

Lizard Management Plan for Homestead Bay Subdivision, Queenstown

Contract Report No. 7483b

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Contract Report No. 7483b

September 2025

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1.0 Introduction

Remarkable Planning, on behalf of RCL Homestead Bay Limited, is preparing a Fast-track Approvals Act (2024) resource consent application for a residential subdivision of rural land at Homestead Bay, just south of Jacks Point in Queenstown. The subdivision includes two properties, Lot 8 DP 443832 and Lot 12 DP 364700, with a combined area of approximately 163 hectares.

The gently sloping site has been farmed for many decades and the vegetation is largely dominated by exotic pasture, but also contains small areas of tūmatakura/matagouri (*Discaria toumatou*) shrublands, gullies with ephemeral streams, and small natural inland wetlands (Wildland Consultants 2025a). Previous aquatic and terrestrial ecology assessments have been undertaken for the site by Beale Consultants (2023) and Water Ways Consulting (2023). A wetland assessment and Ecological Effects Assessment for the project have also been undertaken by Wildland Consultants (2025a & 2025b).

Remarkable Planning engaged Wildland Consultants Ltd (Wildlands) to undertake a lizard assessment over the entire site. This survey was carried out in February 2025, under Wildlife Act Authority 96003-FAU. One lizard species was commonly found and widespread over the site: McCann's skink (*Oligosoma maccanni*; Not Threatened). It is possible that the site could also have small remnant populations of tussock skink (*Oligosoma chionochoescens*; At Risk – Declining) or mountain beech gecko (*Woodworthia* “south-western large”; At Risk – Declining).

A Lizard Management Plan (LMP; this document) and Wildlife Act Approval (WAA) is therefore required. This LMP follows the principles outlined by the Department of Conservation (DOC) in their guidelines (DOC 2019) (Table 1). These principles describe steps to take and enable the outcome of successful lizard management (including salvage, if determined to be the right mitigation option).

1.1 Project site and context

1.1.1 Subdivision plan

RCL Homestead Bay Limited is proposing the creation of residential subdivision of rural land at Homestead Bay, involving the creation of approximately 2,800 lots over 205 hectares. The proposed development includes residential lots (including low, medium and high-density areas), commercial areas, reserves and wastewater treatment areas (Figure 1).

The consenting timeframe being sought for the subdivision is 15 years. The development of the subdivision will occur during this timeframe.

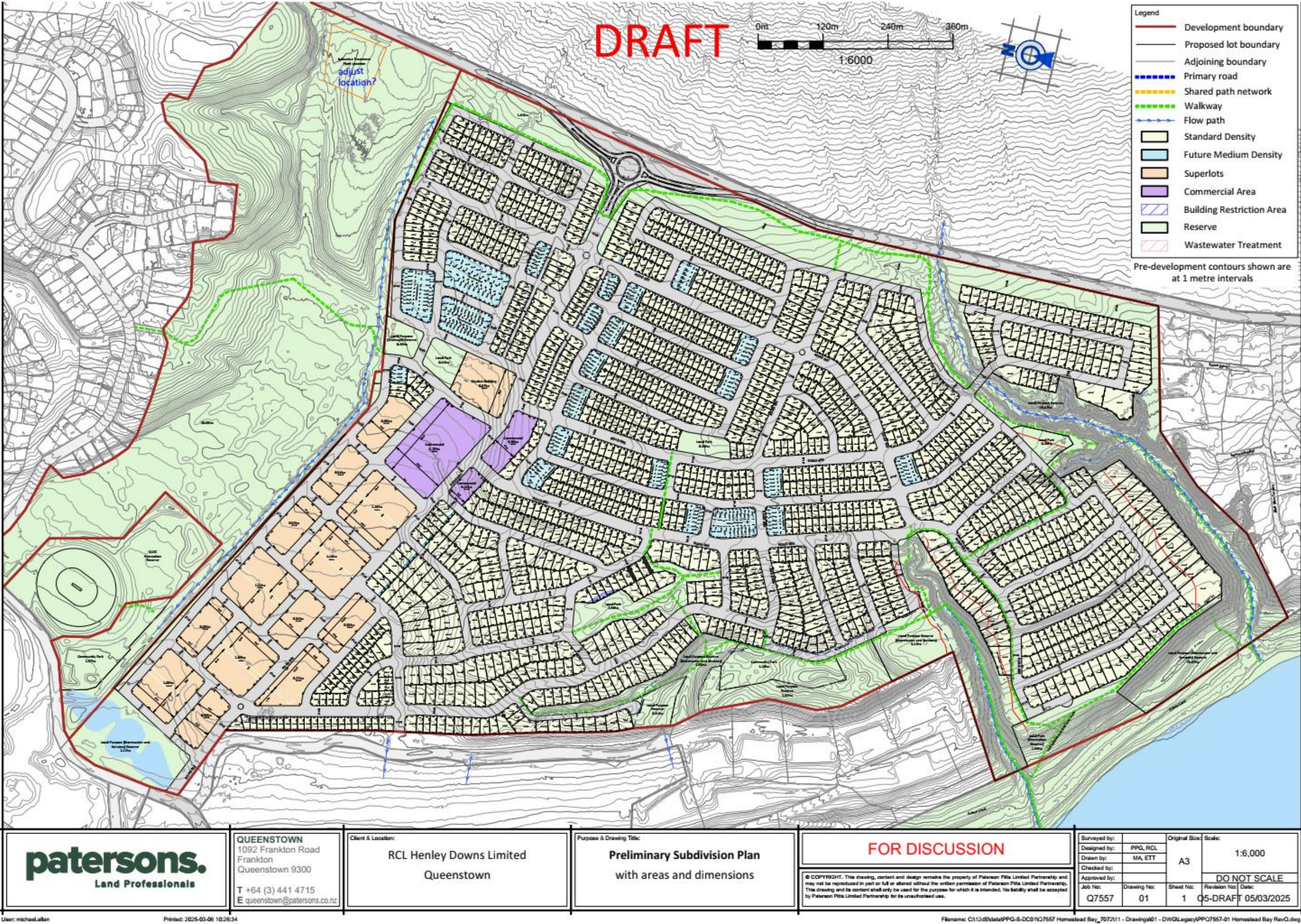


Figure 1 – Draft Plan for Homestead Bay Subdivision. Provided by Remarkable Planning.



Table 1 – Key principles for lizard salvage and transfer in New Zealand and corresponding section in this LMP that details the application of each principle.

Key Principle	Summary	Section in this document that addresses the principle
Lizard species' values and site significance must be assessed at both the impact (development) and receiving sites	One Not Threatened species has been confirmed present at the site. It is possible that two other species (At Risk – Declining) may be present.	Section 4
Actual and potential development-related effects and their significance must be assessed	Effects include but are not limited to disturbance during earthworks, death and injury, fragmentation of habitat, loss of habitat, ongoing disturbance, and increased predation to lizards.	Section 6
Alternatives to moving lizards must be considered	Alternatives to moving lizards have been considered through avoidance of high-quality habitats (tūmatakura/matagouri shrublands and rocky gullies).	Section 7.1
Threatened species require more careful consideration than less-threatened species	It is highly unlikely that Threatened species are present. The Incidental Discovery Protocol will address any unexpected discoveries, including Threatened species.	Section 4, Appendix 2
Lizard salvage, transfer and release must use the best available methodology	Use standard accepted procedures (Hare, 2012a & 2012b).	Section 7.3.2
Receiving sites and their carrying capacity must be suitable in the long term	Lizards will be released into areas on site where habitat enhancement will be undertaken.	Section 7.2, 7.3.4
Monitoring is required to evaluate the success of the salvage operation	If a substantial number of lizards (more than 100 McCann's skinks or if any additional species are found) are salvaged from the extent of works, monitoring will be conducted to determine the success of salvage, and enhancement of the release site.	Section 8
Reporting is required to communicate outcomes of salvage operations and facilitate process improvements	Standard reporting will be undertaken for the success of the LMP implementation. Reports will be provided to the consenting authority, mana whenua and DOC on the completion of salvage.	Section 9
Contingency actions are required when lizard salvage and transfer activities fail	Contingency actions include: - Incidental Discovery Protocol to be followed throughout works. - Management of reconstructed habitats if they fail to uptake. - Management measures where more lizards than expected are salvaged.	Section 7.4, Appendix 2



2.0 Relevant legislation

Due to the presence and abundance of indigenous lizards, the proposed subdivision requires a Wildlife Act Approval under Schedule 7 of the Fast-track Approvals Act (2024) which includes approvals relating to the Wildlife Act (1953).

All indigenous lizards are protected under the Wildlife Act (1953) and approval under the Schedule 7 of the Fast-track Approvals Act must be obtained in order to permit the activity occurring. This includes before any indigenous lizards can be disturbed or relocated on site (Schedule 7(2, 2, i)).

In order to ensure that protective benefit is achieved for lizard populations within the site, appropriate mitigation measures have been provided in the LMP. Lizard mitigation work will be undertaken by a Department of Conservation-approved herpetologist who has been authorised to implement lizard management for the project through a Wildlife Act Approval (WAA) issued for the project.

A LMP (this document) is required to accompany the WAA application and must be submitted to the Department of Conservation (via the EPA) and approved prior to undertaking any activities that potentially impact on lizard populations, and any lizard management proposed to mitigate these effects.

3.0 Lizard management approach

3.1 General

Any lizard management must be carried out in consultation with DOC, Queenstown Lakes District Council (QLDC), Otago Regional Council (ORC) and mana whenua. We consider avoidance, remediation and salvage and release will provide the best opportunity for protective benefit at this site, given the surrounding landscape, and likelihood of lizards persisting/thriving (see Section 7.3 for more detail).

3.2 Roles and responsibilities

Table 2 identifies the roles and responsibilities for the implementation of actions identified in this Lizard Management Plan. Responsibilities for specific actions are also identified in the sections below.

3.2.1 Wildlife Approval holder

RCL Homestead Bay Limited is the applicant of the subdivision under the Fast-track Approvals Act and will therefore act as approval holder, and will be responsible for compliance with the Wildlife Approval and implementation of the LMP. The applicant has never been convicted of any offence under the Wildlife Act, nor has any current criminal charges under the Wildlife Act pending before a court.



3.2.2 Authorised personnel

The authorised personnel for the project will be those suitably qualified as being trained and approved by the DOC lizard Technical Advisory Group and will be implementing lizard management at the site:

- Cameron Thorp – Wildland Consultants Ltd; Herpetologist – Project Herpetologist
- Jade Christiansen – Wildland Consultants Ltd; Herpetologist
- Samantha King – Wildland Consultants Ltd; Senior Ecologist and Herpetologist

Delivery of, and compliance with this LMP will be the responsibility of approval holder (RCL Homestead Bay Limited) who will liaise with the Site Manager, Site Engineer(s), Project Herpetologist and vegetation clearance and earthworks contractors as required.

Pre-start meeting

Prior to any construction or earthworks of each stage, a pre-start meeting must be undertaken with the following present on site:

- Site supervisor.
- Project herpetologist.
- Client representative.

At this meeting the logistics and timings of mitigation techniques will be discussed, so that all parties understand their roles and responsibilities. In addition, a walk over of the site will be conducted with the above parties, to delineate the areas of works and ensure that all parties understand where works are permitted to occur.

Table 2 – Identified project roles and responsibilities for LMP implementation

Title	Responsibility	Timeline
Project Owner • RCL Homestead Bay Limited	• Delivery of the Project, including overall compliance with resource consents, LMP and subsequent WAA conditions to be issued for the project.	TBC
Contractor/ Construction • TBC Project Manager • TBC	• Compliance with LMP and subsequent WAA issued for the project. • Implementation of actions required by the LMP and WAA including the following: - Reading and understanding the LMP and WAA requirements. - Facilitating a project start-up meeting with the Project Herpetologist and Contractors before vegetation clearance for construction commences. - Maintaining clear lines of communication with the Project Owner, Project Herpetologist and Contractors regarding changes to the works schedule. - Implementing actions where responsibility has been identified. - Briefing new personnel about the contractor's responsibilities under this LMP.	TBC



Title	Responsibility	Timeline
Project Herpetologist - Authorised Personnel on the WAA	The Project Herpetologist has been engaged by the Project Owner to provide technical advice to the Project Engineer(s), and to assist the Project Engineer with compliance checks against this LMP and WAA. The Project Herpetologist will: • Prepare and update the LMP as required. • Ensure any required WAA permits are attained and on hand during site works. • Where necessary, assist with contractor training. • Complete the required compliance reporting.	TBC
Contractors - Wildland Consultants Ltd - TBC	The Contractor(s) will be engaged by the Project Owner to implement the Project. The Contractor(s) will report and work daily with the Contractor/ Construction Site Manager. The Contractor(s) will: • Implement lizard management. • Implement habitat enhancement requirements including creation of aggregate piles. • Implement annual pest plant incursion monitoring. • Undertake surveys in lizard habitats. • Assist the Project Herpetologist with compliance and monitoring reporting.	Lizard salvage within two weeks of each stage being cleared of vegetation/lizard habitat. Habitat creation during works.

4.0 Lizard Values

4.1 Desktop assessment/literature review

Department of Conservation BioWeb Herpetofauna Database observations within 20 years, and 20 kilometres of the site, were assessed to provide context for lizard fauna recorded within the site and inform an assessment of ecological values for the Project Area (Table 3).

McCann's skinks were confirmed during site surveys. McCann's skinks are often found in modified dry, open environments where there is a complex of rocky outcrops, tussock and scrub. This species is considered to be highly abundant throughout Central Otago.

It is possible that tussock skink may be present within the site, at low densities in damper areas. However, in these areas on site, mice were observed at high densities during the site survey.

Mountain beech gecko could possibly inhabit rocky scrubland present on site, particularly in the south-eastern gully. However, due to the very small and fragmented rocky habitat available, and apparent high mouse densities, this species is unlikely to be detectable. There are several records indicating remnant mountain beech gecko populations nearby, but all are in areas with different rocky habitats (tors, scree or boulderfield) available.

Cryptic skinks (*Oligosoma inconspicuum*) and short-toed geckos (*Woodworthia* "southern mini") have both been recorded nearby (6.4 and 3.2 kilometres, respectively). These nearby observations were all in the subalpine and alpine rocky slopes of the nearby Remarkables. The Homestead Bay site lacks the high quality rocky or tussock habitats likely needed to support populations of cryptic skinks, and the subalpine habitat required by short-toed geckos. It is highly unlikely that any other species of indigenous lizard typically found in the region are present within the site, due their habitat requirements (orange-spotted gecko;



Mokopirirakau “Roys Peak”; alpine specialist), slow life history characteristics (Lakes skink; *Oligosoma* aff. *chloronoton* “West Otago”) and the geographic separation between the site and location the species was recorded (Kawarau gecko; *Woodworthia* “Cromwell”).



Table 3 – Results of the Department of Conservation BioWeb Herpetofauna Database search, within a 20-kilometre radius of the site, and an assessment of the likelihood of the presence of these species at the site. Threat statuses as per Hitchmough *et al.* 2021 and Jarvie *et al.* 2023. The likelihood of occurrence at the project site has been assessed for each species based on their known habitat preferences and distribution in the area and surrounds.

Species	Common name	National threat status	Regional threat status	Record distance (km)	Preferred habitats	Likelihood of occurrence
<i>Oligosoma maccanni</i>	McCann's skink	Not Threatened	Regionally Not Threatened	1.3	Open habitats – dry rocky environments such as rock outcrops, and montane grassland.	Presence confirmed during site surveys
<i>Woodworthia</i> "south-western large"	Mountain beech gecko	At Risk – Declining	At Risk – Regionally Declining	3.0	Mature indigenous forests, rocky scrub/grasslands, boulderfields and scree.	Possible
<i>Woodworthia</i> "southern mini"	Short-toed gecko	At Risk – Declining	At Risk – Regionally Declining	3.2	Alpine and subalpine areas (600-1,700m). Scree, boulderfield, creviced rock outcrops. Occasionally rocky scrubland or pasture.	Highly unlikely
<i>Oligosoma inconspicuum</i>	Cryptic skink	At Risk – Declining	At Risk – Regionally Declining	6.4	Prefers tussock grasslands, wetlands and rocky areas such as rocky screes.	Unlikely
<i>Mokopirakau</i> "Roys Peak"	Orange-spotted gecko	At Risk – Declining	At Risk – Regionally Declining	10.4	High altitude (1,100-1,800m) alpine and subalpine creviced rock outcrops, rocky shrubland, boulderfield, talus, scree and rocky tussockland.	Highly unlikely
<i>Oligosoma chionochloescens</i>	Tussock skink	At Risk – Declining	At Risk – Regionally Declining	14.3	Range of habitats including coastal dunes, wetlands, grassland, shrublands, rocky shrubland/herbfield, screes, tussock, stony river beds and even cities.	Possible
<i>Woodworthia</i> "Cromwell"	Kawarau gecko	At Risk – Declining	At Risk – Regionally Declining	15.8	Rocky scrubland, talus, and creviced rock outcrops (from lowland to alpine areas, <1,300m).	Highly unlikely
<i>Oligosoma</i> aff. <i>chloronoton</i> "West Otago"	Lakes skink	Nationally Vulnerable	Regionally Vulnerable	18.0	Grassland, scrubland, tussockland, rocky areas, scree, herbfield, fellfield, stony riverbeds, terraces and lake edges (from montane to alpine areas).	Highly unlikely



4.2 Lizard survey

4.2.1 Field survey methods

A five-day survey was carried out over the Homestead Bay site by herpetologist Jess Randall (Wildlands) from 2nd to 6th of February 2025, under Wildlife Act Authority 96003-FAU. The surveys were carried out in weather conditions suitable for lizard activity in Central Otago (average minimum air temp 10.7°C – maximum average air temperature 23°C). Where possible, lizards detected were captured and identified prior to release.

Fifty-two Gee's minnow (funnel) traps were used during the survey. Systematic daytime searches were also conducted across suitable habitat, including lifting of debris (metal sheets, logs, plastic pipes etc.), rocks and searching vegetation.

Lizard survey methods sometimes have poor detection rates because of typically low population densities, species' cryptic colouration, difficulty in surveying preferred habitats and behaviour/activity patterns. As such, even intensive lizard surveys are unlikely to detect all individuals in the population or, possibly, all species present.

4.2.2 Field survey results

A total of 42 skinks were observed over the survey (Table 4). Of these, 35 were captured and identified as McCann's skinks. 28 skinks were caught in funnel traps set across the site, while a further 14 skinks were observed or caught during systematic searches. One skink was recaptured on one occasion.

Funnel traps were not able to be placed in all possible lizard habitat on site, due to the high capture rates of mice in large areas of rank grass. Mice were captured on 21 occasions, and when mice were caught traps were removed from the area and relocated to a safer location.

Table 4 – Lizard survey effort and weather conditions at the site.

Date	Weather on Survey Date	Activity and Effort	Species Detected
2-Feb-25	18°C, 60.1% r.h., S gentle breeze, breaking inversion cloud - 22°C, 51.4% r.h., SW gentle breeze, sunny.	Set 25 funnel traps	Nothing detected
3-Feb-25	11.5°C, 72.4% r.h., S gentle breeze, overcast - 24°C, 40.0% r.h., W gentle breeze, sunny.	Checked 25 funnel traps Set additional 27 funnel traps 0.5 hours manual searching	1 McCann's skink
4-Feb-25	17.2°C, 62.3% r.h., E gentle breeze, sunny - 22.0°C, 45.6% r.h., S gusty wind, sunny.	52 funnel trap checks 2 hours manual searching	16 McCann's skinks 4 uncaptured skinks
5-Feb-25	14.9°C, 63.3% r.h., W gentle breeze, sunny - 28.8°C, 34.5% r.h., E gentle breeze, high cloud.	52 funnel trap checks 2 hours manual searching	10 McCann's skinks 3 uncaptured skinks
6-Feb-25	16.2°C, 80.1% r.h., SE moderate breeze, overcast - 19.0°C, 65.1% r.h., S moderate gusts, overcast.	52 funnel trap checks 0.5 hours manual searching	8 McCann's skinks
Total	Temperature range: 11.5-28.8°C	181 funnel trap checks 5 hours manual searching	35 McCann's skinks captured 7 uncaptured skinks





4.3 Lizard habitat

The vegetation on site mostly comprises exotic pasture grassland, with indigenous vegetation restricted to fragmented areas associated with gullies and steep faces. In February 2025, most paddocks were heavily grazed or being rotated with crops (beets and triticale). Small rock piles were present in paddocks throughout the site, though these did not provide adequate cover for lizards due to their small size and very heavy grazing by stock and damage from rabbits.

The extent of lizard habitat available on site is summarised in Table 5 and Figure 3 and covers approximately 30.8 hectares. Vegetation and habitat types listed are detailed in the Ecological Effects Assessment for the project (Wildlands 2025b).

Table 5 – Habitat types and approximate areas of lizard habitat quality at the Homestead Bay site.

Vegetation and habitat type	Approximate area of lizard habitat quality (hectares)			Approximate area (hectares)
	High	Moderate	Low	
(Common mat daisy) mossfield	0.62			0.62
(Elder-sweet briar-tūmatakura) shrubland	0.54			0.54
[Kōhuhu]/mikimiki-sweet briar shrubland	2.30	1.03	0.36	3.69
Blackwood/elder-mikimiki-puka scrub			2.73	2.73
Blue gum/(mikimiki-sweet briar) treeland	0.27			0.27
Cocksfoot-sweet vernal stonefield	1.14		0.05	1.19
Ephemeral wetland*		<0.01		<0.01
Eucalyptus spp.-pin oak-Lombardy poplar treeland (planted)			0.93	0.93
Lombardy poplar-Lawson's cypress-argle apple treeland (shelterbelt)	0.13	0.45	<0.01	0.58
Mountain beech-tī kōuka-kāpuka-mānatu- <i>Prunus</i> sp. treeland (planted)	0.19		0.02	0.21
Pond*			0.03	0.03
Radiata pine forest (plantation)	0.02	<0.01	1.30	1.32
Ryegrass-(browntop-cocksfoot-sweet vernal) grassland (productive farmland)	3.80	3.11	7.35	14.25
Soft rush-browntop-sharp spike sedge rushland marsh*			0.04	0.04
Soft rush-floating sweet grass-Yorkshire fog grassland swamp*			<0.01	<0.01
Tūmatakura shrubland	1.07	0.64	0.22	1.93
Tūmatakura-mikimiki-(sweet briar) scrub and shrubland	2.44			2.44
Total	12.53	5.23	13.02	30.78

*Lizard habitat is present around wetland margins.

Small patches of remnant tūmatakura/matagouri shrubland were found on terrace risers close to the western and northern boundaries of the site. Most of these provided relatively patchy, moderate-quality habitat, due to very heavy grazing and damage from rabbits.



Populations of lizards were detected in some areas where exotic pasture grass or dense lower cover from shrubs provided better cover for lizards.

The northern gully currently includes a radiata pine forest/plantation on the lower reaches with [kōhuhu]/mikimiki-sweet briar shrubland on the upper section of the gully. Only low-quality lizard habitat was observed here during surveys, and no traps were placed due to high risk of mouse predation in traps in this area. While the shrubland area is moderate-quality habitat for McCann's skinks, and some lizards were found in this area (relatively low in the gully), it's expected that the population of lizards here will be small due to relatively recent disturbance (approximately 30,000 m³ of clean fill was put into the northern gully in 2018).

The larger southern gully had habitat ranging from patches of high-quality open stonefield habitat at the upper and lower reaches, to large areas of moderate-quality exotic pasture grass, mixed [kōhuhu]/mikimiki-sweet briar shrubland and taller exotic woody vegetation. It's not expected that the taller vegetation in this area would provide habitat for arboreal lizard species, due to historic disturbance, recent revegetation with exotic species, high mouse abundance and a lack of habitat connectivity. A middle section of the gully close to paddock gates is characterised by exposed soil, heavily grazed pasture grass and has no rocks or indigenous shrubs to provide any suitable habitat for indigenous lizards.

Some exotic treeland/shelterbelts provided suitable moderate-quality lizard habitat with small areas of exotic pasture grass, including those where trees had recently been removed, leaving behind stumps and woody debris that provided good cover for lizards. Other shelterbelts had no grass or other vegetation close to the ground and were not considered suitable lizard habitat.

Most paddocks were heavily grazed, with patches of rank grass in wetter areas such as around ponds or water troughs. There is a considerable area of rank grass between 'North Zone' Road and fence lines. A large paddock of triticale attracting large flocks of small birds was adjacent to this area. Trapping in many of these areas was abandoned due to particularly high mouse abundance, and rank grass habitats were largely considered low-quality habitat for lizards.

A large section of the property is currently used by a skydiving company, 'NZone', for their operations including buildings, gardens and a large mown airstrip. This airstrip was not available for surveying due to safety concerns, however did not include any potential lizard habitat. A native garden around these buildings could provide excellent habitat for indigenous lizards, however NZone staff reported a very high density of pests in this area, including mice, hedgehogs and feral cats. No lizards were detected in traps or under debris during surveys of this area.



Plate 1 – South-western gully with mixed indigenous – exotic shrubland.



Plate 2 – Erosion, rank grass and some rocky substrate in the lower section of the south-eastern gully.

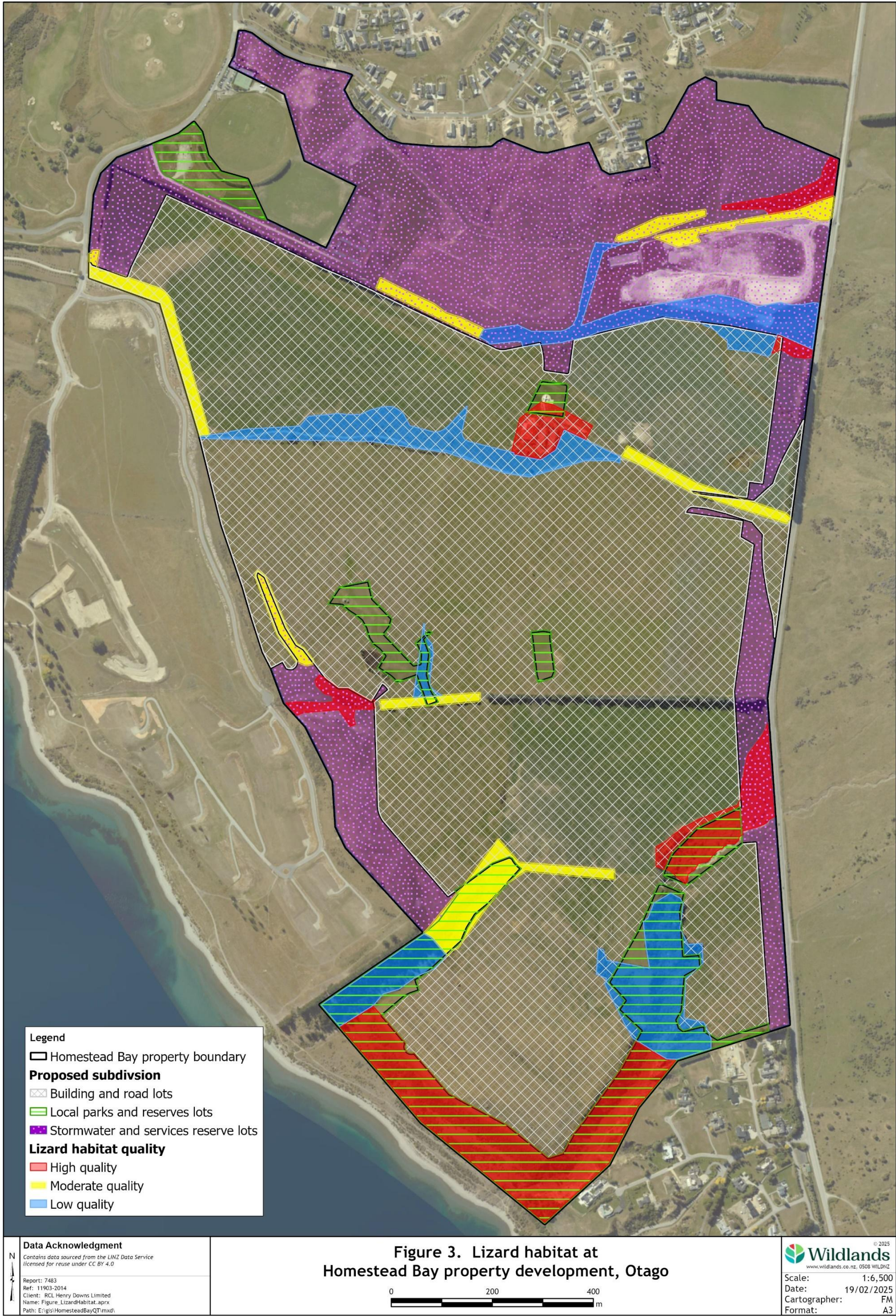




Plate 3 – A patch of rocky habitat in the upper south-east gully.



Plate 4 – Woody debris and rank grass in a former shelterbelt.



5.0 Ecological significance

The ecological significance of vegetation and habitats of indigenous fauna was assessed as part of the Ecological Effects Assessment for the project (Wildlands 2025b), based on the criteria in the Otago Regional Policy Statement (Otago RPS; Otago Regional Council 2019). Significant vegetation and habitats of indigenous fauna are present within the site (the criterion for Rarity was met for six vegetation and habitat types and the criterion for Ecological Context was met for ten vegetation and habitat types present on site). Refer to Wildlands (2025b) for further detail regarding the ecological significance of the site.

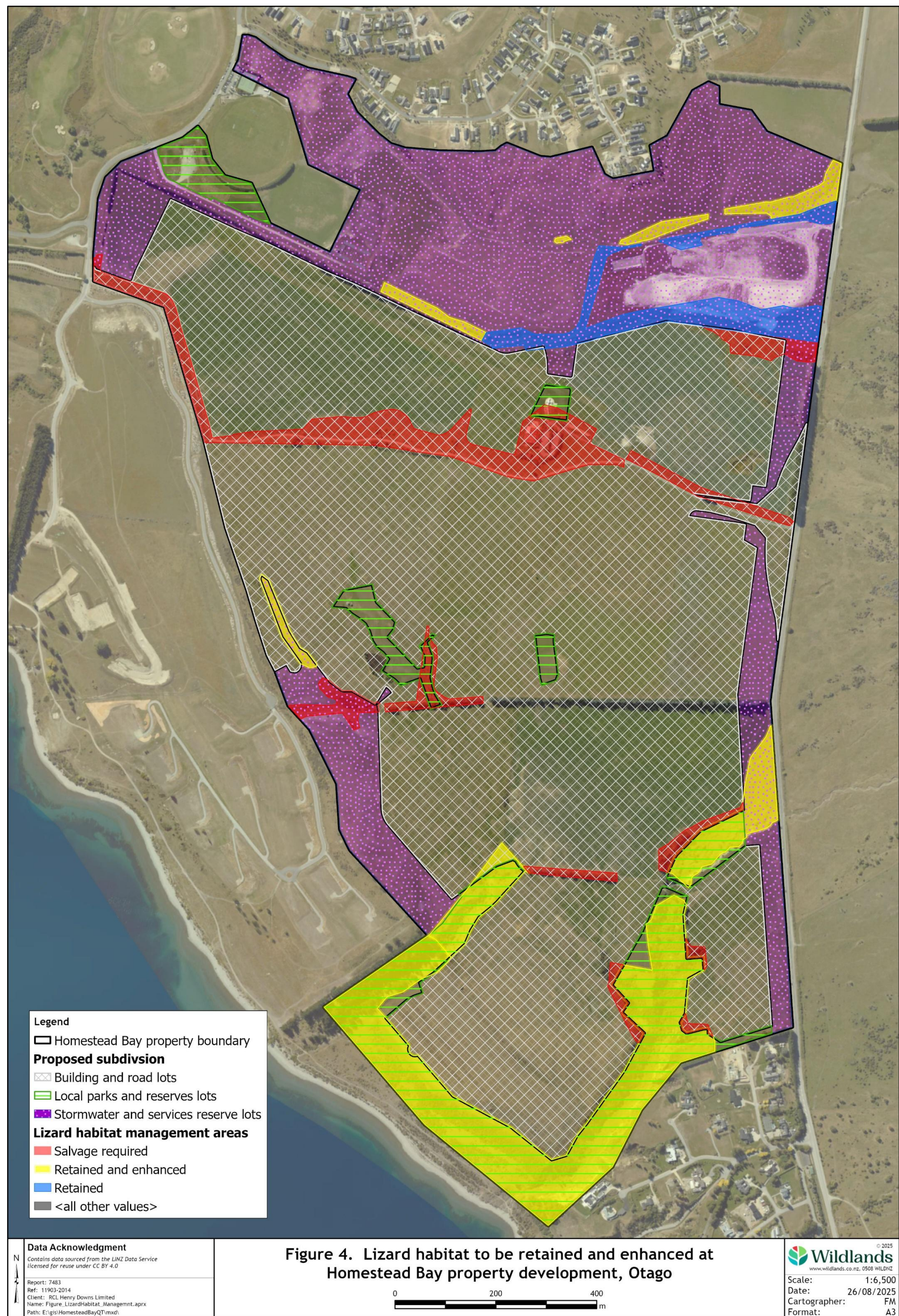
6.0 Effects on lizards

Effects on lizards from the proposed subdivision and associated earthworks have been assessed at a local population scale, using the Quality Planning Extent of Adverse Effects criteria (Quality Planning, 2017). The subdivision will be permanent in nature, and will affect a total of 11.88 hectares of lizard habitat (Figure 4).

Survey results suggested that patches of higher density populations of McCann's skink exist on site in areas of high and moderate quality lizard habitat. However, in lower quality habitat (such as areas of rank grass), very high pest abundance suggests low to undetectable lizard populations.

6.1.1 Proposed works

Major earthworks will be completed across the development area, including large-scale topography altering earthworks across the site. This includes the creation of screening bunds along the highway. Existing shelterbelts and vegetation within the works areas will be permanently removed during the development of lots and associated services, roads and reserves.





6.2 Potential effects

Potential effects on lizards resulting from the proposed development are detailed below.

- Accidental injury/death/displacement
- Disturbance to lizards during earthworks
- Loss of indigenous lizard habitat
- Breeding failure/behavioural effects
- Increased predation to lizards

Accidental injury/death/displacement: The proposed works will result in the permanent displacement, injury and death of individual lizards within the construction footprint. This effect is likely to be **more than minor** without mitigation.

Disturbance during earthworks: Disturbance during construction to lizards includes dust, vibration, and noise. This disturbance is likely to disrupt normal behaviour, including social dynamics in lizard populations adjacent to the construction footprint as a result of construction activity. Across the site, this effect is likely to be **more than minor** without mitigation.

Habitat loss and fragmentation: Lizards and their habitat were found throughout the site and loss of some poorer quality habitats cannot be avoided. This will result in permanent habitat loss for indigenous lizards at this site. Due to the low-moderate density of lizards present, this effect is likely to be **minor** without mitigation.

Breeding failure/behavioural effects: The proposed subdivision and associated earthworks may lead to temporary effects on behaviour of lizards and/or social interactions, such as increased stress, leading to reduced population functionality, such as poor breeding and low population recruitment. This effect is likely to be **less than minor** without mitigation.

Increased predation: The proposed subdivision will increase domestic cat abundance, as well as attract rodents, which may have an impact on lizard populations adjacent to the impact site. Due to the already high abundance of invasive predators including mice and hedgehogs, the effect is likely to be **less than minor** without mitigation.

6.3 Significance of effects

The level of ecological effects on indigenous lizards without mitigation actions taken are presented in Table 7.

Table 7 – Potential significance of effects to lizards and their habitats without mitigation.

Effect	Level of effect without mitigation
Accidental injury/death/displacement	More than minor
Disturbance during earthworks	More than minor
Habitat loss	Minor
Breeding failure/behavioural effects	Less than minor
Increased predation	Less than minor



7.0 Management of Effects

In the sections below we describe how effects may be avoided, remedied, or mitigated in the first instance.

7.1 Avoidance

Most of the high quality lizard habitat within the Homestead Bay subdivision can be avoided due to minimal disturbance to the gullies and steep terrace risers present on site. Existing areas of tūmatakura/matagouri and other indigenous shrubs will be retained where possible in stormwater services and reserve lots.

Disturbance to areas of high-quality rocky habitat and indigenous shrubs in the south-eastern gully floor will be avoided during construction of any stormwater management or paths in this area.

7.2 Remediation

Mitigation for the effects to McCann's skink can be largely achieved through on site remediation. The Landscape Plan by STR includes the planting of large areas of indigenous shrubland and low riparian planting, as well as planting of red and mountain beech on lower steep gully slopes. The Landscape Plan includes lizard friendly plant species, and rock and wood piles will additionally be created to provide lizard habitat. The remediated and enhanced areas will expand high-quality habitat available on site and will enable additional individuals salvaged from other lower quality habitats removed during the development.

7.2.1 Rock and wood piles

To increase the number of lizard refuges and thus the carrying capacity of the site for lizards, rock and wood piles will be created within habitat enhancement areas.

The success of lizard habitat enhancement will be monitored. DOC provides guidance on habitat enhancement that can be used to assist with habitat creation (DOC 2023).

Rock piles

Rock habitats will be created using rocks that will be removed from paddock rock piles prior to earthworks and construction. These will be retained and placed in rock piles under the supervision of the Project Herpetologist. Hand placing of slab rocks across areas naturally impoverished of rock, on open and sunny sites will be undertaken.

Rock piles must be free draining and should comprise only coarse rocks, with minimal soil and gravel, which is more likely to be colonised by weeds. Rocks will be of varying size dependent on the rocks sourced from paddock rock piles. A grade of 50-200 millimetres is preferable to provide optimal interstitial spaces amongst the rock piles for lizard occupation.

Rock piles will be either up to two metres in diameter, or be created in longer meandering corridors.

These rock piles will be placed in parts of the south-eastern gully where habitat is already present but requires additional enhancement. All rock stacks will be marked and recorded to



ensure that they can be used as supplementary release sites and for future monitoring, if required (Section 8).

Wood piles

Pine trees will be removed as part of scheduled works for the project. Pines controlled on site will be retained, cut up and placed into the south-western gully. This will provide temporary refuges for lizards until lizard friendly restoration plantings can provide adequate cover and habitat. All cones should be removed to reduce risk of spreading seeds.

Wood piles will consist of a combination of different sized logs and cover up to a 3m² area.

Any additional woody vegetation that is to be removed within the impact site can also be placed in the south-eastern gully to provide enhanced cover for lizards during removal of exotic shrubs and trees. The contractor responsible will ensure that no unwanted organisms or pest species are placed in these areas.

Layout and number of piles

A combination of rock and wood piles will be created. A minimum of 20 piles will be created within habitat enhancement areas, with the number of each type of pile to be created to be at the discretion of the Client and the relevant Contractor.

The distance between wood or rock piles will be a minimum of five metres.

7.2.2 Lizard friendly planting

Areas of proposed indigenous shrubland and low/riparian planting on site have been designed to consider the habitat preferences of McCann's skink. Indigenous plants suitable for Central Otago dryland sites that provide benefits to lizards are included within the planting schedule for the site. Indigenous restoration planting will be undertaken in areas of the site that will not be developed. A total area of approximately 17.15 hectares of landscape planting will be undertaken to provide high-quality lizard habitat.

Planting areas and a planting schedule are provided in Appendix 1. A summary of the planting schedule is provided in Table 8.

Table 8 – Planting schedule summary and lizard habitat provided.

Planting type	Approximate area to be planted (ha)	Lizard habitat plantings
Gully Restoration Shrubland Mix (Low Density Infill)	3.82	
Gully Restoration Shrubland Mix (High Density)	0.69	
Gully Restoration Beech Mix (Low Density Infill)	3.48	
Gully Restoration Beech Mix (High Density)	1.15	
Grey Shrubland Mix (High Density)	11.89	Yes
Grey Shrubland Mix (Low Density Infill)	0.68	Yes
Mountain Beech Mix (High Density)	0.68	
Mountain Beech Mix (Low Density Infill)	0.67	
Low Dryland Planting	0.55	Yes



Planting type	Approximate area to be planted (ha)	Lizard habitat plantings
Riparian Planting	4.03	Yes
Total	27.64	17.15 ha

Site preparation

Site preparation for planting will be limited to the planting areas. Removal of exotic pine trees and weed and pest plant control across the wider enhancement area will be undertaken as part of the general site preparation for the development and/or pest plant control programme.

The site preparation requirements for the planting will be confirmed by the Contractor after identifying the planting sites, but it is possible that some spot-spraying may be required. However, where feasible, hand weeding will be prioritised during site preparation for planting in areas of lizard habitat, as the effects herbicides and insecticides have on lizards are largely unknown but considered to be detrimental.

Where exotic pine trees or other woody weeds are present within the planting areas these should be controlled using the most effective methods that also minimise potential impacts to lizard habitat. This will be decided at the discretion of the Contractor who will be preparing the site. Pine trees can also be used for habitat enhancement (wood piles as above).

Chemical spraying during site preparation for planting should take place no less than 1.5 metres from any naturally occurring indigenous plants.

Timing

Removal of exotic pine trees within lizard habitat enhancement areas (e.g., in the lower section of the northern gully) will be undertaken prior to the planting of native seedlings.

Following the removal of exotic trees and shrubs, plantings will be undertaken. The planting programme will begin prior to the development of the site. Planting will be undertaken between late autumn and early spring (April-September) to enable plantings to establish whilst there is sufficient ground moisture present.

Planting will be undertaken in stages following the completion of each stage of works.

Plant species

The species to be planted are already present on site or will be species that would have historically occurred in this area. These plantings will increase the complexity and quality of the habitat for lizards (e.g., through an increase in refuges, protected basking opportunities and/or food resources, including berries, nectar and invertebrates), therefore supporting the lizard population and increasing the carrying capacity of the site.

Plantings will be eco-sourced. Every effort will be made to source the plants in the list provided, but the final plantings undertaken will depend on the availability of plants at nurseries.

Planting will be undertaken by a suitably qualified professional contracted by the Client.



The planting schedule includes a variety of lizard friendly plant species. Examples of the plant species included within the planting schedule and the benefits of these species for lizards are outlined in the below table.

Table 9 – Examples of plant species included within the planting schedule and their benefit to lizards and growth habit.

Common name	Scientific name	Benefits to Lizards	Beneficiaries	Growth Habit
Kāretu-tawhiti / copper tussock	<i>Chionochloa rubra</i> subsp. <i>cuprea</i>	C, I	Terrestrial skinks	Tussock
Desert (native) broom	<i>Carmichaelia petriei</i>	C, R, I	Terrestrial skinks	Shrub
<i>Coprosma dumosa</i>	<i>Coprosma dumosa</i>	C, N, F, I	Terrestrial skinks	Shrub
Poataniwha	<i>Melicope simplex</i>	C, N, I	Terrestrial skinks, geckos	Shrub
Scrub pōhuehue	<i>Muehlenbeckia complexa</i>	C, F, I	Terrestrial skinks, geckos	Shrub
Korokio	<i>Corokia cotoneaster</i>	C, N, F, I	Terrestrial skinks, geckos	Shrub
Porcupine shrub	<i>Melicytus alpinus</i>	C, F, I	Terrestrial skinks, geckos	Shrub
Mingimingi	<i>Coprosma propinqua</i>	C, N, F, I	Terrestrial skinks, geckos	Shrub
<i>Coprosma crassifolia</i>	<i>Coprosma crassifolia</i>	C, N, F, I	Terrestrial skinks, geckos	Shrub
Scented tree daisy	<i>Olearia odorata</i>	C, N, I,	Terrestrial skinks, geckos	Shrub
Tātārāmoa / bush lawyer	<i>Rubus schmidelioides</i>	C, F, I	Terrestrial skinks, geckos	Vine

Key to known benefits to lizards: C = Cover, R = retreats, N = nectar, F = fruit, I = invertebrates.

7.2.3 Plant protection

Newly-planted trees and shrubs can be decimated by browsing by rabbits, hares or possums (if present), so protection against browsing is critical.

- Individual plant guards should be used to protect each plant from browsing, especially for more sensitive species (e.g., young monocots). They also provide shelter, increased humidity, reduction of moisture loss, and help to prevent unintended herbicide damage.
- Guards should be removed once the plants are large enough to outcompete surrounding exotic vegetation.
- We recommend using cardboard plant guards. Cardboard plant guards are robust, biodegradable and resilient, but are more expensive. If cheaper light weight plastic guards are to be used in order to save on costs, care needs to be taken to ensure they are well secured due to the wind exposure on the site.

The use of weed mats, mulch, bark and woodchip in lizard habitat enhancement areas will be avoided. These types of ground covers inhibit the establishment of suitable habitat and vegetation often relied upon by lizards for cover, and reduce the presence of invertebrate communities that provide important food resources for lizards. Small amounts of woodchip may only be used around the bases of new plantings if required for weed suppression.

Fertiliser

The use of slow-release fertiliser tablets should also be considered to boost plant growth. This would be at the discretion of the planting Contractor.



7.2.4 Planting maintenance

Plant maintenance and monitoring will be commissioned by the Client and implemented by a suitably qualified Contractor for 24 months after planting or until the plants have established. This plant maintenance will include monitoring visits every one to two months over spring and summer to ensure the uptake and survival of plantings and determine what maintenance is required. Post-planting maintenance will include:

- Plants kept free of weeds by means of hand weeding as far as possible or weed eaters when required. Chemical spraying should not be used unless absolutely necessary. Weeding will be undertaken three to four times a year (or as required) to ensure that weeds do not compromise plant growth.
- Hand weeding around the plants will allow for better establishment of the plants and limits disturbance to lizards.
- No mulching will be undertaken.
- Where plant losses exceed 10 percent, these will also be replaced.

Maintenance will take place on warm, sunny days when the daily temperature exceeds 16°C as this is when skinks are most active. Contractors will minimise the use of sprays in and around lizard habitats as far as possible, to minimise any potential negative effects on lizards present.

7.2.5 Pest plant control

During initial removal of pest plants, to minimise temporary risk to indigenous lizards currently using this vegetation for cover, removal and control of pest plant species should be done during the warmer months (October to March) and when temperatures are above 16°C to allow lizards to disperse from removed vegetation.

Ongoing pest plant control is required to prevent pest plants outcompeting native plantings or reducing the habitat quality of rock and wood piles for lizards. Pest plant species will be determined by a suitably qualified pest plant control Contractor. Pest plant control will be implemented using the following methods:

- Manual pulling, cutting and pasting or drilling for wilding pine and other woody pest plants.
- Other appropriate methods for other pest plant species as determined by a pest plant control Contractor, noting that the use of chemical sprays should be avoided as far as possible around lizard habitats.
- Pest plant control will be undertaken for five years following the planting of seedlings.

7.3 Minimise

7.3.1 Ongoing site maintenance

Currently, the vast majority of the site is heavily grazed or being rotated with crops and is not suitable habitat for lizards. However, should grazing and current land-uses cease and rank grassland spread across the site prior to development, much of the site could become suitable for McCann's skink and populations could disperse across the site.



It is important that grazing is continued throughout undeveloped parts of the site and throughout the development process. This will reduce the risk of lizards dispersing into areas not currently designated as areas of potential lizard habitat.

If areas of pasture grass are not grazed or maintained, these areas may also become lizard habitat and will require salvage through the same methods highlighted below.

7.3.2 Salvage

Salvage of lizards in areas that cannot be avoided by works is restricted mostly to highly modified habitats, including shelterbelts and exotic pasture grassland (Table 10).

A small patch of heavily grazed tūmatakura/matagouri shrubland to the north-eastern boundary of Lot 8 will also be impacted by works. All of the habitats affected are likely to hold relatively low densities of lizards due to poor habitat quality and high numbers of mice and hedgehogs present.

The amount of salvage effort and range of methods proposed for use at the site is aimed to enable the removal of as many individuals as possible, representing a moderate to high proportion of the total number of McCann's skinks present.

Salvages will be staged in concurrently with the staging of works for each area (draft staging of subdivision works is shown in Figure 5). Earthworks will proceed into salvaged lizard habitats within a maximum of two weeks after the salvage has been completed. The Project Herpetologist will be notified once the works commence. If works do not proceed in this time, it is possible that lizards from the surrounding areas may move into the works area. If this occurs, the salvage will need to recommence following the methods outlined below.

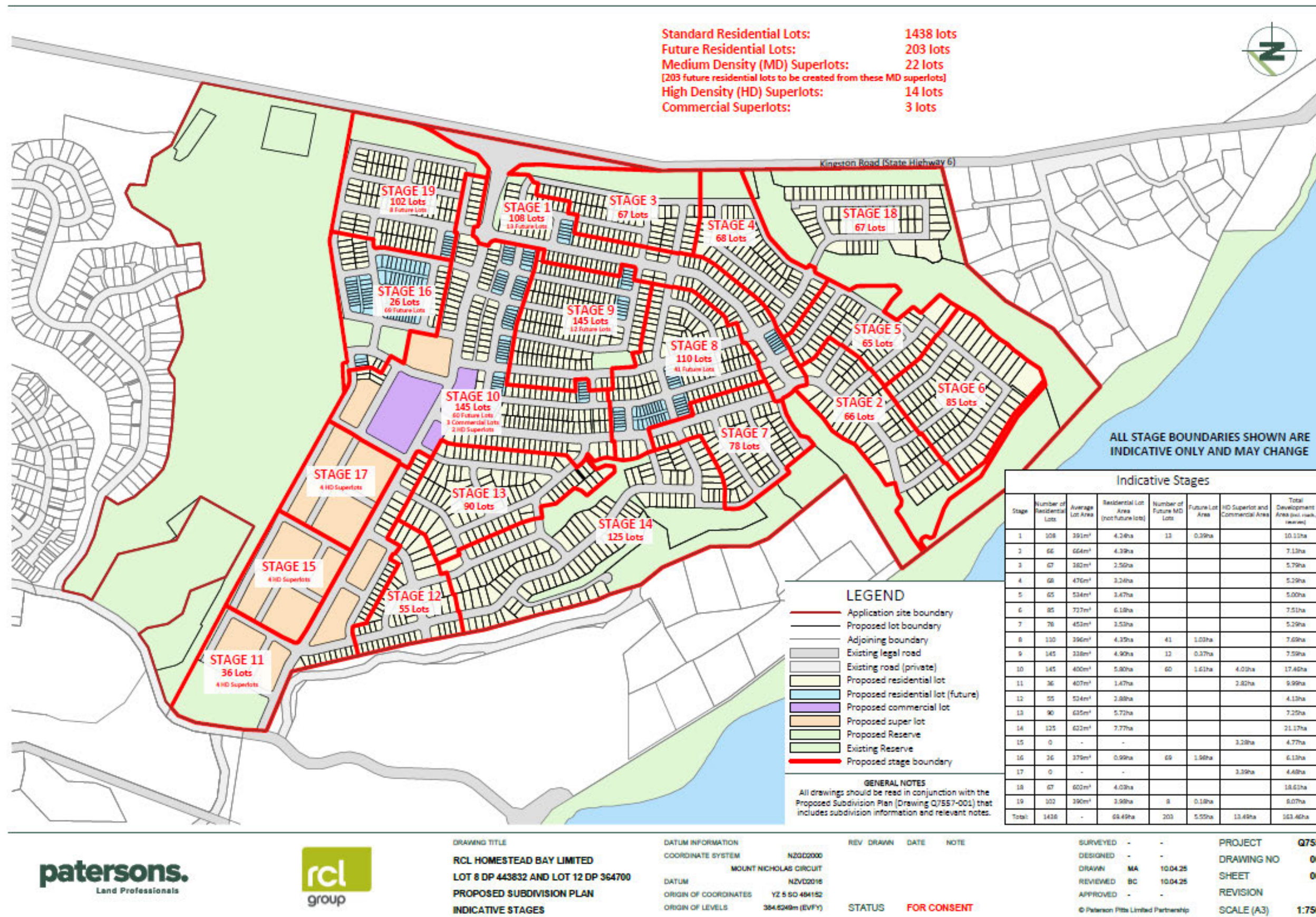


Figure 5 – Draft staging of Homestead Bay subdivision works. Provided by Remarkable Planning.



Table 10 – Estimated number of lizard traps and the manual searching effort required for each habitat requiring salvage, including estimated number of skinks caught.

Habitats	Approximate Area to be Affected by Works (ha)	Approximate Number of Traps Required	Trap Type	Manual Search Effort Required	Estimated Number of Lizards Salvaged
Tūmatapura/matagouri shrubland	0.07	40	Pitfall traps	-	35-40
Mixed indigenous – exotic shrubland	1.67	200	Funnel traps and ACOs	-	75-85
Shelterbelts	2.11	310	Pitfall trap	5p/h	150-160
Native garden	0.7	50	Funnel trap	5p/h	35-40
Rank grassland	7.4	555	Pitfall traps	-	85-95
Total	11.88	1,155		10p/h	380-420

Trapping

Funnel traps will be baited with canned pear or berry bliss lollies (Natural Confectionary Co.TM), known lizard attractants. The funnel traps will be padded with grass to provide shelter and prevent desiccation, in addition to preventing mice from preying upon caught skinks. The funnel trap will be covered with or nestled into the surrounding vegetation (as per the DOC Herpetofauna Monitoring Toolbox for Funnel Trapping; Hare, 2012a).

Pitfall traps consist of a plastic container (>2 litre depth) dug into the ground (typically baited with pear or berry bliss lollies, Natural Confectionary Co.TM), which lizards may fall into and be unable to exit. The pitfalls will be covered with OndulineTM to provide additional thermoregulatory advantages and attract more lizards to the traps. Pitfall traps will be filled with grass and a damp sponge, in addition to the Onduline artificial cover to provide shelter and prevent desiccation of skinks within the trap. Pitfall traps will be installed at least one week prior to habitat clearance and will be closed during this time to allow for lizards to become habituated to the traps and for the traps to weather in (as per the DOC Herpetofauna Toolbox for Pitfall Trapping; Hare, 2012). To prevent harm to lizards, pitfall traps will be closed when not in use (either with a sealed lid and/or by filling them with rocks). Traps will be checked at least every 24 hours when in use.

- Lizard traps will be placed at 5-10 metre spacings, as outlined above in each lizard habitat prior to earthworks. This work will be staggered with development stages.
- Once active, live capture traps will be checked daily for 7 consecutive days in low quality habitats and 10 consecutive days in moderate or high-quality habitats. If trapping reveals trends of decreasing numbers of skinks over the course of the time allocated for the habitat type, the salvage will cease.
- If traps continue to get the same or high numbers of skinks over the allocated time (≥ 3 individuals per day), the salvage will continue for an additional three days, or until no more lizards are caught.
- If trapping reveals trends of decreasing numbers of skinks over the course of the salvage, 7 days in low quality habitats and 10 days in moderate or high-quality habitats, with no skinks captured after day 5 or 7 respectively, trapping will cease.



- The length of trapping past the minimum requirements will be at the discretion of the Project Herpetologist.

Manual searching

Manual searching will occur in any habitats where woody debris or rocks are present. Where possible these areas will be manually searched and cleared throughout the salvage. Woody debris and rocks that could provide refuge for lizards will be manually lifted, and any lizards present will be subsequently caught (as per the DOC Herpetofauna Toolbox for Systematic Searches; Hare, 2012b). The clearance will occur until as much of the habitat, as reasonably possible, has been removed.

- Hand-searching techniques will be used to capture additional basking/active skinks. This will involve manually searching through and destructing any woody debris or rocky areas (where possible) to locate and capture any additional lizards.

Data collection

Lizard capture data will include species identity, sex and life history stage (adult or juvenile). Each stage of salvage will be recorded, including start/stop time, GPS coordinates, and a habitat description for the capture location, date and time. Weather conditions will be recorded during and at the beginning and end of each salvage event.

Temporary holding of lizards

Any lizards captured will be handled and held following best practice and released as soon as practical to the pre-selected lizard release area. All captured lizards will be temporarily placed in clean individual lizard cloth bags, and stored in ventilated, hard-sided containers (to prevent accidental crushing), in full shade. A small amount of damp leaf litter or vegetation from the capture site will be placed inside the cloth bags with the lizard to provide cover and prevent dehydration. Any lizards captured will be handled and held following best practice and released as soon as practical to the pre-selected lizard release area. Lizards will be released within five hours of capture into the habitats nearby (into suitably enhanced habitat within reserves on site).

7.3.3 Constraints

There are inherent risks associated with lizard capture, salvage and relocation as a management tool for mitigation purposes. In particular, there is high risk of poor capture rates for lizards during capture and salvage activities. This will be managed by maximising the salvage effort and using a range of tools suitable to the species in questions.

Lizard salvage climatic constraints

Many lizard species are inactive below 16°C. Hot summer temperatures (>25°C) also reduce lizard emergence and detectability. Because of these constraints, salvage will be undertaken between October – April (inclusive), when:

- The temperature is between 16°C and 25°C, and
- Rain is no heavier than 0.1 – 2.0 mm per hour.
- The wind is not strong.



7.3.4 Lizard release

Release site

The initial release site for the first stage of development is a c. 1.3-hectare area in the lower section of the northern gully. This area is currently Radiata pine forest/plantation that will be cleared and turned into a lizard habitat enhancement area. Immediate enhancement will be provided in the form of wood piles from cut up pine trees cleared from the plantation. Native plantings will subsequently be undertaken in this area. This area is within the Homestead Bay development site, and development plans designate the area as a Local Purpose Reserve. RCL Homestead Bay have agreed to protect the release area from future use and works.

Additional lizard release areas within the southern gullies on site will be enhanced following the completion of any required works in these areas (e.g., track creation). These additional areas will then be used for lizard release for subsequent stages of the subdivision development. Further enhancement of these areas through the addition of rock and wood piles will increase their carrying capacity, resulting in the ability to accommodate additional individuals. Planned lizard friendly planting and exotic pest plant control will further increase capacity over the long-term.

These additional sites will receive the same habitat enhancement measures as discussed in section 7.2.

Lizard release areas will receive legal protection from future development.

Release methods

Lizards will be placed into pre-prepared rock piles or retained woody debris within the release sites. Five to ten skinks (depending on numbers caught) will be released at each release point so as to not create unnecessary competition. Where any lizards are found together or in aggregation (i.e. multiple captures in one trap), they will be released together.

The rock/woody debris piles will provide temporary refugia while more long-term enhancement including lizard friendly restoration planting takes place. These refugia will reduce accessibility for mice and other predators, increasing the likelihood of a successful release.

7.4 Contingencies and risks associated with proposed management

7.4.1 Risks associated with salvage

Potential risks to lizards as a result of the proposed salvage, and management actions to reduce these risks, include:

- **Overheating**
 - Issue: Overheating may occur when captured lizards are temporarily held in containers during ongoing salvage activities.
 - Action: Lizards will be placed in individual containers and kept in a cool place until transported and released. Handling will be minimized to ensure they do not become stressed. All traps will be checked at least once daily.
- **Overcrowding, competition and displacement**



- Issue: Lizards are already present in areas of the release site. The addition of supplementary lizards to the release site population may result in competition for resources and increased predation pressure and may result in displacement when released.
 - Action: Enhancement planting, predator control and creation of additional habitat units within the release site will allow for a greater carrying capacity of lizards. This will reduce the amount of competition and potential displacement of released skinks.
- **Injury/death**
 - Issue: Incorrect trapping or handling during salvage by untrained staff.
 - Action: All lizards will be captured or supervised by an appropriately qualified herpetologist, following best practice and full hygiene protocols, minimising the risk of injury, death and disease transmission through inappropriate handling and capture.

7.4.2 Contingencies

There is inherent uncertainty in the outcomes of lizard management at the site, as a result of the complexities of the process and long-term management of the release site for species conservation. In some cases, additional species may be discovered during salvage, the release site is not viable in the long term, or the predator control regime has been found ineffective.

The main risks and resulting contingencies relating to the proposed lizard management include (see Table 11 for more details):

- Additional lizard species encountered other than those known to be on site (unexpected discovery).
- Habitat enhancement and/or planting uptake fails.
- Predator control causes negative impacts (mouse eruptions).
- More than expected lizards (>300 individuals) are salvaged from the impact site (overcrowding).

Table 11 – Risks associated with salvage and proposed management.

Risk Associated with Salvage	Detail	Contingency
Additional lizard species encountered	Mountain beech gecko.	Mountain beech geckos will be relocated to existing rocky areas within the release site.
	Tussock skink.	Tussock skinks will be relocated to damper habitats within the release site.
	Although unlikely, if any other species (other than those listed) is encountered during salvage.	Stop works, notify DOC, and develop further instructions. Follow Incidental Discovery Protocol (Appendix 2).
Remediation site failure	Habitat creation from salvaged rocks and woody debris is not taken up by lizards.	Continue monitoring for another two years. Any recommendations to address population declines will be recommended in annual reporting (see Section 9).
	Restoration planting fails.	Any more than 10% plant failure will be replaced at the cost of RCL Homestead Bay Ltd.
More than expected lizards are relocated	Although it is not possible to accurately estimate the number of lizards that will be relocated during	Salvage will be extended as addressed in Section 7.3.2.



Risk Associated with Salvage	Detail	Contingency
	salvage, it is considered that more than 300 lizards will be a significant number and will require a contingency to address the risk.	If more than 300 lizards are salvaged across the site, additional on-site release areas will require enhancement (see Section 7.2).
Residual skink populations remaining following manual habitat clearance	It is unlikely that all lizards will be removed from the impact site and may be displaced by earthworks.	Incidental Discovery Protocol (Appendix 2).

8.0 Post release monitoring

The Department of Conservation's lizard mitigation guidelines (DOC, 2019) recommend monitoring to evaluate the success of the salvage operation, post release. If a substantial number of lizards (>100 McCann's skink) or any additional species are salvaged from the extent of works, monitoring is appropriate to determine the success of the salvage, and enhancement of the release site. Monitoring will be carried out at the release site during the first season post salvage. This monitoring will be commissioned by RCL Homestead Bay and undertaken by a suitably qualified and permitted herpetologist.

Monitoring of translocated individuals for survivorship and establishment is not practical without toe-clipping for this species, as they cannot be reliably identified to an individual level from their natural markings. However, this method will not be used as it is widely considered as unethical. Therefore, the design of the post-translocation monitoring work will be focused on achieving population persistence at the site following relocation (ACO survey over one week during fine weather between November and December). Two to three ACOs will be placed at each aggregate and talus pile in which lizards were released in throughout the release site (c.40 ACOs).

By conducting a live capture survey, mark-recapture of the population is possible. All lizards captured will be measured (snout-vent length, tail-vent length, regen length), sexed, photographed and marked with an ID number. Therefore, occupancy modelling can be conducted to estimate the size of the population, and trends of persistence over time, which can provide an indication as to how lizards are faring at the site.

9.0 Reporting

A salvage report will be prepared, including details of the lizard species, capture locations, the number of individuals salvaged and release locations, annually for every year that salvage is undertaken. This report will also include details around the enhancement of the release site(s) and compliance with the WAA issued. The report will contain information regarding the success of the lizard salvage and any adaptive management that was required.

Lizard species and location details will be provided to the Department of Conservation as part of the Wildlife Authorisation permit obligations. ARDS cards will be completed and submitted to DOC.

This report will be provided to RCL Homestead Bay Limited, QLDC, ORC, DOC, and mana whenua, as required within six months of the completion of all lizard habitat removal on site.



Additionally, if post-release monitoring is required, an annual report summarising the monitoring outcomes will be reported by the Project Herpetologist to the listed stakeholders above, providing details of success, failure and any adaptive management that may be required.

10.0 Significance of effects after management

Accurately predicting the level of effect with mitigation in place is difficult, but Table 12 gives a broad picture of how effects can be significantly reduced with mitigation measures in place. We consider that if the effects management outlined in this plan are properly implemented, the overall level of effect will be **less than minor**.

Table 12 – Potential significance of ecological effects if effective mitigation is implemented as recommended above.

Effect	Level of adverse effect without mitigation	Mitigation	Level of effect with mitigation
Accidental injury/death/displacement	More than minor	Avoidance of high-quality habitats (Section 7.1) Lizard salvage and relocation (Section 7.3.2) Contingencies and risks with proposed management is considered (Section 7.4) Incidental Discovery Protocol (Appendix 2)	Minor
Disturbance during earthworks	More than minor	Lizard salvage and relocation (Section 7.3.2) Contingencies and risks with proposed management is considered (Section 7.4) Incidental Discovery Protocol (Appendix 2)	Less than minor
Habitat loss	Minor	Avoidance of high-quality habitats (Section 7.1) High-quality lizard habitat creation and enhancement (Section 7.2)	Less than minor
Breeding failure/behavioural effects	Less than minor	Lizard salvage and relocation (Section 7.3.2) Contingencies and risks with proposed management is considered (Section 7.4)	Less than minor
Increased predation	Less than minor	Habitat enhancement (Section 7.2)	Less than minor

Acknowledgements

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This topographic map of Homestead Bay illustrates the proposed planting areas for the Planting-Community Park. The map features contour lines indicating elevation, with a prominent creek flowing through the lower right portion. The planting areas are highlighted in various colors: dark green for the creek banks, light green for adjacent slopes, and yellow/orange for the main planting zones. A north arrow is located in the upper right corner. The map is overlaid with a grid of property lines and roads.

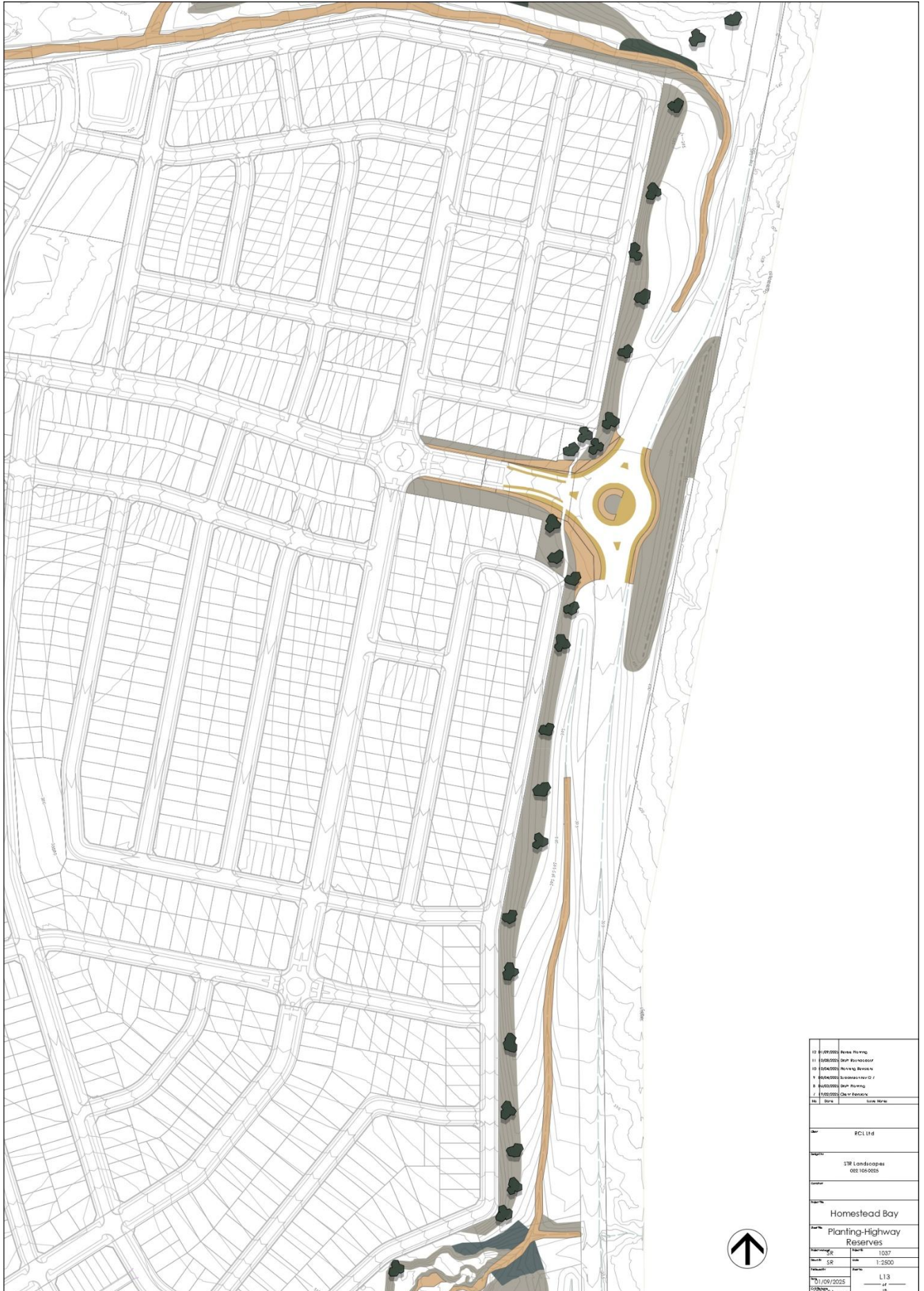
Legend:

- 12 04/05/2023: Review Planning
- 11 04/05/2023: Draft Review/Approval
- 10 04/05/2023: Review Planning
- 9 04/05/2023: Review Planning
- 8 04/05/2023: Draft Review
- 7 04/05/2023: Draft Review
- 6 04/05/2023: Draft Review
- 5 04/05/2023: Draft Review
- 4 04/05/2023: Draft Review
- 3 04/05/2023: Draft Review
- 2 04/05/2023: Draft Review
- 1 04/05/2023: Draft Review

Project Information:

RCL Ltd	
Site Landscapes	
002 100 0025	
Homestead Bay	
Planting-Community Park	
Planning	1037
Scale	1:2500
Author	L11
Date	01/09/2023
Project	100 100 0025











Plant Schedule								
Plant ID	% Mix	Qty	Botanical Name	Common Name	Grade	Planted Height (m)	Height @7yrs (m)	Spacing (m)
Gully Restoration Shrubland Mix (Low Density Infill)				38238m2				
0								
CAsa	3	200	Carpodetus serratus	Marble leaf, Putaputaweta	pb2	Comment 1	Comment 2	2.4
COau	3	200	Cordyline australis	Cabbage tree, Ti kouka	pb5	Comment 1	Comment 2	2.4
COco	5	333	Corakia cotoneaster	Wire-netting bush, Korakia	pb2	Comment 1	Comment 2	2.4
COLi	5	333	Coprosma linearifolia	Mikimiki, yellow wood	pb2	Comment 1	Comment 2	2.4
COpr	10	666	Coprosma propinqua	Mikimiki, Mingmingi	pb2	Comment 1	Comment 2	2.4
GRli	10	666	Griselinia littoralis	Napuka	pb2	Comment 1	Comment 2	2.4
MEsm	3	200	Melicope simplex	Postanliha	pb2	Comment 1	Comment 2	2.4
MUco	5	333	Muehlenbeckia complexa	Small leaved Pohuehue	pb2	Comment 1	Comment 2	2.4
MYai	5	333	Myrsine divaricata	Weeping mapou	pb5	Comment 1	Comment 2	2.4
OLav	8	530	Olearia avicennifolia	Mountain akeake	pb2	Comment 1	Comment 2	2.4
OLod	5	333	Olearia odorata	Scented tree daisy	pb2	Comment 1	Comment 2	2.4
PIte	15	997	Phytosporum tenuifolium	Kahuhu	pb2	Comment 1	Comment 2	2.4
PIre	3	200	Plagianthus regius	Ribbonwood	pb5	Comment 1	Comment 2	2.4
PScr	4	267	Pseudopanax crassifolius	Lancewood, Haraeka	pb5	Comment 1	Comment 2	2.4
RUsc	1	66	Rubus schmideloides	White-leaved lawyer, Tāvihara-wai	pb5	Comment 1	Comment 2	2.4
SOMi	5	333	Sophora microphylla	Small-leaved Kowhai	pb2	Comment 1	Comment 2	2.4
VEsa	10	666	Veronica salicifolia	Karamika	pb2	Comment 1	Comment 2	2.4
Gully Restoration Shrubland Mix (High Density)				6915m2				
0								
CAsa	3	144	Carpodetus serratus	Marble leaf, Putaputaweta	pb2	Comment 1	Comment 2	1.2
COau	3	144	Cordyline australis	Cabbage tree, Ti kouka	pb5	Comment 1	Comment 2	1.2
COco	5	240	Corakia cotoneaster	Wire-netting bush, Korakia	pb2	Comment 1	Comment 2	1.2
COLi	5	240	Coprosma linearifolia	Mikimiki, yellow wood	pb2	Comment 1	Comment 2	1.2
COpr	10	480	Coprosma propinqua	Mikimiki, Mingmingi	pb2	Comment 1	Comment 2	1.2
GRli	10	480	Griselinia littoralis	Napuka	pb2	Comment 1	Comment 2	1.2
MEsm	3	144	Melicope simplex	Postanliha	pb2	Comment 1	Comment 2	1.2
MUco	5	240	Muehlenbeckia complexa	Small leaved Pohuehue	pb2	Comment 1	Comment 2	1.2
MYai	5	240	Myrsine divaricata	Weeping mapou	pb5	Comment 1	Comment 2	1.2
OLav	8	384	Olearia avicennifolia	Mountain akeake	pb2	Comment 1	Comment 2	1.2
OLod	5	240	Olearia odorata	Scented tree daisy	pb2	Comment 1	Comment 2	1.2
PIte	15	720	Phytosporum tenuifolium	Kahuhu	pb2	Comment 1	Comment 2	1.2
PIre	3	144	Plagianthus regius	Ribbonwood	pb5	Comment 1	Comment 2	1.2
PScr	4	192	Pseudopanax crassifolius	Lancewood, Haraeka	pb5	Comment 1	Comment 2	1.2
RUsc	1	48	Rubus schmideloides	White-leaved lawyer, Tāvihara-wai	pb5	Comment 1	Comment 2	1.2
SOMi	5	240	Sophora microphylla	Small-leaved Kowhai	pb2	Comment 1	Comment 2	1.2
VEsa	10	480	Veronica salicifolia	Karamika	pb2	Comment 1	Comment 2	1.2
Gully Restoration Beech Mix (Low Density Infill)				34818m2				
0								
FUcl-1	60	3628	Fuscopora cliffortioides	Mountain beech, Tāvahal rauriki	pb5	Comment 1	Comment 2	2.4
FUFu-1	40	2418	Fuscopora fusca	Red Beech	pb5	Comment 1	Comment 2	2.4
Gully Restoration Beech Mix (High Density)				11473m2				
0								
COco	5	398	Corakia cotoneaster	Wire-netting bush, Korakia	pb2	Comment 1	Comment 2	1.2
COdu	4	319	Coprosma dumosa	Shrubby Coprosma, Karamā iti	pb2	Comment 1	Comment 2	1.2
COpr	5	398	Coprosma propinqua	Mikimiki, Mingmingi	pb2	Comment 1	Comment 2	1.2
FUcl-1	20	1292	Fuscopora cliffortioides	Mountain beech, Tāvahal rauriki	pb5	Comment 1	Comment 2	1.2
FUFu-1	15	1195	Fuscopora fusca	Red Beech	pb5	Comment 1	Comment 2	1.2
GRli	5	398	Griselinia littoralis	Napuka	pb2	Comment 1	Comment 2	1.2
MEsm	5	398	Melicope simplex	Postanliha	pb2	Comment 1	Comment 2	1.2
MUco	5	398	Muehlenbeckia complexa	Small leaved Pohuehue	pb2	Comment 1	Comment 2	1.2
MYai	5	398	Myrsine divaricata	Weeping mapou	pb5	Comment 1	Comment 2	1.2
OLav	10	797	Olearia avicennifolia	Mountain akeake	pb2	Comment 1	Comment 2	1.2
PIte	10	797	Phytosporum tenuifolium	Kahuhu	pb2	Comment 1	Comment 2	1.2
RUsc	1	79	Rubus schmideloides	White-leaved lawyer, Tāvihara-wai	pb5	Comment 1	Comment 2	1.2
VEsa	10	797	Veronica salicifolia	Karamika	pb2	Comment 1	Comment 2	1.2
Grey Shrubland Mix (High Density)				118680m2				
0								
CApe	4	3293	Carmichaelia petriei	Native Broom	pb5	Comment 1	Comment 2	1.2
COco	8	6594	Corakia cotoneaster	Wire-netting bush, Korakia	pb2	Comment 1	Comment 2	1.2
COcr	10	8237	Coprosma crassifolia	Thick-leaved Coprosma	pb2	Comment 1	Comment 2	1.2
COdu	4	3293	Coprosma dumosa	Shrubby Coprosma, Karamā iti	pb2	Comment 1	Comment 2	1.2
COLi	5	4123	Coprosma linearifolia	Mikimiki, yellow wood	pb2	Comment 1	Comment 2	1.2
COpr	15	12363	Coprosma propinqua	Mikimiki, Mingmingi	pb2	Comment 1	Comment 2	1.2
Dita	3	2469	Discaria toumatou	Matagouri	pb5	Comment 1	Comment 2	1.2
MEsm	4	3293	Melicope simplex	Postanliha	pb2	Comment 1	Comment 2	1.2
MUco	10	8237	Muehlenbeckia complexa	Small leaved Pohuehue	pb2	Comment 1	Comment 2	1.2
MYai	5	4123	Myrsine divaricata	Weeping mapou	pb5	Comment 1	Comment 2	1.2
OLi	10	8237	Olearia lineata	Twiggy tree daisy	pb2	Comment 1	Comment 2	1.2
OLod	15	12363	Olearia odorata	Scented tree daisy	pb2	Comment 1	Comment 2	1.2
RUsc	1	824	Rubus schmideloides	White-leaved lawyer, Tāvihara-wai	pb5	Comment 1	Comment 2	1.2
SOMi	6	4946	Sophora microphylla	Small-leaved Kowhai	pb2	Comment 1	Comment 2	1.2
Grey Shrubland Mix (Low Density Infill)				6817m2				
0								
CApe	4	48	Carmichaelia petriei	Native Broom	pb5	Comment 1	Comment 2	2.4
COco	8	94	Corakia cotoneaster	Wire-netting bush, Korakia	pb2	Comment 1	Comment 2	2.4
COcr	10	119	Coprosma crassifolia	Thick-leaved Coprosma	pb2	Comment 1	Comment 2	2.4
COdu	4	48	Coprosma dumosa	Shrubby Coprosma, Karamā iti	pb2	Comment 1	Comment 2	2.4
COLi	5	58	Coprosma linearifolia	Mikimiki, yellow wood	pb2	Comment 1	Comment 2	2.4
COpr	15	177	Coprosma propinqua	Mikimiki, Mingmingi	pb2	Comment 1	Comment 2	2.4
Dita	3	35	Discaria toumatou	Matagouri	pb5	Comment 1	Comment 2	2.4
MEsm	4	48	Melicope simplex	Postanliha	pb2	Comment 1	Comment 2	2.4
MUco	10	119	Muehlenbeckia complexa	Small leaved Pohuehue	pb2	Comment 1	Comment 2	2.4
MYai	5	58	Myrsine divaricata	Weeping mapou	pb5	Comment 1	Comment 2	2.4
OLi	10	119	Olearia lineata	Twiggy tree daisy	pb2	Comment 1	Comment 2	2.4
OLod	15	177	Olearia odorata	Scented tree daisy	pb2	Comment 1	Comment 2	2.4
RUsc	1	11	Rubus schmideloides	White-leaved lawyer, Tāvihara-wai	pb5	Comment 1	Comment 2	2.4
SOMi	6	71	Sophora microphylla	Small-leaved Kowhai	pb2	Comment 1	Comment 2	2.4
Mountain Beech Mix (High Density)				6758m2				
0								
COcr	10	300	Coprosma crassifolia	Thick-leaved Coprosma	pb2	Comment 1	Comment 2	1.5
COdu	5	151	Coprosma dumosa	Shrubby Coprosma, Karamā iti	pb2	Comment 1	Comment 2	1.5
COpr	20	601	Coprosma propinqua	Mikimiki, Mingmingi	pb2	Comment 1	Comment 2	1.5
FUcl-1	20	601	Fuscopora cliffortioides	Mountain beech, Tāvahal rauriki	pb5	Comment 1	Comment 2	1.5
MEsm	5	151	Melicope simplex	Postanliha	pb2	Comment 1	Comment 2	1.5
MUco	10	300	Muehlenbeckia complexa	Small leaved Pohuehue	pb2	Comment 1	Comment 2	1.5
OLi	14	420	Olearia lineata	Twiggy tree daisy	pb2	Comment 1	Comment 2	1.5
OLod	15	420	Olearia odorata	Scented tree daisy	pb2	Comment 1	Comment 2	1.5
RUsc	1	31	Rubus schmideloides	White-leaved lawyer, Tāvihara-wai	pb5	Comment 1	Comment 2	1.5
Mountain Beech Mix (Low Density Infill)				6550m2				
0								
FUcl-1	100	1137	Fuscopora cliffortioides	Mountain beech, Tāvahal rauriki	pb5	Comment 1	Comment 2	2.4
Low Dryland Planting				5468m2				
0								
CApe	5	716	Carmichaelia petriei	Native Broom	pb5	Comment 1	Comment 2	0.6
CHI	10	1430	Chionochloa rigida subsp. rigida	Narrow-leaved snow tussock	pb2	Comment 1	Comment 2	0.6
COpr	5	716	Coprosma propinqua	Mikimiki, Mingmingi	pb2	Comment 1	Comment 2	0.6
FEnz	20	2860	Festuca novae-zelandiae	Fescue tussock, Hard tussock	pb2	Comment 1	Comment 2	0.6
MEal	5	716	Melicytus alpinus	Porcupine schub	pb2	Comment 1	Comment 2	0.6
MUax	10	1430	Muehlenbeckia axillaris	Creeping Wire Vine, Pohuehue	pb5	Comment 1	Comment 2	0.6
OZva	10	1430	Oxanthus vulvulens	Mountain tuihu, Mountain Cottonwood	pb2	Comment 1	Comment 2	0.6
POci	30	4289	Poa cita	Silver tussock	pb2	Comment 1	Comment 2	0.6
Riparian Planting				40308m2				
0								
AUli	15	6940	Austroderia richardii	South Island Toetoe	pb2	Comment 1	Comment 2	0.9
CAseC	30	13881	Carex secta	Purei	pb2	Comment 1	Comment 2	0.9
CHru	30	13881	Chionochloa rubra subsp. cuprea	Kiretu-tawhiti, Copper Tussock	pb2	Comment 1	Comment 2	0.9
COpr	10	4626	Coprosma propinqua	Mikimiki, Mingmingi	pb2	Comment 1	Comment 2	0.9
PIte	15	6940	Phormium tenax	Haraakeke, Flax	pb2	Comment 1	Comment 2	0.9
0								
CHru	100	3497	Chionochloa rubra subsp. cuprea	Kiretu-tawhiti, Copper Tussock	pb2	Comment 1	Comment 2	0.9
Total				176536				

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Appendix 2

Incidental Discovery Protocol (IDP)

Overview

Incidental discovery protocols are set out below for development Contractors, and are to be followed if any further lizards are discovered, post-mitigation, during subdivision works.

Where lizards might be found:

Lizards could be present in and on vegetation such as within rank grassland and low shrubland. They may also bask in sunny exposed spots, such as in/on wood or rock piles, and may be found underneath debris. They may be uncovered when disturbed by habitat clearance or earthworks.

Following the incidental discovery of a lizard

- Immediately (as soon as discovery of a lizard is made) cease any activities within 10 metres of the place of discovery. If the species encountered is a species with a Threat Classification status of 'Threatened' then all works must cease immediately, until an assessment is made of the works programme risk for that species, and any specific management identified, including avoidance.
- If possible, capture the lizard and place in a container with grass/leaf litter. Ensure to create breathing holes in the container for the lizard. Hold in captivity in a **cool, shady** location out of sun until a decision is made.
- Immediately inform the Project Herpetologist at Wildland Consultants and Operations Manager on-site.
- Document:
 - Date and time.
 - Weather conditions.
 - Observer name(s).
 - Photographs of the animal and the location where it was found. Photograph the lizard from above trying to show the head and any markings on the upper body or back. A cell-phone picture is adequate for this and can help with identification of species.
 - If lizards are unable to be captured and/or photographed, note as much detail as possible: what colour was it; what colour patterns; how big was it; whether it was robust or slender; what habitat was it found in? You may need to describe these details to the Project Herpetologist and DOC.
 - Location (GPS coordinates).
 - Species.
 - If injured:
 - What part of the animal is injured? (Photograph the injury).
 - Time since injury (if known).
 - Probable cause of injury (if known).
 - Immediately (within one hour) contact the Project Herpetologist, a local veterinarian and the local DOC office (Whakatipu-wai-Māori/Queenstown Office), and arrange for the injured lizard to be delivered to the veterinarian. This may require a monetary contribution for care.



- If a carcass is found:
 - Condition of carcass (see below).
 - Approximate time since death (if known).
 - Probable cause of death (if known).
 - Notify the Whakatipu-wai-Māori/Queenstown DOC Operations Manager (queenstown@doc.govt.nz) and Project Herpetologist within 48 hours.
 - Arrange for the carcass to be sent to Massey University Wildlife Postmortem Service, Massey University, in Palmerston North, OR as otherwise advised by the Whakatipu-wai-Māori/Queenstown DOC Operations Manager, along with details of the animal's history.
 - Chill the body if it can be delivered within 72 hours, or freeze the body if delivery will take longer than 72 hours.

Should a 'Threatened' lizard species be encountered during development works, contact Whakatipu-wai-Māori/Queenstown DOC Operations Manager (queenstown@doc.govt.nz) and the Project Herpetologist immediately for further advice. Further works may not proceed until approval has been granted to continue by DOC.

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