ecoLogical Solutions
Environmental Consultants





July 2025

Ashbourne
Ecological Management Plan

Submitted to:

Matamata Developments Limited

water fauna flora land

Quality Assurance

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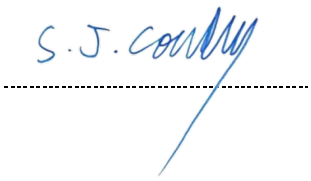
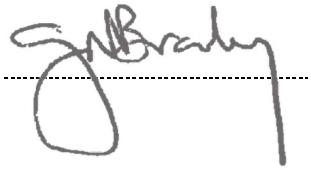
	Dr. Simon Connolly Ecologist	
Reviewed by:	Dr. Gary Bramley Director, Senior Terrestrial Ecologist	
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1.0 Introduction

1.1 Background

Matamata Development Limited are seeking approval via a fast-track application for a proposed development, known as Ashbourne, at 247a Station Road, Matamata. The four-precinct development is framed around a central spine road which runs from Station Road to the north of the site, down to the eastern boundary. Intersecting this is a secondary spine road connection to link the wider residential precinct to the commercial node, green space and greenway. Specifically, the four precincts include Solar Farms, a Greenway Corridor, Residential Community and Retirement living.

Ecological Solutions was engaged to prepare this Ecological Management Plan (EMP) to manage actual and potential adverse effects on the terrestrial and freshwater ecological values. This EMP is supplementary to the Ecological Impact Assessment prepared by Ecological Solutions (Ecological Solutions 2025).

1.2 Purpose of the EMP

The purpose of this EMP is to identify, protect, manage, and enhance the ecological values potentially affected by the Ashbourne development and streamline the development process. This EMP aims to ensure that ecological considerations are integrated into the design, construction and operational phases of the project, consistent with sustainable management principles under the Resource Management Act 1991 and the intent of the Fast-track Approvals framework. Specifically, this EMP aims to:

- Avoid, remedy or mitigate (as appropriate) adverse effects on indigenous biodiversity, habitats of threatened species, and ecologically important areas as identified in the ecological impact assessment (Ecological Solutions 2025).
- Implement best-practice ecological management through transparent processes.
- Support the maintenance or improvement of ecosystem health, connectivity, and resilience in the project area.
- Consolidate all ecological mitigation, restoration and enhancement measures under a single, coordinated structure.
- Ensure compliance with relevant consent conditions and statutory obligations.
- Facilitate timely delivery of the project while safeguarding long-term ecological outcomes.
- Simplify certification, monitoring, and reporting processes for mana whenua and regulating agencies; and
- Enable staged review and closure of monitoring requirements once performance measures have been met.

1.3 Structure of the EMP

This Ecological Management Plan has the following sections:

- Responsibilities (Section 2.0)
- Bird Management Plan (Section 3.0).
- Bat Management Plan (Section 4.0).

- Lizard Management Plan (Section 4.3.3)
- Fish Management (Section 6.0).
- Summary (Section 7.0).

2.0 Responsibilities

2.1 Matamata Development Ltd

Coordination of specific roles, functions and responsibilities will be undertaken by Matamata Development Ltd as the holder of the consents and authorisations. Matamata Development Ltd will establish systems and standards that ensure the timely and efficient implementation of management actions and resolve any trade-offs that arise.

Accountability for the delivery of management actions and the achievement of expected outcomes will be embedded in the resource consent and Wildlife Act Authorisation conditions relating to the certification and implementation of the EMP and reporting on its outcomes.

Waikato Regional Council are responsible for certifying this EMP and monitoring compliance.

2.2 Contractor Responsibilities

Contractors have the following responsibilities:

- Observing and adhering to the requirements of the EMP.
- Native plant purchasing and planting/maintenance.
- Predator management/control.
- Details of the implementation and works schedules for the EMP are to be included in the contractors Implementation Plan and Contract Works Schedule.

2.3 Ecologist Responsibilities

Ecologists have the following responsibilities:

- Overseeing ecological aspects of the EMP and working with the contractor(s) to ensure the EMP delivers the ecological enhancements set out in the plan.
- Department of Conservation ('DOC') certified bat expert will carry out roost checks and bat roost protocols, as outlined in section 4.0.
- DOC authorised herpetologist will carry out implementation of the Lizard Management Plan (see section 4.3.3).

3.0 Bird Management Plan

3.1 Introduction

Existing trees and shrubs on site provide potential nesting habitat for indigenous birds. Birds using the site are common, widespread species typical or rural and semi-urban areas and will readily habituate to disturbance. Nonetheless, almost all indigenous birds are absolutely protected under the Wildlife Act (1953). Vegetation clearance during the construction phase of the proposed Ashbourne development has potential to cause direct injury or mortality of nesting birds, nestlings, and eggs if undertaken during the breeding season (September to February inclusive) and not managed.

3.2 Purpose and Objectives of Bird Management

The purpose of bird management is to ensure the maintenance of existing absolutely protected indigenous bird populations during construction and operation of the site.

This will be achieved through the following objectives:

- Avoidance of vegetation clearance during the peak breeding season, where possible.
- Implementation of appropriate pre-clearance bird nest surveys, avoidance setbacks and monitoring protocols for vegetation clearance during the breeding season that cannot be avoided.

3.3 Approach

3.3.1 Vegetation clearance

Where practicable, vegetation clearance will be avoided during the bird breeding season (September – February inclusive). Clearing vegetation outside the bird breeding season will require no specific management of birds.

If vegetation clearance must occur within the bird breeding season, the following measures will be implemented to minimise impacts on native bird nests, eggs and chicks:

- No more than seven days prior to vegetation clearance, a bird nest survey will be undertaken by a suitably qualified and experienced ecologist.
- Where required, assistance from a climbing arborist and/ or drone will be used to identify bird nests, i.e., where trees are too tall or dense to properly assess from the ground.
- No more than seven days after determining no active nests were found, trees must be felled.
- If active nests of native species are found, a 20 m setback will be established around the nest. This area is to be clearly marked, cordoned off and left undisturbed until nesting birds have been confirmed to have fledged or nests determined to have been naturally abandoned by a suitably qualified ecologist.
- Record keeping will include the collection of: date and time, GPS location and/or area of checking, and the outcome of bird nest checks (i.e., presence or absence of active nests).

3.4 Reporting and Closure

Any death or injury of native birds will be reported to the DOC and local iwi. Bird management may be considered closed after the safe removal of trees with no further monitoring required.

4.0 Bat Management Plan

4.1 Introduction

Long-tailed bats (*Chalinolobus tuberculatus*) have been recorded using the site. The proposed development will both directly and indirectly impact long-tailed bats and bat habitat through vegetation clearance and the introduction of artificial light. Long-tailed bats are Threatened - Nationally Critical and are absolutely protected under the Wildlife Act (1953).

4.2 Purpose and Objectives of Management

The purpose of bat management is to avoid injury to, or mortality of, long-tailed bats during construction and minimise disturbance of long-tailed bats during operation.

This will be achieved through the following objectives:

- Avoid clearance of potential bat roost trees outside the period of greatest bat activity (October to April inclusive).
- Implementation of the Department of Conservation's Bat Roost Protocols (DOC 2024) prior to the felling of any 'high risk' potential bat roost trees.

4.3 Approach

4.3.1 Project bat ecologist

Implementation of the bat management plan is to be supervised by a DOC certified competent bat specialist. The project bat ecologist (PBE) will be experienced at implementing bat management protocols and a recognised Level 3.3 competent bat ecologist (DOC 2024).

4.3.2 Bat roost protocols

Implementation of the Bat Roost Protocols version 4 (DOC 2024) will ensure adverse effects on bats are avoided by:

- Identifying potential roost trees requiring management (Figure 1).
- Specifying timing of tree clearance.
- Undertaking pre-clearance acoustic monitoring and visual roost watch surveys where required.
- Outlining actions for detecting and encountering bats during pre-felling.
- Felling trees within the recommended window when bats are most active and environmental conditions are most suitable (i.e., between October–April inclusive).

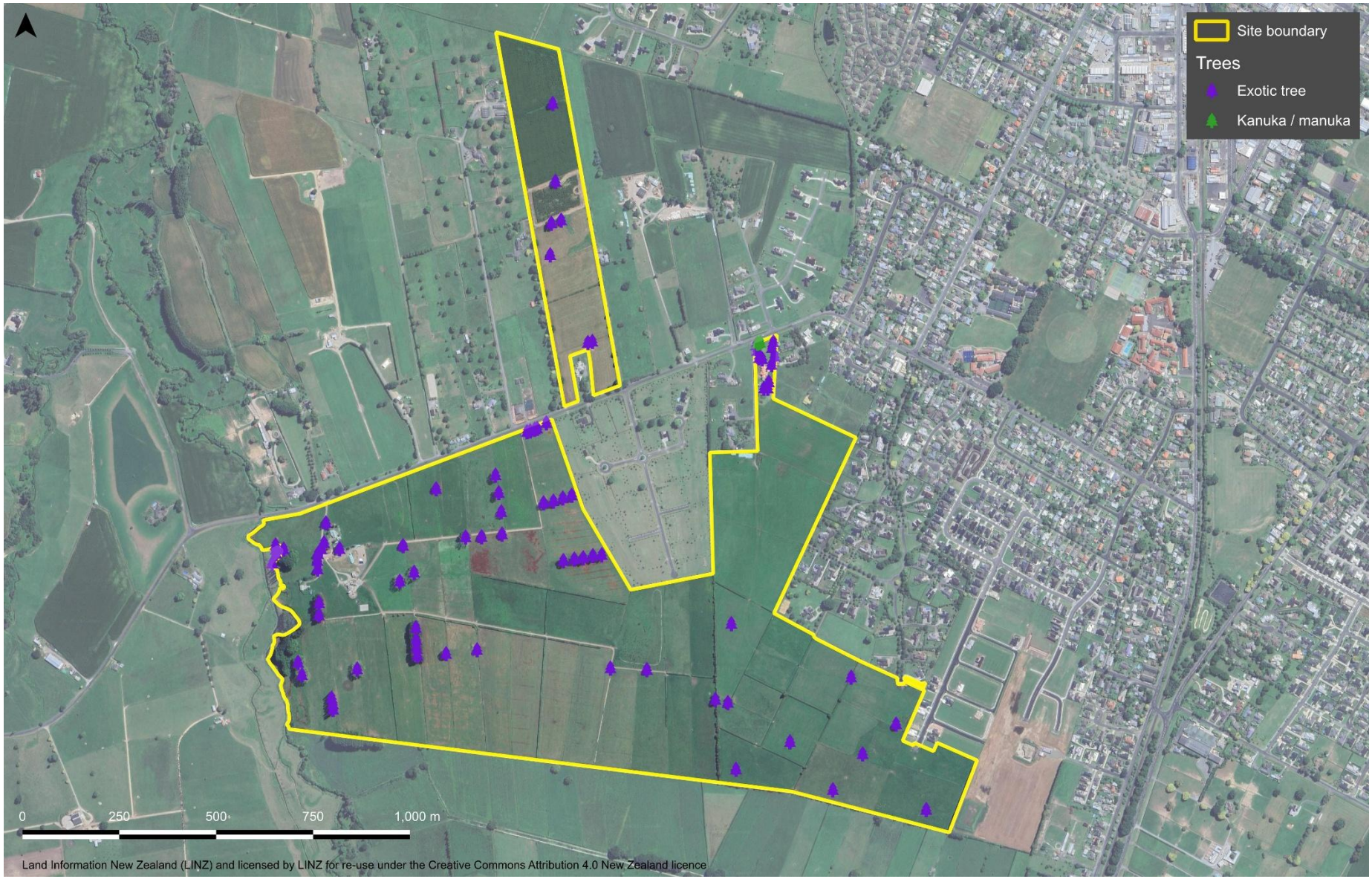

Figure 1: Trees of 15 cm DBH or greater that should be inspected for bat roost features.

4.3.3 Bat sensitive lighting design

Artificial lighting can adversely affect behaviour in long-tailed bats (Schamhart et. al 2023). To mitigate the effects of artificial lighting on long-tailed bats using the site, bat sensitive lighting design is to be incorporated into the Ashbourne development within 200m of the Esplanade Reserve along the Waitoa River.

The following bat sensitive design elements (adapted from guidance in the Hamilton City Operative District Plan (Chapter 25.6 Lighting and Glare)) are proposed to minimise effects of long tailed bats.

Specific measures to be adhered to within 200m of the Esplanade Reserve along the Waitoa River:

- All fixed outdoor lighting is to be downward directional, baffled and angled so as to emit no direct upward illumination.
- Be mounted as low as practicable.
- Have a maximum colour temperature of 2700K emitted from white LEDs.
- Any security lighting will be controlled via timers to activate for less than 5 minutes.
- Illuminance from fixed artificial lighting shall not exceed 0.3 lux (horizontal and vertical) at any height at the external boundaries of the Esplanade Reserve

4.3.4 Offsetting loss of roost features

If active bat roost features are found (i.e., bats are observed) prior to tree clearance or during felling operations, artificial roosts will be provided within the Esplanade Reserve at a ratio of three artificial roosts for every one actual roost discovered (e.g. 3:1) as soon as practical following tree felling. These may be natural (e.g., relocation of felled trees with confirmed roost features) or artificial (e.g., Kent bat boxes or artificially created crevices/cavities in existing trees).

4.4 Reporting and Closure

4.4.1 Lighting

- A baseline report prepared by a lighting specialist prior to development to determine light levels in the current landscape will be prepared.
- Two one-off reports by a lighting specialist will be prepared to confirm that the lux limits are being met. One after the southern Solar Farm is developed and another after the Retirement Living development street and residential lighting is installed.

4.4.2 Bat roosts

- A compliance monitoring report will be prepared following the completion of each season of vegetation removal which includes:
  - Confirmation that vegetation removal was undertaken in accordance with the Bat Roost Protocols and associated consent conditions.
  - Details of the works undertaken prior to the removal of high-risk bat roost trees (i.e., species, DBH, total number of trees, GPS coordinates, description of acoustic monitoring undertaken and results).

  - Recommendation (if any) on potential changes to improve the effectiveness of bat management in relation to this project.
  - If injured or dead bats are found during tree felling, DOC will be notified immediately and a report documenting the protocols undertaken will be completed.
- Any artificial roosts to be installed to offset natural roost loss will be marked by GPS and monitored annually in late summer for the first five years.
  - Results of this monitoring and any artificial roosts requiring replacement will be reported in an annual monitoring compliance report.
- Bat management may be considered closed/completed following the submission and acceptance of the compliance monitoring report.

5.0 Lizard Management Plan

5.1 Introduction

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 and fenced drains. These areas could provide habitat for native skinks.

No native skinks were observed during field assessments. The DOC Herpetofauna Database records indicate that copper skink (*Oligosoma aeneum*) have been found in close proximity to the site and habitat on the site is consistent with habitats used by copper skink more broadly in the Waikato rural lowlands region. There is no habitat on the site that could 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.

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.

5.2 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.

5.3 Lizard Habitat

Typical habitat that may be utilised by copper skinks at the site is summarised in Table 1 and presented in Figures 2 - 5. A map of the spatial distribution of potential copper skink habitat across the site is presented in Figure 9.

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

Habitat Type	Quality of habitat for copper skink on-site	Area (m^2) of lizard habitat proposed to be cleared	Likelihood of presence
Barberry Hedgerow	Low	c. 13,520	Low
Barberry/Hawthorn Hedgerow	Moderate	c. 2,900	Low
Rank grass/farm drains	Low	c. 2,500	Low
Blackberry/ debris piles	Moderate	c. 0.01	Moderate

Figure 2: Potential copper skink habitat. Barberry hedgerow and rank grass along dry farm drain.

Figure 3: Potential copper skink habitat. Rank grass and stump refuge along dry farm drain.

Figure 4: Potential copper skink habitat. Barberry/hawthorn hedgerow and debris pile.

Figure 5: Potential copper skink habitat. Blackberry and coarse woody debris refuge.

5.4 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.

5.5 Approach

5.5.1 Introduction

The approach to lizard management will follow the principles set out by the Department of Conservation for lizard salvage and transfer in New Zealand (DOC 2019).

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.

Notwithstanding the absence of any confirmed lizard presence within the Ashbourne site, the lizard salvage methods described in this report are reflective of best practice and are designed to capture ground dwelling lizards.

5.5.2 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 9).

5.5.3 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 October and April inclusive. The search and salvage campaigns will be undertaken in two phases.

- *Phase 1:* Pre-vegetation clearance systematic manual habitat searches, use of artificial cover objects 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 and live trapping programme

Systematic Searches

Diurnal (day) searches will be undertaken.

- Day time systematic manual habitat searches will be undertaken within lizard 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., logs, rocks, and organic and inorganic material), searching through vegetation foliage, scrub/rank grass

and rock piles by hand or with the assistance of rakes (Hare 2012a).

Live Trapping

The following trap types will be used prior to vegetation removal:

- Artificial Cover Objectives (ACO) or Retreats (Lettink 2012).

ACOs are an effective means of salvaging skinks. ACOs comprise 475 mm x 500 mm sheets of corrugated Onduline™ (a bitumen saturated material) laid in double or triple stacks with a 5 – 10 mm gap between the sheets and between the sheet and the ground. ACOs will be installed in areas of potential habitat to be cleared and where lizard encounters are considered possible, including where vegetation is dense and supports good ground cover for skinks. ACOs will also be placed within the proposed release site.

Proposed locations for ACOs are shown in Figure 9.

- ACOs will be installed at least six weeks to allow colonisation by lizards after which time they will be checked over a minimum 4-day trapping period before vegetation clearance and earthworks commences.
- All native lizards will be released at the designated release site (set out in Section 5.5.7) immediately upon capture.

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.

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.

5.5.4 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 5.4.7 below.

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

5.5.4.1.1 Morphometrics

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

- Species of native lizard;
- Gender;
- 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.

5.5.5 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.

5.5.6 Lizard salvage timeframe

The duration of the pre-clearance manual habitat searches, and live trapping 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/ trapping 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 and trapping will continue until no lizards are captured within a 24-hour period employing the same search effort.

5.5.7 Lizard release

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 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 following criteria have been used in determining a suitable relocation site.

- Habitat quality – ensure the relocation habitat is representative (equal or greater quality), than the original capture site(s).
- Proximity to original population – limit the distance that lizards are relocated from their original capture site(s) to <500 m as much as is practicable.
- Security – ensure legal protection in perpetuity of relocation habitat.
- Species competition – confirm the presence of resident indigenous lizards and limit the potential adverse effects of intra- and inter-species competition at the relocation site.

The designated release site is within suitable habitat in the proposed Esplanade Reserve along the Waitoa River. Both Ngāti Raukawa and Ngāti Hinerangi have been consulted by Barkers and are supportive of the use of the Esplanade Reserve as a release location for any taonga found. The proposed release site location is identified in Figure 9 and an example of the current habitat is presented in Figure 6 and 7.

The fallowing suitability factors were assessed to evaluate the suitability of the proposed release site.

Table 2: Proposed release site suitability

Suitability factor	Release site description
Suitability of existing habitat	The c. 0.5 ha release site has a generally north-westerly aspect with a mixture of juvenile rimu and mature kahikatea and poplar surrounding an old oxbow wetland with pasture margins to the east. Ground cover is dominated by tradescantia providing a source of invertebrates for forage and suitable cover.
Long-term protection of the site	The release site is located within a proposed 20m wide esplanade reserve to be vested to Council. Esplanade reserves are established under the Resource Management Act 1991 (RMA) and are protected from development. They are specifically designed to protect riparian margins, and serve purposes like conserving ecological values, and providing public access.
Accessibility for release	The release site is nearby to the salvage sites (i.e., on the same property) and accessible through a combination of driving (four-wheel drive farm track) and walking. The time to travel between any part of the salvage site and the release site is less than 30 minutes.
Size of the release site and its connectivity to other habitat	The release site is approximately 0.5 hectares and is connected to further Esplanade Reserve area which is proposed to be ecological enhanced through planting of native vegetation species. It is expected that the habitat available is large enough to accommodate the relocated lizards (and resident lizards). Ecological enhancement may provide potential for population increase over time.

Suitability factor	Release site description
Existing lizard populations	The existing population of lizards at the proposed release site is expected to be low due to the extensive historic farming activities adjacent and the absence of any systematic predator control.
Existing predator control or opportunities to enhance predator control	There is no existing predator control at the site. It is likely that a range of exotic predators are present.

If the primary site becomes unsuitable prior to release, captured lizards will be relocated to Centennial Drive Reserve in the town of Matamata. Centennial Drive Reserve is a botanical park which is managed in accordance with the Matamata – Piako District Council General Policies Reserve Management Plan.

Release strategy

All lizards will be hard released (i.e., no staging pens) into appropriately enhanced habitat within the approved relocation site. It is expected that habitat enhancement will assist in achieving high survival and sustainability of relocated lizards at the release site.

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

Figure 6: Proposed release site habitat (foreground)

Figure 7: Proposed release site habitat (foreground)

5.5.8 Lizard habitat enhancement/augmentation

Artificial lizard refugia habitat will be constructed within the release area using coarse wood debris/log piles to create ‘eco-stacks’ Figure 8 . Eco-stacks are designed to provide adequate refuge habitat and thermal protection for released lizards. Eco-stacks will be created under the supervision of a suitably qualified herpetologist and at a ratio of one eco-stack for every 1 lizards 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.

Predator control across the entire Esplanade Reserve will also be undertaken if greater than 10 lizards are released. Predator control will be undertaken for a period of five years to assist in lizard establishment through minimising the threat of predation by existing and newly recruited predators.

Figure 8: Examples of artificial refuge (eco-stacks/log piles)

5.6 Reporting and Closure

The project herpetologist will report the results of the lizard relocation work to Matamata Development Limited and Waikato Regional Council within 20-days of completion. 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.

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.

Records of predator control within the release site will also be maintained.

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 the completion of five years of predator control within the release site.

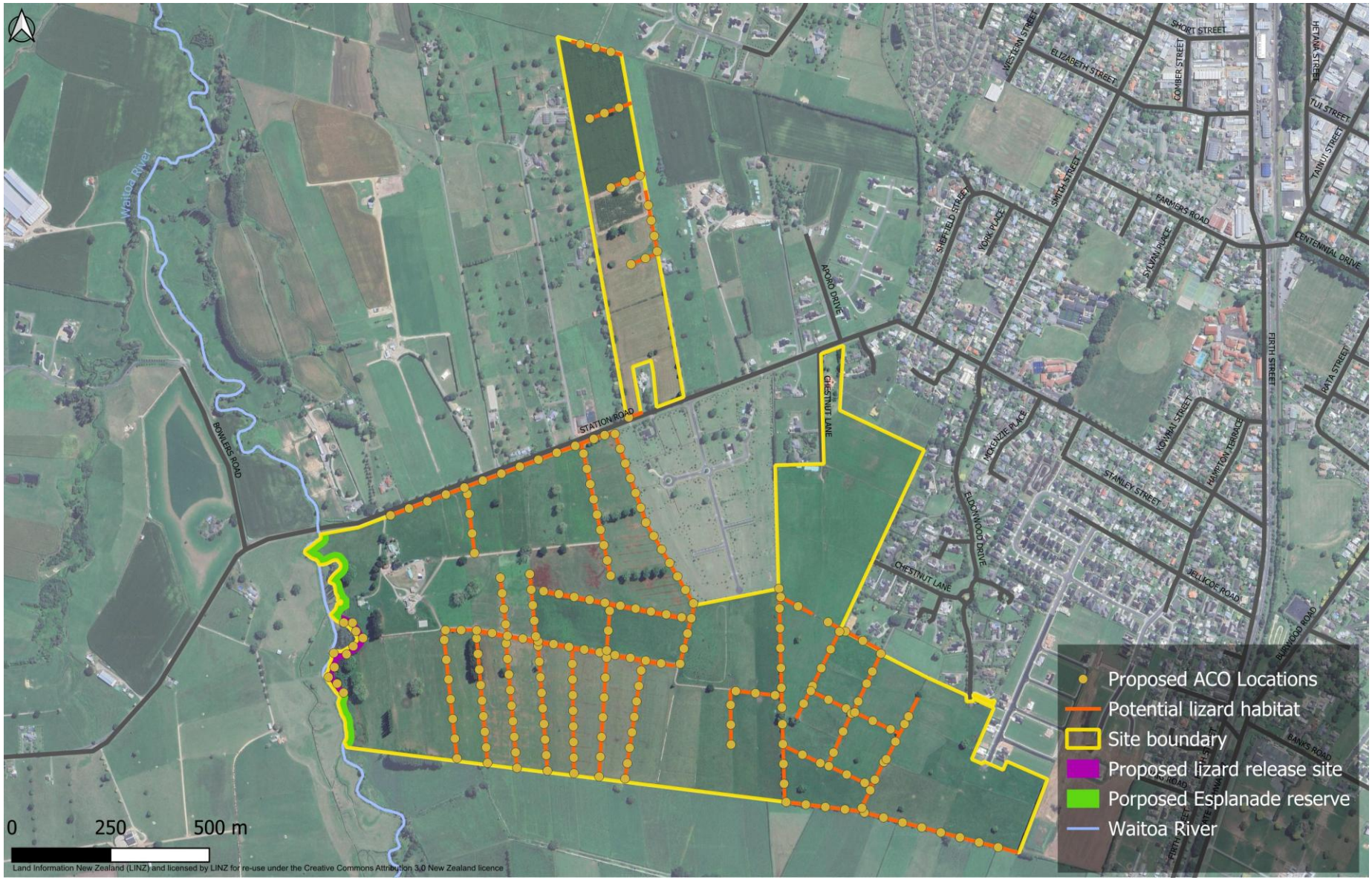

Figure 9: Lizard habitat (management) areas and proposed locations for ACOs.

6.0 Fish Management Plan

6.1 Introduction

The Ashbourne site contains several drains that, when holding water, could provide habitat for native fish species (e.g., eels). Reclamation of any drains holding surface water capable of supporting native fish species during the construction phase without appropriate mitigation could cause mortality or injury.

6.2 Purpose and Objectives of Management

The purpose of fish management is to prevent mortality and injury to any native fish during construction.

This will be achieved through the following objective:

- Successfully relocate any native fish from affected drains prior to and during construction on site.

6.3 Permits

The capture and transfer of native fish will be carried out under Special Permit Number SP905 and Native Fish Transfer Permit number NFT 441 from Fisheries New Zealand that is currently held by Ecological Solutions Limited.

6.4 Timing

- The timing of fish relocations will depend on the construction schedule and weather conditions.
- A suitably qualified ecologist will consult with the construction site manager to decide start times for pre-works fishing effort.
- Pre-works fish relocations will occur within two weeks prior to works.
- Dewatering and excavation fish relocations will occur during works.

6.5 Approach

6.5.1 Key stages

Fish relocations will be implemented in the following stages:

- Stage 1: Pre-works fish relocations prior to any stream works.
- Stage 2: De-watering fish relocations.
- Stage 3: Excavation fish relocations.

6.5.2 Pre-works fish relocations

- Pre-works fish relocations will be carried out prior to works.
- Staging of earthworks will be undertaken in discrete areas and in shorter lengths of

drain at any one time to allow fish relocations to be managed.

- If deemed necessary, fine mesh exclusion nets (3 mm mesh) will be installed at the upper and lower extents of each section prior to fishing to prevent fish from entering fished reaches.
- Pre-works fishing will involve the following fishing methods:
    - Baited fine-mesh fyke nets (1 net / 10 m).
    - Un-baited Gee minnow traps (1 trap / 10 m).
- Pre-works netting and trapping will be carried out for a minimum of three nights and salvage will continue until the mean catch rate within a salvage site is less than 0.25 fish/trap/night.
- Captured fish will be handled in accordance with the Fish Capture and Handling section (Section 6.6).

6.5.3 Dewatering fish relocations

- Fish remaining after pre-works fish relocations will be captured and relocated during the dewatering stage.
- Pumps used for dewatering are to have 3 mm screens over the pump nozzle to prevent fish entrainment.
- Fish relocations will occur in areas where the water level is shallow enough to allow safe access into the channel to retrieve fish.
- Fish are to be captured using hand-held nets with an option to use an electric fishing machine if it is safe to do so.
- Captured fish will be handled in accordance with the Fish Capture and Handling section (Section 6.6).

6.5.4 Excavation fish relocations

- Fish remaining after dewatering fish relocations will be captured and relocated during the excavation stage.
- Fish relocations during the excavation stage will involve inspecting streambed material as it is removed from the channel and deposited into designated holding areas.
- Captured fish will be handled in accordance with the Fish Capture and Handling section (Section 6.6).

6.6 Fish Capture and Handling

The following procedures will be followed during the transfer of native fish:

- Fish captured will be transferred into a fish bin containing water obtained from the tributary.
- Multiple fish bins will be used to minimise stress on fish.
- Fish bins will be kept in an area that minimises direct sunlight and potential for water temperature to become elevated to levels that are stressful to fish.
- If eels and another species of native fish are captured the eels will be kept in separate fish bins to minimise stress and avoid mortality.

- Eels may be transferred from fish bins to catch bags immediately prior to transport and release if a large number are captured.
- Battery powered aquarium pumps will be used to maintain dissolved oxygen in fish bins if required.
- Fish will be checked to ensure that all aquatic plant material and mud/silt is removed prior to transfer into the bucket/fish bin.
- Native fish will be transported to the designated release point(s) and released within two hours of capture, or prior if fish are displaying signs of stress.

The following procedures will be followed if pest fish are captured;

- Pest fish will be transferred to separate fish bins from those containing native fish.
- Pest fish will be euthanised by placing them in an appropriately concentrated solution of AQUI-S Anaesthetic as soon as practicable after capture and then disposed of.

6.7 Fish Release Location

After fish capture, consideration will be given to the number of fish captured, life stage of the captured fish, stocking rates, and proximity of the release site to the capture location to minimise stress on the released fish. Release sites will be within the same catchment as the capture location. Release sites will include the oxbows in the newly created Esplanade Reserve and in Waitoa River downstream of the bridge along Station Road.

6.8 Reporting and Closure

Ecological Solutions Limited will report the results of the fish relocation work to Matamata Developments Limited within five days of completion. Results will include the following information:

- Date and time of capture.
- Capture method(s).
- Fish species caught.
- Number caught (including any accidently killed).
- Length range.
- Health/condition (i.e., visible disease or injury).
- Location of release.

All data will be uploaded to the NIWA New Zealand Freshwater Fish Database.

Fish management may be considered closed after fish relocations have been completed.

7.0 Summary

This Ecological Management Plan outlines protocols and management strategies to mitigate adverse ecological effects and enhance ecological values at the Ashbourne site. Management incudes measures during the construction and operation of the site, including monitoring of predator control. When considering the terrestrial fauna management windows for birds, lizards and bats, the optimum time for vegetation removal to minimise potential fauna disturbance is March to April inclusive. When felling trees, care must be taken to avoid bird nests and to ensure proper implementation of bat roost protocols.

Fish management protocols will be used to relocate any fish on site before or during construction.

8.0 References

Department of Conservation Lizard Technical Advisory Group (2019). Key principles for lizard salvage and transfer in New Zealand. Department of Conservation, Wellington.

Department of Conservation. (2024). 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.

Hare, K. 2012a. Herpetofauna: systematic searches. Version 1.0. Inventory and monitoring toolbox: herpetofauna. DOCDM-725787

Kosciuch, K., Riser-Espinoza, D., Gerringer, M., & Erickson, W. (2020). A summary of bird mortality at photovoltaic utility scale solar facilities in the Southwestern US. *PloS one*, *15*(4), e0232034.

Lettink, M. 2012. Artificial Retreats. Version 1.0. In Greene. T, McNutt. K (editors) 2012. Biodiversity Inventory and Monitoring Toolbox. Department of Conservation, Wellington, New Zealand.

McAlpine, K.G., Howell, C.J. 2024. List of environmental weeds in New Zealand 2024. Science for Conservation 340. Department of Conservation, Wellington. 37 p.

McCrary, M. D., McKernan, R. L., Schreiber, R. W., Wagner, W. D., & Sciarrotta, T. C. (1986). Avian mortality at a solar energy power plant. Journal of Field Ornithology, 135-141.

Penniman, J.F., Duffy, D.C., 2021. Best Management Practices to Protect Endangered and Native Birds at Solar Installations in Hawai'i.

Schamhart, Titia, Clare Browne, Kerry M. Borkin, Nicholas Ling, David E. Pattemore & Grant W. Tempero (2023): Detection rates of long-tailed bats (*Chalinolobus tuberculatus*) decline in the presence of artificial light, New Zealand Journal of Zoology, DOI: 10.1080/03014223.2023.2245760

APPENDIX A

Fauna Seasons for Works

	Month											
Fauna	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Birds	Nesting Season - Vegetation clearance can proceed if Bird Management Plan are adhered to.	Nesting Season - Vegetation clearance can proceed if Bird Management Plan are adhered to.	Vegetation clearance can proceed.	Vegetation clearance can proceed.	Vegetation clearance can proceed.	Vegetation clearance can proceed.	Vegetation clearance can proceed.	Vegetation clearance can proceed.	Nesting Season - Vegetation clearance can proceed if Bird Management Plan are adhered to.	Nesting Season - Vegetation clearance can proceed if Bird Management Plan are adhered to.	Nesting Season - Vegetation clearance can proceed if Bird Management Plan are adhered to.	Nesting Season - Vegetation clearance can proceed if Bird Management Plan are adhered to.
Bats	Trees with confirmed bat roost protocols can be felled if Bat Roost Protocols are employed.	Trees with confirmed bat roost protocols can be felled if Bat Roost Protocols are employed.	Trees with confirmed bat roost protocols can be felled if Bat Roost Protocols are employed.	Trees with confirmed bat roost protocols can be felled if Bat Roost Protocols are employed.	Trees with confirmed or potential bat roost feature cannot be felled.	Trees with confirmed or potential bat roost feature cannot be felled.	Trees with confirmed or potential bat roost feature cannot be felled.	Trees with confirmed or potential bat roost feature cannot be felled.	Trees with confirmed or potential bat roost feature cannot be felled.	Trees with confirmed bat roost protocols can be felled if Bat Roost Protocols are employed.	Trees with confirmed bat roost protocols can be felled if Bat Roost Protocols are employed.	Trees with confirmed bat roost protocols can be felled if Bat Roost Protocols are employed.
Lizards	Vegetation clearance within Lizard habitat may occur if Lizard Management Plan is adhered to.	Vegetation clearance within Lizard habitat may occur if Lizard Management Plan is adhered to.	Vegetation clearance within Lizard habitat may occur if Lizard Management Plan is adhered to.	Vegetation clearance within Lizard habitat may occur if Lizard Management Plan is adhered to.	Vegetation clearance of lizard habitat may not occur.	Vegetation clearance of lizard habitat may not occur.	Vegetation clearance of lizard habitat may not occur.	Vegetation clearance of lizard habitat may not occur.	Vegetation clearance of lizard habitat may not occur.	Vegetation clearance within Lizard habitat may occur if Lizard Management Plan is adhered to.	Vegetation clearance within Lizard habitat may occur if Lizard Management Plan is adhered to.	Vegetation clearance within Lizard habitat may occur if Lizard Management Plan is adhered to.