

Brookvale Green, 174 and 176 Brookvale Road, Hawkes Bay

Fauna Management Plan (FMP)

Prepared for:
Vermont Street Partners No.4 Ltd

Date: 07/07/2026

Prepared by:
Georgia Woodall

Project/File: 310002495



Revision Schedule

Revision No.	Date	Description	Prepared by	Quality Reviewer	Independent Reviewer	Project Manager Final Approval
0	1/05/2026	Fauna Management Plan – draft for client review	GW	DS	MT	IR
1	8/05/2026	Fauna Management Plan – final draft			MT	IR
2	07/07/2026	Fauna Management Plan – Boundary change- final draft	GW			LD

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Prepared by:



Signature

Georgia Woodall

Printed Name

Reviewed by:



Signature

Dylan Smith

Printed Name

Approved by:



Signature

Ilze Rautenbach

Printed Name



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Executive Summary

This Fauna Management Plan (FMP) has been prepared by Stantec New Zealand for Vermont Street Partners No.4 Ltd (Applicant) to support the proposed Fast Track Approval Application (FTAA) for Brookvale Green, a residential development (203 dwellings and associated infrastructure) at 174–176 Brookvale Road and adjoining Arataki Reserve (Lot 3 and Lot 4 DP 481968), Havelock North. The FMP supports the Ecological Assessment Report (EAR) recommendations and sets out practical protocols to avoid, remedy, or mitigate direct injury or mortality of native fauna that may be present on-site during vegetation clearance and earthworks.

The 24.3 ha site has been historically modified (horticulture and pasture) and contains intermittent streams/drains connected to the Karamu Stream catchment, along with shelterbelts and other vegetation that may provide habitat for freshwater fish, long-tailed bats, nesting birds, and indigenous lizards. Fauna management is therefore required prior to, and during, works in areas where watercourses are realigned/removed and where vegetation clearance is undertaken.

- **Freshwater fish:** All streams/drains to be disturbed will be isolated with upstream/downstream fish barriers and managed by experienced freshwater ecologists. Where flow is present, fish salvage will be performed using fyke nets and minnow traps for a minimum of two nights prior to dewatering, with effort extended until depletion criteria are met. Dewatering will be supervised, with fish recovery using hand nets and pump intake exclusion screens (maximum 3 mm mesh, unless impracticable due to sediment viscosity at the ecologist's discretion). Captured native fish will be transported in oxygenated containers and released downstream in suitable habitat within the Karamu Stream.
- **Bats:** Although no bats were detected during January 2025 acoustic surveys, long-tailed bats have been recorded in the wider area and roost-risk features may occur in mature trees. For any trees with roost-risk features, management will follow DOC Bat Roost Protocols (Version 4) and be supervised by a DOC-certified competent bat specialist. Works are restricted to the bat management season (1 October–30 April). If bats are detected, felling must not proceed until the roost is confirmed vacant; DOC will be notified if bats are found post-felling. Where active roosts are removed, temporary roost replacement (bat boxes) will be provided and maintained.
- **Birds:** Vegetation clearance during the main nesting season (1 August–28 February) requires nest checks by a suitably qualified ecologist on the day of works. If an active nest is found, a minimum 20 m buffer will be retained until nest failure is confirmed or chicks have fledged; nests are not to be intentionally disturbed.
- **Lizards:** Potential habitat is mainly within shelterbelts, shrubby vegetation and rank grasses. Lizard salvage will be undertaken by a suitably qualified herpetologist holding the required Wildlife Act authorisation, generally during October–April in suitable weather. Pre-clearance salvage will use a combination of pitfall and funnel traps (with an acclimation period) and manual habitat searches, followed by supervised vegetation removal to reduce harm. Captured lizards will be transported and released in accordance with animal welfare requirements and permit conditions. On-site riparian margins have been identified as primary and contingency release areas (with habitat enhancement such as ecostacks and planting), with contingency arrangements (including DOC engagement) if unexpected species or higher-than-anticipated numbers are encountered.



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Biosecurity measures (including cleaning and drying of fish salvage equipment in accordance with MPI guidance) will be applied to prevent the spread of aquatic pests. Fish salvage will be undertaken under Stantec's relevant Fisheries New Zealand authorisations, and lizard salvage will require a site-specific Wildlife Act authorisation. Reporting commitments include a fish salvage summary report to Hawkes Bay Regional Council within 10 days of completion and a lizard salvage and relocation report to Hawkes Bay Regional Council and the Department of Conservation within 30 working days (with post-translocation monitoring required if more than 20 lizards are salvaged). When implemented as specified, the measures in this FMP are intended to minimise the risk of harm to native fauna during construction and support compliance with applicable regulatory requirements.

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1 Introduction

This Fauna Management Plan (FMP) is written by Stantec New Zealand (Stantec) for Vermont Street Partners No.4 Ltd (the 'Applicant') for the proposed Fast Track Approval Application (FTAA) to build 203 residential dwellings and supported infrastructure at 174 and 176 Brookvale Road and adjoining Arataki Reserve (Lot 3 and Lot 4 DP 481968), Havelock North (Figure 1-1). This document has been prepared to support the Ecological Assessment Report¹ (EAR) recommendations for fauna management to minimise the risk of injury or harm to native fauna.



Figure 1-1: Location of site in relation to Havelock North with associated overlay of Hastings District Plan (Operative) Zoning (From ecological assessment report¹).

1.1 Background and Project Description

The site is 24.3 hectares on the eastern edge of Havelock North's urban residential boundary, to the west of the Havelock North village centre. The proposal is to change the site from currently commercial horticulture (exotic pasture, orchards, and associated buildings) to residential. The site has been heavily modified and degraded from its original state, however, as identified within the EAR there is the potential for native fish, bats, birds and lizards to be present on-site, and, as such there are associated sections for management of these species within the report below. Vegetation clearance will also be

¹ Wild Ecology (2026). Ecological Assessment Report prepared for proposed Fast-track development application at Brookvale Green, 174–176 Brookvale Road, Havelock North. Final version (02/07/2026). Report prepared by Wild Ecology for Vermont Street Partners No.4 Ltd.



undertaken within the Arataki Reserve. This FMP is written as part of a Fast Track Approval application and is a draft subject to final timings and changes associated with the project.

A site visit was undertaken by Wild Ecology in January 2025 to assess terrestrial and aquatic ecology features on-site and provide recommendations for management through the appropriate use of the Effects Management Hierarchy. Through this, the need for on-site fauna management was recommended.

1.2 Project scope

The purpose of this management plan is to detail specific protocols to be used to minimise the direct loss or injury of native fauna including, freshwater fish, bats, birds, and lizards as a result of on-site earth works occurring during site development.

This FMP covers the areas shown in Figure 1 and should not be applied to other water bodies or land areas in the wider area without prior consultation with Stantec and approval from the relevant local and regional authorities.



2 Native Freshwater Fish Management

2.1 Waterbodies to be Impacted

There are four intermittent streams within the property (Figure 2-1) one along the northern boundary (watercourse 1), one through the centre (watercourse 2), and two more off watercourse 1 (watercourses 3 & 4). All are unnamed tributaries feeding into the Karamu Stream catchment.

As described in the EAR, watercourse 1 primarily flows through its historic alignment, but the others have been highly modified from their original courses. No flow was present in any stream during the site assessment in January 2025, with the northern stream being complete dry. Stream indicators such as defined stream channels or beds, hydrophytic vegetation, and flood debris were largely absent, except for some small northern sections of the central stream catchment near Brookvale Road. There are also several artificial drains located across the site. The proposed development works involve the realignment of a section of watercourse 1 to enable the proposed urban development, and removal of several stream drains. All realigned streams and drains shall be subjected to fish management prior to earthworks. The works within the Arataki Reserve are located outside Watercourses 1 and 2 (beds and margins) and the mapped natural inland wetland areas, with no connection to their natural flow regimes. No direct effects on freshwater habitats are anticipated from the Arataki Reserve works. Earthworks, battering and retaining wall construction within the reserve will be undertaken in accordance with standard erosion and sediment control measures to manage the potential for sediment-laden runoff during construction.

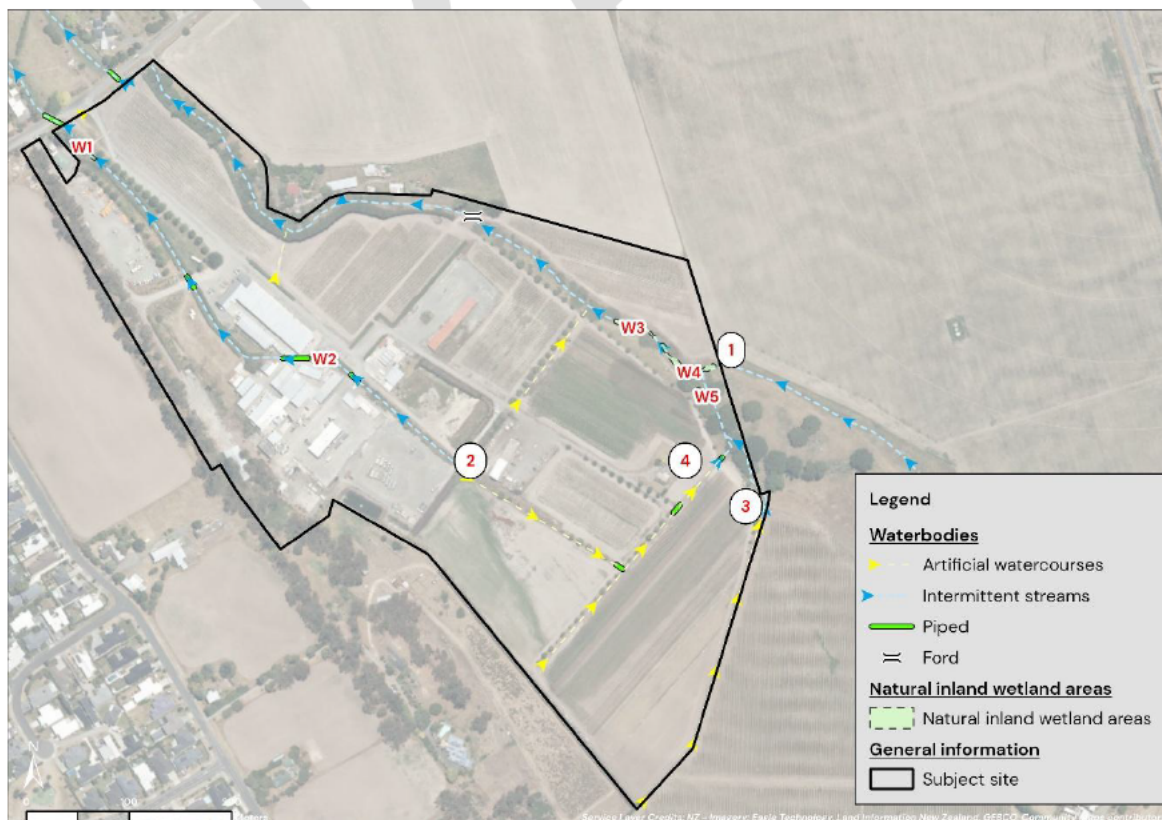


Figure 2-1: Location of the described intermittent streams requiring fish management at 174-176 Brookvale Road.

2.2 Native Fish Presence

A desktop review of the New Zealand Freshwater Fish Database² (NZFFD) on the 29th of April 2026 found that six number of native and four species of exotic and naturalised fish are present within the Karamu Stream catchment (Table 2-1). Additionally, an eDNA sample and manual capture efforts on-site found shortfin eels present.

Table 2-1: Historic records of freshwater fish in the Karamu Stream catchment.

Species	National Threat Status ³
Common smelt (<i>Retropinna retropinna</i>)	At Risk, Declining
Common bully (<i>Gobiomorphus cotidianus</i>)	Not Threatened
Shortfin eel (<i>Anguilla australis</i>)	Not Threatened
Longfin eel (<i>Anguilla dieffenbachii</i>)	At Risk, Declining
Koura (<i>Parenphrops</i> sp.)	Not Threatened
inanga	At Risk, Declining
Unidentified mullet (<i>Mugilidae</i> sp.)	Not Threatened
Brown trout (<i>Salmo trutta</i>)	Introduced and Naturalised
Gambusia (<i>Gambusia affinis</i>)	Introduced and Naturalised
Goldfish (<i>Carassius auratus</i>)	Introduced and Naturalised

2.3 Timing of works

It is good practice to avoid prolonged instream earthworks during the peak migration period for anguillids (eels) (December- March) unless sufficient fish passage diversion is provided. It is also good practise to avoid fish management during summer when water temperatures could cause thermal stress and oxygen content levels are lower increasing the mortality risk to native fish.

If water is absent from the drains and streams during summer, then realignment of the waterbodies should be undertaken during this period to reduce the risk of fish presence within the channel(s).

² National Institute of Water and Atmospheric Research. New Zealand Freshwater Fish Database (NZFFD). Niwa, Wellington, New Zealand. <https://niwa.co.nz/freshwater/nz-freshwater-fish-database>

³ Dunn N.R., Closs G.P., Crow S.K., David B.O., Goodman J.M., Griffiths M., Hicks, A.S., Hickford, M.J.H, Jack D.C., Kitson, J.C., Ling N., Waters J.M., Wylie, M.J., Hitchmough, R.A., Mekan, T. (2025). Conservation status of New Zealand freshwater fishes, 2023. New Zealand Threat Classification Series 46. Department of Conservation, Wellington.



2.4 Project Freshwater Ecologist

All fish capture and relocation work is to be undertaken by experienced Freshwater Ecologists who have the appropriate training, knowledge, skills and ability to ensure safe handling of fish together with the safety of staff conducting the operations. It is assumed at this stage that Stantec will oversee fish management on-site. Stantec holds the appropriate Ministry for Primary Industries (MPI) permits which are required to undertake fish salvage and relocation works (see Section 2.6 for details).

2.5 Change Management

If circumstances arise where the nominated Project Freshwater Ecologist is unable to implement the management plan, suitably qualified sub-consultants shall be contracted to implement the plan following the methodology detailed in this management plan. The new contractor must have their own permits for fish salvage and relocation and cannot operate under Stantec Permits.

Any changes to the implementation of the plan in terms of personnel or methodologies will be communicated back to Hawkes Bay Regional Council through the consent compliance monitoring process as soon as possible and no later than five working days prior to fish management.

2.6 Permits

Permitting requirements and conditions for fish transfers depends on the species and the location of transfer. To capture and relocate native species Stantec will operate under the following permits:

- Fisheries New Zealand Authorization (NFT421) pursuant to section 26ZM(2)(a) of the Conservation Act (1987) given to Stantec New Zealand for the translocation of native freshwater aquatic life. Expires 8 August 2028.
- Fisheries New Zealand Special Permit 877 pursuant to section 97(1) of the Fisheries Act (1996) to allow persons or agencies to take aquatic life and relocate it to a suitable habitat where this is necessary or required to mitigate adverse effects of habitat modification on the aquatic life (section 97(1)(c)).

2.7 Biosecurity

All fish salvage equipment is to be thoroughly cleaned and dried according to the protocols recommended by the Ministry for Primary Industries (MPI)⁴, to ensure no transfer of invasive aquatic organisms between sites. Equipment will be cleaned before and after use, and any plant material found on traps or nets after fishing is to be removed and left on-site. Particular care should be given to any gear that has been used within Corbicula Control areas and thorough hygiene protocols must be applied.

⁴ Ministry for Primary Industries. (2021). *Check, Clean, Dry: preventing didymo and other pests*. Retrieved from: <https://www.mpi.govt.nz/outdoor-activities/boating-and-watersports-tips-to-prevent-spread-of-pets/check-clean-dry/>



2.8 Methodology

2.8.1 Site isolation

Isolation of the affected reaches shall be conducted by installing fish barriers both up and downstream of the works areas (Figure 2-2). Before and during earthworks, the exclusion screen will be inspected and, where required, maintained daily by the contractor to ensure the screen's structural integrity is maintained until the works in that section are completed.

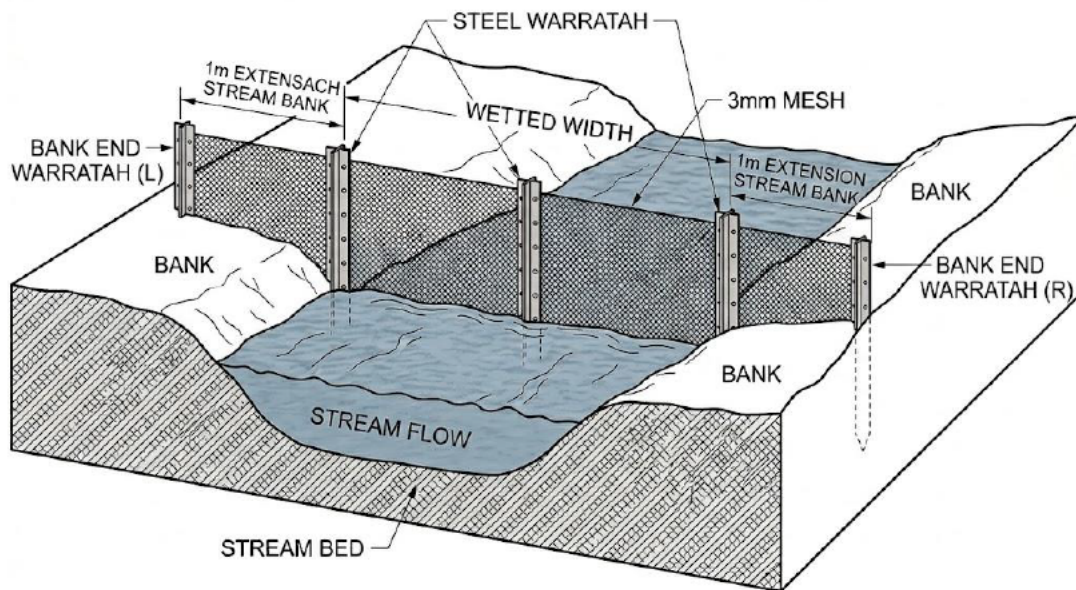


Figure 2-2: Conceptual illustration showing correct barrier application.

2.8.2 Netting and Trapping

If there is flow at the time of instream works, netting and trapping has been selected as the primary nature of fish salvage and recovery due to the instream habitat features of the impact streams being best suited for this sampling methodology.

Netting and trapping using Fyke nets and Gee minnow traps will occur for a minimum of two nights prior to dewatering. After two nights, if the number of captured fish has decreased by $> 80\%$ then it will be considered appropriate to begin dewatering. If catch rates remain above the depletion threshold of 80% , or above 10 native fish per channel per night, then an additional two nights of netting and trapping shall be undertaken. If more than one watercourse is being managed simultaneously, then each watercourse or drain should be managed as an individual section subjected to the criteria above and not as a collective sum.

If there is insufficient water for netting and trapping, then fish management shall proceed to the methodology detailed in Section 2.8.3.

2.8.3 Dewatering Supervision and Fish Recovery

Following the completion of the netting and trapping efforts to the satisfaction of the Project Freshwater Ecologist, dewatering can commence. The Project Freshwater Ecologist will be present during stream

dewatering activities to inspect the stream bed and channel base, under-bank margins and any other instream habitats for freshwater fauna that may have been missed. Hand nets will be used to scoop up any remaining fish as water levels proceed.

A fish exclusion screen will be installed on all pumps used during dewatering activities. This screen will have a maximum mesh size of 3 mm. Once stream dewatering is complete and the Project Freshwater Ecologist is satisfied with the level of fish capture effort, approved and consented stream works can commence. If the residual water within the channel(s) is sediment and it is determined that the water cannot be pumped out of the channel due to viscosity, larger mesh can be utilized. This can only be done after the option for 3mm mesh has been proven to be ineffective and only at the discretion of the Project Freshwater Ecologist.

2.8.4 Adaptive Management

In streams 1,2 and 4 adaptive management decisions will be undertaken at the discretion of the Project Freshwater Ecologist during fish management. The above protocols may be modified or changed if a more suitable methodology is appropriate for site specific fish management. Any changes to methodology will be discussed in the completion memorandum.

2.8.5 Fish Relocation Protocols

Following capture, all freshwater fauna will be translocated in a lidded container of an appropriate volume of clean stream water for any native fish caught. Portable oxygen pumps will be installed into the container/s to ensure dissolved oxygen rates are maintained in holding containers and transferred to the relocation site within approximately one hour of capture.

Whilst contained, fish will be constantly monitored and if any individual fish show signs of stress (e.g. loss of righting response, gulping air, and/or gaping) the water will be changed to provide more oxygen and / or the fish will be moved to the relocation site immediately. Sensitive fish species, e.g. galaxiidae or gobiidae species, will be kept in a separate bucket to eels, to avoid any further disturbance to these species. Kōura will also be kept separate if captured.

Large eels (> 500 mm) will be contained separately within wetted mesh sacks and kept hydrated to avoid injury to other smaller captured fish. Fish will be handled with clean, wet hands at all times. Handling of freshwater fish will be minimised in order to reduce stress.

2.8.6 Release Site

All fish will be relocated within the Karamu Stream downstream of the impact site. The Project Freshwater Ecologist will ensure that fish caught are released in a distributed manner within suitable habitat particularly when releasing a large quantity of freshwater fauna at one time. This will avoid or reduce the risk of any predation risks or overstocking at a single release site.

For all native freshwater fauna the following information will be recorded:

- Date and time of capture and release;
- Release location(s) (GPS coordinates)



2.9 Pest Fish

Pest fish may be captured during the fish salvage. If this occurs, pest fish are to be humanely euthanise with the preferred method being adding clove oil (50 ml per 10 L water) to a container holding the fish. Alternatively, large pest fish may be killed by a sharp blow to the back of the head. All pest fish will be disposed of appropriately, either by digging a hole nearby and burying them, or taking them off-site to dispose of.

2.10 Reporting

A summary report presenting all results from fish salvage will be provided to the Hawkes Bay Regional Council within 10 days upon the completion of the project. The summary will include the following:

- Fish capture methodologies used;
- Species, number and length to the nearest 10 mm of native aquatic life captured and relocated;
- Known fish fatalities during capture and relocation.

The report will also outline the number of fish caught by each salvage technique and will provide relevant information to aid projects of similar extent going forward. A record of species captured and relocated, will be submitted to update NIWA's freshwater fish database.

3 Bat Management

3.1 Introduction

Bats are protected under the Wildlife Act (1953) and cannot be harmed under this regulation. A desktop review showed that long-tailed bats (*Chalinolobus tuberculatus*; Threatened- Nationally Critical⁵) have been recorded on the DOC Bioweb⁶ in 2025 13 km from site at Pekapeka Regional Park.

Acoustic surveys performed on-site over four consecutive nights by Wild Ecology in January 2025 did not show any evidence of bats at that time, however, scattered mature exotic vegetation with features providing potential bat roosts have been observed across the site. As such, it is recommended that bat management is applied for any trees with risk features present prior to felling and removal. These trees are primarily located within shelterbelts throughout the site and within the mature eucalyptus stand within the Arataki Reserve. The following methods are recommended to be used on-site to provide best-practice management for long-tailed bats.

Implementation of the bat management plan is to be supervised by a DOC certified competent bat specialist/s, with the competencies Levels 2.1, 3.1 and 3.3⁷.

3.2 Timing

Bat management must occur between October 1st to April 30th. Any tree ≥ 15 cm DBH with roost-risk features cannot be felled outside this window and must be checked using the methodology described in Section 3.3. Trees < 15 cm DBH or without roost features are unrestricted with regard to bat management.

3.3 Methodology

Implementation of the Bat Roost Protocols Version 4⁸ should be followed to ensure adverse effects on bats are avoided. Any trees above ≥ 15 cm diameter at breast height (DBH) must be checked for bat roost characteristics (hollows, cavities, knot holes, cracking and peeling bark etc) three-days prior to felling and be tagged and mapped as such. Trees below 15cm DBH, or without roost-risk features can be removed at any time if doing so will not impact/ hit any potential bat roost trees.

If any potential bat roost features are identified, then acoustic monitoring shall be undertaken for two valid consecutive nights prior to felling. A valid night consists of a clear weather night with minimal wind, when temperatures are above 8⁰c. If bats are detected on these recordings, then the trees must be

⁵ O'Donnell, C. F. J., Borkin, K. M., Christie, J., Davidson-Watts, I., Dennis, G., Pryde, M., & Michel, P. (2023). *Conservation status of bats in Aotearoa New Zealand, 2022*. New Zealand Threat Classification Series 41. Department of Conservation | Te Papa Atawhai.

⁶ Department Of Conservation. (2026). Bat Observations Map. Department of Conservation, Wellington, New Zealand. <https://www.doc.govt.nz/nature/native-animals/bats-pekapeka/resources-for-bat-workers>.

⁷ Department Of Conservation. (2023). Bat handling competencies authorisation V1.4.DOC-6169671

⁸ Department Of Conservation. (2024). Protocols for minimising the risk of felling occupied bat roosts (Bat roost protocols).



checked for presence of bats on the day of felling, and this may involve sending a climbing arborist up to check the feature with an endoscope.

If the presence of bats is detected then the tree must not be felled that day, and audio and visual checking must occur again on following days until the bats have vacated the roost. If a bat is found within a roost at any time of assessment/ the felling process, the tree must not be felled until the bats have vacated, following the above methods until bats have vacated the roost. Where no bats are detected on the day of survey, then the trees can be felled. If trees are not felled on day of checking, then the trees must be checked again prior to clearance. Any features must be checked again after felling in case a bat has been missed.

If a bat has been found after felling, then the local DOC office must be notified and contacted for further instructions. No further tree felling works can be undertaken until DOC has advised so.

For any active roosts identified and felled, five untreated kent box style bat boxes should be installed for every one roost. Installation of these should be supervised by a DOC certified competent bat specialist, and installed within retained suitable areas on site, preferably along the stream. These will provide temporary replacement roost habitat until planted trees included in the restoration plan have matured.

4 Bird Management

4.1 Introduction

Existing vegetation onsite may provide potential nesting habitat for indigenous birds. As discussed in the EAR, birds expected to use the site are common Not Threatened species typical of rural semi-urban environments. Any vegetation clearance and earthworks at this site have potential to cause direct injury or mortality of nesting birds, nestlings, and eggs if undertaken during the breeding season (1st August to the 28th of February) unless adequately managed. Almost all native birds are protected under the Wildlife Authority Act (1953) and as such cannot be harmed. No permit is required to observe native birds, but an ecologist with a background in avifauna should conduct the methodology detailed in section 4.3. It is likely that bat management and bird management will be conducted in conjunction with each other.

4.2 Timing

Trees expected to be cleared within the bird nesting season (1st August – 28th February) must be subjected to bird management. If vegetation clearance outside of this window occurs, then bird management is not necessary. If the trees have a DBH of 15cm or more, then the tree(s) must be subject to a roost risk check prior to felling in order to avoid risk to bats (as discussed in Section 3.3).

It is recommended that vegetation clearance occurs outside of the nesting season where possible to avoid undue risk to native birds.

4.3 Methodology

If undertaking vegetation clearance during the nesting season, then same-day bird nest checks must be carried out by a suitably qualified ecologist prior to vegetation clearance. Bird nest checks include checking vegetation, tree cavities and hollows for nesting birds (e.g. kingfisher, morepork) and on the ground/ long grass for ground nesting species. If an active nest is found a 20m works exclusion zone will be enacted around the nest until an approved and experienced ecologist has confirmed that the nest has failed, or the chicks have hatched and naturally left the natal site. Regular re-inspections can be conducted to monitor bird nest progression. The nest must not be intentionally disturbed during this period.

5 Lizard Management

5.1 Introduction

As outlined in the EAR, the proposed development will result in the clearance of potential native lizard habitat. Arboreal lizard habitat may be present within the mature trees of the shelterbelts across the Site and the eucalyptus stand within the Arataki Reserve. Ground-dwelling lizard habitat was present in the form of rank grasses at the bottom of the shelter belts. No native lizards were observed during the site walkover.

The Lizard Management (LM) section of this FMP has been prepared following guidelines and best practice documents provided by the Department of Conservations (DOC) Lizard Technical Advisory Group^{9,10}. The LM will aim to address principles 5-9 of key principals for lizard salvage and transfer in New Zealand. These are as follows:

1. *Lizard values and site significance must be assessed at both the impact (development) and receiving sites.*
2. *Actual and potential development-related effects and their significance must be assessed.*
3. *Alternatives to moving lizards must be considered.*
4. *Threatened lizard species require more careful consideration than less-threatened species.*
5. *Lizard salvage, transfer and release must use the best available methodology.*
6. *Receiving sites and their carrying capacities must be suitable in the long term.*
7. *Monitoring is required to evaluate the salvage operation.*
8. *Reporting is required to communicate outcomes of salvage operations and facilitate process improvements.*
9. *Contingency actions are required when lizard salvage and transfer activities fail.*

The EAR details principles 1-4 and is not discussed further.

5.2 Description of Lizard habitat and Significance

Walk over surveys of the entire proposal site were undertaken during the EAR to assess areas of potential suitable lizard habitat. The site had limited habitat for indigenous lizards due to historic vegetation clearance across the site and on-going use of the site for horticulture and agricultural land

⁹ Department of Conservation Lizard Technical Advisory Group 2018: Guidelines for conservation-related translocations of New Zealand lizards. Department of Conservation, Wellington.

¹⁰ Department of Conservation Lizard Technical Advisory Group 2018: Key principles for lizard salvage and transfer in New Zealand. Department of Conservation, Wellington.



use. Ground and shrub layer vegetation was sparse. The current land use primarily prevents rank grass, shrub or structural cover from developing. Potential lizard habitat was present within shelter belts and the eucalyptus stand, however this offered limited cover and structural diversity.

5.3 Lizard populations at the sites where modification is proposed

Desktop investigations using iNaturalist¹¹ and DOC Bioweb herpetofauna database¹² records and visual surveys of habitats conducted by Wild Ecology during the EAR in January 2025 across the development site were conducted to identify lizard values. The range of species known from the Hawkes Bay Region and their likely presence that they may be encountered along the alignment is summarised in the below table (Table 5-1). This level of likelihood has been determined through the authors expert opinion, available knowledge of species distribution and suitability of habitats to support each species. Where habitat has been identified a conservative approach has been taken to assumed that species are present without the requirement of in-depth surveys. All the areas that could be impacted will therefore trigger the need for management without confirmation of presence being required.

Table 5-1: Range of lizard species known in Hawkes Bay Region and their likelihood of being onsite.

Species	National Threat Status	Likelihood of Occurrence
Forest gecko (<i>Mokopirirakau granulatus</i>)	At Risk, Declining	Low
Hawkes Bay skink (<i>Oligosoma auroraense</i>)	At Risk, Uncommon	Low
Northern grass skink (<i>Oligosoma polychroma</i>)	Not Threatened	Low
Ngahere Gecko (<i>Mokopirirakau Southern North Island</i>)	At Risk, Declining	Low
Small-scaled skink (<i>Oligosoma microlepis</i>)	Threatened, Nationally Vulnerable	Not Likely
Barking gecko (<i>Mokopirirakau "southern North Island</i>)	At Risk, Declining	Not Likely
Northern spotted skink (<i>Oligosoma kokowai</i>)	At Risk, Uncommon	Low
Glossy brown skink (<i>Oligosoma zelandicum</i>)	At Risk, Declining	Low
Raukawa gecko (<i>Woodworthia maculata</i>)	Not Threatened	Not Likely
Copper skink (<i>Oligosoma aeneum</i>)	At Risk, Declining	Low
Shore skink (<i>Oligosoma smithi</i>)	At Risk, Declining	Not Likely
Ornate skink (<i>Oligosoma ornatum</i>)	At Risk, Declining	Not Likely

¹¹ iNaturalist. Available from <https://www.inaturalist.org>. Accessed 21/04/26.

¹² Department of Conservation. (2022). *Bioweb Herpetofauna Database*. Department of Conservation, Wellington, New Zealand.



5.4 Wildlife Act Authority

All New Zealand geckos and skinks are legally protected under the **Wildlife Act 1953**, which makes it illegal to collect, handle, disturb, kill, or possess them without authorisation from the DOC. The Wildlife Act provides broad protection to native wildlife, including lizards, by restricting activities that may harm them or interfere with their habitat.

Lizard salvage during development involves capturing animals, moving them, or disturbing their habitat. Because these actions are prohibited without permission, an authorization from DOC is mandatory before any salvage takes place.

5.5 Project Herpetologist

A suitably experienced and qualified herpetologist who holds the appropriate Wildlife Act Authorization to carry out works will be required to oversee the implementation of the lizard management onsite. It is expected that a site-specific permit will be obtained prior to fauna management and vegetation clearance cannot occur until this has been granted.

5.6 Methodology

5.6.1 Timing

Vegetation clearance must occur from 1st October to 30th April (inclusive) in suitable weather conditions (warm, minimal precipitation, low wind). Lizard salvage must not be conducted outside of this period as lizards will likely be in a lowered state of torpor and/or are inactive so will be less detectable during salvage efforts and susceptible to increased harm.

5.6.2 Salvage footprint

The implementing herpetologist will walk over the Site and clearly demarcate possible lizard habitat area requiring salvage effort prior to any vegetation clearance. Lizard salvage and relocation efforts will focus on marked areas. Where lizard habitat is retained adjacent to the works footprint then fencing will be installed only the perimeter of the site to discourage lizards from entering the works footprint. Open fields should be regularly mown to prevent colonisation of area prior to earthworks.

To maintain lizard populations at the Site during the salvage period, a targeted pest control programme will be implemented. This programme will focus on controlling rodents, stoats, hedgehogs, and feral cats.

Pest control will be planned, overseen, and managed by a suitably qualified and experienced pest control professional. Control measures must begin at least six weeks prior to the commencement of salvage operations.

Pest activity will be monitored using chew cards and tracking tunnels throughout the control period. If monitoring indicates that pest numbers are not significantly declining, the level of control effort should be increased by installing additional traps and bait stations.



The specific density and layout of pest control devices will be determined by the pest control professional. The overall objective of the program is to reduce pest numbers to 10% of baseline levels across all the identified lizard habitat areas at the Site.

5.6.3 Pre-clearance salvage and relocation

Baited Pitfall traps (installed under Artificial Cover Objects (ACOs)) and funnel trapping will be installed throughout the salvage footprint at 20m spacing. The density can be increased if the implementing herpetologist finds it appropriate. Traps will be installed and then left shut for a minimum of six weeks prior to the commencement of lizard salvage works to allow animals to get used to the traps. The traps will then be activated with traps opened and baited, and trapping will commence for five days or until no native lizards are being captured for three days in a row. If high numbers of native lizards are being captured on day five, then additional trapping effort may be required.

Manual habitat searches and disestablishment will be conducted by suitably qualified ecologists. This will involve log-flipping, raking leaf-litter, systematic habitat searches and removal of habitat objects and materials to deter lizards from re-entering the salvage footprint

5.6.4 Supervision of Vegetation Removal

The Implementing Ecologist(s) must be present on-site during vegetation removal to ensure lizards are not harmed or killed during works. The Implementing Ecologist(s) will be responsible for working with arborists and machine operators to supervise the felling of trees, shrubs and the upper surfaces of the habitat floor where lizards may be sheltering. Vegetation will be searched to remove any native lizards not captured during the pre-clearance salvage and relocation works. Where a risk of arboreal species has been identified trees will be dropped to the ground, and foliage checked, along with any crevasses where lizards may be hiding will be searched. If deemed appropriate by the ecologist, larger trees should be used to create habitat either within areas retained outside of the salvage footprint or recovered and relocated to the relocation site to enhance habitat there.

5.6.5 Lizard Relocation Protocol

To ensure the appropriate care is taken to minimise disturbance, injury or mortality to captured lizards the Implementing Ecologist(s) will ensure the following protocols are followed:

- Animals must be appropriately prepared for transport, including provision of sufficient food and water as appropriate to the species, condition and expected length of the journey, to avoid pain, injury or distress. Lizards should be transported in ventilated plastic containers. Containers will be kept out of direct sunlight, and vegetation will be added to provide shelter during relocation.
- Individuals handling lizards will sterilize their hands and all equipment used during the salvage and relocation work.
- Lizards will not be contained for longer than three hours during relocation.
- Lizard handling will be kept to a minimum to reduce unnecessary stress and disturbance to captured individuals

The Translocation of lizards must follow the Animal Welfare Code of Welfare for Transport Within New Zealand¹³ and any conditions detailed in the project permit.

5.6.6 Data Collection

All salvaged lizards will be numbered, and the following data will be collected and submitted to DOC for addition to the herpetofauna database

- Date and time of capture
- Weather conditions upon capture
- Capture methodology
- Lizard species, age, sex and life stage, presence of tail (original, regrown/regrowing), snout-to-vent length.
- Photograph of each individual, including dorsal and ventral surfaces
- Photograph of the capture location and release point at relocation.

5.6.7 Accidental injury and/or Death of Lizards

Should an injured or dead native lizard be found during salvage and relocation work, vegetation clearance or during construction work, the Implementing Ecologist(s) are responsible for informing DOC and the permit holder within 24 hours of the event.

5.7 Relocation Site

The re-establishment and long-term protection of displaced lizards relies on a suitable release area(s) being chosen. A release site should be of similar or better habitat to the original site, to ensure survival and long-term persistence of the lizard population being translocated to the relocation site.

Principle 6 of the Key principles for lizard salvage and transfer in New Zealand¹⁴ states four criteria that a suitable relocation area must have

- 1) The site must be ecologically appropriate and have long-term security
- 2) The habitat at the site must be suitable for the salvaged species
- 3) The site must provide protection from predators

¹³ Ministry for Primary Industries (MPI). 2018. *Animal Welfare (Care and Procedures) Code of Welfare: Transport within New Zealand*. Ministry for Primary Industries, Wellington, New Zealand. <https://www.mpi.govt.nz/dmsdocument/46015>.

¹⁴ Lizard Technical Advisory Group (2019). *Key principles for lizard salvage and transfer in New Zealand*. Department of Conservation, Wellington, New Zealand. ISBN: 978-0-473-50697-1

- 4) The site must be protected from future human disturbance

Best practice is to relocate lizards to a suitable area within 500m of the impact site however this is often not achievable due to suitable habitat not being available or there is not permission from the landowners from local areas. Ideally the relocation area will already have an ongoing pest control program and already have a lizard population established.

5.7.1 Location and Description of the release area(s)

The riparian margin along the northern stream on-site has been chosen as a potential release site and is ~0.69 hectares in total. It is within the site and provides similar habitat to that which is being lost. The primary release site will be able to hold 200 lizards, and if this becomes full the contingency site will be used and will hold a further 100 lizards. The contingency site provides an additional ~0.44 ha. The riparian margin will be retained as part of ecological enhancement for the development site, giving it protection from future works and will undergo further planting to increase potential habitat for fauna. Ecostacks need to be placed in relocation areas prior to lizard release to provide more habitat. It is expected that pest control be undertaken by qualified professionals prior to lizard release to reduce potential pest pressures within this site. The details of this management shall be incorporated into the Ecological Management Plan and robust pest management shall be undertaken for a minimum period of 12 months post-relocation completion to ensure relocated lizards have a sufficient period of time for the population to establish.

If this is found to be not appropriate, or if more release areas are required for the number of lizards found, the implementing ecologists will consult with DOC to find a suitable replacement relocation site/s.

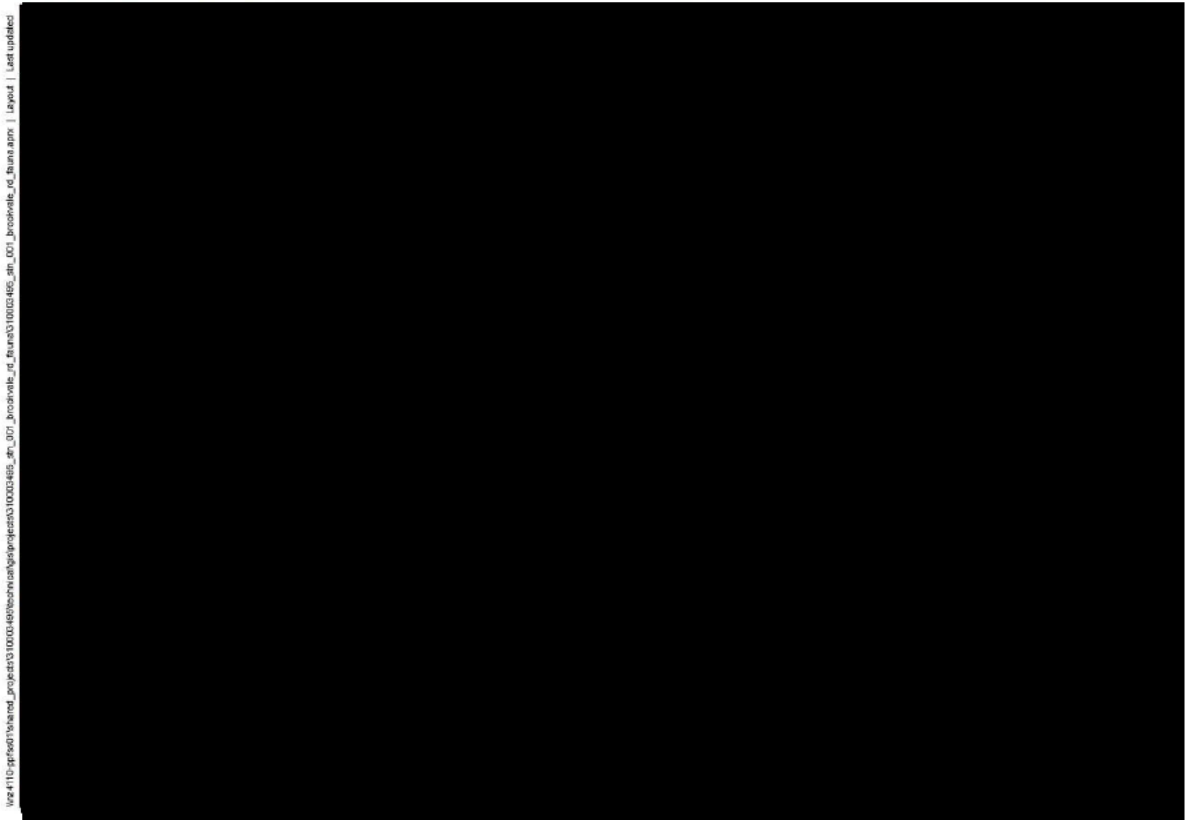


Figure 5-1: Lizard release locations on-site.

5.8 Incidental Discovery and Contingency

In the event that an unexpected species is discovered, or a greater than anticipated number of lizards (300 individuals given the site size) is captured and require salvage then DOC will be contacted immediately to discuss possible options. A suitable location for a contingency relocation once 200 lizards is caught is located onsite (Figure 5-1) and will be subjected to enhancement through the placement of ecostacks and riparian planting as proposed in the EclA. For this project, we deem the maximum number of lizards to be relocated to be 300 individuals, capturing more than this number would trigger relocation to an off-site area.

5.9 Reporting

A report summarizing the salvage and relocation results will be prepared and submitted to Hawkes Bay Regional Council and DOC within thirty working days from the completion date of the work. Specifically, this report will include:

1. Results of lizard salvage and relocation work:
 - a. Photos of lizard salvage methods utilised;
 - b. Photos of lizards captured (including photos of the salvage and relocation areas); and,
 - c. A map showing the location of lizards upon capture and release.
2. Descriptions of how lizard management activities outlined in the LM have been followed. Including conditions outlined in the Wildlife Act Authority,
3. An Amphibian and Reptile Distribution Scheme (ARDs) card detailing information relating to lizard capture and,
4. A brief summary regarding the outcomes of this LM, including any improvements/changes that should be implemented in the future.

5.10 Post-Translocation Monitoring

If more than 20 lizards are salvaged, then post development monitoring will be required. The international literature indicates that translocations of amphibians and reptiles undertaken for mitigation of development activities presently have very low success rates¹⁵. Thus, post-release monitoring of salvaged lizards must be carried out to inform future translocations and, given salvage methods have not been tested in New Zealand, to gather more New Zealand-specific data. Post-release monitoring requires clear objectives prior to initiation.

Monitoring will determine if the salvage has been successful by:

¹⁵ Germano, J.M., & Bishop, P.J. (2008). *Suitability of amphibians and reptiles for translocation*. Conservation Biology, 23 (1), 7-15. <https://doi.org/10.1111/j.1523-1739.2008.01123.x>



- 1) All species released are rediscovered
- 2) Presence of some individuals from the original salvage can be confirmed from inventory of lizards salvaged
- 3) Range of both adults and juveniles is identified

Surveys will be conducted at each of the release sites the following survey season from when salvaged, appropriate survey techniques that may be employed to will include:

- 1) Pitfall trapping.
- 2) Funnel trapping.
- 3) Lizard eDNA surveys (confirm species presence only will require other techniques to determine success).
- 4) Nocturnal systemic search (spotlight survey) for areas where arboreal species have been released.
- 5) ACO survey.

5.10.1 Monitoring Report

A translocation monitoring report will be prepared submitted to Hawkes Bay Regional Council and DOC detailing:

- 1) Monitoring methods used.
- 2) Details around the success of habitat enhancement activities on site.
- 3) Assessment of habitat and food availability at site.
- 4) Weather data across the monitoring period.
- 5) Monitoring results and recommendations.

ARDs card will also be submitted within 30 days following on from the monitoring surveys.

6 Conclusion

This fauna management plan details the methodology to be implemented during works on-site at 174 and 176 Brookvale Road, Havelock North. Management plans for freshwater fish, bats, birds and lizards have been provided above, along with the reporting requirements post works occurring on-site. If the above methodologies within this plan are followed, it is expected that injury to, or death of native fauna will be prevented.







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Stantec New Zealand

Level 3, PWC Centre, 109 Ward Street

Hamilton 3204

NEW ZEALAND

Mail to: PO Box 13052, Christchurch 8140

stantec.com

