

Eastern Busway – EB2/EB3R

Lizard Management Plan

Document Number: EB234-1-PL-RP-Z2-000042

Eastern Busway – EB2/EB3R

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A	18.04.2018	Chris Wedding (Bioresearches)	Lizard Management Plan for AMETI 2 & 3
B	19.05.2022	Morgan Witton (AECOM)	Lizard Management Plan EB2 and EB3R

Document Approval					
Rev	Action	Name	Position	Date	Signature
A	Reviewed by	Dylan van Winkel	Senior Ecologist (Bioresearches)	18.05.2018	On file
B	Reviewed by	Fiona Davies and Matt Baber	Associate Director – Environment (AECOM) and Project Herpetologist (Alliance Ecology)	19.05.2022 and 27.06.2022	On file
C	Reviewed by	Nicola Bishop	Senior Alliance Planner	26.06.2022	On file
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List of Abbreviations and Definitions

Abbreviation and Definitions	Description
ARDS	Amphibian/Reptile Distribution Scheme
AT	Auckland Transport
DOC	Department of Conservation
EBA	Eastern Busway Alliance
EB1	Eastern Busway 1 (Panmure to Pakuranga)
EB2	Eastern Busway 2 (Pakuranga Town Centre)
EB3R	Eastern Busway 3 (Residential)
HRP	Habitat Restoration Plan
LMP	Lizard Management Plan
NoR	Notice of Requirement
RRF	Reeves Road Flyover
WAP	Wildlife Authority Permit

1 Introduction

Eastern Busway Alliance (EBA) has developed this Lizard Management Plan (LMP) on behalf of Auckland Transport (AT) to support the following stages of the Eastern Busway Project:

- The notice for requirement (NoR) and resource consents applications in relation to Eastern Busway 2 (EB2) – Pakuranga Town Centre, including the Reeves Road Flyover (RRF) and Pakuranga Bus Station
- The applications for resource consents in relation to Eastern Busway 3 – Residential (EB3 Residential) – Ti Rakau Drive from South-Eastern Arterial (SEART) to Pakuranga Creek, including Edgewater and Gossamer Intermediate bus stations.

The combined EB2 and EB3 Residential work packages are hereon referred to as 'EB2/ EB3R'.

1.1 Purpose and Scope

The purpose of this LMP is to detail the lizard salvage and relocation procedures that will be required to mitigate effects on native lizards associated with vegetation or site clearance of EB2/ EB3R. This LMP has been informed by a desktop review and site investigations of EB2/ EB3R area to assess potential habitat values for indigenous lizards. The LMP from a previous stage of the overarching EBA project known as Eastern Busway 1 (EB1) and the results of the EB1 lizard salvage operations were also used to inform this LMP.

This LMP should be read in conjunction with the EB2/ EB3R Habitat Restoration Plan (HRP) which will be prepared and submitted to Auckland Council 10 working days prior to the commencement of any construction activity. The HRP will detail the locations and restoration requirements (including the relocation/translocation sites identified under this LMP) to mitigate for the loss of lizard habitat.

All native reptiles are legally protected under the Wildlife Act 1953 and the habitats used by populations of native lizards (particularly threatened species) may be considered significant under the Resource Management Act 1991. LMPs must be actioned by EB2/ EB3R Herpetologist under a valid Department of Conservation (DOC) Wildlife Authority Permit (WAP). Further detail on the WAP process is provided in Section 1.4.1.

1.1.1 Lizard Management Plan Objectives

The LMP objectives are as follows:

- Minimise adverse effects on lizards associated with vegetation or site clearance activities
- Maintain viable lizard populations at relocation sites through habitat restoration and enhancement activities

1.2 Project Description

EB2/ EB3R involves two works packages titled Eastern Busway 2 (EB2) and Eastern Busway 3 Residential (EB3R). These are described separately below.

1.2.1 EB2

EB2 commences from the intersection of William Roberts Road and Pakuranga Road (connecting with EB1) and traverses west to the Ti Rakau Drive / SEART intersection. EB2 will improve safety by simplifying intersections and the provision of extra crossings to the town centre (including more regular crossing intervals). New cycle lanes and walking paths will make it possible to walk or cycle off-road, improving accessibility and safety around the town centre.

Key elements of EB2 include:

- Pakuranga Station - the key station for Pakuranga/Howick users of the busway leading to the Panmure Station and Botany; and
- Reeves Road Flyover (the RRF) - provides for local traffic to bypass the heavily congested Pakuranga Road and Ti Rakau Drive route to the Pakuranga Highway/South-Eastern Arterial Highway (SEART) via an overpass between SEART and Pakuranga Road (north).

An overview of the proposed EB2 works is shown in Figure 1 below.

Figure 1 Overview of EB2



1.2.2 EB3R

EB3R will provide the extension of the Rapid Transport Network from SEART in the west to Pakuranga Creek in the east, including additional walking and cycling infrastructure. The construction of the busway within EB3R will involve a staged approach to construction to minimise disruption on the existing road network.

Key elements of EB3R include:

- A separated busway through the centre of Ti Rakau Drive
- The construction of two new westbound lanes for general traffic
- Two intermediate bus stations, being Edgewater Station and Gossamer Station (interim design)
- The western abutment for a future bridge across Pakuranga Creek, adjacent to the existing Ti Rakau Drive Bridge
- Intersection upgrades along Ti Rakau Drive, including William Roberts Road and Gossamer Drive.

The extent of the EB3R works is shown in Figure 2 below:

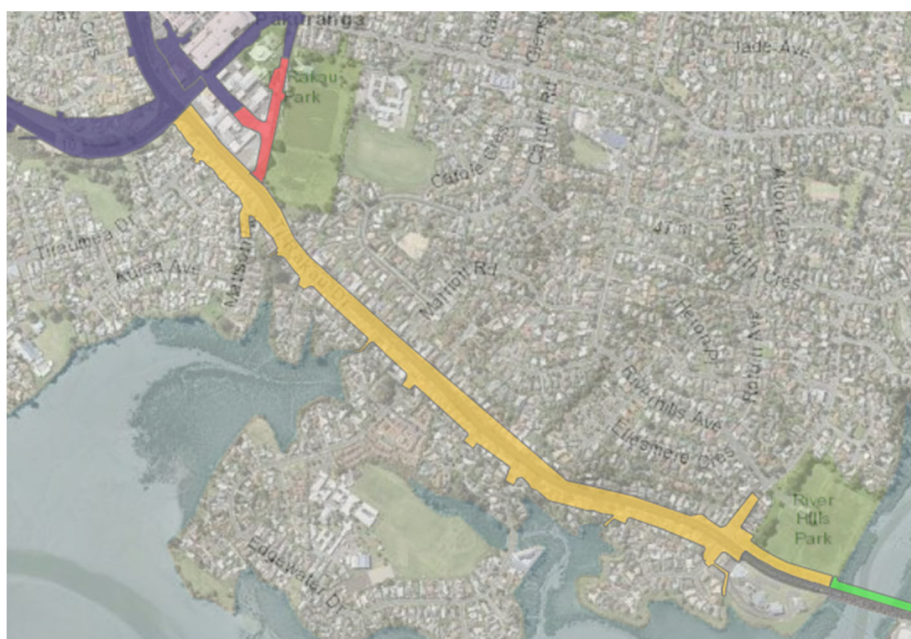


Figure 2 EB3R Location (shown in yellow)

1.3 Roles and Responsibilities

The roles and responsibilities of staff and contractors responsible for implementation of the LMP is set out in Table 1-1 below. Team members will have the appropriate experience, project involvement and responsibility to ensure that all relevant aspects of EB2/ EB3R are considered when making decisions on LMP implementation.

Table 1-1 Roles and Responsibilities

Name	Role	Contact Details	Responsibility
TBC	Environmental Lead	TBC	Overall responsibility for Environmental Management and Performance
Matt Baber (Alliance Ecology)	Suitably qualified and experienced ecologist/herpetologist	Ph: 027 589 5076	Responsibility for implementation of this LMP and any conditions

(WAP # 91322-FAU) ¹	(Project Herpetologist)		associated with the Wildlife Authority Permit.
TBC	Supporting ecologist	TBC	Assisting EB2/ EB3R Herpetologist with implementing this LMP as needed

A checklist of all activities covered by this LMP along with responsibilities has been provided in Appendix I. The listed activities must be carried out satisfactorily, to the standard determined by the Project Herpetologist, to achieve effective lizard management.

1.3.1 Suitably Qualified and Experienced Ecologist/Herpetologist

A suitably qualified and experienced ecologist/ herpetologist (Project Herpetologist) prepared this LMP and is responsible for implementing this LMP. EB2/ EB3R Herpetologist will hold the DOC WAP.

The EB2/ EB3R Herpetologist must be approved by Council and will be responsible for reporting that the lizard related works have been carried out in accordance with the certified LMP within two weeks of completion of the vegetation clearance works.

Upon completion of works, all findings resulting from the implementation of the LMP must be recorded by EB2/ EB3R Herpetologist on an Amphibian/Reptile Distribution Scheme (ARDS) Card (or similar form that provides the same information) which will be sent to Auckland Council.

1.4 Plan Review and Approval

Once certified, minor amendments as a result of changes in design, construction materials, methods or management of effects can be made to the LMP without the need to seek recertification provided that the amendments are agreed to by Council, prior to the implementation of any changes.

The LMP may be submitted in parts or stages to address activities or to reflect the staged implementation of the Project. If submitted in part, the LMP will clearly show the linkage with plans for adjacent stages and interrelated activities.

Any amendments to the certified LMP that may result in a materially different outcome/effect will be submitted to Council to certify these amendments are consistent with the relevant designation and resource consent conditions prior to implementation.

If no written response is received from Council within 10 working days of the management plan being submitted for certification, the LMP will be deemed to have certification and works can commence.

1.4.1 Wildlife Authority Permit

This LMP will be actioned under a DOC WAP. This would either be through the existing Project Herpetologist region wide permit (WAP # 91322-FAU) or a project specific permit depending on the

¹ Auckland Regional Wildlife Act Authority Permit granted to Matt Baber to undertake authorized activities under the Wildlife Act 1953 in relation to native lizards.

number of lizards that will be transferred. If more than 20 lizards require translocation, a EB2/ EB3R project specific permit will be required. In this instance, the WAP application form (<https://www.doc.govt.nz/get-involved/apply-for-permits/application-forms/>) will be prepared and submitted to DOC along with this LMP by the EB2/ EB3R Herpetologist 6 months prior to vegetation/ site clearance that has been identified as lizard habitat within Section 3.2.1 of this LMP (note these areas will be subject to further assessment to confirm potential lizard habitat prior to vegetation/ site clearance taking place).

2 Legislative Requirements

This LMP has been prepared in accordance with the relevant designation and resource consent conditions contained in the condition set submitted with the application. This document is intended to provide a framework and information that will assist in the implementation of these requirements.

If there is a conflict between the LMP and the corresponding legislative requirements, including consent conditions, then the legislative requirements shall prevail.

3 Lizard Management Plan

3.1 Local Lizard Populations

New Zealand has two major groups of terrestrial lizards (Order Squamata): skinks and geckos, both of which occur within the Auckland Region. Ten species of native lizard have been recorded in the mainland Auckland Region (Table 3-1) and all of these are classified as Nationally “At-Risk” or “Threatened” by the Department of Conservation (Hitchmough et al., 2021).

One introduced species, the rainbow skink (*Lampropholis delicata*), is an “Unwanted Organism” Ministry for Primary Industries (MPI) under the Biosecurity Act (1993) and was not considered in this LMP.

Table 3-1- Threat classification of native lizards from the mainland Auckland Region

Species	Threat Category*	Threat Status
Copper skink (<i>Oligosoma aeneum</i>)	At Risk	Declining
Ornate skink (<i>Oligosoma ornatum</i>)	At Risk	Declining
Moko skink (<i>Oligosoma moco</i>)	At Risk	Relict
Striped skink (<i>Oligosoma striatum</i>)	At Risk	Declining
Shore skink (<i>Oligosoma smithi</i>)	At Risk	Naturally Uncommon
Tatahi skink (<i>Oligosoma</i> aff. <i>smithi</i> “Western Northland”)	At Risk	Declining
Forest gecko (<i>Mokopirirakau granulatus</i>)	At Risk	Declining
Pacific gecko (<i>Dactylocnemis pacificus</i>)	At Risk	Relict
Elegant gecko (<i>Naultinus elegans</i>)	At Risk	Declining
Muriwai gecko (<i>Woodworthia</i> aff. <i>maculata</i> “Muriwai”)	Threatened	Nationally Critical

*Threat category as per Hitchmough et al. (2021).

3.2 Project Area and Affected Habitats

EB2/ EB3R Project is located in southeast Auckland within a heavily modified urban environment that spans residential, commercial and industrial environments alongside existing major arterial transport routes. Species recorded within 10 km of EB2/ EB3R area include copper skink, ornate skink, forest gecko and elegant gecko. Forest gecko and elegant gecko are associated with larger areas of established

native vegetation . Copper skink and ornate skink have potential to be present within rough grass or roadside scrub that are present within EB2/ EB3R Area.

Habitat preferences for lizard species potentially present within the footprint are presented below in Table 3-2 **Error! Reference source not found.**

Table 3-2 Native lizard (Mokomoko) species recorded within 10km of EB2 and EB3R

Species	Threat Status (Hitchmough et al., 2021)	Habitat Preferences
Elegant gecko (<i>Naultinus elegans</i>)	At risk - Declining	Forest and scrub, especially kanuka/manuka shrubland
Forest gecko (<i>Mokopirirakau granulatus</i>)	At risk - Declining	Older forest. May persist in remnant stands, scrub, broadleaf and mixed forest and scrub, especially small leaved species with dense growth
Copper skink (<i>Oligosoma aeneum</i>)	At risk - Declining	Open and shaded areas where sufficient cover is available (e.g., rock piles, logs, dense vegetation)
Ornate skink (<i>Oligosoma ornatum</i>)	At risk - Declining	Forest or open areas with deep leaf litter, or stable cover (e.g., deep rock piles, thick vegetation), usually connected to higher value contiguous forest.

3.2.1 Baseline Lizard Survey

The entire Project Area was walked and potential lizard habitats were visually assessed by experienced ecologists in 2018 and then again in 2021.

Within the construction footprints of EB2 and EB3R, several areas of vegetation were identified with the potential to support copper skinks and ornate skinks. This includes areas of planted native vegetation (PL.1), native treeland (TL.1) mixed/ exotic treeland (TL.2), exotic scrub (ES), unmanaged rank grassland (EG) on habitat edges and also present along stream corridors located within and outside the CMA and esplanade reserves. These areas of vegetation have sufficient ground cover (such as tradescantia (*Tradescantia fluminensis*), unmanaged grass, leaf litter and woody debris) to support skink. These areas also had connections with areas of riparian or esplanade vegetation beyond EB2/ EB3R Area where native lizards may also occur.

Specifically, these areas include south of SEART and along Pandora Place Esplanade Reserve, Edgewater River Esplanade Reserve, Fremantle Place Esplanade Reserve and Riverhills Park (Ecological Effects

Assessment [Document number: EB234-1-PL-RP-000031]). These areas should be reviewed and updated prior to vegetation removal as the habitat favourability for lizards may have worsened or improved between the time of the surveys (2018/2021) and vegetation removal.

3.3 Potential Effects on Lizards

A detailed assessment of EB2/ EB3R impacts in relation to lizards and their habitat is detailed in the Ecological Effects Assessment [Document number: EB234-1-PL-RP-000031]. Effects identified include (without mitigation):

- Lizard mortality and/or injury during vegetation clearance
- Permanent loss (and fragmentation) of lizard habitat used for foraging and breeding.
 - 0.34 ha for EB2 and 0.09 ha for EB3R

This LMP details the management measures and methods (Section 5 and 6) to mitigate the effects of lizard mortality and/or injury during vegetation clearance. This LMP should be read in conjunction with EB2/ EB3R Habitat Restoration Plan which details sites where restoration will occur to mitigate the loss of lizard habitat (including the relocation/translocation site detailed as part of this LMP). The Habitat Restoration Plan (HRP) will be prepared and submitted to Auckland Council 10 working days prior to the commencement of construction.

4 Lizard Capture Methodology

Lizard capture and relocation would be associated with vegetation clearance activities (construction-assisted salvaging).

4.1.1 Timeframe

Vegetation clearance under this LMP would be undertaken from September to May inclusive, and during fine and settled weather. Lizard salvaging is not undertaken during winter months because lizards may be in torpor (mild hibernation) and/or are generally inactive so are less likely to be detected during salvaging operations.

4.1.2 Construction-Assisted Salvaging

Removal of all identified vegetation (including low stature ground cover) and any cover objects in associated with vegetation or site clearance would be undertaken in the presence of EB2/ EB3R Herpetologist. This includes:

- Pre-works salvaging to be undertaken by EB2/ EB3R Herpetologist prior to vegetation removal. During this process manual searching of low-stature vegetation, logs, debris and tree bark would be undertaken to capture lizards and areas that should be targeted for machine/excavator searching identified This may include hand raking of leaf litter or low stature vegetation (e.g. tradenscantia) where this can feasibly be undertaken.
- Construction-assisted salvaging would then by undertaken by EB2/ EB3R Herpetologist(s) in association with an excavator or scrub cutter.
 - Excavators used for clearing vegetation within potential lizard habitat areas should be undertaken with a root raker (Figure 3) or toothed bucket so that surface vegetation can be scraped back to ground level in the presence of a herpetologist. Root rakers and toothed buckets are efficient tools for pulling back mat-forming vegetation and other small bushes, such as pampas) that provide habitat for copper and ornate skinks
 - A scrub cutter may be used to reduce habitat and salvage lizards in smaller areas of low-stature vegetation where this is expected to be a more effective than the use of an excavator.



Figure 3 Excavator arm fitted with root raker

4.2 Lizard Handling and Temporary Containment

Native lizards would be captured and handled by a DOC-authorized herpetologist with assistance from an approved ecologist(s). All native lizards will be placed into temporary containment boxes, which would be filled with vegetation matter and leaf litter and misted with water. As far as practicable, lizards would only be held temporarily over the period of active searches or trap inspections (i.e., on the same day of capture), after which lizards would be released at the relocation site.

Note that lizard fences / barriers used to prevent movement of lizards from adjacent areas, such as release sites, into a works area would not be required under this Plan, as the primary method of capture is during vegetation removal.

It is not expected that any lizard taxa with a threat classification higher than “At Risk – Declining” would be present on-site; however, if a more threatened lizard is detected, it would be captured and held temporarily in a containment box, while the Department of Conservation (Auckland Office) is contacted for further advice and/ or instruction.

4.2.1 Relocation Site Selection

The re-establishment, persistence and long-term protection of a displaced lizard relies on a suitable release site(s). A relocation site should offer equal or ideally better prospects for survival and long-term persistence of lizards when directly compared to the original capture site.

Lizards will be released in the coastal marine esplanade reserve area within and adjacent to the habitat restoration areas identified in EB2/ EB3R Habitat Restoration Plan for EB2 and EB3R (within 500m of the EB2/EB3R footprint). Landowner approval will be required prior to translocation taking place. Riparian and esplanade vegetation is protected under the Auckland Unitary Plan; therefore, these areas provide suitable adjacent relocation sites.

5 Lizard Habitat Enhancement

EB2/ EB3R Habitat Restoration Plan will provide the site-specific detail in relation to the lizard habitat restoration sites, including the relocation/translocation site(s) (refer Section 4.2.1). A general outline of these habitat enhancement measures is outlined below.

5.1.1 Enhancement Planting

The planting in the restoration sites will be designed to provide suitable habitat for native skinks and will include native botanical species will provide food (e.g. berries and invertebrates) and habitat complexity. Dense ground cover will maintain moisture and help lizards avoid predation. Occasional larger shrub or smaller tree species may be planted.

Enhancement planting would be undertaken within the first planting season following habitat removal. and would consist of infill planting into the existing vegetation matrix and should consist of locally sourced vegetation suitable for the Auckland Region. Where that area is already planted, it should be provided with buffer planting, where practicable. All planted plants would be maintained for a period of five years, during which time all smothering weeds would be pulled away from plantings. Suitable plant species are listed in Table 5-1 below.

Table 5-1 Recommended Plant Species (low growing and tree/shrub) for Lizard Habitat Restoration Areas

Low growing / groundcover species	
pōhuehue	<i>Muehlenbeckia complexa</i>
NZ Flax	<i>Phormium tenax</i>
Shining karamu	<i>Coprosma lucida</i>
Toe toe	<i>Austroderia fulvida</i>
Carex	<i>Carex comans</i>
Koromiko	<i>Veronica stricta var. stricta</i>
Mingimingi	<i>Coprosma propinqua</i>
Rasp fern	<i>Doodia australis</i>
Rengarenga	<i>Arthropodium bifurcatum</i>
Shrubby tororaro	<i>Muehlenbeckia astonii</i>
Thick leaved coprosma	<i>Coprosma crassifolia</i>
Tūrutu / New Zealand blueberry	<i>Dianella nigra</i>
Wharariki	<i>Phormium cookianum</i> spp. hookeri
Occasional shrub/tree species	
Coprosma	<i>Coprosma rotundifolia</i>
Kānuka	<i>Kunzea robusta</i>
Karaka	<i>Corynocarpus laevigatus</i>
Kohekohe	<i>Dysoxylum spectabile</i>
Māhoe	<i>Melicytus ramiflorus</i>

Low growing / groundcover species	
Mānuka	<i>Leptospermum scoparium</i> <i>var. scoparium</i>
Māpou	<i>Myrsine australis</i>
Mingimingi	<i>Coprosma propinqua</i>
Thin-leaved coprosma	<i>Coprosma areolata</i>

5.1.2 Additional Lizard Refugia

Woody material should be sourced from the release site or nearby to provide additional refuge for native lizards relocated. The quantity and location at each site will be specified in the Habitat Restoration Plan. All lizards would be released into the provided refugia.

5.2 Mammalian Pest Control

Pest control would be undertaken where 20 or more native lizards are relocated into one area. These thresholds recognise a higher value of the habitats affected, where identified, based on the presence of an established population or rarer species.

Pest control operations would target rodents and be initiated along the remaining edge of the habitat for a period of three years by a licensed pest control provider.

Prior to any pest control being undertaken in relation to the specific sites where translocation will occur, a pest control programme will be developed by an Auckland Council approved pest control provider and will be agreed with Auckland Council prior to implementation.

6 Post-Release Monitoring

Post-release monitoring is a general requirement of DOC WAP's issued for the purpose relocating protected wildlife. Where lizards are rescued and relocated from the works site, post-release monitoring would be required only where ≥ 20 "At Risk" or "Threatened" species are relocated.

Monitoring would commence after 12 months and would aim to analyse the outcome of the relocation, mitigation efforts, and determine the need for further management. Lizard monitoring would be required again on Year 3 after the release of salvaged animals. Post-release monitoring must be undertaken and recorded by a suitable qualified and experienced ecologist/herpetologist approved by the council.

Lizard monitoring would be undertaken during the months (November – April inclusive) and employ standard herpetofauna survey techniques such as the use of artificial lizard refuges, in accordance with Department of Conservation SOPs (DOC Biodiversity inventory and monitoring toolbox – Herpetofauna). The methods and intensity of the monitoring regime would reflect the outcomes of the lizard salvage programme (e.g., skinks only: deployment of artificial refuges for at least one month, followed by at least four inspections).

Upon completion of works, all findings resulting from the implementation of the Lizard Management Plan will be recorded by the suitably qualified and experienced ecologist/herpetologist (stated in Section 1.3) on an Amphibian/Reptile Distribution Scheme (ARDS) Card (or similar form that provides the same information) which must be sent to and approved by the Auckland Council.

7 References

Hitchmough, R. A., Barr, B., Knox, C., Lettink, M., Monks, J.M., Patterson, G.B., Reardon, J.T., van Winkel, D., Rolfe, J., Michel, P. 2021. *New Zealand Threat Classification Series 35*. Conservation status of New Zealand reptiles, 2021. 23 p, 978-1-99-115292-3-0.

Singers, NJD; Rogers, GM. 2014. A classification of New Zealand's terrestrial ecosystems. Science for Conservation 325. Department of Conservation, Wellington.

8 Appendices

Appendix I. Lizard Management Plan (LMP) Checklist

Project Start	Responsibility of:	Completed
Lizard Management Plan acceptance and approval	Client/ Auckland Council/ DOC	
Acquisition of Wildlife Act Authorisation (permit)	Client / Project Herpetologist	
On-site lizard management		
Pre-start meeting (if required)	Client/ Project manager/ Project Herpetologist / Ecologists	
Lizard search and salvage operation	Project Herpetologist/ Ecologists / Machine operator (contractor)	
Release site habitat enhancement (refuge placement)	Herpetologist/ Ecologists	
Post-lizard salvage works		
Establishment of mammalian pest control and maintenance	Contractor	
Planting at lizard restoration areas	Planting contractor/ advice from Project herpetologist/ ecologist	
Post-release monitoring (three years after first planting)	Project Herpetologist/ Ecologists	

Appendix II. Areas of Potential Lizard Habitat within Project Area

Potential favourable locations of lizard habitat within EB2 and EB3R project areas



Figure 4 Treeland mixed exotic (TL.2) in EB3R, the ground cover of tradescantia, dense leaf litter and woody debris provides suitable potential habitat for native skink species.



Figure 5 Unmaintained Rank grasses around habitat edges in EB2 provides suitable potential habitat for native skink species.



Figure 6 Southern border of the Pakuranga Highway (EB2), vegetation interspersed with canopy cover (baseline survey site 11)



Figure 7 Vegetation along the Pakuranga esplanade of EB3R which could potentially support native lizard species (baseline survey site 10)

Appendix III. Wildlife Act Authority Permit



Wildlife Act Authority for wildlife on non-public conservation land

Authorisation Number: 91322-FAU

THIS AUTHORITY is made this 19th day of May 2021

PARTIES:

The Director-General of Conservation and where required the Minister of Conservation (the Grantor)

AND

Alliance Ecology Limited (the Authority Holder)

BACKGROUND

- A. The Director-General of Conservation is empowered to issue authorisations under the Wildlife Act 1953.
- B. The Authority Holder wishes to exercise the authorisation issued under the Wildlife Act 1953 subject to the terms and conditions of this Authority.

OPERATIVE PARTS

In exercise of the Grantor's powers the Grantor **AUTHORISES** the Authority Holder under Section 53 of the Wildlife Act 1953 subject to the terms and conditions contained in this Authority and its Schedules.

SIGNED on behalf of the Grantor by Stephanie Bowman, Permissions Manager Hamilton acting under delegated authority
in the presence of:

Witness Signature

A copy of the Instrument of Delegation may be inspected at the Director-General's office at 18-32 Manners Street, Wellington.

SCHEDULE 1

1.	Authorised activity (including the species, any approved quantities and collection methods). (Schedule 2, clause 2)	<p>a. Activity – to catch alive, kill, have in possession, and liberate absolutely protected wildlife under the Wildlife Act 1953 for survey and small-scale salvage.</p> <p>b. Species – As per Schedule 4.</p> <p>c. Quantity – as required subject to schedule 3 clause 1.</p> <p>d. Method –</p> <ul style="list-style-type: none"> i. all skinks, geckos and frogs will be caught using techniques described in the Herpetofauna inventory and monitoring toolbox ii. in accordance with Schedule 3.
2.	The Land (Schedule 2, clause 2)	All private locations within the Auckland Region.
3.	Personnel authorised to undertake the Authorised Activity (Schedule 2, clause 3)	Matt Baber
4.	Term (Schedule 2, clause 4)	Commencing on and including 24 May 2021 and ending on and including 23 May 2026
5.	Authority Holder's address for notices (Schedule 2, clause 8)	<p>The Authority Holders address in New Zealand is:</p> <p>24 Westmere Park Ave Westmere Auckland 1022 New Zealand Phone: 027 589 5076 Email: mbaber@allianceecology.co.nz</p>
6.	Grantor's address for notices	<p>The Grantor's address for all correspondence is:</p> <p>Permissions Team Level 4 73 Rostrevor Street Hamilton, 3204 Email: permissionshamilton@doc.govt.nz</p>

SCHEDULE 2

STANDARD TERMS AND CONDITIONS OF THE AUTHORITY

1. Interpretation

- 1.1 The Authority Holder is responsible for the acts and omissions of its employees, contractors or, agents. The Authority Holder is liable under this Authority for any breach of the terms of the Authority by its employees, contractors or agents as if the breach had been committed by the Authority Holder.
- 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 Authority Holder is only allowed to carry out the Authorised Activity in the Land described in Schedule 1, Item 2.
- 2.2 The Authority Holder must advise the Department of Conservation's local Operations Manager(s) one week prior to carrying out the Authorised Activity in the District, when the Authority Holder intends to carry out the Authorised Activity.
- 2.3 Any arrangements necessary for access over private land or leased land are the responsibility of the Authority Holder. In granting this authorisation the Grantor does not warrant that such access can be obtained.
- 2.4 The Authority Holder and Authorised Personnel must carry a copy of this Authority with them at all times while carrying out the Authorised Activity.
- 2.5 The Authority Holder may publish authorised research results.
- 2.6 The Authority Holder must immediately notify the Grantor of any taxa found which are new to science. In addition, the Authority Holder must lodge holotype specimens and a voucher specimen of any new taxa with a recognised national collection.

3. Who is authorised?

- 3.1 Only the Authority Holder and the Authorised Personnel described in Schedule 1, Item 3 are authorised to carry out the Authorised Activity, unless otherwise agreed in writing by the Grantor.

4. How long is the Authority for - the Term?

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

5. What are the liabilities?

- 5.1 The Authority Holder agrees to exercise the Authority at the Authority Holder's own risk and releases to the full extent permitted by law the Grantor and the Grantor'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 Authority Holder's exercise of the Authorised Activity.

5.2 The Authority Holder must indemnify the Grantor against all claims, actions, losses and expenses of any nature which the Grantor may suffer or incur or for which the Grantor may become liable arising from the Authority Holder's exercise of the Authorised Activity.

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

6. What about compliance with legislation and Grantor's notices and directions?

6.1 The Authority Holder must comply with all statutes, bylaws and regulations, and all notices, directions and requisitions of the Grantor and any competent Authority relating to the conduct of the Authorised Activity. 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.

7. When can the Authority be terminated?

7.1 The Grantor may terminate this Authority at any time in respect of the whole or any part of Authorised Activity if:

- (a) the Authority Holder breaches any of the conditions of this Authority; or
- (b) in the Grantor's opinion, the carrying out of the Authorised Activity causes or is likely to cause any unforeseen or unacceptable effects.

7.2 If the Grantor intends to terminate this Authority in whole or in part, the Grantor must give the Authority Holder such prior notice as, in the sole opinion of the Grantor, appears reasonable and necessary in the circumstances.

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

8.1 Any notice to be given under this Authority by the Grantor is to be in writing and made by personal delivery, by pre-paid post or email to the Authority Holder at the address, fax number 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 3rd 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.

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

9. What about the payment of costs?

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

10. Are there any Special Conditions?

10.1 Special conditions are specified in Schedule 3. If there is a conflict between this Schedule 2 and the Special Conditions in Schedule 3, the Special Conditions will prevail.

11. Can the Authority be varied?

11.1 The Authority Holder may apply to the Grantor for variations to this Authority.

SCHEDULE 3

SPECIAL CONDITIONS

Ownership of absolutely protected wildlife

1. This Authorisation gives the Authority Holder the right to hold absolutely protected wildlife in accordance with the terms and conditions of the Authorisation, but the 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.
2. Unless expressly authorised by the Grantor in writing, the Authority Holder must not donate, sell or otherwise transfer to any third party any wildlife, material, including any genetic material, or any material propagated or cloned from such material, collected under this Authority.

Lizard capture and handling

3. Lizard capture, handling and relocation should be undertaken at a suitable time of year [September-May] when lizards are active, as advised by Personnel listed under schedule 1 clause 3.
4. Capture and handling of lizards must involve only techniques that minimise the risk of infection or injury to the animal.
5. Capture and handling methods shall follow those described in the Herpetofauna inventory and monitoring toolbox <http://www.doc.govt.nz/our-work/biodiversity-inventory-and-monitoring/herpetofauna/>.
6. The Authority Holder must ensure all live capture traps are covered to protect lizards from exposure and minimise stress. Damp leaf litter or other material must be provided to reduce desiccation risk and the bottom of the pit-fall trap must be perforated to allow drainage of water.
7. The Authority Holder must ensure all live capture traps, (e.g. pitfall traps and G-minnow traps), are checked at least every 24 hours.
8. The Authority Holder must sterilise any instruments that come in 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 gear should be thoroughly cleaned and dried between sites.
9. The Authority Holder must ensure lizards are temporarily held individually in a suitable container (e.g. breathable cloth bag) and held out of direct sunlight to minimise the risk of overheating, stress and death.
10. The Authority Holder is strongly encouraged to adhere to current best practice hygiene protocols when visiting sites of known native frog populations to avoid the spread of pest organisms such as chytrid fungus.

11. If any threatened lizard species are found, the Authority Holder must advise the Grantor within one working day and seek further advice.
12. If any lizards should die during the authorised activities of catch, transfer or liberate, the Authority Holder must:
 - a. inform the Grantor within 5 working days; chill the body if it can be delivered within 72 hours, or freeze the body if delivery will take longer than 72 hours; and
 - b. follow the Grantors instructions on where to send the body, along with details of the animal's history; and
 - c. pay for any costs incurred in investigation of the death of any lizard; and
 - d. if required by the Grantor, cease the Authorised Activity for a period determined by the Grantor.

Frog capture and handling

13. The Authority Holder must adhere to the current national Frog Hygiene Protocol as per Schedule 5 of this Authority to minimise the possible spread of chytrid fungus and other pathogens to, within and between the sites listed in Schedule 1 of this Authority.
14. Frog capture and handling methods shall follow those described in the Herpetofauna inventory and monitoring toolbox <http://www.doc.govt.nz/our-work/biodiversity-inventory-and-monitoring/herpetofauna/>, the Frog Hygiene Protocol as per Schedule 5 and the methods listed below, to minimise the risk of injury or death:
 - a. Catch frogs by gently scooping and holding the frog in cupped, gloved hands, or by gently holding the middle of the frog between 1st or 2nd forefingers and thumb. Do not squeeze the frog and never hold it by the legs or head.
 - b. Frogs should be placed in a safe location to avoid accidental trampling. If holding frogs during the day, they must be held out of direct sunlight and bright day light to minimise the risk of overheating, drying out, stress and/or death.
 - c. Release frogs at the original capture point and check bags to ensure every frog has been released. If releasing frogs during the daytime, they should be released next to the cover object under which they were found and gently tapped with a gloved hand to encourage them to return under the refugia.
 - d. New gloves and new bags should be used for each individual frog found.

Mitigation

15. This Authority allows the survey and salvage of a population up to twenty (20) individuals of any lizard species as listed in Schedule 4, and survey only of Hochstetter frogs, by the Personnel listed under Schedule 1 clause 3. If a larger number is estimated at the salvage site, a separate application to translocate over twenty (20) individuals is required.
16. The Authority Holder is permitted to release wildlife only subject to the following:
 - a. lizards that are classified as Not Threatened or At Risk species under the current threat classification system;
 - b. into release site(s) that are assessed by a qualified herpetologist as being of similar or better habitat than the source location, and capable of supporting that lizard species;

- c. into release site(s) that are within five hundred (500) metres of the development footprint (or with consultation and agreement with the relevant DOC Services Manager);
- d. into release site(s) where habitat for that species of wildlife has been enhanced and approved prior to relocation, using accepted techniques such as provision of extra refuges suitable for the species providing protection from predators (e.g. complex rock stack), or long-term predator control; and
- e. into release site(s) where the site has long-term security from development or modification (e.g. Council or DOC- managed Reserves, covenants or District Plan provisions).

If these requirements cannot be met, a separate application is required.

17. Any salvage operation for wildlife shall be accompanied by a Lizard/Ecological Management Plan that outlines, as a minimum, capture and handling techniques to be applied, the proposed relocation release site, management of the release site including provision for protection of relocated wildlife, provision of post-release monitoring, actions that will be followed in the event that Threatened lizard species are found within the development footprint and contingencies should establishment of salvaged wildlife fails. This plan must be provided to the Grantor prior to the salvage activity occurring.

Killing wildlife

18. Where monitoring indicates that population establishment has failed, the Authority Holder must perform actions as set out in the contingencies/adaptive management sections of the Lizard/Ecological Management Plan to ensure adequate mitigation of effects has been achieved.
19. DOC Operations Manager(s) are to be contacted immediately for further advice if wildlife species classified as Threatened are located within the footprint of the proposed development or within the proposed release site. A separate application to translocate Threatened species will be required.
20. The Authority Holder must engage with the relevant tangata whenua prior to any relocation of wildlife taking place in their rohe. Advice on engagement with tangata whenua should be sought from the DOC Operations Manager(s).
21. Once a Lizard/Ecological Management Plan has been prepared the Authority Holder may hold any of the salvaged wildlife in captivity for up to twelve (12) months. Any offspring of the salvaged wildlife born in captivity must be released with the original salvaged wildlife, in accordance with the Lizard/Ecological Management Plan.

Euthanasia

22. If any lizards or frogs are found injured as part of the Authorised Activity, the Authority Holder shall contact the Grantor or a veterinarian to get advice on management of the lizard. The Authority Holder is authorised to euthanise injured lizard(s) or frog(s) on recommendation of the Grantor or a veterinarian.

Reporting

23. A report is to be submitted in writing to the DOC Operations Manager, Auckland Office, auckland@doc.govt.nz and permissionshamilton@doc.govt.nz, within 3 months of each salvage being completed summarising outcomes in accordance with the Ecological Management Plan. Each report must include:
- a. the permission number; and
 - b. the species and number of any animals collected and released; and
 - c. the GPS location (or a detailed map) of the collection point(s) and release point(s); and
 - d. results of all surveys, monitoring or research; and
 - e. description of how the Lizard Management Plan was implemented including any difficulties encountered with capture and handling, how release sites were assessed (e.g. detailed habitat description and habitat map), post release monitoring methods and what contingency actions were required.
24. The Authority holder shall provide an annual report to the Grantor. This report shall be electronically forwarded to the rest of the native Frog Recovery Group and Lizard TAG (and/or to 'Terrestrial Science Unit' if requested), and to permissionshamilton@doc.govt.nz, citing Authority number 91322-FAU. This report shall be submitted by the 31st of December annually. The Authority Holder acknowledges that the Grantor may provide copies of these findings to tangata whenua.
25. Completed Amphibian and Reptile Distribution System (ARDS) cards for all herpetofauna sightings and captures (<http://www.doc.govt.nz/conservation/native-animals/reptiles-and-frogs/species-information/herpetofauna-data-collection/ards-card/>) must be sent to Herpetofauna, Department of Conservation, National Office, PO Box 10420 Wellington 6143 or herpetofauna@doc.govt.nz. within 1 month of sighting or capture.

Cultural

26. The Grantor shall require the Authority Holder to make all reasonable endeavours to attend a Ngāti Manuhiri cultural induction if any herpetofauna are salvaged and relocated within the rohe of Ngāti Manuhiri (<http://www.tkm.govt.nz/iwi/ngatimanuhiri/>). This can be arranged by contacting info@ngatimanuhiri.iwi.nz.
27. The Authority Holder must handle any herpetofauna in a culturally appropriate manner.
28. The Grantor shall require the Authority Holder to inform Ngāti Manuhiri of how many herpetofauna are being relocated and where prior to relocation if in their rohe.

SCHEDULE 4

WILDLIFE SPECIES

Lizards

Common Name	Scientific Name
Copper skink	<i>Oligosoma aeneum</i>
Ornate Skink	<i>Oligosoma ornatum</i>
Shore Skink	<i>Oligosoma smithi</i>
Moko Skink	<i>Oligosoma moko</i>
Elegant Gecko	<i>Naultinus elegans</i>
Forest Gecko	<i>Mokopirirakau grantulatus</i>
Pacific Gecko	<i>Dactylocnemis pacificus</i>
Duvaucel's Gecko	<i>Hoplodactylus duvaucelli</i>
Raukawa Gecko	<i>Woodworthia maculate</i>

Frogs

Common Name	Scientific Name
Hochstetter's frog *Survey only	<i>Leiopelma</i>

SCHEDULE 5

FROG PROTOCOL

Site hygiene:

- All footwear, packs, rainwear and gaiters must be cleaned, disinfected (see Table 1) and dried between sites.
- All clothing must be freshly laundered using hot water or Trigene (including outer clothing) between sites.
- All frog handling/measuring equipment must be disinfected between sites.
- Footwear and gaiters must be cleaned and disinfected at the point of entry to a frog field site.
- Wherever a chemical disinfectant is used (e.g. trigene, bleach, F10) this must be rinsed off after the disinfection time. Ethanol can be air dried.

Frog handling hygiene:

- A new glove(s) must be used for catching and handling each frog (the same glove can be re-used on the same frog if that glove remains isolated from other frogs and/or their body fluid).
- Each frog must be held in a separate plastic bag (one plastic bag is used per capture and then disposed of).
- Each frog must be weighed and measured in the plastic bag.
- If frogs are too small to be measured then callipers should be disinfected between frogs using alcohol wipes (air dry before measuring next frog)
- A new stage platform cover must be used for photographing each frog.
- All stage platform covers must be soaked in 70% ethanol for 30 minutes and air dried between frogs.
 - covers are disinfected daily, sufficient covers must be available for each night so that a clean one can be used for each frog
 - if there are not sufficient covers then they must be cleaned with alcohol wipes and air dried between frogs
- The mirror stage must be disinfected with either 70% ethanol (and air dried) or TriGene or similar product (rinsed thoroughly and air dried) between sites, and wiped with alcohol wipes or 70 % ethanol between successive nights at the same site.
- Minimise handling time to reduce stress and to avoid side effects of stress.
- Sick or dead frogs should be collected and held separately from all other frogs until delivered to the appropriate recipient. All equipment should be thoroughly cleaned and disinfected after use.
- Wherever a chemical disinfectant is used (e.g. trigene, bleach, F10) this must be rinsed off after the disinfection time. Ethanol can be air dried.

Table 1: Disinfection strategies for frog field studies (minimum times and concentrations)

Purpose	Disinfectant	Concentration	Time	Pathogen killed	Rinse required
Disinfecting cloth (e.g. clothing, cloth bags)	Trigene	50mL per 4.5 kg laundry load (do not use detergent, do not overfill)	Normal wash time	Chytrid Ranavirus	Yes
	Hot Wash and complete drying	60°C or greater	15 minutes	chytrid	No
Disinfecting footwear	Sodium hypochlorite (bleach)	1%	1 minute	chytrid	Yes
		4%	15 minutes	ranavirus	Yes
	Trigene	1%	1 minute	chytrid ranavirus?	Yes
	F10	1%	1 minute	chytrid ranavirus?	Yes
	Virkon	1:100	10 minutes	chytrid	Yes
Disinfecting collection equipment, instruments and containers	Sodium hypochlorite (bleach)	1%	1 minute	chytrid	Yes
		4%	15 minutes	ranavirus	Yes
	Trigene	1%	1 minute	chytrid ranavirus?	Yes
	F10	1%	1 minute	chytrid ranavirus?	Yes
	Ethanol	70%	1 minute	chytrid and ranavirus	Air dry
	Complete drying		3+ hrs	chytrid only	No
	Heat	60°C or greater	5 minutes	chytrid	No
			15 minutes	ranavirus	No
	Heat	37 C	4 hours	chytrid	No
Sterilising UV light		1 minute	ranavirus only	No	

Acknowledgements:

Amanda Smale: Archey’s Frog Hygiene And Handling Protocol – Whareorino Forest Amphibian Diseases Group, James Cook University (2004): Hygiene Protocol for Handling Amphibians in Field Studies

R. Webb et al: Additional disinfectants effective against the amphibian chytrid fungus *Batrachochytrium dendrobatidis*. [Dis Aquat Organ](#) 2007 Feb 8; 74(1):13-6