclusion fenced area. In order for the predator exclusion fenced areas to be effective, all weka must be removed.

Female weka are normally more trap-averse than male weka (Bramley unpublished data). Where achievable, members of bonded pairs will be collected and released at the same location. Any weka that cannot be caught via trapping, will be captured or removed using other methods such as customary methods or culling by suitably qualified personnel.

Because weka can breed throughout the year, it will likely be necessary to capture and relocate chicks as well. Any chicks captured will be relocated with their parents where achievable. To minimize separation risks and chick mortality during weka capture and translocation, timing of capture and release will be prioritised, monitoring of family units post release will be undertaken using radio-tracking, and implementation of family-unit protocols in accordance with the Kiwi Best Practice Manual (no weka-specific published guides exist).

7.2.1.7 Handling

Weka will only be handled by suitably qualified handlers, appropriately trained field ecologists and/or mine site personnel under the direct supervision of suitably qualified handlers. At all times the handling of birds will be kept to a minimum, and they will be released on the day of capture. Where family groups must be captured and transferred together, birds may be held overnight in suitable cages. The maximum time a bird will be held between capture and when it is first able to feed in its new environment will be no more than 45 hours.

The handling of weka will enable to collection of the following biometric information. Biometric information will be recorded on pre-prepared field datasheets and include:

- Sex and morphometric data used to assign sex;
- Time, date, and location of capture;
- Age class (adult, sub-adult, juvenile) and family status (single, pair, family group);
- Weight and condition.

Birds will be banded and/or microchipped and a sample of birds will be tagged with radio-transmitters to enable monitoring.

7.2.1.8 Health Screening

Any weka that are moved are potential carriers of a wide range of viruses, including avian influenza, bacteria, fungi, and parasites, which could threaten the health of the wild population to which they are introduced or even the health of other bird species. Furthermore, the health of weka displaying ill-health may worsen due to the added stress of translocation and so should not be moved for their own welfare.

While weka are naturally capable of dispersing across local areas (i.e. within the Ngakawau Ecological District or between adjacent ecological districts that are not separated by a significant water barrier) and therefore health screening would not normally be considered necessary, in a similar way to roroa, as outlined in the kiwi best practice manual (Colbourne 2020), it is recommended that a physical

health screen test be undertaken as part of weka translocations or removal from the predator exclusion fenced areas as a precautionary measure. The health screen test should include a physical examination and measurement of body weight and condition. Symptoms of bird flu as outlined in Section 8 Avian Influenza are to be reviewed and noted if present and any current guidelines in relation to avian influenza adhered to.

7.2.1.9 Cultural Considerations

Consultation with Ngāti Waewae will be undertaken to ensure appropriate cultural considerations are factored into capture, transfer and release plans to ensure bird welfare and cultural considerations are maintained throughout the programme.

7.2.1.10 Transport

Purpose built transport boxes, such as those outlined in Section 8.1.3 of the Kiwi Best Practice Manual (Colbourne 2020) will be used. These will also house weka overnight (if required) and during transportation to release sites. If there is a need to walk long distances with captured birds (or birds that are about to be released) in forest or difficult terrain (which is likely the case), a canvas bag can be used to carry them rather than the large and heavy transport boxes. Any bags used will be opened carefully to allow fresh air in every 15–20 minutes.

It is anticipated that birds will be transported between capture and release sites by vehicle. It is preferable to travel during the day, particularly if the bird can be released before dusk. Vehicles that are used for transporting weka should be kept as cool as possible to avoid heat stress. Full ventilation or air conditioning is essential on sunny or warm days. Do not transport weka in the boot of a car, as not only is there less ventilation, but it is noisier and there is a risk of carbon monoxide poisoning. If weka are transported in the back of a ute, have the side windows (but not the back window) open and preferably use a ute with an air dam in the canopy, which ducts fresh air into the canopy space. If the vehicle is parked, for example for a meal break, it is preferable that someone stays with the vehicle and that the windows are left fully open. Alternatively, park the vehicle in the shade and open the windows sufficiently to allow airflow whilst keeping the vehicle secure.

Vehicles will be driven at close to normal speed on sealed roads to minimise the travel time but take corners more slowly than usual to prevent the birds from being thrown around. Also drive more slowly than usual on unformed and gravel roads to minimise bumps. Keep noise levels in the car to a minimum if the birds are inside.

In relation to transfer boxes:

- Only single birds will be placed in a transfer box compartment at any time, even if a bonded pair is captured. Where family groups are captured, chicks will be housed with the female bird if there is sufficient space. One bird per compartment will ensure there is not prohibitive heat build-up in the compartment which may adversely affect the bird's welfare and prevent bird fighting/injury.
- If required to hold birds overnight, the birds will be kept in a quiet, safe place, preferably in a locked and darkened room. This avoids the temptation for people to take a look, open the lid and risk the weka escaping, causing more stress for the bird.

- The transfer boxes should be secured at all times with seatbelts or straps so that they do not tip over or slide around. Place an old carpet or closed cell foam on the tray of a ute to reduce the movement of boxes and the noise levels. Periodically check that there is good air space between the boxes but resist the temptation to open them to see how the weka are doing.

7.2.2 Release areas

Potential weka release areas within the landscape scale mammalian predator control halo area outlined in the Residual Effects Management Report (Alliance Ecology 2026) surrounding the BPCP have been identified in general terms and are shown in Figure 5. These areas were identified based on their distance from known *Poweliphanta* snail populations, accessibility and expected suitable habitat features.

The re-settlement of displaced weka to adjacent areas that are already occupied by weka will indirectly affect the weka resident in those areas through the social disruption associated with competition for territory and other resources. These direct and indirect effects on weka will inflict a cost in terms of energy expenditure and could reduce the survival and reproductive fitness of affected individuals. Therefore, weka will be released only at low densities into areas where there are other weka, in order to minimise this impact.

Selection of specific release sites within the potential release areas shown in Figure 5 will be finalised in consultation with the Department of Conservation and Te Runanga o Ngāti Waewae and others once all the relevant information is in hand, including:

- The approximate number of birds to be relocated;
- The locations seeking weka for population establishment or to supplement existing populations and ready to receive birds (if any).
- Any genetic limitations associated with particular locations.
- Any cultural considerations.

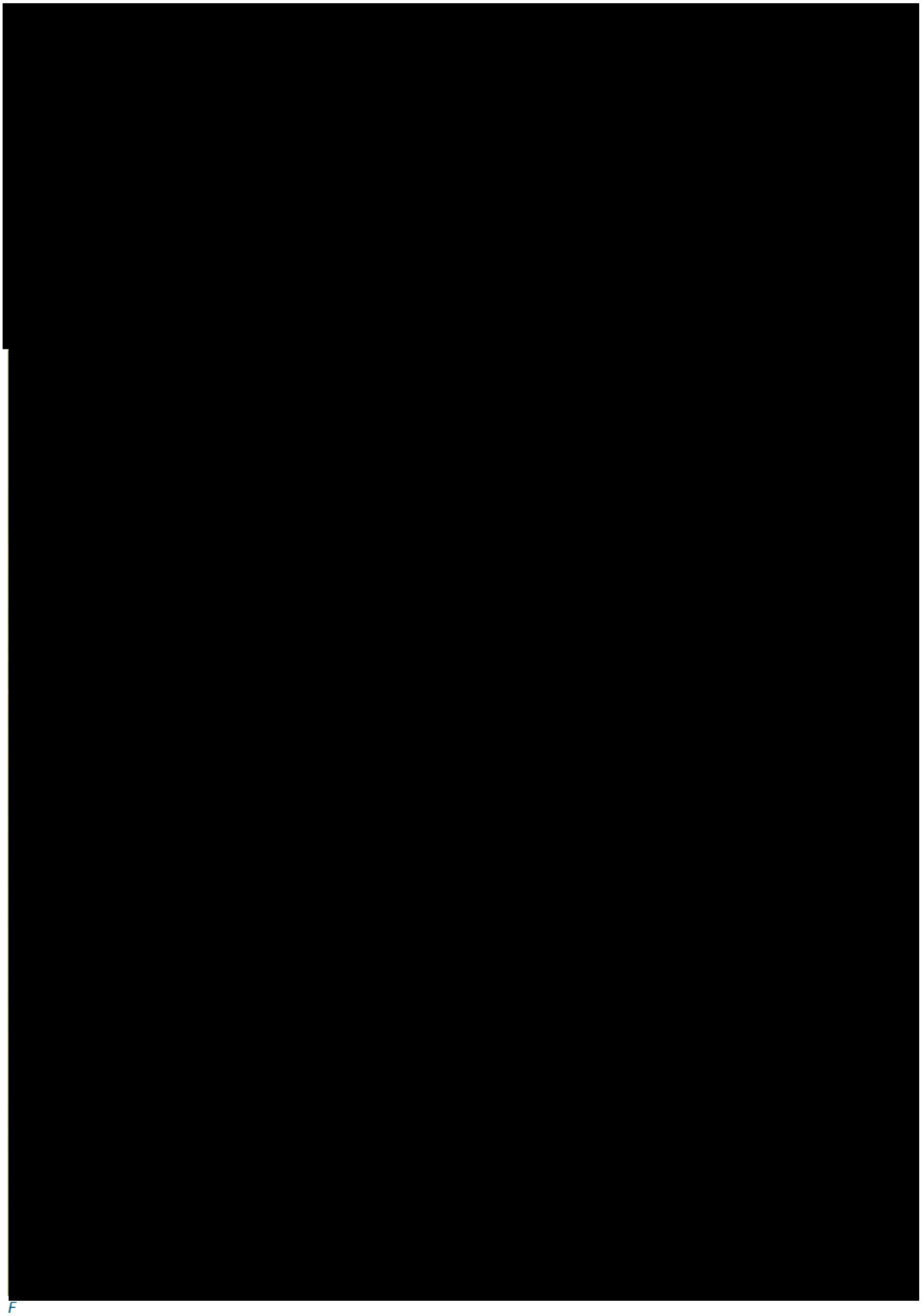
Suitable release sites for weka will include:

- Edge habitats between two ecosystems (e.g., between forest and shrubland or pasture and forest). At a minimum, any habitat should provide adequate dense cover for birds to shelter in.
- The release site should be close – birds are not likely to be genetically distinct and the climate and potential habitats are likely to be similar. Release sites should not be so close that weka can easily return to where they were captured.
- The release site must be protected in the long term – including both legal protection and control of pest mammals (particularly stoats). This criterion is met by the BPCP low intensity pest control area.
- The release site is an adequate size and connected to other suitable habitat – given what is known about any resident weka population.

7.2.2.1 Release Method

Subject to development of the associated research programme, the release method will be a 'hard' release with no specific post release support or temporary enclosure. Weka will be released in accordance with the handling instructions outlined in Section 7.2.1.5 and any relevant cultural considerations as mentioned in Section 7.2.1.7. Release will occur only a short distance away from suitable dense, low-lying vegetation, logs and burrows that weka can seek refuge in.

Known bonded pairs, and family groups will be released together near to one another. In practice, many existing pair-bonds are broken during translocations.



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8.0 Management of Avian Influenza

Avian influenza (ie. 'Bird flu') is a highly contagious viral disease that mainly affects birds. While low pathogenicity strains of avian influenza naturally occur in New Zealand wild birds with little to no symptoms, these can mutate in to high pathogenicity strains which can cause severe symptoms and high death rates in native birds (MPI 2026). The implementation of this AvMP warrants awareness of the threat of bird flu and how the capture, handling and transport of wild birds may provide an opportunity for greater surveillance as well as a pathway for spread of the infection. Consequently, implementation of this AvMP will require the following measures be incorporated in order to record, report, survey and prevent the spread of avian influenza as a result of the avifauna management measures outlined.

The management focus will be on staying abreast of the latest updates from the Ministry for Primary Industry (MPI) on bird flu tracking and advisories, surveillance for bird flu symptoms and group mortality within wild bird populations in the BPCP while implementing this AvMP.

Observing, recording and reporting suspected bird flu incidences will assist in tracking how bird flu may be moving around New Zealand. This information will help support the Department of Conservation's work to safeguard native wildlife. Ongoing surveillance and testing will help build a clearer picture of where the disease is and how it is spreading. This will also allow egg and chick rearing facilities to make informed decisions about the biosecurity measures that best protect against the acceptance of infected wild birds for rearing and spread of bird flu.

Surveillance will start with informing personnel responsible for the implementation of the AvMP of the basic symptoms of bird flu in wild birds. The basic symptoms include:

- Lethargy/paralysis or a reluctance to move, droopy head, inability to fly or lack of co-ordination.
- Coughing, panting and nasal secretions.
- Severe diarrhoea.

In addition, if three or more sick or dead wild birds in a group are observed an MPI online report (https://report.mpi.govt.nz/pest/) is to be completed as soon as possible. Do not touch or transport dead birds. Take a GPS point or mark the location on a map for future reference.

If symptomatic birds are captured as part of a translocation programme, they should be banded and released with as little handling and stress as possible. The release location is to be recorded and symptomatic birds will be followed up on as part of well-being checks and ongoing translocation monitoring. Any dead or symptomatic birds captured as part of ongoing monitoring will be reported in accordance with the above procedure.

No symptomatic birds are to be transported to any captive breeding and rearing facilities. If eggs or chicks of threatened species (e.g. roroa) are captured for relocation away from disturbance areas in accordance with this AvMP and the nearest captive breeding and rearing facilities have implemented strict biosecurity measures preventing the acceptance of wild birds, the Department of Conservation

is to be contacted regarding the establishment of temporary field captive and rearing facilities suitable for the species being relocated.

9.0 Remediation

Artificial habitat creation can be an effective measure for bridging the temporal gap between when natural habitat features are lost or disturbed and when new habitat features form in other areas as part of successional development or restoration activities or when they become functionally similar to what was lost. The creation of artificial burrows/roosts for roroa will be undertaken within the vegetation rehabilitation areas as set out in the Rehabilitation Management Plan (BPCP-ENV-PLN-002) for the Project.

Creating roroa burrows or roosts will involve constructing artificial, ground-level refuges that mimic the structure, drainage, and security of natural kiwi burrows. In suitable slopes or mounds of well-drained soil, a gently sloping entrance tunnel (about 2–3 m long, 20–25 cm high and wide) will be excavated or formed using buried pipes, leading to a slightly enlarged chamber lined with leaf litter, fern fronds, and other locally sourced material. The entrance will be oriented away from prevailing winds and major disturbance, with overhanging vegetation or placed logs and rocks used to create a dark, concealed access that still allows easy inspection if required for monitoring. Burrows will be spaced in accordance with expected territory sizes, clustered within dense ground cover near any existing kiwi sign (tracks, probes, calls) to maximise uptake and constructed only after any heavy machinery work is complete to avoid collapse. Once built, they will be lightly camouflaged with local debris and checked periodically (initially with trail cameras or minimal torch checks) to confirm use, with any failed designs adapted (e.g., altering entrance angle or drainage) as part of an adaptive rehabilitation programme.

10.0 Residual Effects Management

Management of residual effects (i.e., those that remain after the management actions to avoid, minimise or remedy adverse effects have been applied) will involve implementing ecological restoration and/or habitat enhancement measures that provide positive benefits for those same indigenous biodiversity values that are adversely affected by the Project. The avifauna values within the Project disturbance areas and proposed residual effects management sites are affected to varying degrees by mammalian pests and weeds. Consequently, a combination of extensive, landscape scale weed and mammalian pest elimination and management tailored to the specific requirements of each location and covering c. 25,000ha within the wider aerial 1080 and ground-suppression halo will support long-term biodiversity outcomes at the ecological restoration and enhancement sites. The details of the specific mammalian pest control objectives, strategies and methods are outlined in the Residual Effects Management Report (Alliance Ecology 2026) and the Pest Control Plan (BPCP-ENV-PLN-022). Implementation of these plans is expected to deliver maintenance and recovery of forest vegetation and both common and ‘Threatened’ and ‘At Risk’ birds affected by the Project.

11.0 Monitoring

11.1 Pre-mining

As set out above, detection of 'Threatened' and 'At Risk' species using the Project Area will be undertaken prior to commencement of mining. During vegetation stripping there will be fortnightly and/or weekly detection surveys and close (twice weekly) monitoring of any nesting attempts during the breeding season. The number, location and outcome of all nesting attempts will be recorded, along with the number, dates and times of monitoring visits. In locations where a nesting bird or a species of conservation concern has been detected during pre-clearance surveys or during active mining monitoring a suitably qualified ecologist will be present in order to oversee felling or clearance. Pre-clearance surveys are set out in Sections 5.3.2 and 6.3.2 (for roroa). This information will be compiled into an annual avifauna monitoring report.

11.2 Post-mining

Monitoring following translocation of weka and relocation of kakaruwai/South Island robin and mātātā/South Island fernbird, as well as monitoring of bird and other populations within the predator exclusion fenced areas and wider pest control areas, the Blackburn Pākihi intensive ground control area and at rehabilitated sites will be undertaken at least annually as set out in the Biodiversity Outcome Monitoring Plan (BPCP-ENV-PLN-009) and the Rehabilitation Management Plan (BPCP-ENV-PLN-002). These surveys will use five-minute bird counts (5MBC), nocturnal call counts, acoustic monitoring devices and other methods (including play back surveys) as appropriate. This monitoring is intended to demonstrate long term trends in bird populations within these areas.

To confirm the success of roroa in-situ management and 'shepherding' on (if required) from within the mine footprint, monitoring and surveillance will be undertaken as outlined below.

The aim of monitoring birds that have been 'shepherded' is to determine the survival of each radio-tagged roroa for a minimum period of one year.

- As a minimum, all roroa are to be banded or have a transponder implanted, so that they can be individually identified.
- Surveillance monitoring across the BPCP will involve checking the fate of radio-tagged individuals with mortality transmitters and undertaking standard call-counting surveys (McLennan 1992).
- Transmitter signals will be checked at least weekly for the first month, fortnightly for the next two months, and three-monthly thereafter for a minimum of one year or until the birds have bred.
- Subadults and adults wearing transmitters will be caught, weighed and measured no more frequently than at monthly intervals for the first three months, and at three-monthly or greater intervals thereafter for two years.

During the roroa egg laying season (1 July to 31 December inclusive), where works are planned to occur within a roroa "high risk" habitat, the breeding status of affected radio-tagged roroa will be monitored. Monitoring frequency will be sufficient to identify active incubation in time to implement the nest protection and response measures required by Condition AVI 25.

To confirm the success of weka translocation and monitor weka abundance across the BPCP, weka call count surveys will be undertaken simultaneously with the roroa surveys. In addition, a sample of relocated weka, with the sample size dependent on the number of weka transferred, will carry radio-transmitters and be monitored regularly (at least twice daily for at least the first month) post release. Weka will also be detected during the general bird surveys and monitoring within the 'Waimangaroa' wider pest control area.

Post-construction, alerting road users to the presence of roroa via daily communications or permanent signage will be done to reduce the risk to roroa.

Speed restrictions have been shown to have limited success in reducing kiwi mortality on public roads, due to poor driver adherence (Glista et al. 2009). However, since BPCP roads will be used by mine employees or contractors, vehicle speeds can be more reliably controlled. The current speed limit of 60 km h^{-1} on Stockton Mine roads is expected to be adequate for managing the risk to roroa compared to speeds of up to 100 km h^{-1}. Identification of and publicity around roroa 'hotspots' is proposed to make road users aware of the issue.

12.0 Reporting

An annual avifauna monitoring report will be prepared in accordance with condition AVI8. The annual avifauna monitoring report will inform the Ecology Annual Monitoring Report in accordance with condition ECO 1 and the Biodiversity Outcomes Monitoring Plan (BPCP-ENV-PLN-009).

13.0 Accidental Bird Injury and Mortality

In the event a dead or injured 'Threatened' or 'At-Risk' native bird is discovered during mining activities, the following procedures will be implemented:

a) Injured native birds will be taken immediately to a veterinarian approved by the Department of Conservation for assessment.

b) Birds will be placed in a cool, dark, material-lined box/bag by or under the direction of the SQEP to ensure the bird is handled appropriately; and

c) The local Department of Conservation office or the DOC hotline (0800 DOC HOT / 0800 362 468) if after hours will be contacted no more than two hours after the injured or dead bird is found.

If a 'Threatened' or 'At-Risk' bird is found dead or has been euthanised by the veterinarian, it will be taken to the local Department of Conservation office as soon as practicable.

14.0 Roles, Responsibilities, and Training

BRL is committed to continual training and awareness of all staff, employees, and contractors. Training and awareness procedures are an integral part of ensuring the full implementation of the Avifauna Management Plan (BPCP-ENV-PLN-003) across all aspects of all projects. Effective and regular communication at all levels reinforces the message that ecology management issues are taken seriously and that the AvMP has the active support of the principal contractor.

Implicit in the effective management of avifauna values of all areas where BRL operates is the allocation of responsibilities to key individuals. Details of roles and responsibilities associated with this Avifauna Management Plan (BPCP-ENV-PLN-003) are provided in Table 4 below.

Table 4: Responsible personnel and tasks

Position	Accountable Task
Site Senior Executive (SSE) / General manager (GM)	• Overall accountability for implementation of this plan. • Allocating adequate resources to support implementation of this plan • Endorses significant management responses where required • Clearly communicate Avifauna management responsibilities where required
Environmental Manager	• Primarily responsible for implementation and administration of this plan • Coordinate internal and external reporting obligations under this plan • Maintain liaison with relevant regulatory authorities as required • Overseeing the periodic review of this plan • Notify the SSE/GM of matters requiring review or amendment of this plan
Suitably qualified and experience person (SQEP) with demonstrated experience in avifauna management	• Provide technical direction for all AvMP actions that affect or involve avifauna (including pre-clearance checks, species handling, monitoring and any capture/translocation activities). • Supervision and training of other staff/contractors where required.
Contractors	May be involved in various aspects of avifauna management including pre-clearance searches, capture, radio-tagging and translocation/relocation under the supervision of the SQEP.

15.0 Document Management

This Plan forms part of the SEMP and will be managed in accordance with ***BRL-HST-STD-003 Document Control Standard***. This Plan will be reviewed three (3) yearly or:

- Following any major operational change;
- Following receipt of substantiated hazardous substance related complaints;
- Following significant incidents or non-compliance;

- Following relevant legislative changes;
- At the request of the regulator.

A copy of this Plan will be available on the project website.

15.1 Change Register

This Avifauna Management Plan is issued, revised, and amended under authorisation of the CEO.

A copy will be stored electronically with access available to all workers. The signed hard copy will be maintained in the Westport document library.

Reasons for making changes will be documented and recorded in the document management table, refer to Table 5. A copy of the original document and subsequent versions will be kept for records and marked as obsolete. Each new/updated version will be issued with a version number and date to eliminate obsolete documentation being used.

Table 5: Document management

Document Management:			
Regulatory Approvals Authorities:			
Document Owner:			
Document Owner Name:			
GM HSEC Approval Signature:			
Date:			
Document Approver:			
CEO Name:			
CEO Signature:			
Date Approved:			
Revision History:			
Date	**Version No.**	**Lead Author**	**Contributing Authors**
Version No.:	**Detail / Changes:**		
Next Planned Review:			

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Attachment 1: Oparara Kiwi Treatment Area

Section 4 of the Cypress Mine Kiwi Management Plan (Bathurst Resources Limited 2018):

4. COMPENSATION: OFF-SITE MANAGEMENT IN THE OPARARA KIWI TREATMENT AREA

4.1. Aims and methods

Predator control required by condition C39 and BNZONE (Bank of New Zealand Operation Nest Egg) (if necessary) will be undertaken in the 1,000 ha Oparara KTA in the Oparara Valley, Karamea, from the commencement of mining until 20 years after mining ceases plus an equivalent period to that between the commencement of mining activities and the commencement of predator control. The location in the Oparara Valley is shown on Figure 1. The context of the new location is shown on Figure 2. There are two management targets:

1. To ensure over each five-year period that an average of at least 50% of chicks hatched or sourced from the Oparara KTA survive to the critical weight of 1000 g, the weight at which they cease to be vulnerable to stoats (McLennan et al. 1996);

2. To arrest population decline in the treatment area.

Current rates of chick survival in the treatment area are unknown but are presumed to be typical of those in mainland forests in the absence of predator control (i.e. to vary from 0% to 15% per annum). The current rate of population decline is also unknown, but is probably similar to the average value (-2% per year) for great spotted kiwi throughout its current range (Holzapfel, 2008). The goal of arresting population decline may be difficult to achieve if young kiwi disperse away from natal areas and settle outside the treatment area.

Intensive stoat trapping and rat poisoning will be the main management technique, along with three-yearly aerial 1080 poisoning to control possums. Possums will also be controlled (using ground-based poisoning) once each year – or more often if the mean RTCI (Residual Trap Catch Index) in the Oparara KTA exceeds 10% on two monitoring lines or an average of 3% across all monitoring lines. The control programme should provide adequate protection for chicks in all years except those immediately following heavy beech mast seeding or podocarp mast seeding when both stoats and rodents become extremely numerous. These 'plague' years are expected to occur once every 3-7 years and may require additional 1080 application within the Oparara KTA.

If necessary, BNZONE - which involves collecting eggs from the field, hatching them in captivity, and then returning the chicks to the wild when they have reached safe size - will be employed along with predator control in stoat plague years to ensure that the target of 50% chick survival is achieved.

The Department of Conservation will generally carry out 1080 application in the area in beech mast seeding and podocarp mast seeding years (if such years do not coincide with beech mast years or other 1080 application carried out by the Animal Health Board). Bathurst will apply 1080 to the Oparara KTA in the same year if monitoring shows this is necessary, and will then resume three-yearly aerial application of 1080.

4.2 The Oparara KTA operational area

The 1000 ha Oparara KTA (Figures 1) straddles the middle reaches of the Oparara River (Karamea district) in the south-western corner of Kahurangi National Park. The Oparara River basin is a well-known tourist destination, noted for its spectacular limestone river arches, cliffs and complex cave [redacted]

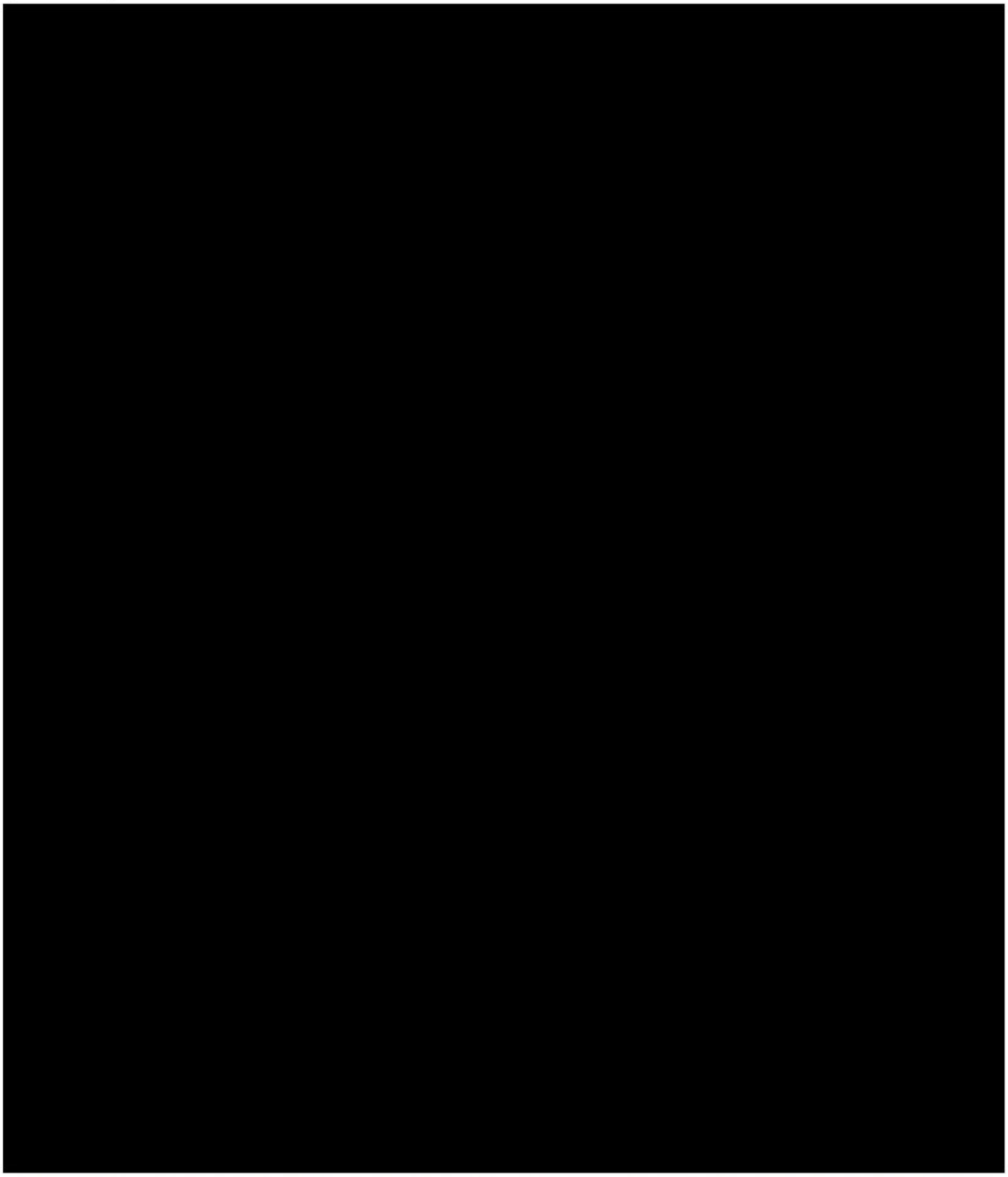


Figure 1: Attachment 3 Second Revision – Kiwi Treatment Area in the Oparara Basin.

[redacted] biological and landscape values of the Oparara Basin are recognised in part by its National Park status. The Department of Conservation also recognises additional values, ranking the 'Oparara Management Unit' (mainly the Oparara Basin) as a priority for management in its recent nationwide assessment of significant habitats. The Department has also identified, under its 'Operation Ark' initiative, the Oparara Basin and some of its immediate surrounds as a priority site for treatment with

aerial 1080 in years when rodents and stoats irrupt following beech and/or podocarp masting. This 'Oparara Beech Mast/Rat Response Operational Area' comprises 33,000 ha and supports three (two species of bats and blue duck) of the five species (yellowhead and orange fronted parakeet in addition to the three species already mentioned) that the 'Operation Ark' programme aims to protect. The Department's whio/blue duck recovery plan also identifies the Oparara River and neighbouring Ugly River as a 'security site' for whio (blue duck) - one of 8 'security sites' selected nationwide for blue duck conservation (Glaser et al., 2010). The aim of management in the Oparara/Ugly is to increase the local blue duck population to 50 pairs, up from the 14 pairs present when the restoration programme started in 2007.

The Oparara KTA is not aligned to any obvious geographical features, other than tributaries of the Oparara River. It is more-or-less square in shape to minimise the length of its perimeter and maximise the size of its 'protected core'. It can be expanded in all directions to provide additional offsets, if required, at some later stage. The underlying geology is 350 million year-old granite, overlaid by a thin layer of limestone with mudstone on top. The predominant forest type is podocarp/hardwood with some beech at higher altitudes; parts of the Oparara KTA were logged in the 1970s. Most of the Oparara KTA is less than 350 m a.s.l. It supports the full suite of forest birds still extant in the Buller/Karamea region. Species with patchy distributions and or threatened species rankings include kakariki, kaka, blue duck, kea, weka, rifleman and great spotted kiwi. There are insufficient open habitats in the Oparara KTA to support pipits but fernbirds are present in some localised shrublands bordering disused forestry roads.

Various surveys over the last 25 years show that great spotted kiwi are widespread in the Oparara Basin. The most recent call-count survey in November 2010 (Stewart, 2010) detected an average of 5.1 calls per hour in 32 hours of listening. Stewart's survey area comprised about 1700 ha and included all the 1000 ha in the Oparara KTA. Seven of his 16 listening locations were located entirely within the Oparara KTA and another three were alongside it: kiwi were detected at 8 of the 10 listening stations in or alongside the Oparara KTA. Stewart (2010) estimated that mean territory size was somewhere in the range of 42-57 ha, and that some 40 pairs were responsible for the calls he and his team heard. He noted that his density estimates were lower than those recorded in both the Hurunui Mainland Island (29 ha/pair; Keye, 2008) and the Saxon Downs area on the Heaphy Track (25 ha/ pair; McLennan and McCann 1991), implying that the existing population in the Oparara is below carrying capacity.

There is no information on the age-structure of the kiwi population in the Oparara Basin but it is probably typical of areas where there is limited pest control. Juveniles less than 1000 g in weight are likely to be rare in most years, and in most parts of the Oparara KTA, because of constant predation by stoats. The aerial poison in 2010 may have improved chick survival in the following breeding season, resulting in a recruitment bulge that may still be measurable. Great spotted kiwi juveniles remain with their parents for 2-3 years, so the beneficiaries of the aerial drop are probably only just beginning to leave their natal territories now. Chick survival in the territories immediately alongside the Oparara River may also be slightly higher than elsewhere in the Oparara KTA because of the blue duck protection programme. The intensive stoat trapping along waterways and roads seems to be paying off, with the numbers of blue duck in the Oparara/Ugly security site trebling since 2007 (DOC unpublished data). It could well be making a difference for kiwi too.

Overall, the Oparara KTA is in a good location for a long-term predator control and ONE programme. It has excellent all-weather road access and an extensive internal network of tracks. Much of the

infrastructure required to establish and maintain the predator control programme already exists: the remaining components (mainly trap-lines, traps, bait stations and trap markers) will be installed once a management agreement is established with the Department of Conservation. The Oparara KTA supports plenty of species that are likely to benefit from pest control, with great spotted kiwi top of the list. The expectation is that kiwi density should increase in the Oparara KTA following intensive restoration management, with population expansion made possible because of spare carrying capacity.

The predator control programme will ultimately enhance both biodiversity in the Oparara Basin and the experience of visitors. It would be difficult to find another site that ticks so many boxes.

4.3 Predator control in the Oparara KTA

The Predator Control Plan for Cypress Mine (Bathurst, July 2018) describes the methods that will be used to control predators to increase the survival rates of great spotted kiwi and other birds (blue duck, kaka, kakariki, robin, tomtit, weka, tui, bellbird and kereru) in the treatment area for the period required. Predator control aims to provide great spotted kiwi and other forest birds with year-round protection from stoats, rats and possums. Stoats are the main predator of young kiwi less than 1,000 g in weight. They are also the main predator of hole-nesting species including blue duck, kaka, kakariki (and bats). Rats and possums are the main predators of open-nesting birds, such as bellbirds, kereru and tui. Two species of rat (ship rat and Norway rat) probably inhabit the Oparara Valley. Most of the Oparara KTA has not previously received any ground-based control and is receiving only intermittent aerial 1080 under Department of Conservation management. The Cypress programme in the Oparara KTA will ensure three-yearly aerial 1080 application plus continuous ground-based stoat, rat and possum control. The Oparara KTA was previously treated with 1080 in February 2010 and most recently in September 2016.

Stoat Control

Best practice techniques of stoat control, as defined by DOC, will always be used. These are certain to evolve over the course of this management programme as better control devices, control practices, and baits and lures become available. The plan initially is to control stoats mainly by intensive kill-trapping and rats and possums by ground-based poisoning, supplemented with secondary poisoning from aerial 1080 in years when it is applied. Kill-traps will be positioned at an average density of one trap per 1.25 ha throughout the entire treatment area, at 100 m spacing, on marked tracks cut along rivers, streams and major ridgelines (approximately 960 traps). A DOC 150 trap set under a 900 mm wooden cover with a double mesh entrance to exclude weka will be used at each trap site to begin with. These traps generally have a long life, and are expected to remain serviceable for at least 15 years. Thereafter they might be replaced with something else, depending on what is available at the time. The traps will be baited with locally sourced hen eggs or other suitable bait and operated continuously throughout the year, with service rates varying seasonally from once per fortnight (November to February) to once every two months (mid-winter) (on average eight times per year).

The three-yearly 1080 drops will kill stoats and rats directly, and will help to ‘purge’ the Oparara KTA of ‘trap-shy’ stoats that establish in the years between the 1080 operations.

The trapping operation will be suspended for six months following each aerial 1080 application within the Oparara KTA unless monitoring shows it should continue. Monitoring will take place within a

month of the 1080 operation and again three months later. Stoat numbers in the Oparara KTA are likely to remain low for at least six months following a 1080 operation. Additional controls over that period are expected to be unwarranted but the monitoring proposed will test whether this is the case.

Possum Control

Possum control in the Oparara KTA will be achieved with a combination of ground-based and aerial poisoning operations. There will be one ground-based poisoning operation in winter each year as a matter of course, supplemented by three-yearly (on average) aerial applications of 1080 as described above. Additional ground-based operations will be undertaken if the possum RTCI's exceed the thresholds listed above but this is not expected to be necessary.

Rat Control

A network of bait stations will be established and operated year-round to control rats in the Oparara KTA. The stations will be spaced 100 m apart, sufficient to ensure that all rats in the Oparara KTA have access to at least one station. First generation anti-coagulant poisons will be the standard baits, wired into each station to prevent removal. The methodology will be reviewed frequently to ensure the method is achieving the outcome desired. The stations will be checked and filled (if necessary) eight times per year (approximately 6-weekly). Any mouldy and/or unpalatable bait will be removed during each inspection and taken out of the Oparara KTA to be disposed of in an approved facility. This bait-station poisoning operation will be suspended for a six month period whenever 1080 is applied unless the post 1080 monitoring set out above indicates additional controls are required.

Buffer Zone

Surrounding the Oparara KTA Predator control carried out by DOC in the area surrounding the Oparara KTA will enhance predator control within the Oparara KTA, by effectively placing a large buffer zone around it, and minimizing re-invasion of predators from outside the Oparara KTA. This reduces the density of traps required around the margin of the Oparara KTA that would otherwise have to be provided by the Oparara KTA programme. In recognition of this Bathurst will provide funding to the Department of Conservation to assist with predator control in the area surrounding the Oparara KTA.

4.4 Protective rearing using BNZONE

BNZONE will be used to enhance kiwi chick survival in the Oparara KTA if the predator control programmes fail to produce the expected benefits. Outcome monitoring (described below) will show whether or not chick survival targets are being achieved. If BNZONE is require to boost chick survival rates, approximately 12-15 adult male kiwi in or alongside the Oparara KTA will be caught (using trained dogs) and radio-tagged, sufficient to yield least 9 eggs/chicks in the following spring. This number of eggs is likely to equate to about half of the annual production in the Oparara KTA during the first few years of its existence.

The males will be tagged with 'smart' transmitters that provide information about their reproductive state. The males will then be left alone until the last week of October, when those with eggs or young chicks will be located by radio-tracking from a fixed-wing aircraft. Ground crews will then be directed to each nest, and the eggs/chicks from all nests will be collected on the same day. As many as five different crews may be required to complete the pick-up. The eggs will be taken to an incubation

facility in either Hokitika or Christchurch. Thereafter they will be subjected to standard procedures (Colbourne et. al., 2005) with the chicks being raised in either a fenced creche or on an offshore island. When they reach the safe weight of 1000 g, the juveniles will be returned to the Oparara KTA or released elsewhere, subject to whatever the Department of Conservation and Ngati Waewae think is best at the time. Appropriate translocation proposals will be prepared, if required.

The transmitters will be removed from all males, irrespective of whether they have bred or not, immediately after egg collection in late October. Efforts will be made to catch a different mix of males whenever BNZONE is employed again. Males living alongside the Oparara KTA will be targeted as well, to increase the chances of catching 'new' males that have not been caught before. This will minimize disturbance to individual males, and ensure that the juveniles that are released back into the Oparara KTA are sourced from as many different breeding pairs as possible.

4.5 Outcome monitoring

Two variables will be measured to monitor kiwi in the Oparara KTA and their response to predator control:

1) call counts and

2) adult/juvenile ratios.

Regular Call Count Survey of Kiwi

Call count surveys will be undertaken once every three years to measure changes in adult abundance and distribution in the Oparara KTA. Calls will be counted at six elevated sites with good listening coverage in the first 2 hours of darkness over four nights in late November / early December. Consecutive nights will be used if weather conditions are favourable for listening. The same six sites will be used during each survey. The measures of mean call rate will provide an index of relative abundance, and the estimated locations of calling birds will provide some indication of the distribution of paired adults.

In years when BNZONE is implemented, an additional call count survey will be undertaken in winter when the ground crews have completed catching and radio-tagging adult males. Over 2- 3 nights, observers will again listen for calls, but this time they will also record which calls are attributable to radio-tagged individuals and which ones are not. The ratio of 'tagged' to 'untagged' calls will provide an absolute measure of male abundance, which will show categorically whether the number of territorial males in the Oparara KTA is increasing over time. The first baseline call-count survey of kiwi in the Oparara KTA was carried out in January 2015.

Adult/Juvenile Ratios as Indicators of Successful Recruitment

Recent studies show that juvenile great spotted kiwi remain in their parents territory for their first 2-3 years of life and often shelter with them during the day. This behaviour means that recruitment rates can be assessed relatively easily, simply by sampling the adult population over a week or so and determining which ones have young with them and which ones do not.

Adult/juvenile ratios will be measured at least once every five years – either as a programme in its own right or as part of a BNZONE initiative. Over a 2–3-week period in autumn, kiwi found by trained

dogs in day-time shelters will be weighed and measured to determine whether they are adult or juvenile. Juveniles will be assigned to a year class, depending on their size. Family groups with adults and a mix of offspring of varying age will provide measures of cumulative recruitment in the three years preceding the assessment. If the predator control programmes work as expected, juveniles should increase from about 7% to 30% of the population during the first three years of the predator control programme. Alternatively, cameras may be used to determine adult /juvenile ratios if preliminary trials currently underway in the KTA prove that cameras can be useful for measuring the abundance of mature and immature kiwi.

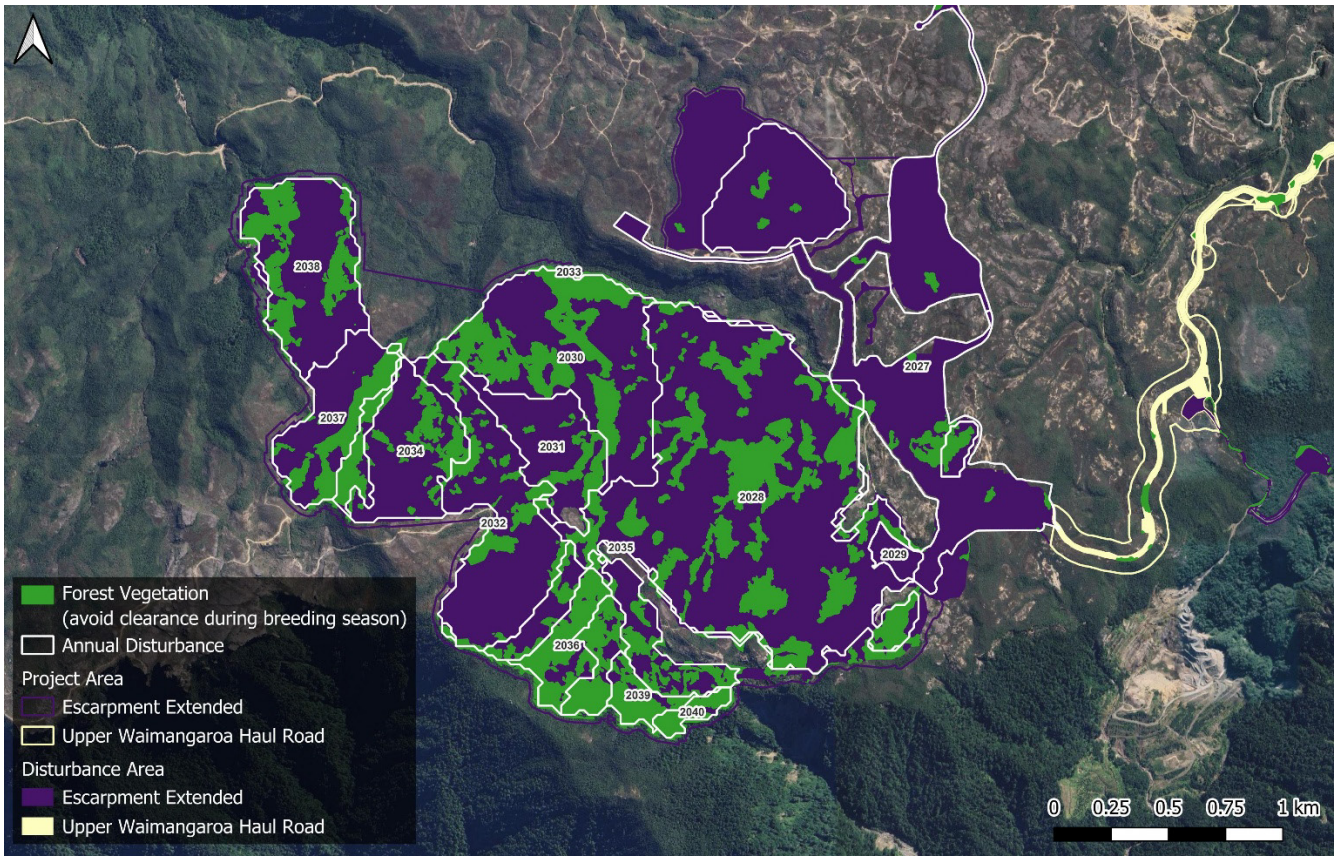
Counts of Forest Birds other than Kiwi

The response of forest birds to predator control will be measured biennially in autumn using the 5-minute count technique (Dawson and Bull, 1975) on 20 one-km-long transects distributed more or less evenly throughout the Oparara KTA. Baseline counts will be obtained in late spring / early summer 2014.

4.6 Predictive monitoring

From 2014 onwards, rodent abundance in the Oparara KTA will be indexed with foot-print tracking tunnels four times each year using standard methods.

Attachment 2: High Risk Avifauna Area Maps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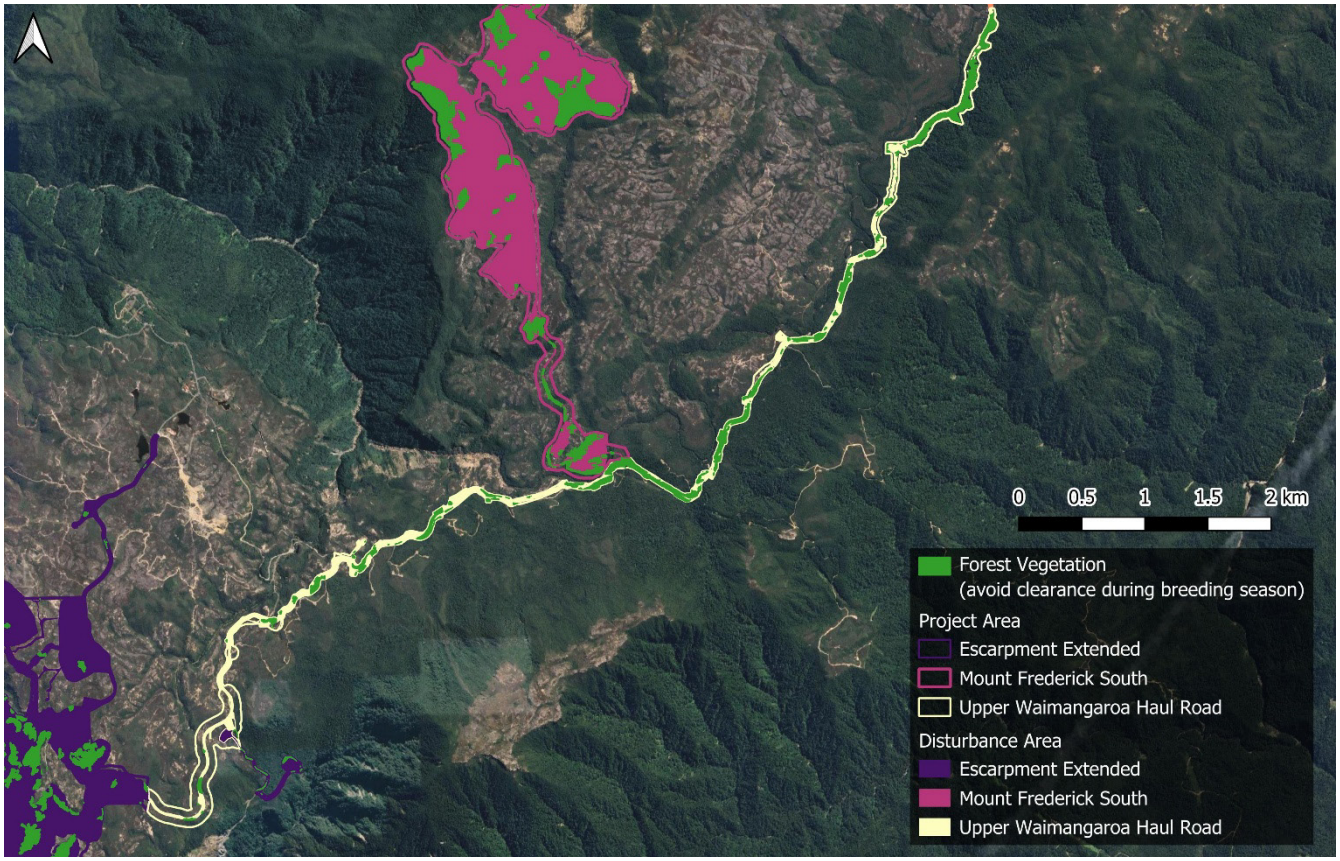
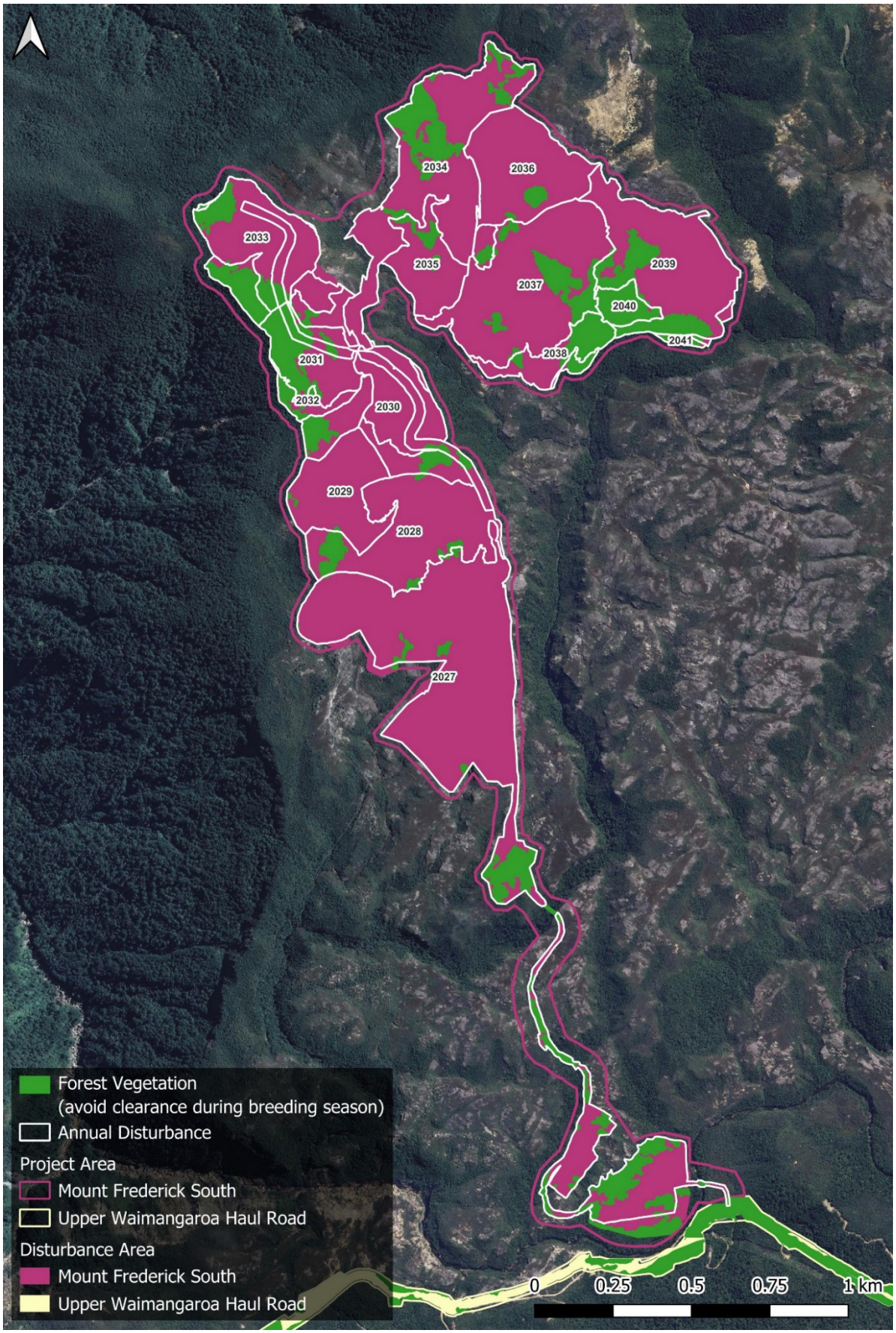
2029
2036
2039
2040
Forest Vegetation
(avoid clearance during breeding season)
Annual Disturbance
Project Area
Escarpment Extended
Upper Waimangaroa Haul Road
Disturbance Area
Escarpment Extended
Upper Waimangaroa Haul Road
0 0.25 0.5 0.75 1 km


0 0.5 1 1.5 2 km
Forest Vegetation
(avoid clearance during breeding season)
Project Area
Escarpment Extended
Mount Frederick South
Upper Waimangaroa Haul Road
Disturbance Area
Escarpment Extended
Mount Frederick South
Upper Waimangaroa Haul Road

Forest Vegetation
(avoid clearance during breeding season)
Project Area
Stockton
Disturbance Area
Stockton
0
0.5
1
1.5
2 km


2034
2036
2033
2035
2039
2037
2040
2041
2038
2031
2032
2030
2029
2028
2027
Forest Vegetation
(avoid clearance during breeding season)
Annual Disturbance
Project Area
Mount Frederick South
Upper Waimangaroa Haul Road
Disturbance Area
Mount Frederick South
Upper Waimangaroa Haul Road
0
0.25
0.5
0.75
1 km