Appendix AJ

Lizard Management Plan

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ecoLogical Solutions
Environmental Consultants

May 2026

Wairākei South
Lizard Management Plan

Submitted to:
Bell Road Limited Partnership

water fauna flora land

Quality Assurance

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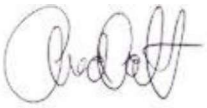

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1.0 Introduction

1.1 Background

Wairākei South is a proposed large-scale c. 350 hectare mixed use development located at 339 Bell Road, Papamoa, Bay of Plenty (Figure 1). The Wairākei South Development proposal was referred as a Fast-track Approvals Act 2024 project and confirmed in December 2024.

As part of the consent application process Ecological Solutions prepared an Ecological Impact Assessment (EcIA) (Ecological Solutions 2026 – Appendix L of the application). This EcIA identified the need to prepare a Lizard Management Plan (LMP) to mitigate adverse effects on indigenous lizards.

The proposed development will result in the clearance of potential lizard habitat consisting primarily of exotic vegetation including areas of rank grass and dense ground cover associated with hedgerows, fenced drains and garden areas surrounding farm dwellings. These areas could provide habitat for native skinks.

No native skinks were observed during field assessments. The DOC Herpetofauna Database records indicate copper skink (*Oligosoma aenum*, At Risk – Declining), moko skink (*Oligosoma moco*, At Risk - Relict) and shore skink (*Oligosoma smithi*, At Risk – Declining) (Hitchmough et al. 2021) have been found in close proximity to the site. Habitat on the site is consistent with habitats used by copper skink more broadly in the Bay of Plenty rural lowlands region. There is no habitat on the site suitable to support other species of ground dwelling lizard, or arboreal lizards, especially given the rural farming history of the site, the complete removal of the original vegetation cover, and the absence of systematic pest animal control over the site. Shore skink are a coastal species found on stony beaches and in dunelands and the habitats on site are not suitable for this species.

The removal of vegetation may adversely affect native lizards via direct injury/death, and habitat loss. Native lizards are absolutely protected under the Wildlife Act 1953.

1.2 Purpose and Objectives of Management

The purpose of lizard management is to minimise adverse effects on lizards during construction and operation.

This will be achieved through the following objectives:

- Capture and relocation of indigenous lizards from identified lizard habitat areas to be affected by vegetation clearance.
- Enhance/augment lizard habitat within the release site through the construction of one artificial refuge (e.g., eco-stack/ piles of logs/branches/stones) for every 1 lizard captured and released. Five artificial refuge(s) to be constructed in advance of lizard salvage, with any additional refuge required to be established concurrently with lizard release.
- Implement predator control within the release area for a period of five years after release.

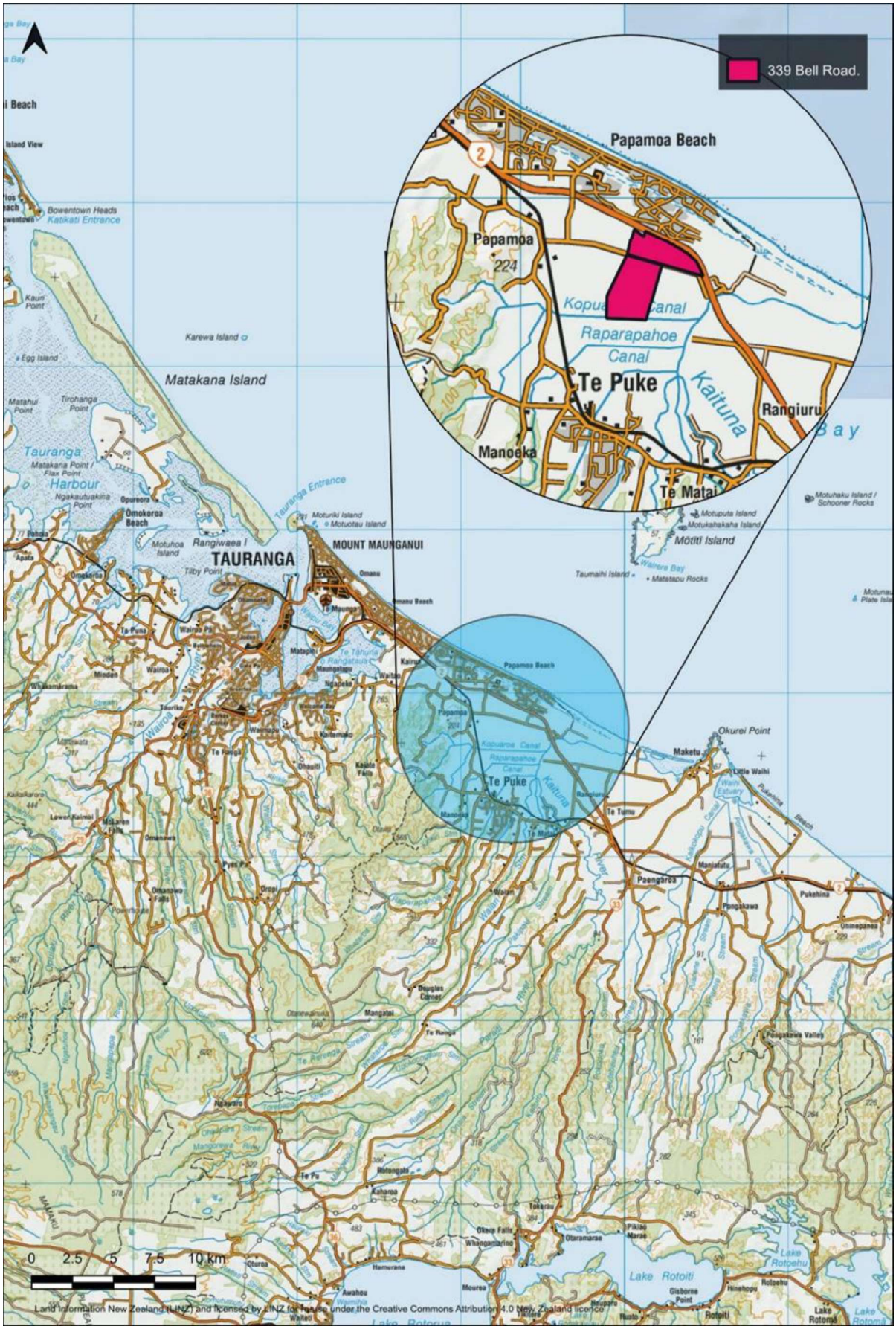

Figure 1: Site location and context.

2.0 Summary of Lizard Values

2.1 Site Description

The site contained largely low-lying flat topography within historic Kaituna River floodplain. The site is bound by farmland to the east and south, State Highway 2 to the north, the Kopuaroa Canal to the south and is bisected by Bell Road and the Bell Road drain.

Vegetation at the site was almost entirely exotic and comprised pasture, shelterbelts and paddock trees. The only indigenous vegetation was occasional cabbage trees (*Cordyline australis*) along the margins of farm drains and as paddock trees and sparse riparian planting of manuka (*Leptospermum scoparium*) and *Cyperus ustulatus* along one drain. The site also contains multiple existing dwellings along with associated ornamental gardens.

The maize block was largely devoid of vegetation due to recent harvesting and no sowing having yet occurred. This block had areas of rank grass along drains and shelterbelts along with occasional cabbage trees.

2.2 Lizard Habitat

The site has been used for agricultural purposes for many decades, and as such the majority of the site is characterised by intensively grazed paddocks which are unlikely to be utilised by ground dwelling lizards. There is no arboreal gecko habitat within the site. Two habitat types that provide potential ground dwelling lizard habitat were identified within the site covering a total area of approximately 6 ha. The spatial distribution of potential skink habitat is provided in Figure 2 and an example of potential habitat is shown in Figure 3 to Figure 5.

- *Hedgerows:* dense grass cover and downed wood along mature tree rows
- *Rank grass:* exotic rank grass and weedy vegetation associated with fence lines and drains.
- *Debris piles/exotic garden vegetation:* mixed ornamental planting around the dwellings with ground cover vegetation, leaf litter and organic/inorganic debris piles.

Table 1: Coverage of potential skink habitat area on-site.

Habitat Type	Quality of habitat for ground dwelling skink on-site	Area (m^2) of skink habitat proposed to be cleared	Likelihood of presence
Hedgerows	Low	c. 20,000	Low
Rank grass	Low	c. 25,000	Low
Debris piles/garden	Moderate	c. 15,000	Moderate

Figure 2: Potential skink habitat distribution across the site.

Figure 3: Potential skink habitat within organic debris piles.

Figure 4: Potential skink habitat within dense grass cover along hedgerows.

Figure 5: Potential skink habitat within rank grass along fence lines and drains.

2.3 Permits

The capture and relocation of native lizards will be carried out in accordance with a valid Wildlife Act Authorisation to be issued by the Department of Conservation.

3.0 Managing Effects on Lizards

3.1 Approach

The approach to lizard management will follow the key principles for lizard salvage and transfer in New Zealand (DOC 2019) presented in Table 2.

Complete avoidance of actual or potential adverse effects on indigenous lizards and their habitats cannot be achieved due to the proposed extent of the project design and the practical difficulty of searching for and capturing lizards at low densities. Therefore, managing adverse effects will involve the implementation of a lizard salvage and relocation campaign in accordance with a Wildlife Act Authorisation, combined with release site habitat enhancement and augmentation as a means of providing additional resources for released and resident indigenous lizards.

Based on the desktop assessment and manual habitat searches it is considered that copper skink are likely the only native lizards species that could be present within the site. Given the site's history, modified and grazed setting, surrounding rural-residential land use, and the limited size and quality of suitable habitat, the potential for supporting a lizard population is considered low (e.g., <20 copper skink).

The lizard salvage methods described in this report are reflective of best practice and are designed to capture ground dwelling lizards. Lizard management methods will involve the supervision of vegetation clearance, as well as manual searching, capture, and relocation, as described in the following sections.

3.1.1 Site Demarcation

Prior to undertaking any lizard salvage activities, the extent of the vegetation clearance and earthworks will be clearly marked (e.g., flagging tape, tree dazzle or pegs) to ensure the project herpetologist clearly understands the full extent of the area of impact. Lizard salvage will be required where vegetation clearance is to be undertaken within identified lizard habitat (Figure 2).

3.1.2 Lizard Salvage

A DOC authorised herpetologist and suitably qualified assistant ecologist(s) will undertake targeted search and salvage campaigns prior to and during vegetation clearance. Vegetation clearance within lizard habitat areas, and therefore lizard search and salvage campaigns, are to be undertaken between 1 October and 30 April inclusive. The search and salvage campaigns will be undertaken in two phases.

- *Phase 1:* Pre-vegetation clearance systematic manual habitat searches and a live capture and relocation programme.
- *Phase 2:* Within Phase 1 areas where native lizards are detected, machine assisted destructive search (vegetation clearance supervision).

The specific salvage methods for each of the phases are detailed below.

Phase 1: Pre-vegetation clearance systematic searches

Diurnal (day) searches will be undertaken.

- Day time systematic manual habitat searches will be undertaken within skink habitat areas to be cleared on days when temperatures are expected to be between 12–20°C, and there is no rain. Manual searches will include lifting debris (e.g., organic and inorganic material), searching through vegetation foliage, scrub/rank grass and rock piles by hand or with the assistance of rakes (Hare 2012a). Potential lizard habitat areas to be cleared of vegetation will be searched for a minimum of 8 person hours, or to the satisfaction of the project herpetologist. Should there be areas where manual habitat searches are not possible, salvage will proceed to phase 2 mechanical assisted searches.

Phase 2. Vegetation clearance supervision and machine-assisted searches

Vegetation clearance supervision and machine assisted searching is a contingency measure, recognising that not every lizard may be captured during Phase 1.

- Destructive searches will involve searching through potential habitat during vegetation removal, and with the assistance of an excavator fitted with a toothed bucket or rake.
- Searches will cover all habitat where native lizards have been detected during Phase 1 works, within the vegetation clearance area and continue until the supervising ecologist is satisfied that the potential habitats are sufficiently removed or degraded that lizards are unlikely to be present. Also included will be areas of blackberry plants even if no lizards are found via hand searching, as these areas cannot be searched well by hand.

Coordination and communication between the supervising ecologist and vegetation clearance contractors will be important to ensure injury to lizards, and the supervising ecologist, is avoided.

Table 2: Department of Conservation Principles of Lizard Salvage.

Principle	Steps to address principle
1: Lizard species' values and site significance must be assessed at both the development and receiving sites	The impact site has been assessed as having low lizard values, that is, likely to contain only copper skinks at low density. This is due to the history of land use, the lack of predator control, and the patchiness of preferred habitat. The receiving site (discussed in **Section 4**) has good quality lizard habitat, predator control and is protected under the Reserves Act.
2: Actual and potential development-related effects and their significance must be assessed	Effects have been assessed in the Ecological Impact Assessment undertaken by Ecological Solutions (2026 – Appendix L of the application). This included an assessment of the values, significance, and adverse effects of the development proposal. Based on the known distribution of native lizard species, the habitat preferences of native lizard species, the availability of habitat at the site, and the history and land use of the site and the surrounding area, approximately 1.9 ha of low-quality copper skink habitat will be removed and a small population (i.e., <10 skinks) affected by the proposed development. Within the local context, this represents a very small proportion of available habitat and population in the local area, regionally, and nationally. All development-related effects that involve disturbance and possible death of indigenous lizards are 'significant' under the Wildlife Act, and as such, this LMP proposes a salvage to minimise injury and death of lizards, improvements to
3: Alternatives to moving lizards must be considered	Alternatives to moving are inappropriate in this instance, due to the potential for mortality if lizards are not moved. However, the release site has been selected so lizards can be moved into a nearby, protected suitable habitat.
4: Threatened lizard species require more careful consideration than less-threatened species	Copper skink are 'At Risk – Declining' threat status. We consider the methods described in this LMP to be robust and suitable for salvage and relocation of copper skink. It is not anticipated that any species with a 'Threatened' status will be found on this site.
5: Lizard salvage, transfer and release must use the best available methodology	Best practice methodology for salvage, processing, and release site assessment are outlined in this LMP based on the size of the estimated population within the development footprint and substantial experience in salvage activities across New Zealand.
6: Receiving sites and their carrying capacity must be suitable in the long term	The release site is subject to animal pest control. Given the small number of lizards expected to be found, the release site's carrying capacity should be suitable.
7: Monitoring is required to evaluate the salvage operation	No post-release lizard monitoring is proposed – simply because the expected number of lizards to be salvaged is very small (i.e., <20 individuals) and because monitoring to robustly record baseline, change in state, and resident versus released animal trends will impose an exceptionally high cost on the project, with a low likelihood that the results will provide a statistically meaningful insight in relocation success.
8: Reporting is required to communicate outcomes of salvage operations and encourage process improvements	Results of lizard salvage including the methods applied, number of lizards salvaged and where they were released and will be reported to the DOC by way of an Amphibian and Reptile Distribution Scheme (ARDS) card and in accordance with any specific Wildlife Act Authorisation conditions
9: Contingency actions are required when lizard salvage and transfer activities fail	If, for any reason, the salvage or transfer activities prove to be ineffective, then the herpetologist will halt operations and redevise a plan in consultation with DOC. This may include, but not be limited to, a reworking of methods, a revision of the spatial scope of the salvage area, a change in the required resources, or a change in the release site.

3.1.3 Lizard Handling and Temporary Containment

All lizards will be placed in a temporary containment box, which will be filled with local vegetation matter and leaf litter and misted with water. Lizards will only be held temporarily for the period of the active searches or retreat inspections, or in all cases less than two hours, after which the lizards will be transported to and released at the approved relocation site set out in Section 4.0 below.

It is not anticipated that any lizard taxa with threat classifications higher than 'At Risk' will be encountered within the site. However, if this were to occur, the individual(s) will be captured and held temporarily in a containment box, and work will cease while DOC (Tauranga Office) is notified, and further advice and instruction is given to the herpetologist.

3.1.4 Data Collection

When a native lizard has been captured, the following morphometric and geospatial information will be recorded:

- Species of native lizard;
- Sex;
- Time and date of capture;
- Age class (adult, sub-adult, juvenile);
- Net weight (minus holding container);
- Length – snout-vent, regenerating tail and original tail;
- Reproductive status;
- Photograph taken of animal (dorsal and ventral view to record colour and scale patterns) and habitat; and
- GPS coordinates of capture site and physical mark on high-definition aerial map of location.

In addition, the total time spent searching and number of personnel involved will be recorded to obtain an estimate of captures per unit search effort across days, habitats, and species.

3.1.5 Unintentional Lizard Injury or Death

Injured lizards will be kept in an appropriate portable enclosure (i.e., a clean, well-ventilated plastic container) under the direction of the project herpetologist to ensure the animal is handled appropriately until the lizard(s) can be assessed and treated.

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

- The project herpetologist will notify DOC (0800 DOC HOT (0800 362 468) at the earliest opportunity within 24 hours after any injured or dead lizard is found.
- Injured lizards found during salvage will be taken to the Hamilton Zoo Native Wildlife Rehabilitation team (07 838 6720 - 183 Brymer Road, Hamilton) as soon as possible for assessment and treatment.

- Any ‘Threatened’, ‘At Risk’ lizard species death shall be sent to Massey University Wildlife Post-mortem Service for necropsy.
- Appropriate measures will be undertaken to minimise any further lizard deaths.

3.1.6 Lizard Salvage Timeframe

The duration of the pre-clearance manual habitat searches will be undertaken over a period of four days of suitable weather (i.e., temperatures between 12–20°C). However, the following contingency plan is proposed to ensure that all reasonable effort is made to salvage every lizard. If:

- No lizards have been caught over the 4-day search period or the herpetologist has determined that the habitat is no longer suitable to support lizards, the salvage operation will cease, OR
- Lizards are still being caught on day four, searching will continue until no lizards are captured within a 24-hour period employing the same search effort.

4.0 Lizard Release

4.1 Release Site

The successful transfer, re-establishment and sustainability of relocated lizards is dependent on the quality and suitability of the relocation site. A relocation site should be in the same Ecological District, offer equal or greater opportunity (i.e., shelter, food resources, access to mates) for survival and long-term health of lizards compared to the habitat of origin. The location of the primary and contingence release site are shown in Figure 6 and described below.

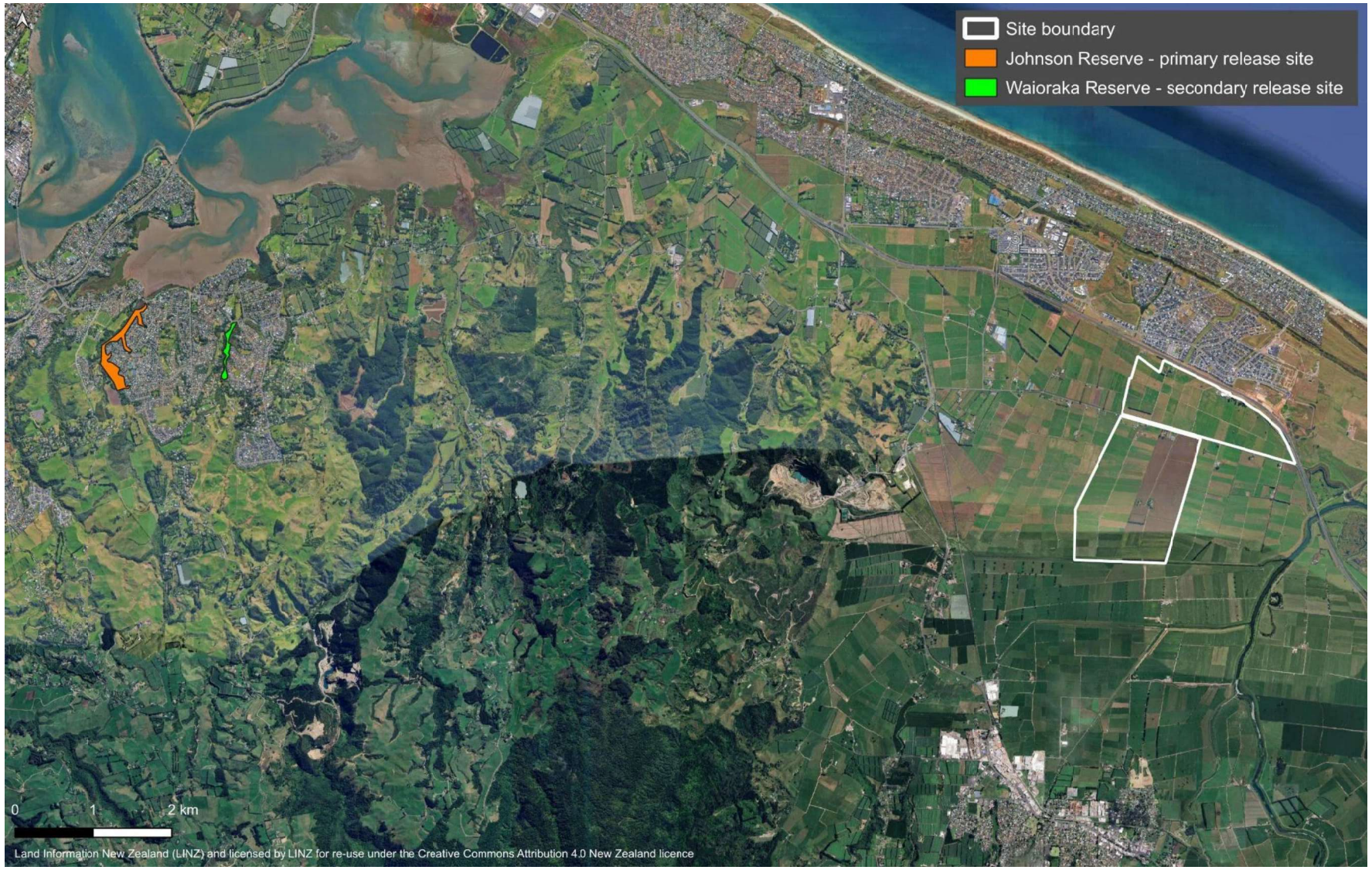

Figure 6: Proposed release site and contingency site.

4.1.1 Primary Release Site

The designated release site is Johnson Reserve (14.6 ha), situated in Welcome Bay (Tauranga Ecological District), as shown in Figure 6. Johnson Reserve is an Ecological and Recreational Linkage Reserve managed in accordance with the Tauranga City Council Reserve Management Plan and includes pest management. The majority of the reserve is identified as a Special Ecological Area (SEA) Category 2 within the City Plan.

This local reserve offers a diverse range of favourable habitat types (Figure 7), and regular pest animal control, well suited for a release site. The following suitability factors in Table 3 were assessed to evaluate the suitability of the proposed release site.

Figure 7: Representative example of suitable habitat at Johnson Reserve.

Table 3: Johnson Reserve suitability for lizard relocation.

Suitability factor	Release site description
Suitability of existing habitat	The habitat in its current state is suitable for native lizards and comprised low-stature rank herbs and grasses, with ample woody debris piles providing suitable cover, and well-established native riparian vegetation, including kānuka, tree ferns, cabbage tree, harakeke and sedges. The site is already established and ready for lizards to be released in to. The site is listed in the Tauranga Reserves Management Plan as an Ecological and Recreational Linkage Reserve and is subject to pest control (Tauranga City Council 2019)
Long-term protection of the site	The release site is protected under the Reserves Act 1977 and is protected from development.
Accessibility for release	Johnson Reserve is within proximity to the salvage site i.e., within 11 km (c. 20 minutes by vehicle), and provides easy access through public walking tracks and spaces.
Size of the release site and its connectivity to other habitat	Johnson Reserve is approximately 14.6 hectares in size and provides good connectively to habitat types within the reserve, including woody debris, rank vegetation and basking areas, native riparian shrubland and forested corridors.
Habitat enhancement opportunities	One artificial refuge (e.g., eco-stack/ piles of logs/branches/stones) for every 1 lizard captured and released.
Existing lizard populations	The existing population of lizards at the proposed release site is unknown, but the existing habitat is expected to have a high carrying capacity.
Existing predator control or opportunities to enhance predator control	Predator control is carried out at the site in accordance with outcomes required for Ecological and Recreational Linkage Reserves (Tauranga City Council 2019).

4.1.2 Contingency Release Site

If the primary site becomes unsuitable prior to release due to unexpected circumstances, captured lizards will be relocated to Waioraka Reserve (3.7 ha), situated in Welcome Bay (Tauranga Ecological District), as shown in Figure 6.

Waioraka Reserve is an Ecological and Recreational Linkage reserve managed in accordance with the Tauranga City Council Reserve Management Plan and includes pest management. Photographs of suitable habitat at Waioraka Reserve are provided below in Figure 8.

Figure 8: Representative example of suitable habitat at Waioraka Reserve.

4.2 Release Strategy

All lizards will be hard released (i.e., no staging pens) into appropriate habitat within the approved relocation site. It is expected that the nature of the release site and its ongoing pest control will assist in achieving high survival and sustainability of relocated lizards.

All relocated lizard species will be recorded and measured with basic morphometric features photographed where possible.

5.0 Reporting and Closure

The project herpetologist will report the results of the lizard relocation work to Bell Road Limited Partnership and BOPRC within 20-days of completion. Results of lizard salvage including the methods applied, number of lizards salvaged and where they were released will be reported to the DOC by way of an Amphibian and Reptile Distribution Scheme (ARDS) card and in accordance with any specific Wildlife Act Authorisation conditions.

Results will include the following information:

- Date and time of capture.
- Capture method(s).

- Lizard species caught.
- Number caught (including any accidently killed).
- Length range.
- Health/condition (i.e., visible disease or injury).
- Location of release.

The Project herpetologist will notify DOC at the earliest opportunity within 24 hours after any injured or dead lizard is found. All lizard capture data will be uploaded to the DOC Herpetofauna Database.

Lizard management may be considered closed after salvage operations are completed.

6.0 References

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