531 & 535 Mill Road Residential Development Project – Lizard Management Plan

Prepared for

Carter Group Limited

3 June 2026

PATTLE DELAMORE PARTNERS LTD
Level 2, 134 Oxford Terrace
Christchurch Central, Christchurch 8011
PO Box 389, Christchurch 8140, New Zealand

Tel +64 3 345 7100
Web www.pdp.co.nz

solutions for your environment

Quality Control Sheet

TITLE	531 & 535 Mill Road Residential Development Project – Lizard Management Plan
CLIENT	Carter Group Limited
ISSUE DATE	3 June 2026
JOB REFERENCE	C045180001

Revision History

REV	Date	Status/Purpose	Prepared By	Reviewed by	Approved
1	04/06/2025	Draft	Lachie Davidge	Jarred Arthur	Jarred Arthur
2	20/08/2025	For consultation with DOC	Lachie Davidge	Jarred Arthur	Jarred Arthur
3	03/06/2026	Amended and Final	Lexi Hunter	Jarred Arthur	Jarred Arthur

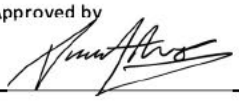
DOCUMENT CONTRIBUTORS

Prepared by

SIGNATURE 

Lexi Hunter

Reviewed and Approved by

SIGNATURE 

Jarred Arthur

Limitations:

This report has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Carter Group Limited and others (not directly contracted by PDP for the work). PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the report. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This report has been prepared by PDP on the specific instructions of Carter Group Limited for the limited purposes described in the report. PDP accepts no liability if the report is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

Executive Summary

This Lizard Management Plan (LMP) has been prepared for Carter Group Limited to guide the management of native lizards potentially affected by the proposed residential development at 531 and 535 Mill Road, Ōhoka. The purpose of this plan is to avoid, minimise, remedy, and mitigate adverse effects on native lizard species and their habitats during site preparation, construction, and post-construction phases of the development.

All native lizard species in Aotearoa New Zealand are absolutely protected under the *Wildlife Act* 1953, and suitable lizard habitat may also be significant under the *Resource Management Act* 1991. This LMP has been developed in accordance with Department of Conservation (DOC) guidance, including the nine principles for lizard salvage and transfer, and will be implemented by a suitably qualified and DOC-authorised herpetologist operating under a valid Wildlife Act Authority.

Desktop assessment and baseline lizard surveys confirmed that the site supports Canterbury grass skink (*Oligosoma aff. polychroma* Clade 4; At Risk - Declining). Suitable habitat occurs in dense exotic vegetation, debris piles, disused structures, and vegetated margins. McCann's skink and Waitaha gecko are known from the wider district, but baseline field surveys did not confirm their presence on the site.

The proposed works will remove identified lizard habitat across the site and therefore have the potential to result in lizard injury or mortality without appropriate mitigation. This LMP sets out a management approach that combines ongoing site maintenance, supervised staged habitat clearance, and a full lizard salvage of suitable habitat prior to or during construction. These measures are intended to reduce the risk of lizard encounters during works and to support compliance with statutory and consent requirements.

Lizard salvage will use best-practice methods including funnel traps, pitfall traps, artificial cover objects, and directed hand searching under the supervision of the project herpetologist. Captured lizards will be relocated to a designated on-site relocation area at 535 Mill Road, within the wider development site as part of the Fast Track application. This area will be enhanced through native planting, creation of refugia, and predator management, and protected during construction by exclusion fencing. Long-term protection of the relocation site is proposed through legal protection over the land.

This LMP also establishes protocols for lizard capture and handling, data recording, incident response, compliance reporting, and post-salvage documentation. Contingency measures and an adaptive management framework are included to respond to unexpected outcomes, such as additional species being encountered, planting failure at the relocation site, predator management issues, or greater-than-anticipated salvage numbers.

Post-release monitoring and compliance reporting requirements are outlined in accordance with DOC and Waimakariri District Council expectations and will be implemented where monitoring thresholds are met. Overall, the measures in this LMP provide a clear framework for managing lizard effects associated with the Mill Road development and support the objective of achieving no net loss for affected native lizard populations.

Table of Contents

Table of Figures

Table of Tables

Appendices

1.0 Introduction

Carter Group Limited (CGL) are applying for Fast-track consent to develop approximately 154 ha site for residential housing at 531 & 535 Mill Road, Ohoka (herein referred to as 'the site'). As part of the Fast-track application, CGL has requested Pattle Delamore Partners (PDP) to prepare a Lizard Management Plan (LMP).

This LMP is required to address and manage potential and actual effects on lizard values associated with the site. These effects may arise through earthworks activities and the removal of vegetation, existing buildings and structures during the development. This LMP details management measures to avoid, remedy or mitigate effects associated with the proposed residential development. It also outlines methodologies to be used for relocating native lizards before or during construction, and personnel responsible for completing the lizard management activities following the procedures described.

2.0 Context of LMP

All native reptiles are legally protected under the *Wildlife Act* (1953) and the habitats used by populations of native lizards (particularly threatened species) may be considered significant under the *Resource Management Act* (1991). LMP's must be actioned by a suitably qualified herpetologist under a valid Department of Conservation (DOC) Wildlife Act Authority Permit. Further detail on the Wildlife Act Authority process is provided in Section 2.4.1.

2.1 Purpose and Scope

The purpose of this LMP is to clearly detail the objectives, methodology, and actions that Carter Group Limited will undertake to minimise and remedy adverse effects on native lizards arising from the development of 531 & 535 Mill Road.

This LMP should be read in conjunction with the desktop review and site investigation of habitat availability (Appendix A) provided to Carter Group Limited.

Objectives of the LMP are as follows:

- Detail the mitigation actions Carter Group Limited will take to minimise and remedy the adverse effects on native lizards and their habitats arising from the development of 531 & 535 Mill Road.
- Ensure, to the greatest extent possible, that the management of lizards during the pre-development, development, and post-development phases complies with any conditions or statutory approvals imposed.

- Identify and recommend the methodologies that will be used to salvage and relocate lizards from affected areas to a suitable relocation site.
- Describe the relocation site.
- Outline lizard habitat enhancement measures to be undertaken within the lizard relocation sites.
- Identify the types of monitoring that will be undertaken to assess progress against the LMP.
- Identify contingency actions in the case that lizard salvage and transfer activities fail.

A wildlife authority permit for the capture, handling and relocation of native lizards is being sought for a minimum of 10 years, or until the project is completed, whichever is shorter.

2.2 Plan Structure

To ensure nationwide consistency, this LMP follows the DOC guidance and nine principles for lizard salvage and relocation in New Zealand (DOC Lizard TAG, 2019; Table 1) and is informed by DOC's guidelines for conservation-related translocations in New Zealand (DOC Lizard TAG, 2018).

Table 1. The Department of Conservation's Nine Principles for Lizard Salvage.	
1	Lizard species' 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 methodologies.
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 improvement
9	Contingency actions are required when lizard salvage and transfer activities fail.

2.3 Roles and Responsibilities

The roles and contact details of PDP, Carter Group Limited, and contractor personnel responsible for the LMP are set out in Table 2. All personnel will have the appropriate experience, project involvement, and responsibility to ensure that all relevant aspects of the project are considered when making decisions on LMP implementation.

Table 2. LMP Roles and Contact Details

Name	Role	Contact Details
Lexi Hunter	Project Herpetologist (PDP)	[redacted]
Bruce Van Duyn	Project Manager (Carter Group Limited)	[redacted]
TBD	Construction Manager	TBD

The **WAA Permit Holder** is the individual or organisation (e.g., CGL) named on the WAA permit (requested to be granted with the Fast-track consent) who is responsible for ensuring that all management activities and other conditions outlined in the WAA permit are correctly administered.

A **Project Manager** (e.g., CGL Site Manager) will be responsible for ensuring the delivery of and compliance with this LMP and will liaise with the Project Herpetologist to undergo the work. The Project Manager is also responsible for ensuring all personnel working on site adhere to this LMP. Should native lizards be discovered onsite during development activities, the Project Herpetologist must be informed a minimum of seven days before areas of potential lizard habitat are cleared.

A **Project Herpetologist** will be responsible for overseeing the correct delivery of the lizard management activities described in this LMP. This person will be suitably qualified and experienced in the field of herpetology and will follow the guidance of the WAA permit holder. If a named Project Herpetologist cannot be provided, the Director-General will review and certify the credentials of any alternative supervising ecologist to ensure appropriate expertise.

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

2.4 Plan Review and Approval

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

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

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

If no written response is received from Waimakariri District Council within 20 working days of the management plan being submitted for certification, the LMP will be deemed to have certification and works can commence.

2.4.1 Statutory Context

This LMP has been prepared in accordance with a *Resource Management Act* 1991 (RMA) Section 92 (s92) (Ministry for the Environment, 1991) request to accompany the resource consent application for the project. The LMP provides a structured approach for complying with these requirements and for managing protected reptiles and amphibians where land-use changes pose a risk to their habitats.

In the event of any conflict between this LMP and legislative requirements, including consent conditions, statutory requirements will prevail.

3.0 Lizard Effects Assessment Overview

3.1 Affected Lizard Habitat

All potential lizard habitat at the site was visually assessed on foot by a suitably qualified and experienced PDP herpetologist on the 28th and 29th of November 2024 (535 Mill Road) and 3rd of June 2025 (531 Mill Road). Appendix A contains details of the site habitat assessments.

The site largely consists of large fields of rank pastoral grasses, but exotic woody shrubs, debris piles and disused buildings are also present on site.

Key areas of potential lizard habitat at the site included:

- Dense vegetation (Figure 1)
- Debris piles (Figure 2)
- Disused structures surrounded by rank grass (Figure 3)
- Densely vegetated riparian margins (Figure 4)

Figure 1. Example of dense vegetation stands present across the site.

Figure 2. Woody debris pile present on site.

Figure 3. Disused structures surrounded by rank pastoral grass.

Figure 4. Riparian margins with rank grass and vegetation providing cover.

3.2 Affected Lizard Species and Populations

3.2.1 Desktop Assessment

The Canterbury region supports a range of native lizard species spread across a range of ecosystems. The region is known to support 24 native lizard taxa (Purdie, 2022). The Waimakariri District, which covers approximately 2,217 km^2, hosts a smaller number of these lizard species, with only three of these species being represented within 5 km of the work site (Table 3).

Table 3. Threat Status and Habitat Preferences of Lizards recorded within a 5 km Radius of the Site Boundaries. Threat status as per Hitchmough et al. (2025) and habitat preference as per Purdie (2022).

Common Name	Species Name	DOC National Threat Classification	Habitat preference
New Zealand Grass Skink complex (Canterbury and Southern)	*Oligosoma aff. polychroma* Clade 4 and 5	At Risk - Declining	Lush garden, shrub lands, stream margins
McCann's skink	*Oligosoma maccanni*	Not Threatened	Rocky habitats, shrub lands.
Waitaha gecko	*Woodworthia brunnea*	At Risk - Declining	Scrubland, forest, rocky scrubland, river terraces, scree.

A desktop assessment evaluated lizard database records within a 5 km radius of the site boundary. Only one indigenous lizard taxon was recorded within close proximity (within 1 km) of the site: the New Zealand grass skink. The site lies on the distribution boundary between the Canterbury and southern grass skink clades; as a result, previous records have not distinguished between these two taxa, with observations instead recorded under the New Zealand grass skink species complex.

Southern grass skink, Canterbury grass skink and Waitaha gecko all have a conservation status of 'Nationally At-Risk - Declining' (Hitchmough et al., 2025). Species that are 'At Risk' and 'Threatened' are of 'high' and 'very high' ecological value respectively in accordance with the New Zealand Ecological Impact Assessment guidelines (Roper-Lindsay et al., 2018). As per guideline, salvage, and transfer proposals for 'At-Risk' and 'Threatened' species will meet the criteria for conservation-led translocations (DOC, 2019).

Due to the lack of appropriate habitat present on the site, such as contiguous canopy and rocky scrubland, it is unlikely that any Waitaha geckos are present.

Images and identification methods can be found in Appendix B.

3.2.2 Baseline Survey Findings

Baseline lizard surveys were conducted by PDP herpetologists between the 31st of March and 3rd of April 2025 (Davidge & Arthur, 2025a, Appendix C). Traps were installed within potential lizard habitat across the proposed development site (Figure 5) and left inactive for five weeks to allow lizards to become acclimated to their presence. Upon survey commencement, traps were activated, checked and baited daily. Additionally, nocturnal spotlighting was planned for two nights to determine whether any native geckos were present on site. However, only one night of spotlighting was completed due to inadequate weather conditions on the second night.

In total, 12 Canterbury grass skinks (*Oligosoma* aff. *polychroma* 'Clade 4') were captured over four days of trapping, and no native gecko species were discovered during nocturnal spotlighting. Two unidentified lizards were also caught that were likely to be Canterbury grass skinks.

Figure 5. Map of the lizard trap placement at 531 & 535 Mill Road, Ōhoka during baseline surveys. Traps were installed in areas of potential lizard habitat across the site. Individuals were captured in traps 7GM, 9GM, 10GM, 5P and 18P

3.2.3 Lizard Density Estimates

To estimate lizard population sizes and densities for New Zealand grass skink and McCann's skink at the site, information was sourced from peer-reviewed scientific literature. A study by Wilson et al. (2017) assessed the population density of skink species in the Canterbury Region under multiple predator management programmes, with the most significant management programme yielding densities of up to 4,000 lizards per hectare – although this is combined for both New Zealand grass and McCann's skinks.

Southern grass skink and McCann's skink are known to occur at very high population densities (Table 4). However, baseline surveys recorded approximately seven skinks per 100 trap nights. While this indicates a moderate skink population is present within suitable habitat at the site, densities are likely to be substantially lower than the up to 4,000 individuals per hectare reported by Wilson et al. (2017).

Table 4. Reported Density Estimates for *O. polychroma* and *O. maccanni*

Lizard Species	Source	Estimated Density
New Zealand grass skink complex (*Oligosoma polychroma*)	Wilson et al. (2017)	4,000 lizards per hectare
McCann's skink (*O. maccanni*)	Wilson et al. (2017)	4,000 lizards per hectare

Notes:

1. *Wilson et al., 2017 study assessed both McCann's skink and southern grass skink simultaneously.*

3.3 Potential Adverse Effects

PDP ecologists assessed potential effects of the works to native lizards and their habitats and identified the following adverse effects (without mitigation):

Lizards (Individual, Community, and Species Level)

- Potential lizard mortality and/or injury during clearance works because the removal of vegetation, debris, and shelter/basking structures (e.g., logs, rocks, wood piles) via cutting, dragging or rolling material can bury or crush lizards.
- Permanent displacement of lizards can cause multiple adverse effects (e.g., increased risk of predation by avian and mammalian predators, new inter- and intraspecific competition, attempting to return to their home site, loss of breeding opportunity, increased stress leading to re-absorption of developing embryos).

- Permanent land use change (i.e., to residential housing) will change the composition and number of mammalian predators, notably an increase in domestic cats, which will prey on the lizard community.
- Temporary (during construction) and permanent increase in light and noise levels can affect lizard foraging effectiveness. It also increases stress levels which can alter their basking behaviour, which consequently increases their vulnerability risk to predation.
- Temporary (during construction) increase in vibration and dust levels. Dust can coat plants used for forage and basking, and dust itself can contain chemicals harmful to lizards.
- Cumulative effects to lizard communities from land use change (i.e., conversion from agricultural land to residential housing).

Lizard Habitat

- Permanent loss of lizard habitat from the proposed new housing development. This includes lizard habitat used for foraging, commuting, refuge, basking, breeding, and overwintering.
- Permanent fragmentation of lizard habitat and reduction of ecological corridors (e.g., through barriers such as new roads, property fences, mowed lawns) can reduce the viability of the remaining habitat remnants and the viability of the lizard communities.
- Temporary (during construction) and permanent increase in light and noise levels causes habitat degradation for resident lizard populations.
- Temporary (during construction) increase in dust levels causes habitat degradation for resident lizard populations.
- Cumulative effects of lizard habitat loss, fragmentation, and degradation from past and future land use change from agricultural land to residential housing (i.e., urban expansion).

3.4 Mitigating Potential Adverse Effects

This LMP covers mitigation measures associated with reducing lizard mortality or injury risk during site clearance works, and enhancement of the relocation site for improved lizard habitat. Mitigation of potential adverse effects to native lizards, and their habitats will follow the Effects Management Hierarchy, starting with avoidance measures, followed by minimisation measures, and finally, remediation measures, as described below.

3.4.1 Avoidance

The permanent loss of lizard habitat at the site cannot be avoided, as the entirety of the site is proposed to have all identified lizard habitat removed.

3.4.2 Minimisation

To ensure a no net loss to New Zealand grass skink and reduce the risk of mortality and injury to lizards during clearance works, the following minimisation measures should occur:

- Lizard habitat management measures (Section 4.0)
  - Ongoing site maintenance works (Section 4.1)
  - Staged habitat clearance works (Section 4.2)
- Lizard salvage and relocation (Section 5.0)

3.4.3 Remediation

The relocation site will be subject to the following remedial measures:

- Lizard habitat enhancement plan (Section 6.2 and Appendix D)
  - Enhancement planting. This includes planting native lizard-food plants (e.g., *Coprosma* sp., *Poa cita, and Corokia* sp.) that provide foraging opportunities.
  - Weed control.
  - Lizard refugia creation. This includes building small eco-piles (Herbert et al., 2023) from materials like stone and wood to provide refugia post-construction works.
  - Predator management.

4.0 Lizard Habitat Management

To deter lizards from the site and prevent them from repopulating, supervised habitat removal is suggested at this site, however, the primary strategy for this site is to execute a full site salvage, as detailed in Section 5.1 Salvage Timing.

Staged vegetation and lizard habitat clearance works should be undertaken during the South Island lizard activity season (October to March inclusive) (DOCLizardTAG, n.d.) and only under suitable weather conditions (i.e., warm temperatures, no precipitation, and low wind).

4.1 Ongoing Site Maintenance

The Mill Road sites have historically been used for stock grazing; however, grazing does not appear to be occurring at present in some areas, and long grasses are beginning to establish across the site. If feasible, stock should be reintroduced to the site at least eight weeks prior to the start of the lizard season (October). Where this is not possible, mowing must be undertaken within the same timeframe (a minimum of eight weeks prior or earlier). Mowing is to be staged, with grass initially reduced to a height of 100 mm and left for

approximately seven days before being cut to a final height of 50 mm. Grass should then be maintained at 50 mm or lower until works commence on site.

Management of grass height is essential to reducing lizard habitat on the site. If it is not managed appropriately prior to the staged habitat clearance, grass will need to be removed following the procedures outlined in Section 4.4.

4.2 Staged Habitat Clearance

Dense vegetation present on the site will be cleared in stages under the supervision of the project herpetologist.

Where possible, vegetation will be removed by hand; however, it is understood that this may not logistically possible for all habitat on site. In this instance, machine assisted vegetation may occur under the direction and supervision of the project herpetologist working alongside machine operators.

As felled vegetation can provide habitat for lizards, any vegetation cleared and confirmed by the project herpetologist to be free of lizards will be immediately removed and disposed of offsite.

Any lizards discovered during staged habitat clearance will be subsequently caught and moved to the proposed relocation area as per Section 5.2. Any lizards captured will be handled and held following best practice and released as soon as is practicable to the selected release area, as per the *Animal Welfare Act*, 1999 (Ministry for Primary Industries, 1999).

5.0 Lizard Salvage and Relocation

Baseline lizard surveys have confirmed the presence of Canterbury grass skinks at the project site, as such, a full salvage (the removal and relocation) of lizards on the site is to be carried out. The methods described below are relevant to the salvage and relocation of lizard specimens caught onsite before or during (i.e., accidental discovery) the proposed construction works.

5.1 Salvage Timing

A lizard salvage should be undertaken between the 1st of October and 30th of April (ECAN, 2018), and during suitable weather conditions (warm and low wind) when lizards are most active. The salvage must take place **prior** to works start and any vegetation clearance and will likely be in stages to align with development of the overall site. WAA must be in place for the duration of the salvage process.

A lizard salvage cannot be undertaken during winter months as lizards will likely be in a lowered state of torpor (mild hibernation) and/or are inactive so will be detected less often during salvage efforts.

5.2 Salvage footprint

The salvage effort will be concentrated in areas with suitable lizard habitat. This was determined during prior habitat availability surveys (Davidge & Arthur, 2025b) and subsequently confirmed during the baseline lizard survey (Davidge & Arthur, 2025a). Areas proposed for vegetation clearance will be clearly marked before works commence. Lizard salvage and relocation efforts will focus on marked areas as well as areas where lizards were captured during the baseline survey (see Figure 5)

5.3 Salvage Methods

Lizards will be salvaged through a combination of methods, including funnel traps, pitfall traps, and artificial cover objects (ACOs), as described below.

5.3.1 Funnel Traps

Funnel traps will be installed across the extent of the works area. Their specific location to be chosen by the project herpetologist. Traps will be installed and filled with vegetation and leaf-litter to provide cover and reduce heat exposure/desiccation to trapped animals prior to activation. Traps will be left for six weeks to all lizards to habituate to their presence prior to activation.

Traps will be activated through the addition of a lure (fruit or protein based). Pieces of rubber garden hose will be added into the entrances of the funnel trap to prevent mice entering. Post-activation, traps will be checked at least once every 24 hours for five days or until no lizards are captured for three days in a row.

5.3.2 Pitfall Traps

Pitfall traps will be installed and left for inactive for approximately six weeks. Their exact location will be determined by the project herpetologist and concentrated in areas of highest ecological value. Traps will be filled with vegetation, sticks, and leaf litter and will be left inactive so that any local lizards can enter and exit, allowing them an opportunity to habituate to the pitfall traps. A piece of square *Onduline* mat will be placed atop the trap to protect lizards from sun and rain exposure. Traps will be left for six weeks to all lizards to habituate to their presence prior to activation.

Traps will be activated through the addition of a lure (e.g., soft fruit or protein based) and a moist sponge will be placed inside to provide water for captured individuals. Post-activation, traps will be checked at least once every 24 hours for five days or until no lizards are captured for three days in a row.

5.3.3 Artificial Cover Objects (ACOs)

ACOs will be installed across the site as far in advance as possible. ACOs will consist of at least two 500 x 475mm *Onduline* sheets stacked on top of one another. *Onduline* is a corrugated roofing material that retains heat, providing refuge and thermoregulation for lizards.

Lizard use of ACOs is dependent on environmental factors, such as proximity to dense vegetation, weather conditions and disturbance frequency (Lettink et al., 2011); this will be taken into consideration when considering placement and maintenance of ACO on the site.

ACOs placed on the ground will be weighted with rocks or pegged down to minimise the impact of adverse weather conditions, whereas ACOs targeting arboreal species are to be attached to trees with cable ties or nails. As previously stated, disturbance frequency can impact ACO usage, and as such, ACOs are only to be opened with the express permission of the project herpetologist.

When lizard salvages begin, ACO checks should be conducted within an enclosed area (e.g., plastic storage bin) to ensure the highest retention rate possible of lizards within the ACO.

Lizards salvaged will be relocated to the pre-determined relocation site outlined in Section 6.1.

5.4 Lizard Capture and Handling Protocol

The project ecologist will ensure that the following protocol is followed to minimise disturbance, injury, or mortality to captured lizards (DOCLizardTAG, 2018):

- Indigenous lizard species will be captured and handled by a DOC-authorised herpetologist with assistance by an appropriately trained ecologist(s). All native lizards will be placed in suitable temporary container (e.g., breathable cloth bag) which will contain adequate vegetation and a source of water present (wet sponge cutting) within a hard sided plastic box to prevent crushing injuries. As practicably possible, lizards should only be held temporarily over the period of active searches or trap inspections (i.e., on the same day of capture), after which lizards will be released at the allocated relocation site.
- Individuals handling lizards will sterilize their hands and all equipment used during the salvage and relocation work.
- The relocation site will be appropriately prepared for the lizard species being translocated.

- 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 Zealand (MPI, 2018) and any conditions detailed in the projects Wildlife Authority Act permit. Lizards must only be handled by those named in the Wildlife Authority Act, or under their direct supervision.

5.5 Inadvertent Lizard Injury or Death

Due to the use of destructive habitat methods using heavy machinery, it is possible that injury and/or death to native lizards could occur.

If a lizard is found during works and the project herpetologist is not present, works must immediately stop within 20 m of the place of discovery, and the project herpetologist/DOC should be notified immediately (within 2 hours). Work can restart following approval from the project herpetologist.

The following steps will be implemented if injured or deceased lizards are found during the salvage.

- The project herpetologist will record, for each species, the number of dead and injured lizards found throughout the project and report these numbers to DOC at the conclusion of each stage of the LMP.
- The injury or death of any 'Threatened' lizard species will be reported to DOC within 24 hours of the observation as they are of high conservation concern.
- The injury of any 'Not Threatened' or 'At-Risk' lizard will be assessed. If injuries are deemed to be severe or life-threatening, euthanasia may be considered via blunt force trauma, followed by pithing. DOC must be consulted prior to undertaking any euthanasia and may recommend an alternative method.
- If a 'Threatened' species is found injured, it must be taken to a suitably qualified veterinarian as soon as possible, or to the South Island Wildlife Hospital if advised otherwise by the Mahaanui DOC operations manager. Injured lizards are to be kept in an appropriate portable enclosure under the direction of the project herpetologist to ensure the animal is cared for appropriately until it can be seen by a veterinarian.
- If the unexplainable carcass of a 'Threatened" species is found, arrange for it to be sent to Massey University Wildlife Postmortem Service, or as advised otherwise by the Mahaanui DOC operations manager.
- If any injured or deceased lizards are found, this LMP may be modified to prevent further injuries or deaths. Measures may include the modification of the salvage strategy, the addition of extra, trained personnel, and further communication with any machine operators.

5.6 Lizard Release Strategy

Lizards will be released into habitat suitable for the species at the selected relocation site. Lizards salvaged within the same location (e.g., same pit fall trap), should be released together to preserve community and family groups.

The proposed lizard release strategy does not include accommodations for captive holding of lizards prior to release. The reasons being that periods of captivity can cause undue stress and injury to lizards captured. There is also no recorded benefit to housing lizards in captivity prior to release. It should be noted that captive housing can be beneficial only in instances where weather conditions are unsuitable for release (e.g., low temperature that reduces lizard activity).

6.0 Relocation Site

6.1 Relocation Site Selection

The re-establishment and long-term protection of displaced lizard relies on an adequate relocation site(s) being chosen. A relocation site should offer better or similar habitat to the original site, to ensure better survival and long-term persistence of lizards translocated to the new site. The ideal relocation site would meet all the following criteria (DOCLizardTAG, 2018):

1. The site(s) must be ecologically appropriate for the salvaged species and have long-term security.
2. The site(s) must provide protection from predators (i.e., predator management).
3. The site(s) must be protected from future human disturbance (i.e., covenanted).
4. The site(s) must be far enough from the salvage area to prevent lizards returning, yet close enough to provide similar habitat conditions.
5. Post-release monitoring must be achievable at the site(s).
6. The site(s) should be able to house at least double the number of lizards expected to be salvaged.
7. The views of mana whenua must be included in the selection process.

Based on these criteria, a potential relocation site has been identified within the wider development works site at 535 Mill Road, Ōhoka (Table 5; see Appendix E). The chosen relocation site is close in proximity to salvage areas, and as such will contain the same climatic conditions as the original habitats lizards are to be salvaged from. As the sites existing vegetation primarily consists of exotic pasture grass, the site will require habitat enhancement in order to make it appropriate for relocation. This will include predator management, native plantings and habitat construction. The proposed site is approximately 1000 m^2 in size.

Table 5: Assessment of the relocation site at 535 Mill Road, Ōhoka		
Principle	**Description**	**Comment/Assessment**
1. The site must be ecologically appropriate and have long-term security	It must be suitable through time for the lizard species being salvaged. The location must be within the species' natural geographic range. There must be no mixing of genetically structured populations.	The relocation site has been proposed within the development site at 535 Mill Road, Ōhoka (see Appendix E). A population of Canterbury grass skinks were found in the development area during baseline lizard surveys (Davidge & Arthur, 2025a). With enhancement, the potential relocation site will support the species.
	It must be an appropriate distance from the salvage site to ensure lizards cannot move back into harm's way yet provide a microhabitats and climate.	The proposed relocation site is found within the proposed development area at 535 Mill Road, Ōhoka. The areas will be enhanced following the methods and designs relating to lizard habitat enhancement. This will include a lizard fence to prevent individuals from moving back into the development area. The site is approximately 1,000 m^2.
	It should be predominantly indigenous vegetation that is sufficiently large and continuous to support both the translocated lizards and the eventual established population over all the species' life history stages.	The site currently has inadequate lizard habitat available and will therefore require habitat enhancement works to make it viable for lizard relocation. The vegetation composition at the site primarily consists of pasture grasses.
	It must contain sufficient resources (food, cover, retreats) for both the salvaged lizards and the eventual established population, be buffered from climatic	Habitat enhancement works will be conducted to provide suitable refugia and foraging sites for relocated lizards. It

Table 5: Assessment of the relocation site at 535 Mill Road, Ōhoka		
Principle	**Description**	**Comment/Assessment**
	extremes (drought, cold) and not located in areas that are prone to flooding or coastal erosion.	is not subject to flooding and is climatically the same as the existing habitat. See Appendix D for lizard habitat enhancement details.
	There must be sufficient resources for both resident and translocated lizards or 'improved' for lizards to ensure resources are available.	Habitat enhancement works will be conducted to provide suitable refugia and foraging sites for relocated lizards. This will ensure the site has the appropriate carrying capacity.
2. The site must provide protection from predators	Habitat at the site must be secure from predators or effective pest control must be in place to allow the salvaged lizards to establish a population.	Pest control is recommended to be undertaken, including pest trapping and monitoring, to ensure potential mammalian predators are reduced in the area. Trapping and monitoring will be conducted for three years. See Appendix D for predator control plan.
3. The site must be protected from future human disturbance	Land tenure at the site must ensure long-term protection from disturbance.	The relocation site is within land owned by the developer. The site will be afforded reserve status (Local Purpose Reserve) and therefore protected from any future development.

6.2 Legal Protection

To enable use of this site for relocation, Carter Group Limited is responsible for securing a covenant over the land to ensure its long-term protection in perpetuity.

6.3 Lizard Habitat Protection

To protect the relocation site during construction and prevent lizards from re-entering the active works area, a lizard exclusion fence will be installed prior to the commencement of works (Figure 6).

The exclusion fence will be constructed from smooth 1.5 mm thick high-density polyethylene (HDPE) geomembrane to provide a non-climbable barrier for skinks and mammalian predators. The fence will have a total above-ground height of 700 mm and will incorporate a buried skirt extending 100 mm vertically and 200 mm horizontally below ground level. This specification is intended to exclude hedgehogs and most rodent species, while also deterring other mammalian predators. The fence will be installed by an approved contractor follow the advice of the Project Herpetologist.

The fence will be regularly inspected during site walks to identify and repair any holes or weak points and will remain in place for a minimum of 12 months following completion of construction.

The fence will be inspected at least quarterly and after any significant adverse weather event to confirm that it remains taut, intact, and fully functional, including being free of holes, tears, breaks, or other defects. Vegetation on both sides of the fence will also be assessed during each inspection. Where vegetation adjacent to the fence reaches approximately 500 mm in height, a 1 m wide buffer on both sides of the fence will be cut back to a maximum height of 200 mm using lizard-sensitive methods (e.g. hand tools). This will help maintain the effectiveness of the fence by reducing opportunities for lizards to escape and limiting access for mammalian predators.

The fence will remain in place for the duration of site works and should be removed upon completion of proposed construction.

Figure 6. Lizard exclusion fencing example.

6.4 Lizard Habitat Enhancement

Habitat enhancement measures to prepare the site for lizard relocation are outlined below and will be detailed in the habitat enhancement plan (HEP) provided alongside this report (Appendix D). All lizard habitat enhancement will occur prior to the salvage period, with exact timings outlined in the HEP.

6.4.1 Enhancement Planting

Planting in the relocation site will be designed to provide suitable habitat for native skinks and geckos and will include a selection of native plant species that provide: (i) a food source (e.g., berry-producing shrubs) (ii) habitat complexity (e.g., some larger shrubs and small trees) (iii) dense ground cover (to maintain moisture and help lizards avoid predation). Initial planting will be undertaken at least 6 to 12 months before the planned salvage period to allow sufficient time for vegetation to establish and provide adequate cover and foraging habitat.

Enhancement planting will be undertaken during the first planting season following vegetation and habitat removal. This will comprise infill planting within the existing vegetation matrix using locally sourced species appropriate to the Waimakariri District. For areas that are already planted, these should be provided with buffer planting, where practicable. All planted areas should be maintained for a period of three years post salvage.

6.4.2 Weed Control

Weed control will be required to ensure the success of planted native plants. All planted areas should be cleared of weeds for a period of three years post-initial planting.

6.4.3 Lizard Refugia Creation

Woody and/or rocky material should be sourced from within the relocation site or nearby and piled to create additional refugia for lizards. The quantity and location of piles will be specified by the project herpetologist. Care should be taken to ensure that the creation of these piles does not results in the injury and/or death of resident lizards, further detailed in the HEP provided.

6.4.4 Predator Management

A Mammalian Predator Management Plan must be prepared and implemented at least 10 weeks prior to the planned relocation date - this is to ensure the continued survival of the population released into the relocation site. This plan will be developed by a Waimakariri District Council approved pest control provider; further details are provided in the provided HEP (Appendix D).

Pest control operations will target invasive species at high risk of predating on lizards, such as rodents and hedgehogs, and be carried out along the perimeter of the habitat for at least three years post relocation by a licensed pest control provider.

It is acknowledged that there are few reports on the level of predator control needed to grow native lizard populations (Reardon et al., 2012), and lizard translocations can only occur if areas have a sufficient and robust Mammalian Predator Management Plan.

If significant avian predation risk is detected at the relocation site, particularly from pukeko (given the site's rural farming location), an alternative relocation site may be considered. To date, pukeko have not been observed near the proposed relocation site.

7.0 Data Recording and Analysis

All salvaged lizards will be numbered, and the following data will be collected on both an Amphibian/Reptile Distribution Scheme (ARDS) card and a ECAN Lizard Occurrence Form and submitted to DOC and Environment Canterbury respectively:

- Date and time of capture.
- Weather conditions upon capture.
- Capture methodology.

- Lizard species, age, sex and life stage, presence of tail, snout-to-vent length and vent-to-tail length.
- Photograph of each individual, including dorsal and ventral surfaces.
- Photograph of the capture location and release point at relocation site.

8.0 Contingencies

The primary incidents relating to this Lizard Management Plan are:

- Additional lizard species encountered other than those expected to be on site (incidental discovery).
- Relocation site habitat enhancement planting failures.
- Mammalian predator control has indirect adverse effects (e.g., a mouse or rat population eruption).
- More lizards than expected are salvaged from the site.

The associated contingency measures for these primary incidents are described in Table 6.

Table 6. Incidents and their contingencies associated with the Lizard Management Plan

Incident associated with salvage	Details	Contingency
Additional lizard species encountered	Any native species (other than those discussed in the LMP) are encountered during salvage.	Stop works within 20 m of the lizard, and notify the project herpetologist and DOC.
Relocation site enhancement planting failures	More than 15% of plantings fail within a year is deemed significant.	Infill planting carried out, reassessment of planting plan, increased pest animal and plant management may be necessary.
Mouse/rat population eruption from mammalian predator control works	Increased numbers of rodents observed due to removal of competing species.	Increased predator control targeting rodents specifically.
More lizards than expected are salvaged	More than 100 lizards are deemed a significant number for this site.	Relocation site will be reassessed, and additional sites may require further habitat enhancement.

9.0 Adaptive Management

To achieve a net-positive outcome for any native lizards onsite, changes to this LMP may be required. The LMP is therefore considered a "living document". If any changes to the LMP are required, a variation to the Wildlife Authority Act permit must be approved before authorisation is given. The current LMP (Version 3.0 03/06/2026) is the authorised document. Changes will follow best practice guidelines as recommended by DOC and Waimakariri District Council.

10.0 Lizard Monitoring

10.1 Monitoring Programme Design

Post-release monitoring is a general requirement of DOC Wildlife Authority Act's issued for the purpose of relocating protected wildlife. Where lizards are captured and released away from the works site, post-release monitoring will be required only where more than 20 "At Risk" or "Threatened" species are relocated.

Monitoring will commence 12 months after translocation and will aim to assess the outcome of the lizard relocation and mitigation efforts and determine whether additional management is required. Lizard monitoring will be required 'every other year' for five years (i.e., Year 1, 3 & 5 post-release) following the relocation of lizards to the site. Post-release monitoring will be undertaken by a suitably qualified/experienced herpetologist/ecologist approved by Waimakariri District Council.

Lizard monitoring should be done from October to March inclusive and employ best practise herpetofauna survey techniques, in accordance with DOC's Standard Operating Procedures (DOC Biodiversity inventory and monitoring toolbox – Herpetofauna). The methods and intensity of monitoring effort should reflect the outcomes of the lizard salvage programme (i.e., skink only – use of artificial refuges for one month, followed by at least four inspections).

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

10.2 Reporting

A salvage report will be prepared, including the details of the lizard species found, salvage methods, capture locations, number of individuals salvaged, and relocation site. This report will include details around the enhancement of the relocation site, and compliance with the Wildlife Act Authority. Information

regarding the success of the lizard salvage and any incidents and adaptations that were required will also be included.

If required, a translocation monitoring report will be provided the following summer post-relocation. This report will summarise the findings of the translocation and will include monitoring methods and results, details around the success of habitat enhancement, and the assessment of the sites ecological suitability at the time of reporting.

10.3 Wildlife Act Authority and Compliance Reporting

Reporting requirements outlined in the Wildlife Act Authority and resource consent will be adhered to.

Lizard capture and relocation data will be compiled, summarised, and submitted to DOC's national data repository for herpetofauna records (Bioweb ARDS Herpetofauna Database). As a minimum, the report will include the following information:

- DOC Wildlife Act Authority number.
- Project name and location.
- A summary of the species, numbers and age/ sex classes of lizard captured.
- Photographs of lizard salvage methods, salvage and relocation methods and lizards salvaged.
- A map showing the location of lizards upon capture and release.
- Summary of salvage method, effort, and success.

10.4 Incident Monitoring and Reporting

An incident report will be provided to Waimakariri District Council and DOC within five working days of the incident occurring and will include the following details:

- Any occurrences of lizard injury or mortality; and,
- Measures to avoid, minimise, or remedy.

11.0 References

DOC Lizard TAG. (2018). *Guidelines for conservation-related translocations of New Zealand lizards*. Department of Conservation, Wellington, New Zealand. Available at: https://www.doc.govt.nz/globalassets/documents/getting-involved/translocation/translocation-best-practice-lizards-1.pdf.

DOC Lizard TAG. (2019). *Key principles for lizard salvage and transfer in New Zealand*. Available at: https://www.doc.govt.nz/globalassets/documents/about-doc/concessions-and-permits/wildlife-research-permits/lizard-salvage-and-transfer-nz.pdf. Department of Conservation, Wellington, New Zealand.

ECan (Environment Canterbury). (2018). *Environment Canterbury Guidelines for Lizard Management*.

Herbert, S., Knox, C., Clarke, D., & Bell, T. (2023). Use of constructed rock piles by lizards in a grassland habitat in Otago, New Zealand. *New Zealand Journal of Ecology*. Available at: https://doi.org/10.20417/nzjecol.47.3543.

Hitchmough, R., Barr, B., Knox, C., Lettink, M., Monks, J. M., Patterson, G. B., Reardon, J. T., van Winkel, D., Makan, T., & Michel, P. (2026). *Conservation status of reptiles in Aotearoa New Zealand, 2025*. Available at: https://www.doc.govt.nz/globalassets/documents/science-and-technical/nztcs50.pdf.

Lettink, M., O'Donnell, C. F. J., & Hoare, J. M. (2011). *Accuracy and precision of skink counts from artificial retreats*.

Ministry for Primary Industries. (1999). *Animal Welfare Act 1999*. New Zealand Legislation. Available at: https://www.legislation.govt.nz.

Ministry for the Environment. (1991). *Resource Management Act 1991*. Ministry for the Environment. New Zealand Legislation. Available at: https://legislation.govt.nz/act/public/1991/69/en/latest/#DLM233695.

Reardon, J. T., Whitmore, N., Holmes, K. M., Judd, L. M., Hutcheon, A. D., Norbury, G., & Mackenzie, D. I. (2012). *Predator control allows critically endangered lizards to recover on mainland New Zealand*.

Wilson, D. J., Mulvey, R. L., Clarke, D. A., & Reardon, J. T. (2017). Assessing and comparing population densities and indices of skinks under three predator management regimes. *New Zealand Journal of Ecology*, *41*, 84–97.

Woolley, C. K., Hartley, S., Innes, J. G., Shanahan, D. F., van Heezik, Y., Wilson, D. J., & Nelson, N. J. (2023). Conservation of skinks in New Zealand cities. *Urban Ecosystems*, *26*(5), 1493–1508. Available at: https://doi.org/10.1007/s11252-023-01398-w.

Appendix A: Habitat Assessment

PATTLE DELAMORE PARTNERS LTD
Level 2, 109 Fanshawe Street,
Auckland Central 1010
PO Box 9528, Auckland 1149, New Zealand

Tel +64 9 **523 6900**
Web **www.pdp.co.nz**

memorandum

TO	Tim Carter	FROM	Lachie Davidge and Jarred Arthur
	Carter Group Limited	DATE	14 August 2025
RE	Ohoka Residential Development – Lizard Habitat Assessment		

1.0 Introduction

Carter Group Limited (CGL) requested Pattle Delamore Partners (PDP) to undertake a lizard habitat assessment on rural land at 531 & 535 Mill Road, Ohoka. This was to support their Fast track consent application for a proposed residential development at the site.

PDP ecologists (see Appendix A) conducted a desktop assessment and subsequently surveyed the 535 Mill Road site on 28-29th of November 2024. A later site visit was conducted at 531 Mill Road on 3rd of June 2025. This was because this parcel of land was purchased after the initial survey dates.

The purpose of the assessments was to determine whether suitable habitats were present onsite that may support an indigenous lizard population. This involved vegetation searches, debris flipping and visual surveys. Findings informed more detailed survey methods (e.g., trapping and tracking) employed in March and April 2025 (see PDP baseline survey report of Davidge and Arthur, 2025a).

2.0 Results

2.1 Desktop Assessment

A desktop search of iNaturalist and the Department of Conservation (DOC) herpetofauna database was conducted within a 13 km boundary of the proposed development site. This determined whether any native lizards had been observed in the vicinity of the area. Only research-grade iNaturalist observations were included in the search.

Only Southern grass skink (*Oligosoma* aff. *polychroma* Clade 5) was recorded within a 5 km radius of the site, however it is possible some of these specimens may have been Canterbury grass skink (*Oligosoma* aff. *polychroma* Clade 4) given the site location north of the Waimakariri River. Several northern grass skinks (*Oligosoma polychroma*), Canterbury grass skinks (*Oligosoma* aff. *polychroma* Clade 4), McCann's skinks (*Oligosoma maccanni*), and Waitaha geckos (*Woodworthia brunnea*), along with additional observation of southern grass skinks, were found within a 13 km boundary of the site. One plague skink (*Lampropholis delicata*) has been observed within the 13 km boundary; however, this observation has been excluded from Table 1 as it is an invasive species.

Table 1: Herpetofauna observed within a 5 km and 13 km of the development site.		
Common Names	**Species**	**Conservation Status[1]**
Canterbury grass skink	*Oligosoma* aff. *polychroma* Clade 4	At Risk – Declining
Northern grass skink	*Oligosoma polychroma*	Not Threatened
McCann's skink	*Oligosoma maccanni*	Not Threatened
Southern grass skink	*Oligosoma* aff. *polychroma* Clade 5	At Risk – Declining
Waitaha gecko	*Woodworthia brunnea*	At Risk – Declining
Note: *Records of Southern grass skink and Northern grass skink are likely to be that of the taxanomically similar Canterbury grass skink due to the geograohic locality north of the Waimakariri River.*		

2.2 Field Surveys

No lizards were observed during the November 2024 or June 2025 habitat survey visits, however several locations contained small areas of potential native lizard habitat, including rank grass, debris piles and abandoned farm buildings (see Appendix B). Of note were the abandoned farm buildings surrounded by rank grass. These areas provide ideal habitat for native skink species such as Canterbury skinks, northern and southern grass skinks, and McCann's skinks (Purdie, 2022).

Overall, the rural land and structures at 531 & 535 Mill Road provides limited habitat for native lizards. However, its proximity to lizard habitats at Ohoka Domain and Ohoka Bush (approx. 500 m east) suggests native lizards could be present at the development site.

A subsequent lizard trapping survey was conducted at 535 Mill Road (the majority of the project site) and found the presence of Canterbury grass skinks in March and April 2025 (see Davidge & Arthur, 2025a for more details). The 1.8 ha site at 531 Mill Road has not had trapping conducted, but it contained an old farm shed and therefore has potential, albeit limited, habitat.

3.0 Schedule 7 Fast-Track Approvals Act 2024

An application for a wildlife approval must address the following matters set out in Table 2 below (as per Schedule 7 of the Fast-Track Approvals Act, 2024).

Table 2: Descriptions of how Schedule 7, clause 2 (Fast-Track Approvals Act, 2024) conditions have been addressed	
Schedule 7, Clause 2	**Comment/Assessment**
(a) specify the purpose of the proposed activity:	Residential development with an area of commercial development, an area for a retirement village and an area for a polo field.
(b) identify the actions the applicant wishes to carry out involving protected wildlife and where they will be carried out (whether on or off public conservation land):	Vegetation clearance, building and debris clearance, site earthworks and other operations associated with the construction of a residential housing development. The site is a 531 & 535 Mill Road and is **not** on public conservation land.

[1] Information on lizard conservation status is provided by the New Zealand Threat Classification System, (DOC, 2022).

Table 2: Descriptions of how Schedule 7, clause 2 (Fast-Track Approvals Act, 2024) conditions have been addressed	
Schedule 7, Clause 2	**Comment/Assessment**
(c) include an assessment of the activity and its impacts against the purpose of the Wildlife Act 1953:	Site assessments have identified potential herpetofauna (lizard) habitat. Detailed baseline lizard surveys were undertaken in March and April 2025. These found the presence of Canterbury grass skinks. A Lizard Management Plan (LMP) will be prepared as part of the Fast-track application and details management interventions proposed to protect lizard populations inhabiting the site (if any). These include trap and transfer of fauna and deterrent measures. The activity and its impacts comply with the Wildlife Act 1953.
(d) list protected wildlife species known or predicted to be in the area and, where possible, the numbers of wildlife present and numbers likely to be impacted:	See Section 2.1 and Table 1. Detailed herpetofauna surveys have confirmed the presence of Canterbury grass skinks in March and April 2025. In total, 14 individuals were caught (see PDP lizard survey report supplied as part of Fast-track application).
(e) outline impacts on threatened, data deficient, and at-risk wildlife species (as defined in the New Zealand Threat Classification System):	Potential impacts include habitat removal and the mortality of lizard specimens as caused by site construction works. These effects will be managed through the implementation of a robust LMP.
(f) state how the methods proposed to be used to conduct the actions specified under paragraph (b) will ensure that best practice standards are met:	See LMP to be supplied as part of the Fast-track application.
(g) describe the methods to be used to safely, efficiently, and humanely catch, hold, or kill the animals and identify relevant animal ethics processes:	See LMP to be supplied as part of the Fast-track application.
(h) state the location or locations in which the activity will be carried out, including a map (and GPS co-ordinates if available):	531 & 535 Mill Road, Ohoka, Christchurch. For further site details, see other supporting documents for the Fast-track application.
(i) state whether authorisation is sought to temporarily hold or relocate wildlife:	Due to the confirmed presence of Canterbury Grass Skink (see PDP lizard survey report), authorisation is sought to temporarily hold or relocate wildlife.
(j) list all actual and potential wildlife effects (adverse or positive) of the proposed activity, including effects on the target species, other indigenous species, and the ecosystems at the site:	Potential impacts include habitat removal and the mortality of lizard specimens as caused by site construction works. The site will long-term consist of a developed residential landscape with roads and other infrastructure, making it unsuitable for lizards to colonise. Effects will be managed through the

Table 2: Descriptions of how Schedule 7, clause 2 (Fast-Track Approvals Act, 2024) conditions have been addressed	
Schedule 7, Clause 2	**Comment/Assessment**
	implementation of a robust LMP (to be supplied as part of Fast-track application).
(k) where adverse effects are identified, state what methods will be used to avoid and minimise those effects, and any offsetting or compensation proposed to address unmitigated adverse effects (including steps taken before the project begins, such as surveying, salvaging, and relocating protected wildlife):	See LMP to be supplied as part of the Fast-track application.
(l) state whether the applicant or any company director, trustee, partner, or anyone else involved with the application has been convicted of any offence under the Wildlife Act 1953:	No convictions.
(m) state whether the applicant or any company director, trustee, partner, or anyone else involved with the application has any current criminal charges under the Wildlife Act 1953 pending before a court:	No pending charges.
(n) provide proof and details of all consultation, including with hapū or iwi, on the application specific to wildlife impacts:	Consultation with DOC occurred as part of the requirements of the Fast-track application (prior to baseline lizard surveys being conducted). This concerned aspects of lizard discovery onsite and is contained in Appendix C. We understand that consultation with Te Ngāi Tūāhuriri Rūnanga, Whitiora, and Te Rūnanga o Ngāi Tahu has or will occur and be included as part of the Carter Group's application. Please see the application for further details on consultation.
(o) provide any additional written expert views, advice, or opinions the applicant has obtained concerning their proposal.	As per this memorandum and associated draft LMP and baseline survey memorandums (supplied as part of application). A pre-consultation meeting with DOC has been held (see feedback in Appendix D).

4.0 Recommendations

4.1 Habitat Management

We recommend that staged vegetation clearance be undertaken in combination with other methods (i.e., eco-piles) a minimum of three days before the commencement of any construction works. This will involve maintenance or livestock grazing to maintain or bring grass down to a low height (approximately 100 mm). Low-cut grass is unattractive to native lizards, especially skink, as it offers limited cover and foraging habitat. Hand-tools should be used to maintain grassed areas and cut vegetation should be removed and piled nearby offsite. The use of machinery such as lawnmowers may cause harm, injury or

death to animals present (DOC, 2023). Cut vegetation should be piled offsite to provide nearby refugia for lizards to colonise if present.

Eco-piles can be used as a management technique to protect lizard populations in combination with staged vegetation clearance. Eco-piles are made using woody debris, rocks and other materials found at the site. These materials are piled together in an area adjacent to the site and left in place throughout the project. The eco-piles provide refugia and foraging habitats for native lizards and will help attract lizards offsite (e.g., Herbert et al., 2023).

Other recommendations for the protection of lizard fauna are contained in a LMP to be supplied as part of the Fast-track application (see Davidge & Arthur, 2025b). These recommendations were made subsequent to the discovery of Canterbury grass skink onsite and include suggestions such as the trap and transfer of specimens.

4.2 Baseline Lizard Survey

Upon the findings of habitat surveys conducted at 535 Mill Road, we recommended conducting a baseline lizard survey (rather than just potential habitats) within areas containing old farm buildings and dense vegetation. This was carried out in March and April 2025, the findings of which are presented in Davidge & Arthur (2025a).

The baseline survey included diurnal lizard searches and nocturnal spotlighting to determine whether any native lizard specimens are present in the area. The survey confirmed the presence of Canterbury grass skink and, consequently, a Lizard Management Plan (LMP) will be prepared as part of the Fast-track application. A Wildlife Act Authority (WAA) permit is sought for the capture and relocation of lizards at the site prior to construction works commencing.

5.0 Recommended Conditions

Schedule 7, clause 6 of the Fast-track Approvals Act 2024 states:

1) *A panel may set any conditions on a wildlife approval that the panel considers necessary to manage the effects of the activity on protected wildlife.*

2) *In setting any condition under subclause (1), the panel must*

   a) *consider whether the condition would avoid, minimise, or remedy any impacts on protected wildlife that is to be covered by the approval; and*

   b) *where more than minor residual impacts on protected wildlife cannot be avoided, minimised, or remedied, ensure that they are offset or compensated for where possible and appropriate; and*

   c) *take into account, as the case may be, the New Zealand Threat Classification System or any relevant international conservation agreement that may apply in respect of the protected wildlife that is to be covered by the approval.*

In accordance with Schedule 7 provisions, it is recommended that the following are included as conditions of consent:

1. *The results of lizard surveys, conducted to confirm lizard presence at the site, must be provided to Mahaanui Kurataiao.*

2. *In the event of any confirmed herpetofauna being found at the site, a detailed Lizard Management Plan must be implemented including methods for:*

   a. *avoidance and mitigation methods; and/or*

b. capturing and relocating of lizards; and/or

c. deterring populations from inhabiting the site; and/or

d. other management interventions as deemed necessary to protect resident populations.

3. *Any capture and relocation of lizard fauna must be undertaken in accordance to permits obtained under the authority of the Wildlife Act (1953).*

The confirmation of Canterbury grass skink at the site means it is recommended that lizard salvage and relocation work is required on site (Davidge & Arthur, 2025a; 2025b). A report summarising the salvage and relocation results will be prepared and submitted to WDC and DOC within 30 days from the completion date of the work (see LMP to be supplied as part of Fast-track application). Specifically, this report will include:

1. Results of lizard salvage and relocation work. Should native lizards be found, then the following will also be included in the report:
   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 lizard upon capture and upon release.
2. Descriptions of how lizard management activities outlined in the LMP were followed, including conditions detailed in the WAA permit and associated resource consent conditions;
3. An Amphibian and Reptile Distribution Scheme (ARDS) card detailing information relating to captured lizards; and,
4. A brief summary regarding the outcomes of the LMP, including any improvements/changes that should be implemented in future.

6.0 Conclusions

The Ōhoka residential development site at 531 & 535 Mill Road contains several areas of potential lizard habitat including rank grass, dense foliage and old farm buildings. Based on these findings, a detailed baseline lizard survey of the site was undertaken in March and April 2025. The surveys found the presence of Canterbury grass skink (Davidge & Arthur, 2025a).

A WAA permit for the capture and relocation of lizards is sought as part of the Fast-track application. A Lizard Management Plan for 531 & 535 Mill Road has been supplied as part of the Fast-track application and contains information on how to manage effects of construction on lizard populations.

7.0 References

Davidge, L., & Arthur, *J. (2025a). 531 & 535 Mill Road Residential Development Project—Baseline Lizard Survey* (Technical Report C045180003M002). Pattle Delamore Partners report prepared for Carter Group Ltd.

Davidge, L., & Arthur, J. (2025b). *531 & 535 Mill Road Residential Development Project—Lizard Management Plan* (Technical Report C045180001R001). Pattle Delamore Partners report prepared for Carter Group Ltd.

DOC (2022). *New Zealand Threat Classification System*. Department of Conservation. https://nztcs.org.nz/

DOC (2023). *Reducing the impacts of development on New Zealand lizards—Guidance for developers, consenting authorities and ecologists/herpetologists.* Department of Conservation. https://www.doc.govt.nz/globalassets/documents/about-doc/concessions-and-permits/wildlife-research-permits/guidance-on-impacts-of-vegetation-clearance-on-lizards-nz.pdf

Herbert, S., Knox, C., Clarke, D., & Bell, T. (2023). Use of constructed rock piles by lizards in a grassland habitat in Otago, New Zealand. *New Zealand Journal of Ecology*, 47(1), 1–7. https://doi.org/10.20417/nzjecol.47.3543

Purdie, S. (2022). *A Naturalists Guide to the Reptiles & Amphibians of New Zealand (1st ed.).* John Beaufoy Publishing.

8.0 Limitations

This memorandum has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Carter Group Limited. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the memorandum. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This memorandum has been prepared by PDP on the specific instructions of Carter Group Limited for the limited purposes described in the memorandum. PDP accepts no liability if the memorandum is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

Prepared by

Lachie Davidge

Herpetologist and Ecologist

Reviewed and approved by

Jarred Arthur

Technical Director - Ecology

Appendix A: Project Team

The assessments outlined in the memorandum were undertaken by the following qualified ecologists:

Lachie Davidge (Freshwater & Terrestrial Ecologist)

Lachie is an ecologist with three years of experience working in environmental consultancy. He graduated from the University of Otago with a Master of Science (Ecology) in 2023. He is affiliated with the New Zealand Ecological Society (NZES), New Zealand Herpetological Society (NZHS), and Society for Research on Amphibians and Reptiles in New Zealand (SRARNZ).

Lachie has expertise in terrestrial and freshwater ecology, pest plant and animal management, and restoration work. He has been involved in a wide range of work including freshwater assessments, bird surveys, lizard management works, wildlife hazard management, infill and riparian planting plans and implementation. Has been involved in several lizard habitat assessments and a successful lizard salvage and relocation project.

At the University of Otago, Lachie's Master's research focused on developing new tools for studying alpine lizard species under the tutelage of Jo Monks and Carey Knox. Since joining PDP in early 2024, Lachie has been involved with several lizard projects across New Zealand. He has also assisted in other research projects including studies on Hura te ao gecko, orange-spotted gecko and various alpine skink species.

Jarred Arthur (Technical Director – Ecology)

Jarred is a freshwater ecologist with fifteen years' experience working in both the public and private sectors. He graduated from the University of Canterbury with a Master of Science (Ecology) in 2010. He is a member of the New Zealand Freshwater Sciences Society (NZFSS).

His previous work as a Regional Council scientist (Environment Canterbury, 2016-2023) involved providing technical support to policy and planning processes, governance and community groups, iwi, and other technical specialists. He has extensive experience informing consent application processes associated with a range of land and water use activities.

Jarred is well-versed in the monitoring of river ecosystems including water quality and habitat parameters, and macroinvertebrate and fish communities. He has analysed and interpreted ecological datasets, written and peer-reviewed numerous technical reports, and prepared and presented evidence at hearings. His recent work with PDP has involved assessing the environmental effects of construction- and operational-phase activities associated with residential and industrial developments. This has included mitigation and offsetting for waterway and wetland ecosystems.

Appendix B: Photographs

Appendix B-1: Rank grass and dense shrub.

Appendix B-2: Dead wood debris provides refugia and foraging habitat for lizards.

Appendix B-3: Old farm buildings contain disowned farm equipment and other materials and are surrounded by patches of rank grass.

Appendix B-4: Rank grass, woody debris and old farm equipment provide potential lizard habitat.

Appendix C: Department of Conservation Fast-Track Pre-Lodgement Consultation Summary

Fast-Track Pre-Lodgement Consultation Summary

Purpose - This document provides a summary of information from DOC following a pre-lodgement consultation request.

Project Details

Project name:	Ōhoka Residential Development
Engagement type:	Pre-lodgement Consultation – Substantive Application
Applicant/agent:	Carter Group Limited - Jarred Arthur Pattle Delamore Partners
Proposal overview:	The proposal is a coordinated and master-planned expansion of the existing Ōhoka settlement involving the subdivision and development of approximately 153 hectares of rural zoned land. Commercial activities and recreational facilities are proposed alongside residential activities.
Location:	The site is located at 347 Whites Road, Ōhoka which is legally described as Lot 2 & 3 Deposited Plan 318615, Lot 2 and Part Lot 1 Deposited Plan 8301, and Lot 2 Deposited Plan 61732.
Date pre-lodgement request received:	29/01/2025 (note further information was requested after the initial request was received).
Documents provided by applicant:	Letter to DOC – FAST-TRACK APPLICATION CONSULTATION ŌHOKA RESIDENTIAL DEVELOPMENT (Dated 29/01/2025) PDP Memorandum of Lizard Habitat Assessment Results (12/12/2024) 16013-AP-120-130-B - Scheme Plan Set.pdf DOC pre-application form
Summary of pre-lodgement Consultation	
Fast track project lead DOC:	Marie Payne – Senior Fast Track Consents Advisor (National Office)
DOC specialist input required:	Fast Track Project Lead RMA Planner Permissions Advisor(s) Statutory Manager (Regional Office) BHV – Technical Specialist – Lizards

Department of Conservation
Te Papa Atawhai

Te Kāwanatanga o Aotearoa
New Zealand Government

DOC Permissions/ Approvals Identified by applicant in pre-lodgement request as potentially required:	**Authority under Wildlife Act 1953** *Potentially lizard handling and translocation permit* The consultation request in the letter more broadly also states: Carter Group Limited would appreciate the opportunity to: *"- seek your feedback on the Wildlife Act specific aspects of the development, - discuss opportunities for ongoing collaboration, and - understand any concerns or considerations you may have"*

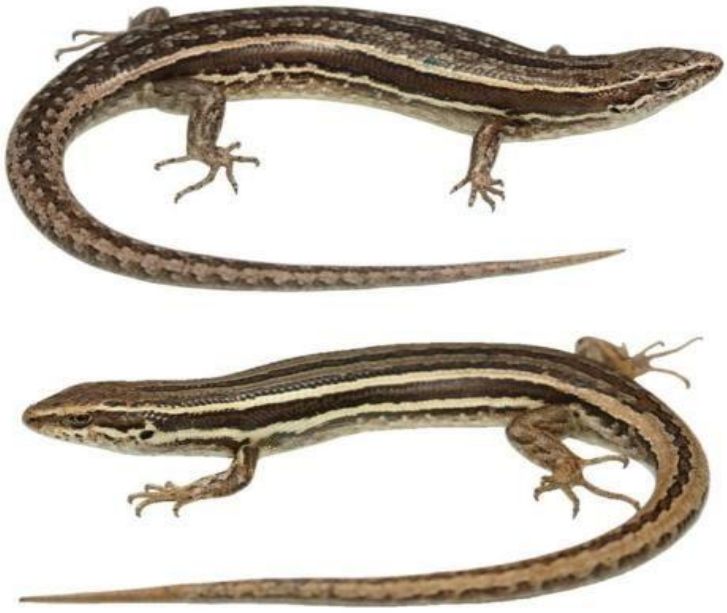
DOC Commentary on Fast Track approvals and permissions identified:	**Wildlife Act 1953 Permissions/Permits**
	
	The information provided to date sets out that:
	
	• A desktop assessment of Lizards has been undertaken.
	• A site visit was conducted to determine whether suitable lizard habitats were present (that may support an indigenous lizard population) on the 28th and 29th November 2024.
	• More detailed survey methods were not employed (e.g. trapping/tracking) – the applicant has advised (via email) that a baseline survey is now underway.
	• Based on a desktop assessment and site visit the report concludes:
	  ○ 5 lizard species have been recorded within a 5-13km radius of the development site
	  ○ No lizards were observed during the site visit
	  ○ Several locations contained small areas of potential lizard habitat
	  ○ The Ōhoka Domain/ Ōhoka Bush Public Conservation Land (PCL) approx. 500m east suggests native lizards could be present at the development site.
	• The PDP Memo recommends:
	  ○ Staged vegetation clearance.
	  ○ Eco-piles can be used as a management technique to protect lizard populations in combination with staged vegetation clearance.
	  ○ Conducting a baseline lizard survey (rather than just assessing potential habitat) within the area containing the old farm building.
	  ▪ Including diurnal lizard searches and nocturnal spotlighting to determine whether any native lizard specimens are present in the area. Diurnal surveys should be conducted over five days and nocturnal spotlighting searches after dark for up to three nights.
	  ▪ Once baseline surveys are completed, results can be used to determine whether additional lizard management measures should be taken.
	  ○ That *"if native lizards are found onsite a Lizard Management Plan (LMP) may need to be prepared and submitted to the council for approval, and a Wildlife Act Authority (WAA) permit must be held for the capture and relocation of lizards at the*

	site. Upon the completion of lizard management activities, construction works may commence'.' Based on the information provided DOC advises that: • A Wildlife Approval is required if there are wildlife onsite and the project will affect that wildlife. The application for wildlife approval needs to include all the information listed in Schedule 7, Clause 2 (FTAA). • DOC understands that demonstrating 'best practice methods' through documents such as management plans can't be deferred to a subsequent LMP as there is no mechanism for subsequent approvals in the FTAA. • To obtain a wildlife approval DOC strongly recommends that the applicant undertakes a baseline survey as the report recommends and carrying out subsequent actions if wildlife are found, this would include the development of a LMP which documents: o the identification of any species present and their number and location. It is noted that Lizards are extremely difficult to detect unless best practice methods are used. o actual and potential effects on any lizard species that is found to be present. o details of avoidance and mitigation methods. o methods to salvage and relocate lizards including identifying and preparing release sites. Methods should be guided by species threat status (noting there are constraints on relocating lizards in the Canterbury region, and establishing appropriate habitat for relocation takes time). o Duration – DOC would anticipate a wildlife approval will be required for activities for the duration of the construction phase.
Treaty Settlement implications/considerations:	In the time available, DOC has not carried out a process to identify Treaty settlement obligations specifically relevant to this site but notes for the applicant that this will form part of the section 18 report prepared by MFE. We encourage the applicant to engage directly with Iwi as required by section 29 of the Act.
Potential Resource Management Act (RMA) considerations and effects: *Note: DOC's role in relation to 53(2)(m)(i) FTAA*	As pre-lodgement consultation was primarily in relation to the wildlife approval being sought, very high-level RMA commentary has been provided. Some primary considerations for DOC include: • That the relevant biodiversity and environmental effects are considered fully as part of the full AEE application, including: o Assessing freshwater values o Considering any impacts on the neighbouring reserve which is PCL administered by the council
DOC Statutory Planning Document considerations in relation to site (e.g. CGP/CMS/CMP):	Although the site is not PCL it adjoins PCL. Wildlife considerations should be considered in the broader context of conversation values and consideration in

	an application should be given to alignment with the Canterbury: Conservation management strategies.
Any further information/considerations:	The applicant has not identified that they are applying for any freshwater fisheries permissions. However, the draft scheme plan indicates a culvert/crossing over the watercourse on site (Ōhoka Stream/tributary) – the applicant should assess whether a freshwater fisheries approval is required.
Additional Notes:	While DOC will assist applicants as much as we can when they engage in pre-lodgement consultation, it is the applicants' responsibility to comply with the FTAA and to ensure they have applied for all permissions they need. DOC encourages the applicant to share draft application documents so that we can provide feedback on how it views alignment with information requirements of Schedule 7 of the Fast Track Approvals Act, noting DOC is unable to request further information once a completeness check is commenced by the EPA. Note that a panel will invite the statutory bodies listed in clause 4 of Schedule 7 to comment on the application (NZCA, conservation boards, Fish and Game Council, and Game Animal Council). We encourage applicants to engage with these bodies in advance of filing a substantive application.

Appendix B: Lizard Identification

Above: McCann's skink example



Above: Southern Grass skink example

Above: Waitaha gecko example

Appendix C: Baseline Lizard Survey

PATTLE DELAMORE PARTNERS LTD
Level 2, 109 Fanshawe Street,
Auckland Central 1010
PO Box 9528, Auckland 1149, New Zealand

Tel +64 9 **523 6900**
Web **www.pdp.co.nz**

memorandum

TO	Tim Carter	FROM	Lachie Davidge & Jarred Arthur
	Carter Group Limited	DATE	14 August 2025
RE	531 & 535 Mill Road Residential Development Project – Baseline Lizard Survey		

1.0 Introduction

Carter Group Limited (CGL) approached Pattle Delamore Partners (PDP) to undertake a baseline lizard survey to support their Fast-track application for a proposed residential development at 531 & 535 Mill Road, Ohoka. This was in response to prior habitat surveys that found that lizards could potentially be present at the project site (Davidge & Arthur, 2025a).

An accessway at 234 Bradleys Road was used to gain entry to the property and farm buildings. PDP herpetologist Lachie Davidge (see Appendix A) conducted the surveys (with assistance from other ecologists) from the 31st of March to the 3rd of April 2025.

This memorandum has been prepared to fulfil Fast-track application requirements for information relating to lizard presence at the project site. It is required under the Wildlife Act (1953) and should be read in conjunction with the following reports supplied as part of the Fast-track application:

- *Ohoka Residential Development – Lizard Habitat Assessment* (Davidge & Arthur, 2025a)
- *531 & 535 Mill Road Residential Development Project – Lizard Management Plan* (Davidge & Arthur, 2025b)

2.0 Results

2.1 Baseline Lizard Survey

Lizard traps were installed at 535 Mill Road[1] five weeks before the baseline survey to allow lizards to become acclimated before the commencement of the baseline lizard survey. In total, 45 traps were installed across the site, including 32 pitfall traps, 10 Gee's minnow traps and three Artificial Cover Objects (ACOs). Two staff members checked and baited the traps daily to ensure any captured lizards were safely released. Data was recorded on species, sex, snout to vent length (SVL), vent to tail length (VTL) and trap number and type. Additional details for the baseline lizard survey method used during this work are provided in the project's Lizard Management Plan (LMP; Davidge & Arthur, 2025b).

[1] 535 Mill Road makes up the majority of the development site with 531 Mill Road consisting of only 1.8 ha. At the time of the surveys, 531 Mill Road had not yet been purchased by the applicant and therefore no trapping took place on this property. A subsequent habitat assessment was undertaken at 531 Mill Road on 3rd of June 2025, the results of which are contained in Davidge & Arthur (2025a).

Overall, 14 native lizards were captured over the four days of trapping, including 12 Canterbury grass skinks (*Oligosoma* aff. *polychroma* Clade 4) and two unidentified (likely Canterbury grass skinks) lizards (see photographs in Appendix B). One unidentified individual was captured in a pitfall trap and was slow and unreactive. It was released immediately into appropriate habitat nearby to reduce stress, but this prevented an accurate identification from being performed. The second unidentified specimen was found within a Gee minnow trap and was dead. It displayed injuries commonly associated with predation from rodents (i.e., no legs, stomach, head or tail) and was maimed beyond the point of performing an accurate identification. Rodent predation is a common cause of injury and mortality in native New Zealand lizards (Lettink & Cree, 2006) and a major cause of declines in lizard abundance when present (Norbury et al., 2023). Canterbury grass skinks have a conservation status of "At Risk – Declining" (Hitchmough et al., 2021) and are fully protected under the Wildlife Act (1953).

Table 1: Herpetofauna captured during the baseline lizard survey

Common Name	Species	Conservation Status[2]	Number Caught
Canterbury grass skink	*Oligosoma* aff. *polychroma* Clade 4	At Risk - Declining	12
Unidentified lizard[3]	N/A	N/A	2

2.1 Nocturnal Spotlighting

Two nights of nocturnal spotlighting were planned within the proposed development zone at 535 Mill Road, however, only one night of spotlighting was conducted due to poor weather conditions (rain and low temperatures). Vegetation surrounding the existing farm buildings at 234 Bradleys Road and a stand of mature exotic trees adjacent to the site were spotlighted on the 1st of April 2025 by two PDP ecologists. Vegetation, including trees, shrubs, and understory plants, was searched to determine whether native lizards (in particular, native geckos) were present at the site. No lizards were observed during nocturnal spotlighting efforts.

[2] Hitchmough et al. (2021)

[3] The two unidentified lizard specimens were either released rapidly to avoid further stress, or maimed by predation. This prevented their accurate identification. Each was likely to be Canterbury grass skink.

Figure 1. Map of the lizard trap placement at 531 & 535 Mill Road, Ohoka. Traps were installed in areas of potential lizard habitat across the site. Individuals were captured in traps 7GM, 9GM, 10GM, 5P and 18P.

3.0 Conclusions and Recommendations

We recommend that lizard salvage and relocation be conducted at the 531 & 535 Mill Road development site. A similar trapping scheme should be followed as shown in Figure 1, combined with destructive vegetation searches targeting areas of habitat around the existing farm buildings and adjacent paddocks. Lizard relocation work should focus on areas where lizards were captured during the baseline survey, these being the existing farm buildings at 234 Bradleys Road and the paddocks surrounding this area (focusing on the vegetated fence lines along the paddocks; see Figure 1 for lizard capture locations).

Additional details relating to lizard salvage and relocation have been provided in a draft project LMP (Davidge & Arthur, 2025b). Lizard salvage and relocation work can only occur between October to April (inclusive) and should be done under appropriate weather conditions for lizards (low wind, sunny and warm). This is to minimise the risk of injury and/or mortality to native lizards and increases catch likelihood due to higher activity levels during summer (i.e., lizards are ectothermic and require external sources of heat to function).

Additionally, we recommend that PDP herpetologists be present during pre-construction vegetation removal to ensure any lizards potentially found during the process are safely captured and translocated to a pre-approved relocation site. All vegetation removed during these works should be taken off-site for disposal, or after vegetation has been searched for lizards, a wood-chipper can be used to shred woody debris. This is recommended as piling woody vegetation onsite will provide habitat that native lizards may recolonise.

4.0 References

Davidge, L., & Arthur, J. (2025). *Ohoka Residential Development – Lizard Habitat Assessment* (Technical Report C045180001M001). Pattle Delamore Partners report prepared for Carter Group Ltd.

Davidge, L., & Arthur, J. (2025). *531 & 535 Mill Road Residential Development Project—Lizard Management Plan* (Technical Report C045180001R001). Pattle Delamore Partners report prepared for Carter Group Ltd.

Hitchmough, R., Barr, B., Knox, C., Lettink, M., Monks, J., Patterson, G. B., Reardon, J. T., van Winkel, D., Rolfe, J., & Michel, P. (2021). *Conservation status of New Zealand reptiles, 2021* (New Zealand Threat Classification Series 35). Department of Conservation.

Lettink, M., & Cree, A. (2006). Predation, by the feral house mouse (*Mus musculus*), of McCann's skinks (*Oligosoma maccanni*) constrained in pitfall traps. *Herpetofauna*, *36*, 61–62.

Norbury, G., Wilson, D. J., Clarke, D., Hayman, E., Smith, J., & Howard, S. (2023). Density-impact functions for invasive house mouse (*Mus musculus*) effects on indigenous lizards and invertebrates. *Biological Invasions*, 25(3), 801–815. https://doi.org/10.1007/s10530-022-02946-9

5.0 Limitations

This memorandum has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Carter Group Ltd. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the memorandum. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This memorandum has been prepared by PDP on the specific instructions of Carter Group Ltd for the limited purposes described in the memorandum. PDP accepts no liability if the memorandum is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

Prepared by

Lachie Davidge

Herpetologist - Ecology

Reviewed by

Nicki Papworth

Senior Ecologist - Ecology

Approved by

Jarred Arthur

Technical Director - Ecology

Appendix A: Project Team

The assessments outlined in the memorandum were undertaken by the following qualified ecologists:

Lachie Davidge (Freshwater & Terrestrial Ecologist)

Lachie is an ecologist with three years of experience working in environmental consultancy. He graduated from the University of Otago with a Master of Science (Ecology) in 2023. He is affiliated with the New Zealand Ecological Society (NZES), New Zealand Herpetological Society (NZHS), and Society for Research on Amphibians and Reptiles in New Zealand (SRARNZ).

Lachie has expertise in terrestrial and freshwater ecology, pest plant and animal management, and restoration work. He has been involved in a wide range of work including freshwater assessments, bird surveys, lizard management works, wildlife hazard management, infill and riparian planting plans and implementation. Has been involved in several lizard habitat assessments and a successful lizard salvage and relocation project.

At the University of Otago, Lachie's Master's research focused on developing new tools for studying alpine lizard species under the tutelage of Jo Monks and Carey Knox. Since joining PDP in early 2024, Lachie has been involved with several lizard projects across New Zealand. He has also assisted in other research projects including studies on Hura te ao gecko, orange-spotted gecko and various alpine skink species.

Jarred Arthur (Technical Director – Ecology)

Jarred is a freshwater ecologist with fifteen years' experience working in both the public and private sectors. He graduated from the University of Canterbury with a Master of Science (Ecology) in 2010. He is a member of the New Zealand Freshwater Sciences Society (NZFSS).

His previous work as a Regional Council scientist (Environment Canterbury, 2016-2023) involved providing technical support to policy and planning processes, governance and community groups, iwi, and other technical specialists. He has extensive experience informing consent application processes associated with a range of land and water use activities.

Jarred is well-versed in the monitoring of river ecosystems including water quality and habitat parameters, and macroinvertebrate and fish communities. He has analysed and interpreted ecological datasets, written and peer-reviewed numerous technical reports, and prepared and presented evidence at hearings. His recent work with PDP has involved assessing the environmental effects of construction- and operational-phase activities associated with residential and industrial developments. This has included mitigation and offsetting for waterway and wetland ecosystems.

Appendix B: Photographs

Photograph 1: Canterbury grass skink (*Oligosoma* aff. *polychroma* Clade 4) captured in a Gee minnow trap.

Photograph 2: Two Canterbury grass skinks (*Oligosoma* aff. *polychroma* Clade 4) captured in a pitfall trap.

Appendix D: Habitat Enhancement Plan

PATTLE DELAMORE PARTNERS LTD
Level 2, 134 Oxford Terrace
Christchurch Central, Christchurch 8011
PO Box 389, Christchurch 8140, New Zealand

Office +64 3 345 7100
Web **www.pdp.co.nz**

535 Mill Rd – Habitat Enhancement Plan

TO	Tim Carter	FROM	Lexi Hunter
	Carter Group Limited	DATE	3/06/2026
RE	535 Mill Road Lizard Habitat Enhancement Plan		

1.0 Introduction

To maximise the likelihood of successful establishment of lizards relocated to the proposed area at 535 Mill Road, a Habitat Enhancement Plan (HEP) has been developed. The plan outlines the measures required to appropriately prepare the site prior to relocation, including weed control, the provision of suitable vegetation, foraging opportunities and refugia, and the management of predation risk.

2.0 Methodology

2.1 Enhancement Planting

Enhancement planting is required at the proposed site, as the existing vegetation is not currently sufficient to support the introduction of lizards. The following sections outline the measures required to ensure that suitable refugia and foraging resources are provided for lizards at the site in the long-term.

Before planting begins, any stock grazing on the site should cease to allow rank grass to develop, and to provide refugia for lizards if the proposed plantings fail to establish.

2.1.1 Planting timings

The planting season is typically from autumn to spring (inclusive), when cooler temperatures result in higher soil moisture and softer ground conditions. Planting during this period increases the likelihood of successful root establishment and subsequent plant growth.

Enhancement planting will be undertaken in two phases. Phase 1 will involve planting the site with hardy, fast-growing species. Approximately three months after initial planting, infill planting will be carried out to replace any plant losses and assess establishment success. Phase 2 will occur approximately 12 months later and will focus on planting slower-growing and more vulnerable species.

Phase 1 plantings should occur **at least 6 - 12 months before the planned lizard salvage** to give plants the opportunity to establish and provide appropriate lizard habitat.

2.1.2 Plant selection

Plants selected, and their coverage, will be appropriate for the Waimakariri District (Waimakariri Biodiversity Trust, n.d) and the geography of the site.

Plants should be planted in patches around the site to create a vegetated habitat mosaic for lizards (e.g., refugia and foraging habitats). Establishing plants in this manner provides space for lizards to bask between refugia sites (e.g., plantings and eco-piles).

Creeping pōhuehue and silver tussock should be sized at minimum PB3 (approx. 1.7 L pots) and larger plants, such as scrub pōhuehue, mingimingi and matagouri, should be sized at a minimum PB5 (2.5 L pots). Larger planting sizes will reduce the time needed for plants to become established at the site and will therefore create adequate lizard habitats sooner.

2.1.3 Additional Requirements

Plants should be protected by a biodegradable plant guard when initially planted to reduce grazing by animals and improve establishment success. Bark chip should **not** be used to mulch the planted area, as this provides no habitat value for lizards. Instead, large rocks (such as river stones) should be used.

Care should also be taken during both the construction of eco-piles (outlined in Section 2.2) and planting to ensure that resident lizard populations are not adversely affected. This can be achieved by checking that the ground is free of any potential refugia before placing large rock or wood piles, and by remaining vigilant while digging planting holes to avoid injuring or trapping lizards beneath the shovel blade.

Figure 1: Biodegradable plant guard example

Table 1 below details the recommended plant species for lizard habitat enhancement and their benefits for enhancing and protecting lizard values.

Table 1: Plant species recommended for lizard habitat enhancement planting at 535 Mill Road.					
Common Name	**Species**	**Plant spacing**	**Mature Height (m)**	**Minimum Plant Bag Size**	**Percent coverage**
Phase 1					
Silver tussock	*Poa cita*	0.5 m	0.3 - 1	PB3	50%
Scrub pōhuehue	*Muehlenbeckia astonii*	0.7 – 1m	1 - 2.5	PB3	10%
Mikimiki	*Coprosma propinqua, intertexta, crassifolia*	0.5 – 1m	1 - 3	PB5	15%
Round-leaved coprosma	*Coprosma rotundifolia*	0.5 – 1m	2 - 5	PB5	7%
Tauhinu	*Ozothamnus leptophyllus*	1.5 – 2m	1 - 2	PB5	5%
Phase 2					
Korokio	*Corokia cotoneaster*	1m	1 – 3	PB5	5%
Matagouri	*Discaria toumatou*	1 – 3m	2 – 4	PB5	8%

2.1.4 Planting Maintenance

Infill planting may be required to replace plants that have not successfully established. Visual assessments of the planting will be undertaken during monitoring visits approximately every 3-6 months, taking note of plants that have died and/or the presence of large gaps (more than 1 m^2) within the planting zone. Gaps or dead plants should be replaced with appropriate native species. Typically, 10% of species planted during the initial plantings will perish during the first growing season and will need to be replaced. These plants will need to be replaced with individuals of the same species.

If rank grass is present around plantings during infill planting, workers should move slowly and carefully through these areas to avoid crushing lizards.

2.2 Eco-piles

Eco-piles are another effective way of creating lizard habitats at a relocation site. Eco-piles are created using woody debris, rocks and/or other materials found on site that are piled together to form complex three-dimensional structures (e.g., Herbert et al., 2023). These structures can be used by lizards as cover, retreats and foraging habitats. Any exotic trees removed during enhancement works should be split into small sections and piled together to create eco-piles. Eco-piles should be spaced sporadically around the site to provide space for lizards to bask between habitat features.

Eco-piles should be constructed at least 12 weeks prior to salvage to allow time for them to settle into their environment.

2.3 Pest Plant Control

The control of pest plants such as gorse (*Ulex europaeus*) should be undertaken by a pest controller approved by the Waimakariri District Council. Care should be taken to ensure that pest plant control does not use materials that may be harmful to lizard species present in the environment. For example, agrichemicals such as triclopyr, and glyphosate formulations should be avoided, or used only where a suitably qualified practitioner determines that risks to lizards and their food sources can be appropriately managed. Where practicable, targeted methods such as cut-stump treatment, stem injection, or hand removal should be preferred over broad-scale spraying to minimise non-target exposure.

2.4 Pest Animal Control

Predator control will be undertaken before lizards are released, and for three years post-release, to reduce predation pressure whilst lizards establish within the new release site. Carter Group Limited (or suitably qualified individuals on Carter Group Limited's behalf) will be responsible for undertaking pest control for a period of three years.

Pest trapping will commence at least 12 weeks prior to the introduction of lizards to the site. Traps will be installed along transect lines throughout the site in accordance with best-practice guidelines. Traps will initially remain baited but inactive for a minimum of two weeks prior to activation. Once activated, traps will be checked weekly for an initial 10 week period, with bait replaced and traps reset as required. Following completion of this initial trapping period, trap checks and resets will be reduced to monthly intervals and will continue for a minimum of three years.

In accordance with the Animal Welfare Act 1999, traps used are required to used pass animal welfare guidelines. DOC recommends the use of traps that pass National Animal Welfare Advisory Committee (NAWAC) guidelines to be used to ensure that trapped animals do not suffer. Live capture traps are not recommended on this site. Predator control (in particular, poison-baiting) should be undertaken by a suitably qualified operator with a current controlled substances license.

All trap captures should be recorded (e.g., TrapNZ) to assist with translocation reporting that may be required at the site.

2.4.1 Hedgehogs, rats and mustelids

DOC250 traps are NAWAC-approved for hedgehogs, as well as all rat and mustelid species. Traps should be set along transect lines at 50 m intervals. Traps will be pre-baited but left inactive for the first two weeks to allow target species to become accustomed to the traps and increase catch per unit effort (CPUE). Traps will then be activated and remain baited, using appropriate bait such as eggs or rabbit meat.

2.4.2 House mice

Rodenticide bait stations should be installed at 50 m intervals along partially sheltered pathways (e.g. fencelines or structure edges). Pre-feeding should be undertaken using bait such as peanut butter before stations are switched to brodifacoum or an equivalent rodenticide.

2.4.3 Brush-tailed possums

Flipping Timmy traps, or other NAWAC-approved possum traps, should be installed where practicable. As these traps require trees or structures for mounting and a ramp for access, placement may be limited at the relocation site. Where installed, traps should be pre-baited with peanut butter or mayonnaise for at least two weeks prior to activation and placed in areas showing evidence of possum activity (e.g. claw marks, droppings or fur).

2.4.4 European rabbits

Philproof bait stations should be installed within the relocation area at 100 m intervals along the fenceline or against a mature tree. Pindone pellets are recommended as this type of poison-bait does not require a pre-feeding period. Stations should be baited with Pindone for two weeks before being emptied and rebaited for another two weeks. Rabbit control should occur two months before the commencement of enhancement planting in the area to ensure rabbit populations are low and will not damage native plantings.

3.0 Conclusion

This Habitat Enhancement Plan provides a framework to ensure the proposed site is adequately prepared for the successful translocation and long-term establishment of lizards at 535 Mill Road. The measures outlined - including staged enhancement planting, installation of habitat features such as eco-piles, and the implementation of comprehensive pest plant and animal control - are designed to create a structurally diverse habitat that provides key ecological requirements such as refugia and foraging opportunities.

The phased approach to planting and ongoing maintenance will promote vegetation establishment and habitat complexity over time, while adaptive management (e.g. infill planting and monitoring) will enable any establishment issues to be addressed promptly. Concurrently, sustained predator control will be critical in reducing predation pressure during the initial establishment period, thereby increasing the likelihood of translocation success.

Collectively, these actions will support the development of a self-sustaining habitat capable of supporting lizard populations in the long term. Implementation of this plan, alongside appropriate monitoring and management, is expected to significantly improve the ecological value of the site and contribute to positive conservation outcomes for native lizard species.

4.0 References

Herbert, S., Knox, C., Clarke, D., & Bell, T. (2023). Use of constructed rock piles by lizards in a grassland habitat in Otago, New Zealand. *New Zealand Journal of Ecology*. https://doi.org/10.20417/nzjecol.47.3543

Lucas Associates. (2021). *Dry Plains: Ti Kouka—Kotare—Kanuka, mid-age plains ecosystem Plant List*. Waimakariri Biodiversity Trust. https://www.wbt.org.nz/_files/ugd/d61c0a_c02470c7cde04b64abca5a570470d877.pdf

This memorandum has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Carter Group Limited. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the memorandum. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This memorandum has been prepared by PDP on the specific instructions of Carter Group Limited for the limited purposes described in the memorandum. PDP accepts no liability if the memorandum is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

Prepared by

Lexi Hunter

Ecologist

Reviewed and Approved by

Jarred Arthur

Technical Director - Ecology

Appendix E: Relocation Site

D10 LIZARD PLANTING

LEGEND

- Neighbourhood Reserve Boundary
- Power pylon 12m offset (indicative)
- Overhead power lines (indicative)
- Lizard planting area (1000m²)
- Habitat aggregate/wood piles
- Lizard exclusion fence

LIZARD PLANTING

Mingimingi
(Coprosma propinqua)

Silver tussock
(Poa cita)

Shrubby Tororaro
(Muehlenbeckia astonii)

Harekeke/NZ Flax
(Phormium tenax)

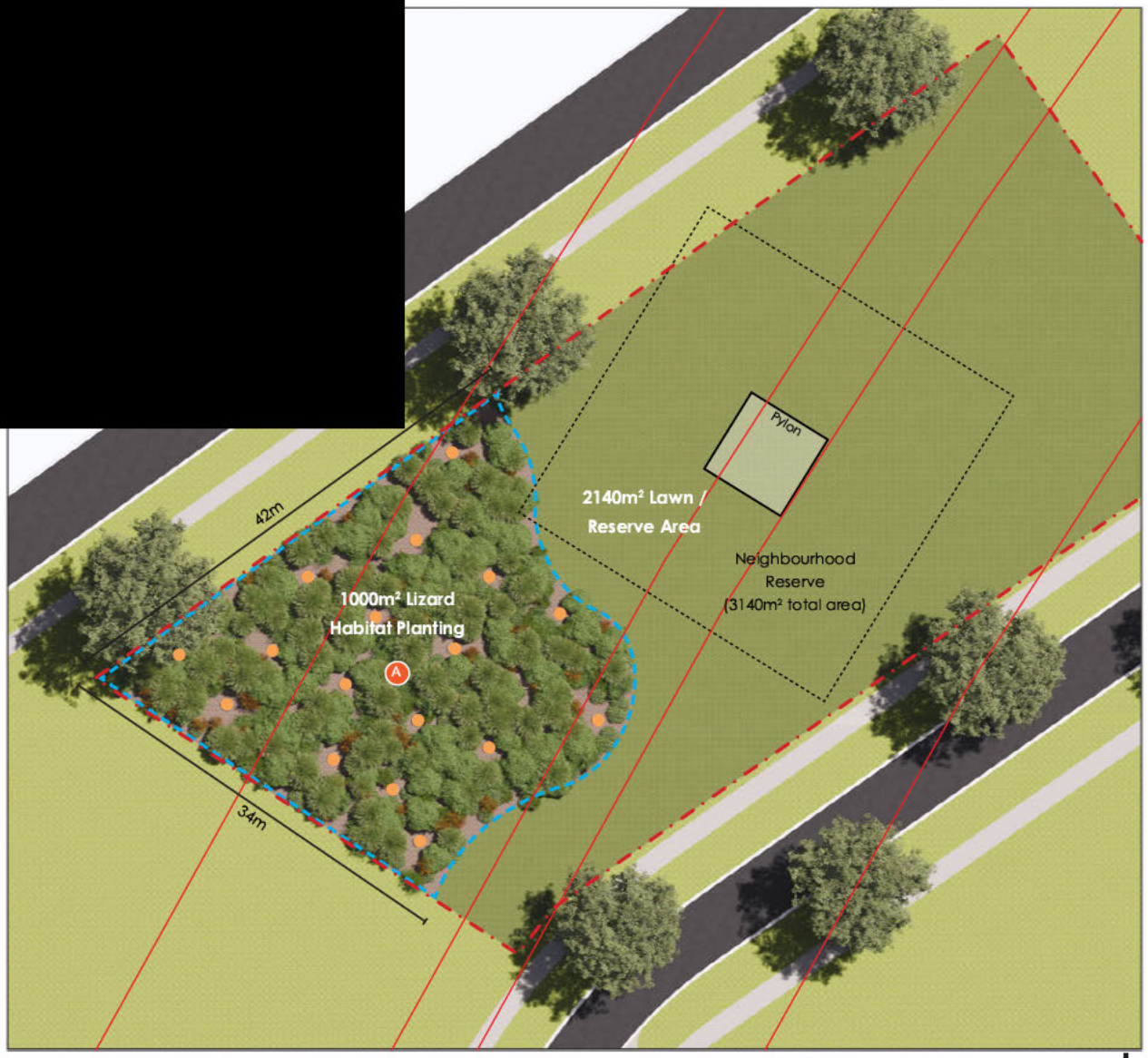
Round Leaved Coprosma
(Coprosma rotundifolia)

Creeping pōhuehue
(Muehlenbeckia axillaris)

LIZARD HABITAT AGGREGATE PILE

LIZARD HABITAT WOOD PILE

LIZARD EXCLUSION FENCE



A. LIZARD PLANTING (1:400 @ A3)