

**DECISION MADE BY THE PANEL: WAITAHA HYDRO SCHEME
TE WHAKATAUNGA A TE PAEWHIRI WHAKAWĀ WAITAHA HIKO-Ā-AWA**

**APPENDIX E: WILDLIFE ACT PERMIT | ĀPITIHINGA E: TE WHAKAAETANGA-Ā-TURE
KARAREHE KŌWAO**

WILDLIFE APPROVAL

THIS APPROVAL is made this 17th day of April 2026

PARTIES:

Waitaha Hydro [FTAA-2505-1069] Expert Panel under the Fast-track Approvals Act 2024 (the **Grantor**)

Westpower Limited (the **Wildlife Approval Holder**)

BACKGROUND

- A. The Wildlife Approval Holder proposes to construct the Waitaha Hydro Scheme (**Scheme**).
- B. The Wildlife Approval Holder has applied for a wildlife approval under the Fast-track Approvals Act 2024 in relation to the Scheme.
- C. A wildlife approval granted under the Fast-track Approvals Act 2024 has force and effect for its duration, and according to its terms and conditions, as a lawful authority for the purposes of Part 5 of the Wildlife Act 1953 for the act(s) or omission(s) for which the approval was granted and is treated as if it were granted under that Act.
- D. This wildlife approval under the Fast-track Approvals Act 2024 in relation to the Scheme was granted by an expert panel on 17 April 2026.

OPERATIVE PARTS

The Wildlife Approval Holder has been authorised by an expert panel under the Fast-track Approvals Act 2024 to undertake the activities specified in this approval, subject to the terms and conditions contained in this wildlife approval and its schedules.

SCHEDULE 1: AUTHORISED ACTIVITY

<p>1.</p>	<p>Approved Activity (Schedule 2, clause 2)</p>	<p><u>The activities approved are:</u></p> <ul style="list-style-type: none"> a) To catch, salvage and relocate native lizards listed in Schedule 4 from the Scheme footprint. b) To disturb whoio / blue duck by gently guiding (without catching) them away from blasting and helicopter use areas. c) To disturb, catch and liberate whoio / blue duck if required to protect their safety. d) In the unlikely event it is required, to capture and relocate avifauna and long-tailed bats listed in Schedule 5 in accordance with the Avifauna Management Plan (AMP) and Bat Management Plan (BMP). e) To incidentally harm or kill wildlife listed in Schedule 5 if the harm or death is not directly intended but is unavoidable and foreseeable.
<p>2.</p>	<p>The Land (Schedule 2, clause 2)</p>	<p>The Waitaha Hydro Site, identified in the map included in Schedule 6.</p>
<p>3.</p>	<p>Personnel approved to undertake the Approved Activity (Schedule 2, clause 3)</p>	<p><u>For lizards:</u></p> <ul style="list-style-type: none"> • Dr Graham Ussher or others under his direct supervision, and/or • a suitably qualified and experienced expert with subject matter expertise relevant to the protected wildlife species concerned, as authorised in writing by the Department, and others under the direct supervision of the suitably qualified and experienced expert. <p><u>For avifauna and long-tailed bats:</u> a suitably qualified and experienced expert with subject matter expertise relevant to the protected wildlife species concerned, as authorised in writing by the Department, and others under the direct supervision of the suitably qualified and experienced expert.</p>
<p>4.</p>	<p>Term (Schedule 2, clause 4)</p>	<p>Commencing on 17 April 2026 and expiring on 16 April 2041.</p>
<p>5.</p>	<p>Wildlife Approval Holder's address for notices (Schedule 2, clause 8)</p>	<p>The Wildlife Approval Holder's address for notices is:</p> <p>146 Tainui Street PO Box 375 Greymouth</p>

6.	Department's address for notices	The Department's address for all correspondence is: Permissions Team Level 4 73 Rostrevor Street Hamilton, 3204 Email: permissionshamilton@doc.govt.nz
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SCHEDULE 2: STANDARD TERMS AND CONDITIONS OF THE APPROVAL

1. Interpretation

- 1.1 The Wildlife Approval Holder must provide a copy of these conditions to its employees, contractors or agents and explain the obligations under the conditions.
- 1.2 Where obligations bind more than one person, those obligations bind those persons jointly and separately.

2. What is being authorised?

- 2.1 The Wildlife Approval Holder is only allowed to carry out the Approved Activity on the Land described in Schedule 1, Item 2.
- 2.2 Any arrangements necessary for access over private land or leased land are the responsibility of the Wildlife Approval Holder.
- 2.3 The Wildlife Approval Holder must advise the Department's local Operations Manager(s) prior to carrying out the Approved Activity in the District (where possible, one week prior), when the Wildlife Approval Holder intends to carry out the Approved Activity.
- 2.4 The Wildlife Approval Holder and Approved Personnel must carry a copy of this approval with them at all times while carrying out the Approved Activity.
- 2.5 The Wildlife Approval Holder must comply with any reasonable request from the Department for access to any wildlife.
- 2.6 The Wildlife Approval Holder may publish authorised research results.
- 2.7 The Wildlife Approval Holder must immediately notify the Department of any taxa found which are new to science.
- 2.8 The Wildlife Approval Holder must immediately notify the Department if any Threatened, At Risk or Data Deficient species not covered by this approval are incidentally discovered.

3. Who is approved?

- 3.1 Only the Wildlife Approval Holder and the Approved Personnel described in Schedule 1, Item 3 are approved to carry out the Approved Activity, unless otherwise agreed in writing by the Department.

4. How long is the approval for – the Term?

- 4.1 This approval commences and ends on the dates set out in Schedule 1, Item 4.

5. What are the liabilities?

- 5.1 The Wildlife Approval Holder agrees to exercise the approval at the Wildlife Approval Holder's own risk and releases to the full extent permitted by law the Department and the Department's employees and agents from all claims and demands of any kind and from all liability which may arise in respect of any accident, damage or injury occurring to any person or property arising from the Wildlife Approval Holder's exercise of the Approved Activity.

5.2 This indemnity is to continue after the expiry or termination of this approval in respect of any acts or omissions occurring or arising before its expiry or termination.

6. What about compliance with legislation and notices and directions?

6.1 The Wildlife Approval Holder must comply with all statutes, bylaws and regulations, and other statutory instruments associated with the Land. Without limitation, this includes the Conservation Act 1987 and the Acts listed in the First Schedule of that Act and all applicable health and safety legislation and regulation.

6.2 The Wildlife Approval Holder will comply with all notices, directions and requisitions of the Department and any competent authority relating to the conduct of the Approved Activity.

7. Are there limitations on public access and closure?

7.1 The Wildlife Approval Holder acknowledges that the public conservation land being part of the Land is open to the public for access and that the Department may close public access to that public conservation land during periods of high fire hazard or for reasons of public safety or emergency.

8. How are notices sent and when are they received?

8.1 Any notice to be given under this approval by the Department is to be in writing and made by personal delivery, by pre-paid post or email to the Wildlife Approval Holder at the address or email address specified in Schedule 1, Item 5. Any such notice is to be deemed to have been received:

- (a) in the case of personal delivery, on the date of delivery;
- (b) in the case of post, on the third working day after posting;
- (c) in the case of email, on the date receipt of the email is acknowledged by the addressee by return email or otherwise in writing, except that return emails generated automatically shall not constitute an acknowledgement of receipt of the email.

8.2 If the Wildlife Approval Holder's details specified in Schedule 1, Item 5 change then the Wildlife Approval Holder must notify the Department within five working days of such change.

9. What about the payment of costs?

9.1 The Wildlife Approval Holder must pay the standard Department charge-out rates for any staff time and mileage required to monitor compliance with this approval and to investigate any alleged breaches of the terms and conditions of it.

10. Biosecurity

10.1 The Wildlife Approval Holder must take all precautions to ensure weeds and non-target species are not introduced to the Land; this includes ensuring that all tyres, footwear, gaiters, packs and equipment used by the Wildlife Approval Holder, its staff and clients are cleaned and checked for pests before entering the Land.

11. Are there any Special Conditions?

11.1 Special conditions are specified in Schedule 3. In the event of inconsistency or conflict, the Special Conditions will prevail over this Schedule 2.

12. Can the approval be varied?

12.1 The Wildlife Approval Holder may apply to the Department for variations to this approval in accordance with clauses 7(2) and (3) of Schedule 7 of the Fast-track Approvals Act 2024.

SCHEDULE 3: SPECIAL CONDITIONS

1. General

1.1 The conditions in the following documents apply within their respective areas of effect:

- (a) The Special Conditions (Schedule 3) in the Lease and Licence Concession;
- (b) The Special Conditions (Schedule 3) in the Easement Concession;
- (c) WDC Consent Conditions; and
- (d) WCRC Consent Conditions.

Management and Monitoring Plans

1.2 All Activities authorised by this Approval must be undertaken in accordance with the relevant conditions of the Concessions and Consents listed in clause 1 and with the relevant management and monitoring plans:

- (a) Avifauna Management Plan (AMP) that has been certified under Conditions CC7 to CC12 of Schedule One: Conditions Common to the West Coast Regional Council and Westland District Council Resource Consents.
- (b) Bat Management Plan (BMP) that has been certified under Conditions CC7 to CC12 of Schedule One: Conditions Common to the West Coast Regional Council and Westland District Council Resource Consents.
- (c) Lizard Management Plan (LMP) that has been certified under Conditions CC7 to CC12 of Schedule One: Conditions Common to the West Coast Regional Council and Westland District Council Resource Consents.

NOTE: Any change to the Concessions, Consents and their conditions, and the relevant management and monitoring plans will not constitute a change to the conditions of this Approval, unless or until this Approval is varied in accordance with requirements of the conditions of this Approval and/or the Fast-track Approvals Act 2024 as appropriate.

1.3 Any references to wildlife in conditions of the Concessions, and Consents shall apply to this Approval as if they are references to all species of absolutely protected wildlife, with any necessary modifications.

2. Whio handling

2.1 Whio will only be handled (caught and liberated):

- (a) if required to protect their safety; and
- (b) by a whio specialist or the project ecologist (as Approved by DOC in Schedule 1, Item 3) following instructions of a whio specialist.

3. Lizard capture, salvage and relocation

3.1 The Approved personnel listed in Schedule 1, Item 3 must undertake lizard capture, salvage and relocation as set out in the LizMP.

- 3.2 The Wildlife Approval Holder must sterilise any instruments that come into contact with the lizards and/or are used to collect or measure lizards between each location. A separate holding bag must be used for each animal. All equipment should be thoroughly cleaned and dried between sites.
- 3.3 The Wildlife Approval Holder must ensure lizards are held temporarily in a suitable container (e.g. breathable cloth bag) and placed out of direct sunlight to minimise the risk of overheating, stress and death between capture and salvage, and relocation to the adjoining receiving site.

4. Incidental death of protected wildlife

- 4.1 If any Threatened, At Risk or Data Deficient species should be incidentally killed in the construction of the Scheme, the Wildlife Approval Holder must:
- (a) inform the Department within twenty-four (24) hours of the death;
 - (b) chill the body if it can be delivered within seventy-two (72) hours of the death, or freeze the body if delivery will take longer than seventy-two (72) hours;
 - (c) send the body for necropsy along with details of the animal's history (the Department shall confirm the location for necropsy);
 - (d) pay all reasonable costs incurred in the investigation; and
 - (e) if required by the Department, cease the Approved Activity for a period determined by the Department.

5. Injured protected wildlife and euthanasia

- 5.1 If any protected wildlife is incidentally injured as part of the Approved Activity or in the course of undertaking activities associated with the Scheme, the Wildlife Approval Holder must contact a suitably qualified person to get advice on management of the protected wildlife, including how to best address the injury.
- 5.2 If protected wildlife is incidentally harmed by the Wildlife Approval Holder, the Wildlife Approval Holder will take all reasonable steps to rehabilitate the protected wildlife, in line with the advice of a suitably qualified person.
- 5.3 The Wildlife Approval Holder is authorised to appoint a qualified veterinarian to euthanise injured animal(s) on the recommendation of the suitably qualified person. Once euthanised, the Wildlife Approval Holder will deal with the protected wildlife in accordance with condition 4.
- 5.4 The Wildlife Approval Holder must notify the Department's West Coast Operations Manager(s) within twelve (12) hours of euthanising protected wildlife. The notification must include details of the species of wildlife euthanised and personnel involved in the euthanasia of the wildlife.

6. Reporting

- 6.1 The Wildlife Approval Holder must undertake reporting as set out in the AMP, BMP and LizMP.

7. Ownership of protected wildlife

- 7.1 All wildlife remains the property of the Crown. This includes any dead wildlife, live wildlife, any parts thereof, any eggs or progeny of the wildlife, genetic material and any replicated genetic material.
- 7.2 Unless expressly authorised by the Department in writing, the Wildlife Approval Holder must not donate, sell or otherwise transfer to any third party any wildlife collected or otherwise obtained under this Approval.

8. Cancellation

- 8.1 The Department may revoke this Approval in whole or any part at any time (pursuant to clause 7(4) of Schedule 7 of the Fast-track Approvals Act 2024) if:
- (a) The Wildlife Approval Holder breaches any of the conditions of this Approval.
 - (b) In the Department's opinion, the exercise of this Approval has caused, or is likely to cause, any unforeseen adverse effects on wildlife.
- 8.2 If the Department intends to revoke this Approval in whole or in part, the Department must give the Wildlife Approval Holder at least thirty (30) days advance notice and either party may invoke the dispute resolution process in clause 9 below before the Department initiates the cancellation process.

9. How will disputes be resolved?

- 9.1 If a dispute arises between the parties in connection with this Approval the parties must, without prejudice to any other rights or entitlements they may have, attempt to resolve the dispute by agreement using informal dispute resolution techniques such as negotiation, mediation, independent expert appraisal or any other alternative dispute resolution technique. The rules governing any such technique adopted are to be agreed between the parties.
- 9.2 If the dispute cannot be resolved by agreement within 30 working days of written notice by one party to the other (or such further period as the parties may agree to in writing) either party may refer the dispute to mediation, where relevant, or to arbitration. Any arbitration is to be carried out in accordance with the provisions of the Arbitration Act 1996.
- 9.3 If the parties do not agree on an arbitrator within 10 working days of a party giving written notice of the requirement to appoint an arbitrator the President of the New Zealand Law Society is to appoint the arbitrator. In either case the arbitrator must not be a person who has participated in an informal dispute resolution procedure in respect of the dispute.
- 9.4 The arbitrator must include in the arbitration award reasons for the determination.
- 9.5 Despite the existence of a dispute, each party must continue to perform its obligations under this Approval.

10. Bat Roost Protocols

- 10.1 The Wildlife Approval Holder shall follow the Bat Roost Protocols, as attached at Schedule 7 of this Wildlife Approval when felling potential bat roost trees during vegetation clearance.

SCHEDULE 4: LIZARDS THAT THE WILDLIFE APPROVAL HOLDER IS APPROVED TO CATCH, SALVAGE AND RELOCATE

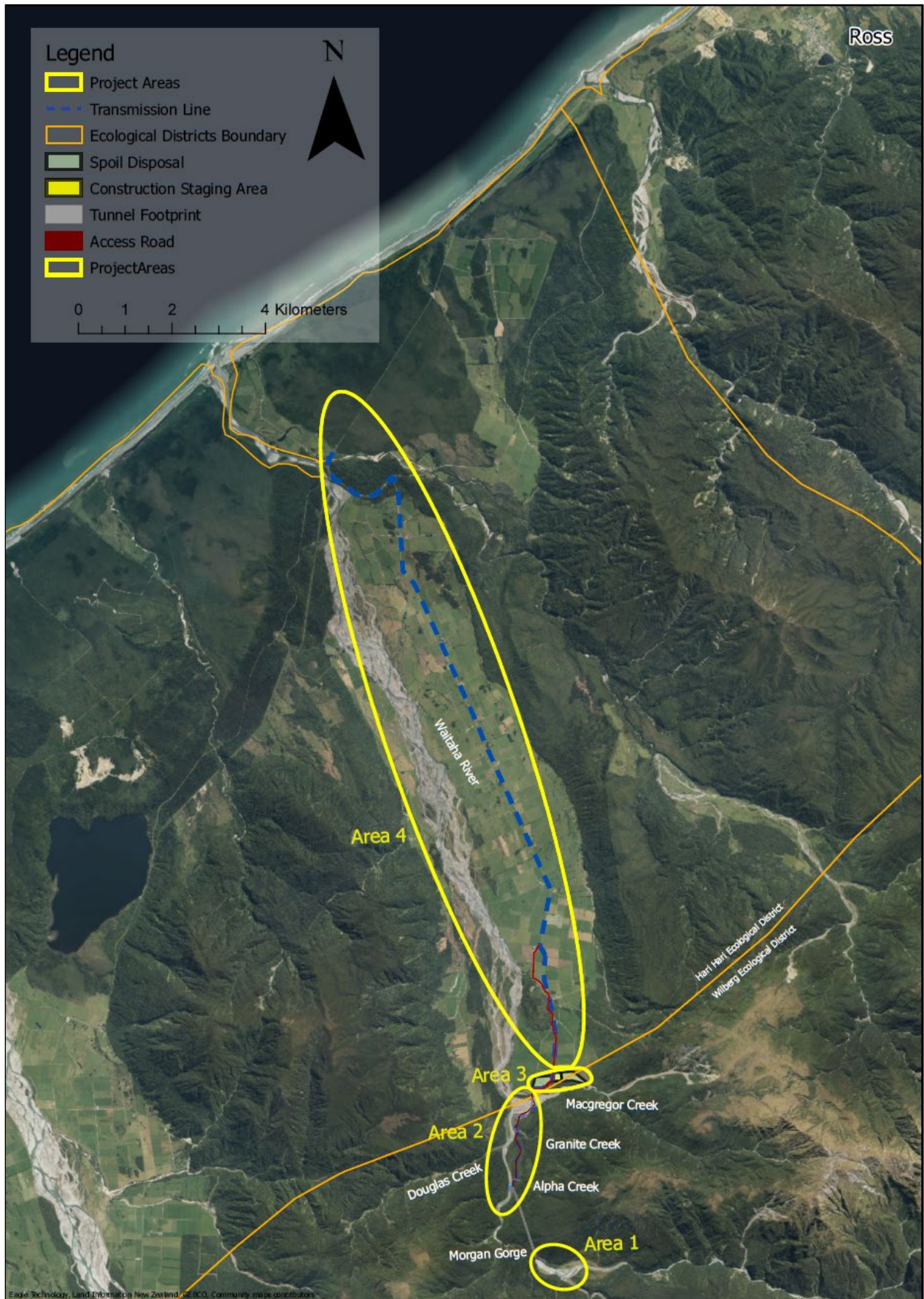
Common name	Scientific name	NZ threat classification
Northern grass skink	<i>Oligosoma polychroma</i>	Not Threatened
Forest gecko	<i>Mokopirirakau granulatus</i>	At Risk – Declining
Newman's speckled skink	<i>Oligosoma newmani</i>	At Risk – Declining
West Coast green gecko	<i>Naultinus tuberculatus</i>	Threatened – Nationally Vulnerable

SCHEDULE 5: WILDLIFE KNOWN OR PREDICTED TO BE IN THE SCHEME AREA

Common name	Scientific name	NZ threat classification
Long-tailed bat	<i>Chalinolobus tuberculatus</i>	Threatened – Nationally Critical
West Coast green gecko	<i>Naultinus tuberculatus</i>	Threatened – Nationally Vulnerable
Kea	<i>Nestor notabilis</i>	Threatened – Nationally Endangered
Blue duck / Whio	<i>Hymenolaimus malacorhynchos</i>	Threatened – Nationally Vulnerable
South Island kākā	<i>Nestor m. meridionalis</i>	Threatened – Nationally Vulnerable
Long-tailed cuckoo	<i>Eudynamys taitensis</i>	Threatened – Nationally Vulnerable
Bush falcon / Kārearea	<i>Falco novaeseelandiae</i>	Threatened – Nationally Increasing
Grey duck	<i>Anas superciliosa</i>	Threatened – Nationally Vulnerable.
Yellow-crowned parakeet / Kākāriki	<i>Cyanoramphus auriceps</i>	At Risk – Declining
South Island pied oystercatcher	<i>Haematopus finschi</i>	At Risk – Declining
South Island robin	<i>Petroica a. australis</i>	At Risk – Declining
South Island fernbird	<i>Bowdleria p. punctata</i>	At Risk – Declining
New Zealand pipit	<i>Anthus n. novaeseelandiae</i>	At Risk – Declining
Black shag	<i>Phalacrocorax carbo novaehollandiae</i>	At Risk – Relict
Little shag	<i>Phalacrocorax melanoleucos brevirostris</i>	At Risk – Relict
Forest gecko	<i>Mokopirirakau granulatus</i>	At Risk – Declining
Newman's speckled skink	<i>Oligosoma newmani</i>	At Risk – Declining
Northern grass skink	<i>Oligosoma polychroma</i>	Not Threatened
Western weka	<i>Gallirallus a. australis</i>	Not Threatened
Welcome swallow	<i>Hirundo n. neoxena</i>	Not Threatened
South Island tomtit	<i>Petroica m. macrocephala</i>	Not Threatened

Common name	Scientific name	NZ threat classification
South Island fantail	<i>Rhipidura f. fuliginosa</i>	Not Threatened
Brown creeper	<i>Mohoua novaeseelandiae</i>	Not Threatened
Tūī	<i>Prosthemadera n. novaeseelandiae</i>	Not Threatened
Bellbird	<i>Anthornis m. melanura</i>	Not Threatened
Grey warbler	<i>Gerygone igata</i>	Not Threatened
South Island rifleman	<i>Acanthisitta chloris chloris</i>	Not Threatened
New Zealand kingfisher	<i>Todiramphus sanctus vagans</i>	Not Threatened
Morepork	<i>Ninox n. novaeseelandiae</i>	Not Threatened
Shining cuckoo	<i>Chrysococcyx l. lucidus</i>	Not Threatened
New Zealand pigeon / Kererū	<i>Hemiphaga novaeseelandiae</i>	Not Threatened
White-faced heron	<i>Egretta n. novaehollandiae</i>	Not Threatened
Pied stilt	<i>Himantopus himantopus leucocephalus</i>	Not Threatened
Silvereeye	<i>Zosterops l. lateralis</i>	Not Threatened
Little owl	<i>Athene noctua</i>	Introduced and naturalised
Pūkeko	<i>Porphyrio m. melanotus</i>	Not Threatened
Swamp harrier	<i>Circus approximans</i>	Not Threatened
Paradise shelduck	<i>Tadorna variegata</i>	Not Threatened
Common redpoll	<i>Carduelis flammea</i>	Introduced and naturalised

SCHEDULE 6: MAP OF THE LAND COVERED BY THE APPROVAL



SCHEDULE 7: DOC BAT ROOST PROTOCOLS

Protocols for minimising the risk of felling occupied bat roosts

(Bat Roost Protocols)

Version 4: October 2024 approved by the New Zealand Department of Conservation's Bat Recovery Group

The use of these protocols is only one step in the RMA effects management hierarchy i.e., avoid, remedy, mitigate. Avoidance of felling bat roost trees should be the first step in any project. Using this protocol only reduces the likelihood of killing or injuring bats present in roosts at the time of felling. It does not avoid, remedy or mitigate any other effects.

Purposes of this document:

1. To outline why protection of roosts is important for the persistence of New Zealand bats and why removal of known and potential roosts should be avoided.
2. Where tree removal cannot be avoided, to set out the minimum requirements and protocols for removing trees in areas where bats are present, to minimise the risk of killing bats.

This protocol does not eliminate the risk to bats of death or injury because bats or active bat roosts can be missed. The best way to eliminate risk of felling an active roost is to **avoid** felling any known or potential roosts.

Context

Bat roost protocols and the Wildlife Act 1953

Aotearoa New Zealand bats are absolutely protected species under the Wildlife Act 1953. It is an offence to catch alive or kill, hunt, possess, molest, or disturb bats under the Act. Any projects where tree or vegetation removal overlaps with the occurrence of bats, there is a risk of killing or injuring bats that may be present. Following the bat roost protocol reduces the likelihood of killing or injuring bats.

Bat roost protocols and the RMA

The occurrence of bats and bat habitat is a matter of 'significance' under Section 6(c) of the Resource Management Act (RMA). Bat roost protocols have become a standard part of bat management plans that may be required under RMA consents. Where developments require consents, and bats (a threatened species) are present, the developments should 'Avoid' impacting bats and bat habitat. Where this is not possible, the effects management hierarchy must be followed with attempts made to "remedy, mitigate, offset, and compensate" for impacts on bats and bat habitat.

Bat roost protocols are not considered an appropriate management measure to address bat roost habitat loss, as they only attempt to reduce the risk of bats being killed by tree felling. Therefore, implementing bat roost protocols where bats are present should be considered a last resort after following the RMA effects management hierarchy.

This protocol has therefore been framed following the RMA effects management hierarchy by first focusing on the avoidance of effects, helping to identify and avoid the removal of roost trees, and to minimise the risk to bats of death or injury if avoidance is not possible. This approach is usually informed by gathering data on bats in the local areas and seeking advice from someone who has been certified as competent by DOC to assess roost use by bats using bat detectors, identify potential roost features, and undertake emergence watches.

Identifying and protecting *both active and inactive* (i.e., trees used by bats at other times of year) roosts by avoiding their removal is an important step in supporting the survival and persistence of bats.

Effects management/compensation

If trees are felled and habitat lost, then compensation measures should be considered to address the adverse effects. What these measures should be is beyond the scope of this document. Provision of artificial roosts in the short-term and planting for the long-term are some of the methods commonly used in development projects, but their effectiveness is untested and understanding this is future research needed.

The status of Aotearoa New Zealand bats

Aotearoa New Zealand's two extant bat species (pekapeka) are classified as threatened.

Long-tailed bats are classified as 'Nationally Critical' because the species is likely to have a 70% decline in numbers within three generations.

Lesser short-tailed bats have three subspecies. The northern subspecies is classified as 'Nationally Vulnerable' because there are 1000-5000 mature individuals and the predicted decline in numbers is 10-50% within three generations. The central subspecies is 'Declining' because there are 20 000-100 000 mature individuals, and the predicted decline is 10-50% within three generations. The southern subspecies is 'Recovering' because there are 1000-5000 individuals, and the predicted increase is >10% within three generations.

Threats to bats

This document deals specifically with roost protection; however, roost protection is only part of the wider issue of habitat loss. Habitat loss through land clearance, habitat degradation, fragmentation and disturbance and loss of roosts reduces roosting, foraging and socialising areas. Individual bats and colonies are also threatened by the local felling of individual trees.

Bats have large home ranges which can include unprotected peri-urban habitat. Protecting habitat and maintaining connectivity of vegetation are crucial for bats being able to persist and flourish in the environment.

Predation and competition by introduced predators: mustelids, rats, cats, and possums have all been implicated in the decline of bats¹.

Roosts are critical to the survival of bats

Roosts are where bats gather to shelter during the day and at night. They are used to socialise, mate, give birth, and raise young. Bats have very specific requirements when they are choosing roosts and are not just choosing any tree. The specialised features of roosts make them rare and almost irreplaceable in any landscape or habitat type except over very long-time frames. People sometimes falsely suggest that "bats can just move to another tree". This is not the case, particularly where trees suitable as roosts are limited².

Bats demonstrate high site fidelity to existing roosts and their specific roosting areas, and they move on a rotation among these. Because roost trees are likely to be rare, and bats choose which of their roosts to occupy to fulfil specialised requirements, felling roost trees even when bats are absent will have a significant negative effect. If the number of suitable roosts and their surrounding habitat is reduced in the landscape, bats are forced to use roosts that are less thermally efficient. This means they will use more energy to survive, resulting in reductions in survival and lower reproductive success. In this way, roost removal is likely to result in higher risk of local extinction.

¹ O'Donnell CFJ; Christie JE; Hitchmough RA; Lloyd B; Parsons S 2010. The conservation status of New Zealand bats, 2009. *New Zealand Journal of Zoology* 37: 297– 311.

² Many references available, for example, Borkin KM; Parsons S. 2011. Sex-specific roost selection by bats in clear-fell harvested plantation forest: improved knowledge advises management. *Acta Chiropterologica* 13(2): 373-383; Borkin KM; O'Donnell CFJ; Parsons S. 2011. Bat colony size reduction coincides with clear-fell harvest operations and high rates of roost loss in plantation forest. *Biodiversity and Conservation* 30; Sedgeley JA; O'Donnell CFJ 1999b. Roost selection by the long-tailed bat, *Chalinolobus tuberculatus*, in temperate New Zealand rainforest and its implications for the conservation of bats in managed forests. *Biological Conservation* 88:261–276; Sedgeley JA; O'Donnell CFJ 2004. Roost use by long-tailed bats in South Canterbury: Testing predictions of roost site selection in a highly fragmented landscape. *New Zealand Journal of Ecology* 28:1-18.

Bats can roost in native or exotic vegetation – therefore it should not be presumed that exotic species such as pine trees will not support bats. Roosts, including maternity roosts, have been found in many exotic species including, but not limited to, pine, poplar, oak, and acacia species, black locust, willow, eucalyptus and Tasmanian blackwood.

Bats are at risk of being injured or killed when trees are felled

If a tree is felled with a bat in it, it is highly likely that the bat will be injured or killed, although this may not be apparent at the time because injuries, such as bruises and fractures, which would hinder bats' ability to fly well, may take time to be obvious.

The highest risk of injuring or killing bats or trapping them within their roosts is when they are heavily pregnant, when young are still dependent on the roost (late November – February) and when bats are more likely to be in torpor (a type of hibernation in May – September). Heavily pregnant bats are slower and less agile, and young bats cannot fly, and when they are new to flying are not very agile, so their chances to escape are reduced when roost trees are felled. Also, it is possible that if the larger female-dominated maternity roosts are cut down when females are raising their young to independence (October-March), a whole colony of bats could be destroyed at one time.

If trees are cut down when bats are in torpor, bats may be unable to rouse from torpor and to fly away in time to escape. Additionally, it is significantly harder, sometimes impossible, to detect bats roosting in trees during torpor. For these reasons, trees with potential bat roost features must not be cut down in winter. Bats also use torpor for short periods during summer, for example, if the weather gets cold, so the risk of killing or injuring bats that cannot escape falling trees exists at any time of the year.

Bat roost protocol

When and how to use the protocol

Whenever vegetation removal is proposed in areas where bats are potentially present and where their habitat may be impacted, follow the decision tree (Figure 1) below as a guide to what sort of action should be undertaken. The decision tree is designed firstly to avoid felling bat roost trees, secondarily aimed at moving roost trees, and only if unavoidable, felling roost trees (but only once vacated).

None of the methods of inspecting roosts described below eliminates the risk of failing to identify bats when they are present. Therefore, techniques such as filling in cavities with expandable foam are not supported as a tool. This is because there is a risk of trapping bats that have not been detected within cavities.

Definitions

Competencies: a set of competencies developed by the NZ Bat Recovery Group³ to ensure that anyone working with bats is competent to do so. Contact bathandler@doc.govt.nz for a list of competencies and requirements to become an authorised competent bat worker.

Competencies referred to in this document:

- 2.1 Bagging, storage, handling, measuring, weighing, sexing, aging, temporary marking and releasing appropriately:
 - For long-tailed bats: 50 individuals
 - For short-tailed bats: 50 individuals
3. High risk activities – Roost felling (all of these competencies include the understanding of what to do when bats are found during tree felling as per Appendix 6 of 'Initial veterinary care for New Zealand Bats'⁴)
 - 3.1 Assessing roost tree use using Automatic Bat Monitors - Demonstrate correct timing, placement, and interpretation of data for 10+ times according to DOC's Tree Felling Protocols.
 - 3.2 Undertake roost watches/emergence counts at 10+ occupied roosts where the entrance is visible.
 - 3.3 In at least two different forest/habitat types, including the forest/habitat type where trees are going to be assessed: evaluate 10+ potential roost features in trees (e.g., cavities, peeling bark, epiphytes).

³ A group of bat specialists that advise on bat issues and assess bat competencies

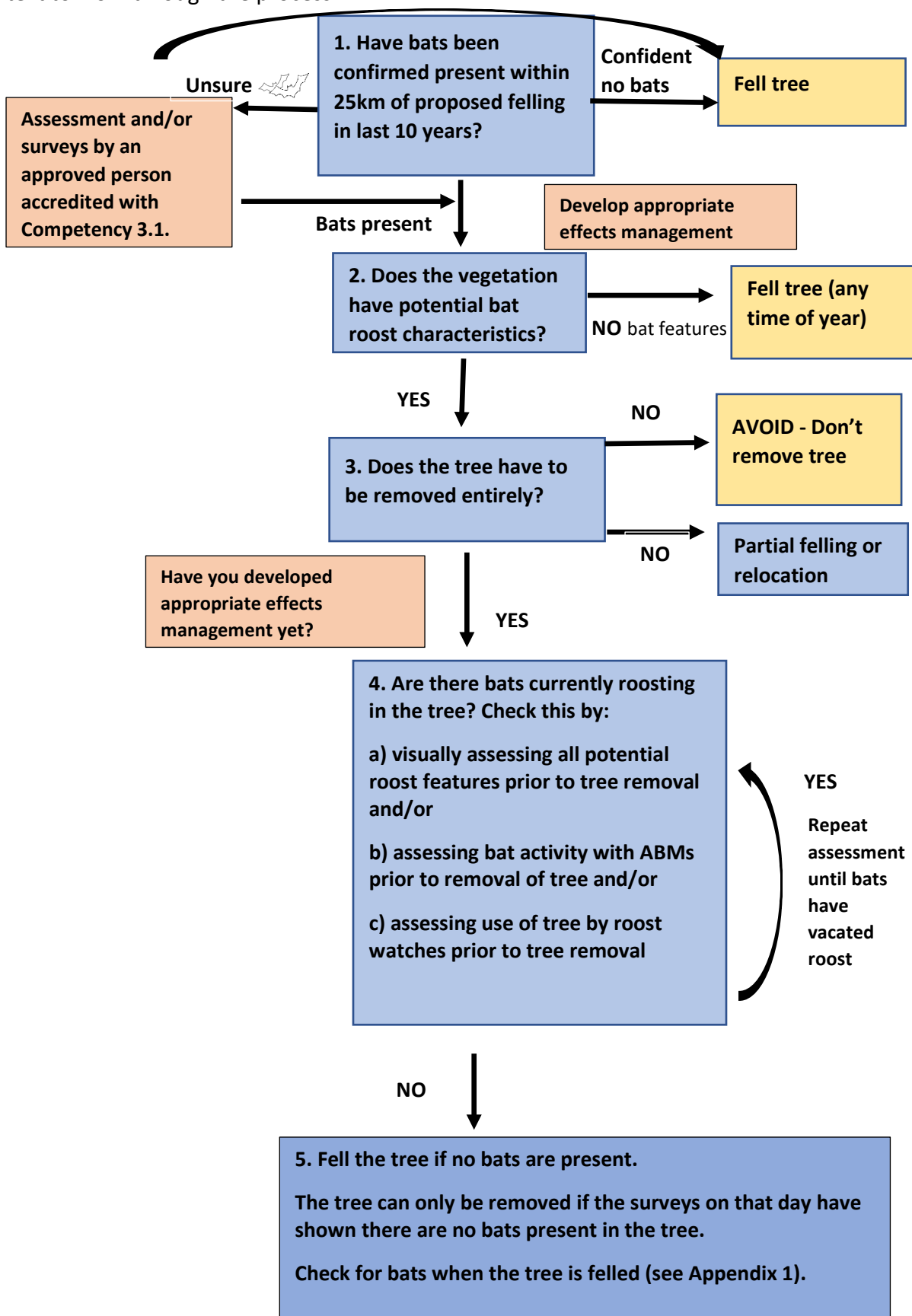
⁴ Available at www.doc.govt.nz/bat-worker-resources

These are minimum requirements and rely on an accredited trainer to provide written endorsement to the Bat Recovery Group that the right level of competency has been achieved.

ABM: automated bat monitoring unit/detector

Figure 1. Tree removal in bat areas flow chart

Each numbered step relates to a step in the Decision Tool for Tree Removal. Follow each step fully in the text to work through the process.



Step by step decision tool for tree removal in bat areas (to be used in conjunction with Figure 1).

Step 1. Does the bat roost protocol apply to my project?	Response	Who can make this assessment?	When?
a) Is there known bat activity within a radius of 25 km of the vegetation to be removed (see ⁵ and ⁶ notes below)?	a) <u>If Yes</u> , proceed to b <u>If No</u> , consider whether survey work needs to be done.	Evidence can come from on-the-ground surveys and reports from the national DOC database if within the last 10 years, consultants, and/or other credible sources. Evidence should be interpreted by an experienced bat ecologist.	Any time
b) Are bats present in the Project Area i.e. where trees are planned to be felled?	b) <u>If Yes</u> , go to step c <u>If unknown</u> , undertake comprehensive survey if bats are likely to be present. <u>If no bats are present after comprehensive survey</u> , you do not need to follow protocol.	If surveys are required to support the assessment, then these will need to be designed by approved person accredited with Competency 3.1. to determine presence around trees due to be felled.	Acoustic surveys to determine presence should be undertaken when bats are most active and environmental conditions are suitable (October 1 st to April 30 th) ⁷ . Surveys undertaken at other times of year are considered less reliable for determining absence.
c) Is the tree known to provide a roost location for bats? (Previous knowledge).	c) <u>If yes</u> , go to step 3 <u>If no (but bats are present in the project area)</u> , go to step 2.		

Notes for Step 1

1a) Bats are a highly mobile species. Long-tailed bats can have home ranges (the areas that they regularly use) as wide as 19km, and short-tailed bats about 24km. Three colonies of long-tailed bats in the Eglinton Valley collectively had a home range of 100km².

When assessing whether bats might be present at a site you have to consider any surveys that have been done in the wider area, how long ago the surveys were done and whether more surveys are required.

⁵ The largest home range span for the long-tailed bat in the Eglinton Valley was 19 km (O'Donnell 2001. J. Zool., Lond. 253, 253-264).

⁶ The largest home range span for the lesser short-tailed bat in the Eglinton Valley was 23.6 km (O'Donnell et al. 1999. New Zealand Journal of Ecology 23(1): 21-30).

⁷ Borkin K.M. 2010. Ecology of New Zealand's Long-tailed bat (*Chalinolobus tuberculatus*) in exotic plantation forest. Unpublished PhD thesis, University of Auckland.

1b) If you are doing a new survey then you should design the survey to cover the project area. Examples of surveys are shown in the Bat Inventory and Monitoring Toolbox (<https://www.doc.govt.nz/our-work/biodiversity-inventory-and-monitoring/bats/>). See 'Bats: Counting away from bat roosts: bat detectors on line transects' and 'Counting away from bat roosts: automatic bat detectors'.

Send bat data (processed csv files and GPS locations) to batdatabase@doc.govt.nz on a standard spreadsheet available by emailing this address.

Step 2. Does the vegetation proposed to be removed have potential bat roost characteristics?	Response	Who can make this assessment?	When?
a) Is the tree ≥ 15 cm DBH (Diameter at Breast Height) ⁸ ?	<p><u>If yes</u>, further assessment is required (2b).</p> <p><u>If no</u>, the vegetation can be removed at any time.</p> <p>There may be roosts that have smaller DBH. If any vegetation is suspected to have a bat roost present, removal shall be halted immediately, and protocols reviewed.</p>	Anyone who can measure a tree DBH.	Any time
b) On visual inspection, does the tree (dead or alive) have features that indicate roost potential (Potential Roost Features/PRFs)? These features include: <ul style="list-style-type: none"> • hollows • cavities • knot holes • cracks • flaking, peeling, and decorticating bark • epiphytes • broken or dead branches or trunk • cavities/hollows/shelter formed by double leaders • Artificial roost boxes 	<p><u>If yes go to step 3</u></p> <p><u>If unsure</u> i.e. cannot assess due to foliage or limited access, further assessment is required. This may include climbing inspection of the tree.</p> <p><u>If no potential roost features are present</u>, the vegetation can be removed at any time⁹, but if upon felling you find a bat follow section 5.</p>	Approved person accredited with Competency 3.3.	Visual inspections can occur at any time of the year, but within 6 months of final felling dates. This accounts for any changes in trees that may occur over time. If there are NO potential roost features, felling can occur at any time of year.
Step 3. Does the tree have to be removed entirely?	Response	Who can make this assessment?	When?

⁸ This diameter at breast height is based on dimensions of roosts used by south Hamilton long-tailed bats that were identified by Dekrout (2009, Unpublished PhD thesis, University of Auckland) - the smallest roosts were 15.5 cm DBH; but note that in South Canterbury Sedgely and O'Donnell (2004, New Zealand Journal of Ecology 28(1): 1-18) found that 25% of long-tailed bat roosts were smaller than 18.8 cm DBH.

⁹All surveys to assess whether trees are potential roosts shall take place within 6 months of final felling dates. If felling does not take place within this time, then assessments must be repeated. This is intended to account for any changes in trees which may occur over time.

<p>a) Is the only option to remove the tree entirely?</p>	<p><u>If yes</u>, continue to step 4</p> <p><u>If no</u>, consider leaving the tree in place, cutting off specific limbs only or relocating the tree. If any felling, partial felling (where the part to be felled has potential bat roost features) or tree relocation takes place you MUST proceed to step 4.</p> <p><u>If a roost (active/inactive) is confirmed</u>, then advice should be obtained at a project level in writing from DOC before proceeding.</p>	<p>Project leader (i.e. the accountable decision-maker for the project)</p>	<p>Any time</p>
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Notes for Step 3

Trees must only be relocated when bats are absent and when standard automated bat monitoring unit (ABM) weather conditions are met (see notes section 4b for appropriate weather conditions), and in consultation with an ecologist with all competencies of level 3: ‘High risk activities – Roost felling’.

Advice in writing can be given on behalf of the Operations Manager of the DOC District you are working in. If you do not know the contact details for this office, you can phone 0800 ASK DOC (0800 275 362) or email info@doc.govt.nz . In emergencies, phone 0800 DOC HOT (0800 362 468).

<p>Step 4. Are there bats currently roosting in the tree? (Follow a or b or c or a combination)</p>	<p>Response</p>	<p>Who can make this assessment?</p>	<p>When</p>
<p>a) Are potential features being used by roosting bats? A tree climber may be required to check all features (see notes for 4a below).</p> <p>If roost is occupied repeat 4a another day until roost is vacated.</p>	<p><u>If yes</u>, THE TREE MUST NOT BE FELLED UNTIL BATS HAVE VACATED IT.</p> <p><u>If no</u>, the tree can be removed on the day of the tree inspection following step 5.</p> <p><u>If bats continue to use the roost</u>, then the tree must not be cut down until the bats leave the roost. At this point reconsider whether this tree must be felled.</p>	<p>An approved person accredited with Competency 3.3 or an experienced tree-climber (e.g., an arborist) working with an approved person accredited with Competency 3.3.</p> <p>If the latter, the tree climber must provide information along with photographs or video footage, to the</p>	<p>October 1st to April 30th when the temperature is 7°C or greater at official sunset in the South Island or 8°C or greater in the North Island.</p>

	<p>Advice must be obtained at a project level in writing from DOC prior to felling the tree.</p> <p>If you do not know the contact details for the office, you can phone 0800 ASK DOC (0800 275 362) or email info@doc.govt.nz.</p>	<p>approved person accredited with Competency 3.3 who assesses and decides whether the tree can be removed.</p> <p>If roosts are known or confirmed through this process, then this information must be communicated to the nominated DOC or Council bat ecologist for this project.</p>	
<p>b) Is bat activity recorded at any time during two consecutive, valid survey nights preceding tree felling¹⁰? At least two nights are required as it is possible for bats to enter or leave a roost without echolocating, or to not leave the roost for a night.</p>	<p><u>If yes (bats are detected)</u>, survey must continue until no bat activity is recorded for two consecutive nights (to indicate bats have left the area) prior to felling OR roost features of each tree must be visually assessed via climbing.</p> <p><u>If bat activity is consistent in the area and 2 nights with zero bat passes cannot be obtained</u>, Go to 4c or 4a.</p> <p><u>If no bats are detected for two consecutive nights</u>, the vegetation can be removed on the day immediately following the survey nights using the method in 5.</p>	<p>An approved person accredited with Competency 3.1</p>	<p>October 1st to April 30th and when conditions meet the requirements for standard ABM weather conditions (see 4b notes).</p>
<p>c) Are bats observed emerging or re-entering the tree? This involves watching roost features to identify bats returning to or exiting potential roost features. It should only be used in combination with previous ABM monitoring (4b) (see notes 4c</p>	<p><u>If yes (bats are seen at either watch)</u>, it is a confirmed roost.</p>	<p>An approved person accredited with Competency 3.2.</p>	<p>Between October 1st and April 30th only AND when weather parameters meet</p>

¹⁰ Le Roux et al (2013) found that in and around Hamilton “The longest consecutive monitoring period without bat detections at each site was three nights during winter.” Le Roux et al 2013. New Zealand Journal of Zoology (2013): Spatial and temporal variation in long-tailed bat echolocation activity in a New Zealand city, New Zealand Journal of Zoology, DOI: 10.1080/03014223.2013.827125.

<p>for method). At least two consecutive emergence and re-entry watches should occur at dusk and dawn immediately preceding the felling as it is possible for bats to enter or leave a roost without being detected, or to not leave the roost for a night.</p> <p>It is strongly recommended that a night vision aid is used for emergence watches to reduce the risk of missing bats if they leave after it becomes too dark to see.</p>	<p>Removal of a roost should not occur.</p> <p><u>If no bats are observed entering or exiting for two consecutive dusk and dawn watches, the vegetation can be removed on the day immediately following the final dawn watch using the method in 5.</u></p>	<p>If more than one person is required for a roost watch at a tree, a minimum of one approved person accredited with Competency 3.2 must be present on site for the duration of the roost watch to supervise.</p>	<p>the roost watch requirements.</p>
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Notes for Step 4.

4a) Tree climbing and inspection

Care must be taken while climbing trees to avoid disturbing, removing or destroying tree features with bat roost potential such as sections of loose bark or cavities in dead wood. Using mobile elevated platforms can be a good option. Bats are less likely to be active over colder periods, so climbing to check whether bats are present in potential roost features must take place between October 1st to April 30th when the temperature is 7 °C ¹¹ (South Island) or 8°C (North Island) or greater at official sunset on the night before inspection.

A tree climber may be required to check all potential bat roost features.

- Can bats be seen? An endoscopic camera should be available for this step and every possible corner of each potential roosting feature inspected, i.e., cavity/crack etc. Cracks, holes, and splits may lead to cavities or may be superficial. A cavity may be wet indicating no/low potential as a bat roost. Ensure that the tree climber is provided guidance from the competent bat worker about bat identification and care required when probing endoscopes into potential roosting features which may disturb bats.
- Can bats be heard? Search of tree features should be accompanied by use of a hand-held bat detector. If bats are present and not in torpor, then detection of presence listening at 25 kHz (for social calls) and 40 kHz (for echolocation calls) may help to determine if long-tailed bats are present. Short-tailed bat social calls are often audible or detected at 25-27 kHz.
- Is guano present or urine staining? See Appendix 1.

4b) ABM survey work

ABMs are to be used to record bat calls. Location of ABMs must provide sufficient coverage to be able to determine if bat roosts are present in one or more of the trees. Department of Conservation-manufactured AR4 bat detectors are considered likely to detect long-tailed bats only over short distances i.e., up to 30-60 m distant from the

¹¹ O'Donnell CFJ 2000. Influence of season, habitat, temperature and invertebrate availability on nocturnal activity of the New Zealand long-tailed bat (*Chalinolobus tuberculatus*). New Zealand Journal of Ecology 207-221.

detector (S. Cockburn, Department of Conservation, pers. comm.). This is similar detection distances of other detector types. Ensure the survey design Note that rain and wind can affect detectability because the sounds can have the same frequencies as bat calls. These sounds are picked up by bat detectors, potentially obscuring bat calls.

‘Valid’ survey nights must have the following features:

- Begin one hour before official sunset and end one hour after official sunrise.
- Temperature 8°C or greater for the first four hours after official sunset time for the North Island and 7°C for the South Island¹².
- Ideally no to very little precipitation within the first 4 hours after official sunset, although a light mist or occasional drizzle may be acceptable as assessed by an ecologist accredited with Competency 3.1.
- No to light wind within the first four hours after official sunset.

Prior to the commencement of surveys, ABMs must be checked for correct operation at a site where bat activity is known to be regular, or by using the DOC – Bat Recorder Tester (Tussock Innovation Ltd) phone app made for this and available from Google Play Store. Faulty or suspect ABMs must not be deployed, and ABMs must be redeployed if faults occur.

4c) *Roost watches*

The following weather conditions define a valid night for roost watches:

- Temperature greater than 8°C all night between official sunset and sunrise for the North Island and 7°C for the South Island.
- Ideally no to very little precipitation within the first 4 hours after official sunset, although a light mist or occasional drizzle may be acceptable as assessed by an ecologist accredited with Competency 3.1.

Roost watches should include the deployment of ABMs and analysis of data for the night of the roost watch.

Emergence watches

- Each tree must be watched from at least 1 hour prior to sunset in the South Island and from ½ hour prior to sunset in the North Island until it becomes too dark to see by sufficient people to observe all potential exit points. This must be supported using handheld detectors, and consider the use of night vision aids which can detect bats once it becomes too dark to see. The aim of emergence watches is to identify potential roost locations within the vegetation. Infra-red and thermal imaging cameras will be useful in this process.

Roost re-entry watches

¹² South Island temperatures are based upon O’Donnell (2000) as above. North Island temperatures are based on Borkin et al. 2023. Influence of weather on long-tailed bat detection in a North Island exotic forest. *New Zealand Journal of Ecology*, Vol. 47, No. 1.

The time when bats return to roosts can vary based on temperature and time of year.^{13,14}

- Observers must then return the next morning and watch the tree to determine whether bats return to the vegetation.
- Roost re-entry watch timing should be based on patterns of activity recorded onsite with ABMs, i.e., as a guide, watches should begin two hours prior to when the last passes were recorded on the ABMs on previous nights and finish one hour after official sunrise time. Where this information is not available and at minimum, watches shall begin two hours prior to official sunrise until one hour after sunrise. Infra-red and/or thermal imaging cameras may be useful as a supplementary tool in this process.

The methods above (Climbing and inspecting; ABM use and roost watches) can be implemented as in steps 4.

If bats are sighted, or sign detected, or a roost (active/inactive) is confirmed, the approved person with the appropriate competencies, as soon as possible, shall:

- Call the tree felling supervisor to inform them which affected tree(s) cannot be felled due to detection of bat sign.
- Send an email to the site manager, and the local DOC office if an active roost is found, detailing the results of the survey and outlining the measures for protection or relocating the roost tree. Advice must be obtained at a project level in writing from DOC prior to felling the tree. If you do not know the contact details for the office, you can phone 0800 ASK DOC (0800 275 362) or email info@doc.govt.nz.
- A record (including photos) of any vegetation containing bat roosts shall be kept detailing the date; size, location and species of tree or other vegetation; roost type, e.g., cavity, peeling bark, broken branch; detail outlining how presence of bats was confirmed; the number of bats present; and species present, if known.

Step 5. Fell the tree if no bats present	Response	Who can make this assessment?	When
NB: Vegetation removal must take place on the day of tree inspection or the day immediately following two consecutive emergence/re-entry surveys that confirm that there are no bats present.			
a) If you have undertaken a visual inspection of the vegetation (following step 4a, then the vegetation can be removed ONLY ON THE DAY OF INSPECTION and meets the valid weather conditions (defined in notes 4c) at official sunset the day prior to inspection. If you have undertaken ABM surveys or roost watches 4b or 4c the vegetation can be removed ONLY ON THE DAY IMMEDIATELY		An approved person accredited with the relevant competency (based on method used) who are familiar with the 'Bat First Aid and veterinary care' documents shown in footnote ¹⁵ , and physically able to	When the inspection method chosen allows.

¹³ Dekrout AS. 2009. Unpublished PhD thesis. University of Auckland, New Zealand Pp 168.

¹⁴ Griffiths R. 2007. Activity patterns of long-tailed bats (*Chalinolobus tuberculatus*) in a rural landscape, South Canterbury, New Zealand. New Zealand Journal of Zoology, 34:3, 247-258, DOI: 10.1080/03014220709510083.

¹⁵ Initial Veterinary Care for NZ Bats UPDATED 2023.pdf (doc.govt.nz) and Bat Care Advice for first responders 2023.pdf (doc.govt.nz) available at www.doc.govt.nz/bat-worker-resources

<p>FOLLOWING SURVEY COMPLETION (i.e., if the survey ends in morning the tree can be felled the same day only).</p> <p>Trees must be inspected for signs of bats once felled and before removing from the site, if safe to do so.</p> <p>Follow Appendix 2 if bats are detected during vegetation removal.</p>		check/inspect tree for signs of bats once felled.	
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Appendix 1. Identification of guano.

Bat droppings ('guano') will superficially look like rodent droppings, being dark in colour and a similar size and shape to a large grain of rice. Bat droppings will easily crush under pressure (e.g., when squeezed between fingers) and will disintegrate into a dusty/crumbly substance in comparison to smearing (rodents). Where beetles form part of the bat's diet, crushed droppings can look shiny/glittery due to the presence of elytra. Larger colonies may leave piles of guano at the bottom of the roosting feature (Figure 1). Where individuals or small colonies are present, it is likely that only individual pieces of guano may be found, therefore careful inspection is needed.



Figure 1: Guano at the base of communal long-tailed bat roost. Photo: M. Choromanski

Appendix 2. If bats are detected during tree relocation or removal

NB: Vegetation removal must take place on the day of tree inspection, or the day roost watches have been completed or two consecutive nights of ABM data have confirmed that there are no bats present at that time. If practical, trees are to be inspected for signs of bats once felled and before removing from site. People inspecting trees should be familiar with the Bat Care Advice document shown in footnote¹⁶ and able to check/inspect tree for signs of bats once felled.

If during the felling of a tree bats are detected, felling of that tree must stop immediately if safe to do so, and DOC and an approved person accredited with Competency 2.1 must be consulted.

If bats do not fly away or are potentially injured/found on the ground, felling can only re-start once permission has been obtained from DOC after consultation with an approved person accredited with Competency 2.1.

If bats are detected once the tree has been felled, all further work must stop, and DOC and an approved person accredited with Competency 2.1 must be contacted. The felled tree must be thoroughly inspected by them for further bats.

If any bats are found on the ground or in the tree once felled, place the bat in a cloth bag in a dark, quiet place at ambient (or slightly warmer) temperature and take to a veterinarian for assessment as soon as possible i.e. that day. A maximum of two bats should be kept in one bag. After delivering the bat to the vet, contact an approved person accredited with Competency 2.1 in consultation with the vet and DOC (0800 DOC HOT; 0800 362 468).

¹⁶ Initial Veterinary Care for NZ Bats UPDATED 2023.pdf (doc.govt.nz) and Bat Care Advice for first responders 2023.pdf (doc.govt.nz) available at www.doc.govt.nz/bat-worker-resources

Bats must be kept for three days under observation and must be kept out of torpor for this time. Additional detail is found at the links provided in this footnote¹⁷. Vets must euthanise bats whose injuries are causing suffering and are not likely to heal sufficiently to allow rehabilitation and return to the wild. The approved person accredited with Competency 2.1 and the vet must consult with DOC to consider appropriate rehabilitation options where suffering is minimal and chances of return to the wild are high.

Euthanised bats or any dead bats (or bat parts) found must be handed to DOC and is a legal requirement under the Wildlife Act. If the bat is held for longer than 12 hours, store it in a food grade safe glass jar in the freezer to preserve the bat's smell for the potential use of training conservation dogs.

¹⁷ Initial Veterinary Care for NZ Bats UPDATED 2023.pdf (doc.govt.nz) and Bat Care Advice for first responders 2023.pdf (doc.govt.nz) available at www.doc.govt.nz/bat-worker-resources