Before the Expert Panel appointed under the Fast-track Approvals Act 2024

Under	the Fast-track Approvals Act 2024
And	
In the Matter of	an application for approvals by NZSki Limited to upgrade existing infrastructure at the Remarkables Ski Area, including a new passenger transport lift, carparking areas, and expanding the ski field into the adjacent Doolans Basin

Statement of Evidence of **Carey Dylan Knox and Trudy Cherie Anderson** on behalf of NZSki Limited in response to Section 53 Comments

Lizards

Dated: 3 November 2026

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INTRODUCTION

Carey Knox

1. My name is Carey Dylan Knox.

2. I am an independent herpetologist (lizard expert) based in Central Otago but operating widely across New Zealand. I have an MSc, PgDip, and BSc from the University of Otago in the fields of Zoology and Ecology and am currently working towards a PhD on a part-time basis. I am a skilled herpetologist with 19 years of field and reporting experience with lizards across New Zealand. I have worked on a wide range of projects relevant to the management and conservation of New Zealand lizards including working directly on several threatened lizard species under contract to the Department of Conservation. I was part of the New Zealand Threat Classification System expert panel for the assessment of the threat status of all New Zealand reptiles in 2020 and 2025. I am an author of over 175 technical reports, guidance documents, and articles on lizards, including 22 published research papers in scientific journals (11 as the lead author).

Trudy Anderson

3. My name is Trudy Cherie Anderson.

4. I am a herpetologist (lizard expert) based in Central Otago but operating widely across the lower South Island. I am employed as a Senior Environmental Scientist – Terrestrial Ecology at e3Scientifc, a position I have held since 2022. I have a BSc in Ecology and a Post-Graduate Diploma in Wildlife Management (with Distinction), both from the University of Otago. I have 20 years' experience working in ecology and conservation, mostly at the Department of Conservation in Otago. My experience includes undertaking survey, monitoring and reporting of common and rare lizard populations in the lower South Island, including informing and reviewing various Resource Management Act 1991 and Fast Track Approvals Act 2024 applications.

SCOPE OF EVIDENCE

5. This statement is given as part of NZSki Limited's (**NZSki**) response to comments on the Remarkables Ski Area Upgrade and Doolans Expansion (**Project**) made under Sections 51 and 53 of the Fast-track Approvals Act 2024 (**FTA**). This statement responds to:

   (a) Mr Nicholas Harker's Statement of Evidence, included as Appendix D to the Department of Conservation Section 51 concessions and approvals report. This document is subsequently referred to as the "*Evidence of Mr Harker*";

   (b) Dr Fleur Maseyk's Statement of Evidence, included as Appendix J to the Department of Conservation Section 51 concessions and approvals report This document is subsequently referred to as the "*Evidence of Dr Maseyk*"

   (c) Liddell, L., Thorp, C. and King, S. September 2026. NZSki Remarkables Ski Field Expansion Updated Terrestrial Ecology Review. Prepared for Central Otago District Council. Wildlands Report No 7955c, included as 0.8A Appendix B NZSki Terrestrial Ecology CODC. This document is subsequently referred to as "*Wildlands* (2026)."

   (d) Mr Matthew John Dale's Statement of Evidence of, included as 14. Kā Rūnaka, Statement of Evidence of Matthew Dale. This document is subsequently referred to as "*Evidence of Mr Dale*"; and

   (e) Statements relating to lizards (paragraphs 155-163) within the Section 51 concessions and approvals report provided by the Department of Conservation.

6. Our original findings are provided in full in B-13 Lizard Assessment and Management Plan (**LMP**). This LMP applies only to the specific geographical area identified LMP and does not apply to Car Park 3 (in the Rastus Burn) or Car Park B (in the Lower Remarkables Transit Hub). Refer to map in **Appendix 1.** Information about Carpark 3 was provided in the application in the document titled "B.30 Memo re Curvey Trenching and Carpark 3". Information regarding Car Park B was provided in the application in the document titled "B.05 Carpark & Bus Hub Ecological Impact Assessment".

7. Although this is not an Environment Court proceeding our confirmation of compliance with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2023 is included in Section 1.7 of the B-13 Lizard Assessment and Management Plan submitted as part of the substantive application.

8. This statement has been prepared jointly by Mr Knox and Ms Anderson Except where comments are attributed to an individual, both experts adopt the statements detailed.

SPECIFIC RESPONSE TO COMMENTS

Lizard Survey

9. We agree with Mr Harker[1] and Mr Dale[2] that extensive lizard surveys were undertaken and acknowledge there are a small number of survey sites which received less survey effort due to weather conditions. This detail is described in the LMP in Section 2.2.1.4 and Appendix 4. We consider the conclusions regarding lizard presence in the areas with less survey effort are appropriate. The areas where we consider survey was not sufficient are not included within the LMP site boundary (as shown in the LMP and the map in Appendix 1).

10. Wildlands (2026)[3] correctly observes that hand-searching of *Dracophyllum* scrub and rock-field habitat is important for determining presence of geckos and lakes skinks. The extent of rock-field habitat suitable for lakes skink and gecko at the site is not extensive. The best habitat is the boulder-fields at trapping sites 59 and 60, and they were small enough that the trapping lines extended across the entirety of both these habitats. These sites were purposefully hand searched prior to trap checking on each of the five days they were visited for that purpose. They were identified as good lizard habitat during previous vegetation surveys and were also subject to hand-searching on those occasions. It is our opinion therefore that areas of rock-field and *Dracophyllum* scrub were surveyed extensively and it is unlikely that any additional lizard species are present.

11. Wildlands (2026) have questioned the experience of the personnel undertaking the survey.[4] The Wildlife Act Authorities under which the survey was undertaken allow for other personnel to undertake work under supervision, provided training and prior supervision criteria have been met. In our view, the personnel involved were appropriately trained, experienced and supervised.

Population Estimation

12. We agree with Mr Harker[5] that McCann's skink reach very high densities in some habitats and that no attempts to quantify the exact number of lizards present at this site were undertaken. The rationale for this is that Mr Knox considers it is extremely

[1] Evidence of Mr Harker, paragraphs 12 and 13.
[2] Evidence of Mr Dale, paragraphs 33 and 34.
[3] Wildlands (2026) section 6.6.
[4] Wildlands (2026) section 6.4.
[5] Evidence of Mr Harker, paragraphs 15 and 16.

difficult, and often impossible, to obtain accurate and precise estimates of population size of McCann's skink using mark-recapture methods in expansive tussock grassland. If confidence intervals are wide (as they almost always are, despite best efforts), then any point estimates of skink abundance are unreliable. Mr Knox has been involved with several prior unsuccessful attempts at estimating the population size of McCann's skinks in tussock grassland in Otago, despite best practice being followed. We therefore consider that the effort required to undertake more precise population estimation at this site, for the species known to be present, is not justified.

13. We agree with Mr Harker that lizard habitat / suitability varies across the site.[6] This was demonstrated in the extensive survey undertaken (across different habitats, aspects and altitudes) and the results provide reasonable certainty of the population density of McCann's skinks on site, from which our estimates are based. Importantly, the trapping and visual surveys showed that McCann's skinks are not in high population density across most of the earthworks footprint (some survey sites in areas mapped as lizard habitat recorded no or very low lizards during trapping and habitat searching), and are therefore conservative. This contrasts with habitats at lower elevations (i.e. 800-1,500 metres above sea level in the Rastus Burn catchment. C. Knox pers. obs.) that have greater habitat complexity (more rocks and native shrubs for example) and generally support a much higher population density of McCann's skinks than tussock-dominant areas with little rock (C. Knox pers. obs).

14. The survey and population estimations described in the LMP support these observations by describing a population estimation that accounted for higher densities of McCann's skink in areas of lower elevation and greater habitat complexity, balanced with large areas of low diversity tussock grassland. We therefore disagree with Mr Harker that the number and density of McCann's skinks on site are likely to have been underestimated.

15. We agree with Mr Harker[7] that the persistence of McCann's skink is not likely to be threatened by the proposal either in the LMP site, locally or nationally.[8]

Impact on Lizard Species

16. We agree with Mr Harker[9] in respect to his comments on the likely impact on McCann's skink, except for disagreeing that the number of McCann's skinks may be greatly underestimated (discussed above).

[6] Evidence of Mr Harker, paragraphs 16.
[7] Evidence of Mr Harker, paragraphs 24 and 32.
[8] Evidence of Mr Harker, paragraphs 24 and 32.
[9] Evidence of Mr Harker, paragraphs 31, 32, 33, 34, and 35.

17. We agree with Mr Harker[10] that not meeting the temperature and habitat reduction provisions of the LMP (section 4.4.4) may result in additional lizard mortality. The $20,000 figure is proposed as a proportional figure that may account for the quantum of lizards these provisions may protect, whilst acknowledging the uncertainty around the impact of these actions.

18. Due to the high survey effort, we consider the possibility *Oligosoma* aff. *inconspicuum* "Central – Southern" being in the earthworks footprint is low (not moderate as suggested by Mr Harker[11]); however, we agree that the possibility of very low numbers of this species being present cannot be completely ruled out. Lizard species can be extremely difficult to detect when their numbers are low, regardless of the amount of survey effort expended.

19. Wildlands (2026)[12] consider that the LMP describes *Oligosoma* aff. *inconspicuum* "Central – Southern" as having a moderate likelihood of occurrence. This is in relation to the desktop assessment only – which does not take into account the subsequent field survey. The survey results that are described in the latter sections of the LMP do not consider *Oligosoma* aff. *inconspicuum* "Central – Southern" to be likely at the site. Section 3.1 of the LMP describes that "due to the extensive survey undertaken there is high confidence that no Threatened or At Risk species will be impacted".

20. In response to Mr Harker's comments, we have reconsidered the addition of herpetological supervision during construction. We consider that supervision is required in the most complex or diverse lizard habitats to be developed, due to these areas being the most likely locations to hold species additional to McCann's skinks (while still being a very low likelihood overall). We have mapped four locations we consider are the best examples of rock-field, *Dracophyllum* shrubland, wetland and north facing tussock as shown in Figure 2, Figure 3 and Figure 4 in **Appendix 2**.

21. The LMP has been updated to incorporate this provision and is provided in **Appendix 3** to this statement of evidence.

Effects Management Hierarchy

22. We agree with Mr Harker, Wildlands (2026) and Mr Dale that the standard approach to implementing the effects management hierarchy for lizards is different to that outlined for the Project. We acknowledge that the proposal does not strictly adhere to effects management hierarchy and the National Policy Statement for Indigenous

[10] Evidence of Mr Harker, paragraph 48.
[11] Evidence of Mr Harker, paragraph 37.
[12] Wildlands (2026) Section 6.1 paragraph 4 and Section 6.5

Biodiversity. Mr Knox considers that these policy frameworks do not always provide the best outcomes for lizards.

23. We note that Mr Harker agrees[13] that the proposed approach of not salvaging McCann's skinks is justified in this instance, due to their status as 'Not Threatened', the logistical challenges with relocating skinks into existing populations which are likely at capacity (given their occurrence in all suitable habitats nearby), and the uncertainty around positive outcomes if a salvage was to be undertaken.

24. Wildlands (2026) disagree with some of the rationale for not undertaking salvage and suggests measures to increase the certainty of success for the habitat reduction. Wildlands (2026) also recommend outcome monitoring to assist with some of the uncertainty. We do not consider that accurate and precise outcome monitoring of populations of McCann's skinks in this landscape is practical and would waste valued resource on monitoring that is unlikely to provide reliable or informative data or trends. The difficulties in monitoring lizards is a key reason for lizard salvage outcomes in New Zealand often being uncertain. This has not improved in recent decades, despite lizard salvages being commonly applied across New Zealand. As described in the LMP, the intent of the compensation package is to redirect resourcing from a non-threatened, common species to activities that are more likely to be of conservation benefit to At Risk and Threatened species.

25. We agree with Wildlands (2026) [14] that the works may result in incidental discoveries being common in certain parts of the footprint and that Incidental Discovery Protocol (I**DP**) would benefit from some additions. Accordingly, we propose the following updates to the IDP (also detailed in the updated LMP):

    (a) Lizard identification and expected lizard habitat information shall be provided to all construction workers as part of their induction.

    (b) Prior to works encroaching on identified lizard habitat for the first time the Project Herpetologist shall run a lizard training session with staff who will be leading teams on-site. This information provide will include lizard identification, procedures expected to be followed in the event of a lizard sighting (as detailed in the LMP), and safe capture, handling and transfer methods for any lizards found. The information provided, and timing of this training, shall be included in the LMP reporting requirements.

    (c) Details of at least two alternative Suitably Qualified and Experienced Herpetologists shall be provided to the applicant and their contractors for

[13] Evidence of Mr Harker, paragraph 25.
[14] Wildlands (2026) Section 6.7.2 last paragraph.

the possibility that the Project Herpetologists are not contactable at short notice.

Adequacy of the Compensation Proposed to Address the Residual Effects

26. Mr Knox disagrees with Mr Harker[15] and Dr Maseyk[16] and considers that the eDNA research project will provide a tangible outcome by directly informing survey and monitoring methods for threatened alpine lizard species and thus supporting their conservation management. The study is specific, measurable and relevant to the site which adds to the appropriateness. The results will inform conservation management of relevant species both at the site and beyond. Further rationale is detailed in section 4.7.1 of the LMP.

27. Following comments by Mr Harker relating to a potential Southern Lakes Sanctuary eDNA Project[17], Mr Knox has determined[18] that a Southern Lakes Sanctuary eDNA Project has not been formalised or funded. The Southern Lakes Sanctuary proposal is focussed on assessing the trend of one population of orange-spotted geckos in the Crown Range. Both Mr Knox and Mr Purdie consider the two eDNA research projects to be very different, but complimentary, to each other.

28. Regarding the translocation of lakes skink, Mr Purdie has advised that Southern Lakes Sanctuary are interested in undertaking a lakes skink translocation but have not initiated work or drafted a proposal for the translocation of lakes skink to the Whakatipu Lizard Sanctuary.

29. Given the above context, we disagree with Dr Maseyk[19] that there is doubt in the additionality of the proposed eDNA research and translocation proposals. We consider that our proposal compliments the ambitions of Southern Lakes Sanctuary and allows their resourcing to be used to further enhance either this proposal, or others, should they wish to do so (e.g., post-release monitoring, additional translocations, or additional research on eDNA and lizards).

30. Mr Knox disagrees with Mr Harker's comment which sets out that "prior to a translocation occurring, surveys will need to be undertaken to ascertain how many lakes skinks could be collected from each source population."[20]Relevant information on lakes skink populations from previous surveys is already known. There are currently approximately 12 known populations of lakes skink in the Otago Region. The translocation proposal would be to repeat the previous methodology for the

[15] Evidence of Mr Harker paragraph 43.
[16] Evidence of Dr Maseyk paragraph 89.
[17] Evidence of Mr Harker paragraph 44.
[18] Conversation with Sam Purdie, Southern Lakes Sanctuary October 2026.
[19] Evidence of Dr Maseyk paragraph 91.
[20] Evidence of Mr Harker paragraph 47.

successful green skink translocation to Mokomoko Dryland Sanctuary. This described choosing six known sites and sourcing ten skinks from each. The rationale being that this number is small enough to not impact a healthy population but also not affect the outcome of a population if it is currently on a path to extinction. This method does not require specific pre-collection surveys. Sourcing ten skinks from six sites provides a strong genetic base for a new population of lakes skink to grow from at the sanctuary.

31. The eDNA research project was initially budgeted at $80,000. After the lakes skink translocation was added to the budget was readjusted to $60,000 to the eDNA study and $20,000 to the lakes skink translocation, by reducing the number of sites covered by the eDNA study. Mr Knox considers the proposed quantum to be the bare minimum required. The addition of further funding would enable the addition of more sites to be added to the eDNA survey, more thorough pre and post translocation monitoring and provide for contingencies and/or unforeseen expenses. This would assist reducing the uncertainty and concerns described by Mr Dale[21] and Mr Harker.[22]

32. We agree with Dr Maseyk[23] that the translocation of lakes skink will have significant conservation benefit. Although the translocation budget (at $20,000) is limited, Mr Knox has undertaken two previous successful translocations of one of the lakes skinks closest relatives (Otago green skink to Orokonui Ecosanctuary in 2016 and to Mokomoko Drylands Sanctuary in 2023) and therefore has relevant and suitable experience in planning and executing successful translocation of lakes skinks.

33. We agree with Wildlands (2026)[24] that further detail regarding the translocation proposal is needed, however, we consider the specifics of the translocation (including pre and post translocation management) are most suitably addressed when the translocation proposal is drafted and submitted to the Department of Conservation.

34. In response to Dr Maseyk[25] (regarding the research project being more beneficial if tied to translocating species found to be present in eDNA study), we consider this is problematic due to the difference in elevation and lizard habitats at the release site compared to the eDNA sites. For example, there is not suitable habitat for orange-spotted gecko at the Wakatipu Lizard Sanctuary. However, if lakes skink were found in the eDNA study, it would be appropriate for these sites to be prioritised as source

[21] Evidence of Mr Dale paragraphs 72-80
[22] Evidence of Mr Harker paragraph 47
[23] Evidence of Dr Maseyk, paragraph 90
[24] Wildlands (2026) Section 6.7.4 “Lakes Skink Proposal”
[25] Evidence of Dr Maseyk paragraph 92

locations in a translocation proposal. This provision has been added to the updated LMP.

35. We agree with Mr Harker that there is likely to be "*net benefit for lizard conservation*"[26] from the described proposal provided sufficient funds are allocated to the research and translocation projects.

36. Dr Maseyk considered [27] that the translocation was absent from the proposed conditions. Conditions relating to the translocation proposal have now been updated.

Car Park and Bus Hub (Carpark B) Lizard Management

37. Mr Harker's comments regarding the inadequacies of lizard management for the Car Park and Bus Hub[28] are largely valid. However, we consider he has overestimated the range of species that could be present[29]. Mr Harker correctly observed that in relation to the Car Park and Bus Hub a lizard survey had not been undertaken and a Lizard Management Plan has not been prepared for this area.

38. In response to Mr Harker's feedback, Mr Knox undertook a 2.5-hour lizard survey of the site on the 22 October 2026 in weather conditions suitable for the emergence and detection of lizards. Mr Knox located 26 McCann's skinks on the site, either sighted emergent in exotic grassland or found under loose rock. All loose rock and wood that could be found (and lifted) on the site was examined for lizards sheltering underneath.

39. The site contains < 1 hectare of grassland habitat with the remainder of the site being dense stands of exotic trees and shrubs, in addition to matagouri. Mr Knox noted that the site is very dry and does not contain rock tors or creviced rock. These features reduce the possibility of southern grass skink and mountain beech gecko being present. Furthermore, as all liftable rock on the site was examined, Mr Knox is confident that no other lizard species are present on the site. All potential species that could possibly occur on the site commonly shelter under rocks.

40. It is proposed that a Lizard Management Plan for this area be prepared subsequent to the FTA process, using the standard process under the Wildlife Act 1953. This approach is considered appropriate due to the low altitude and common lizard habitats present at the site.

[26] Evidence of Mr Harker paragraph 54
[27] Evidence of Dr Maseyk paragraph 90
[28] Evidence of Mr Harker paragraphs 26-30
[29] Evidence of Mr Harker paragraph 28

41. The resource consent conditions include the requirement to prepare and implement a Lizard Management Plan for this area.

Car Park 3 Lizard Management

42. It is proposed that a Lizard Management Plan for this area be prepared subsequent to the FTA process in accordance with detailed conditions, using the standard process under the Wildlife Act 1953. A memorandum pertaining to these matters is provided in the substantive application lodged with the EPA.[30]. We consider that that, provided the recommendations pertaining to lizards detailed in the memo[31] are included in consent conditions, the proposed approach is appropriate.

43. The desktop assessment in the LMP for the FTAA Doolans expansion project contains information relevant to possible lizard species at this site. Prior manual habitat searching nearby has been successful in locating Central–Southern skink. Short-toed gecko may be present as they inhabit similar sites at this altitude elsewhere. It is noted no gecko have previously been found at, or near, this altitude elsewhere in the Rastus Burn catchment.

44. Habitat near to the Carpark 3 area was surveyed as part of the incomplete lizard trapping round in March 2025. The three days of trapping in suitable weather located McCann's skink both in traps and by handsearching. The shorter trapping survey time (due to cooler weather), high quality lizard habitat and known nearby records combine to have low confidence that this survey identified all lizard species possibly present. We consider that additional field surveys will be needed to inform a Lizard Management Plan for this area.

[30] https://www.fasttrack.govt.nz/__data/assets/pdf_file/0023/35681/B.30-Memo-re-Curvey-Trenching and-Carpark-3-Expansion-26-Aug-26_Redacted.pdf
[31] https://www.fasttrack.govt.nz/__data/assets/pdf_file/0023/35681/B.30-Memo-re-Curvey-Trenching-and-Carpark-3-Expansion-26-Aug-26_Redacted.pdf

45. The resource consent conditions already include the requirement to prepare and implement a Lizard Management Plan for this area.



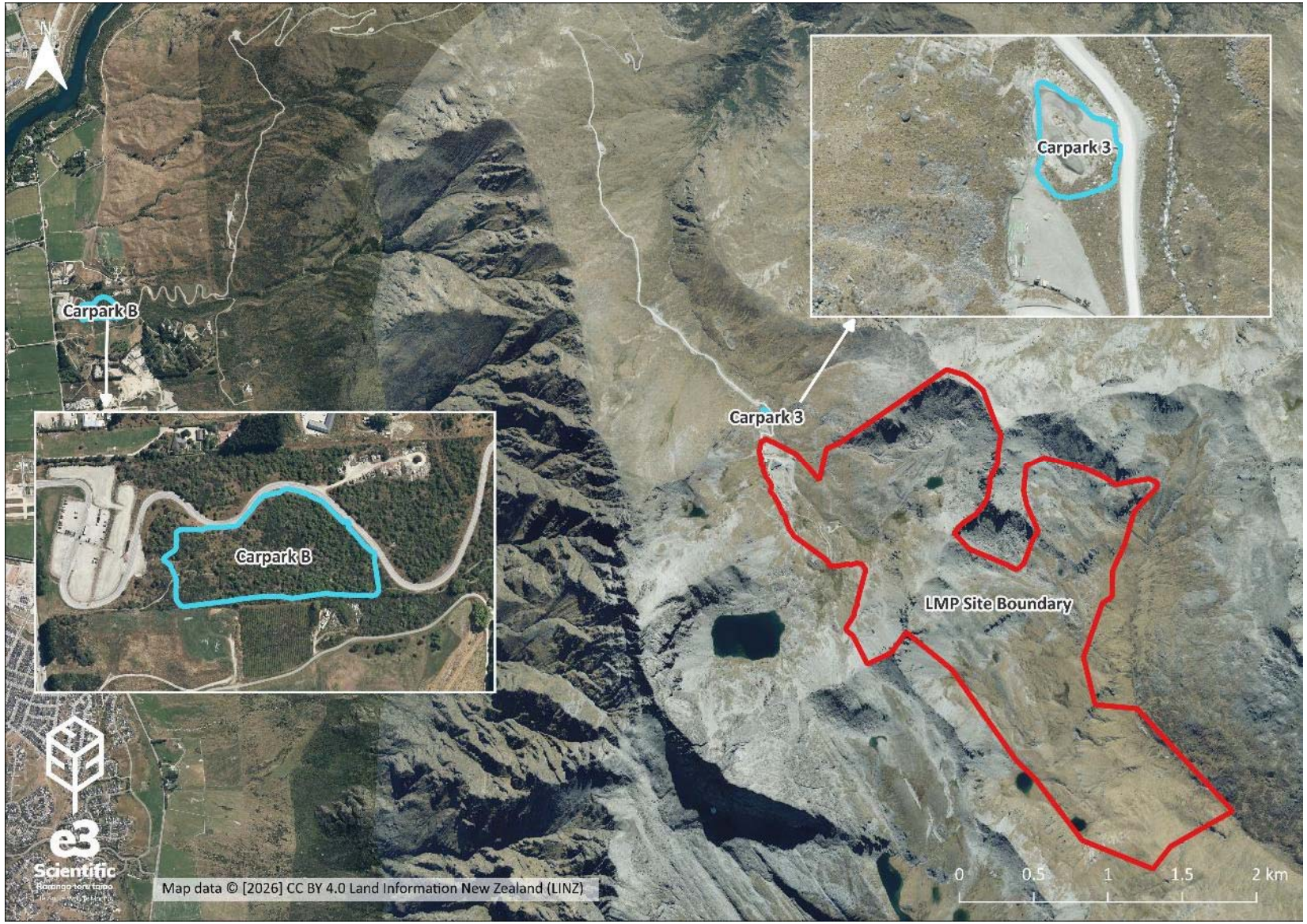
Carey Dylan Knox



Trudy Cherie Anderson

3 November 2026

Appendix 1: Figure 1: Map detailing the location of the LMP boundary, Car Park 3 (in the Rastus Burn) or Car Park B (in the Lower Remarkables Transit Hub).



Appendix 2: Maps detailing locations 1-4 where herpetological oversight is required during initial disturbance.

Figure 2 Map detailing the location 1 (north facing tussock and riparian vegetation at base building) where herpetological oversight is required during initial disturbance.

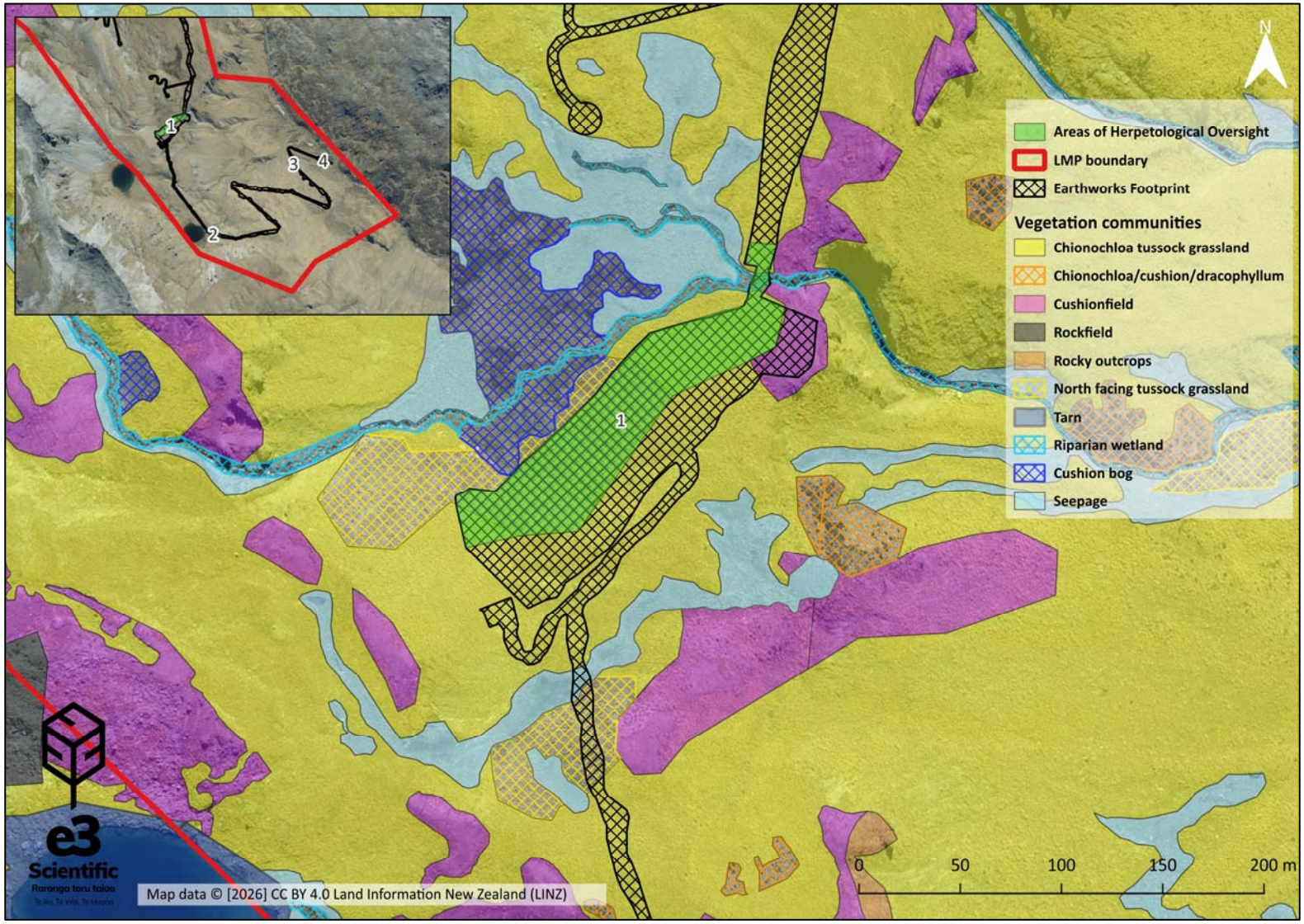


Figure 3: Map detailing the location 2 (riparian vegetation and north-facing tussock near Tarn 2) where herpetological oversight is required during initial disturbance.

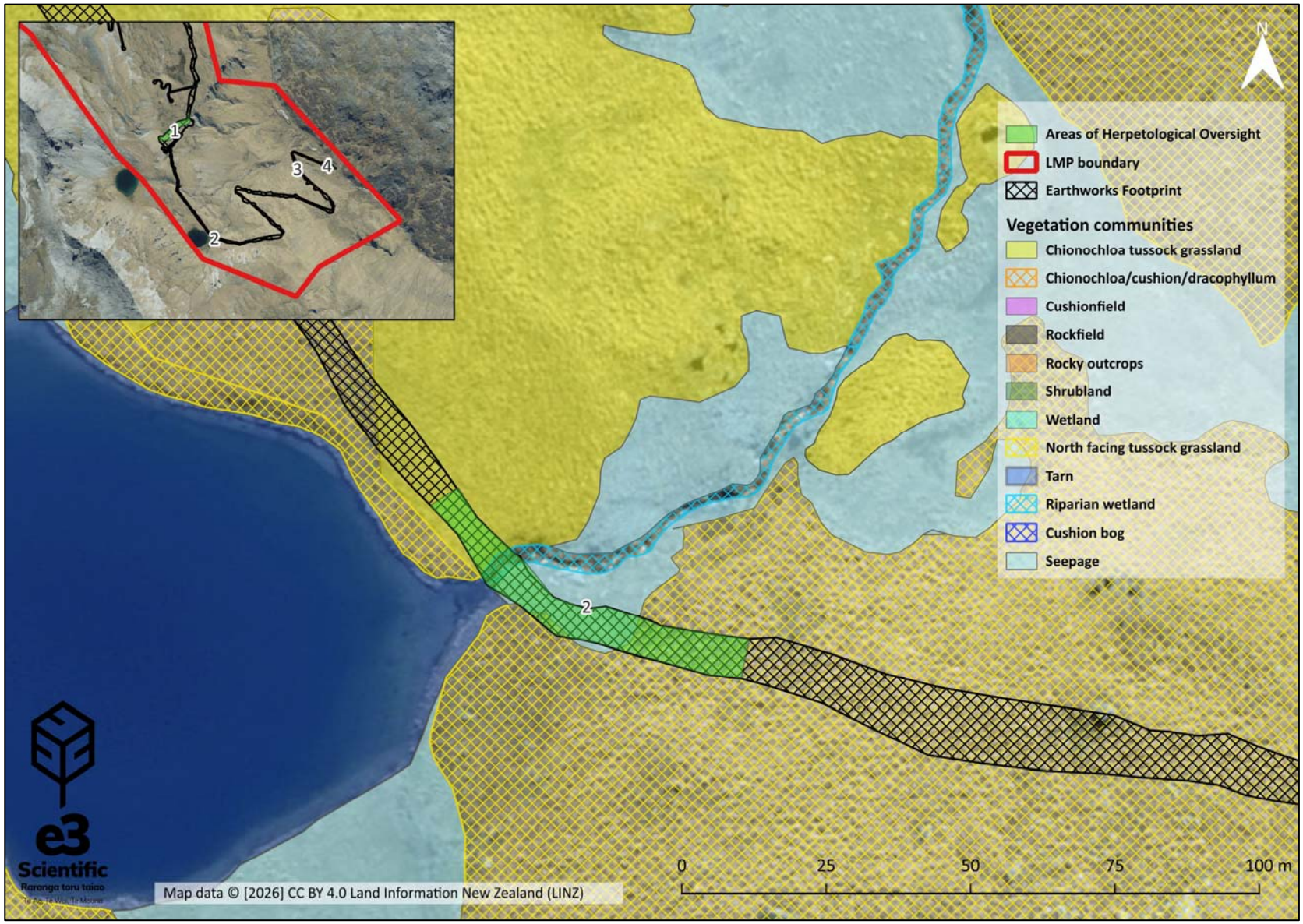
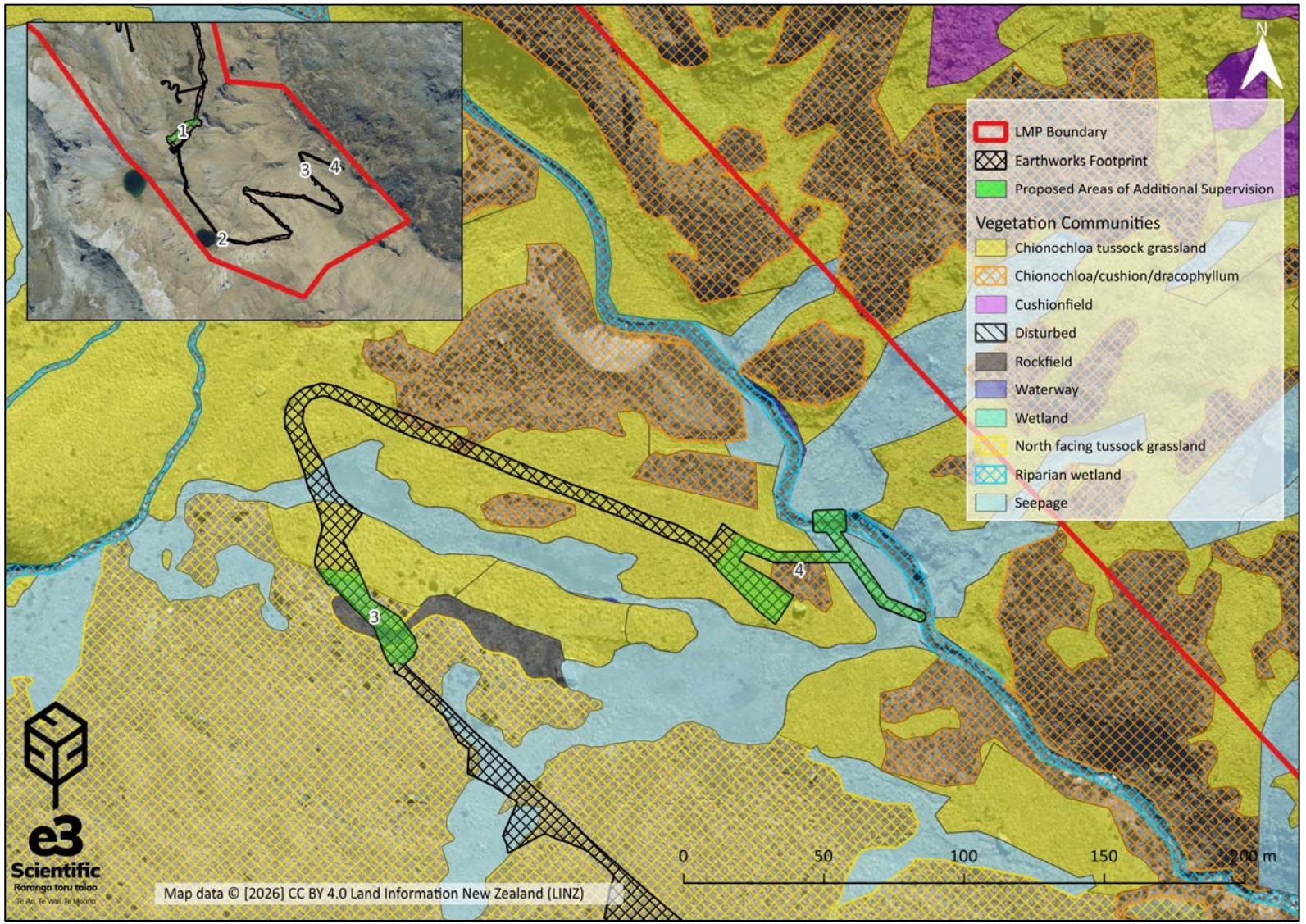


Figure 4: Map detailing locations 3 (wetland, tussock and dracophyllum) and 4 (rockfield and tussock) near Doolans Creek where herpetological oversight is required during initial disturbance.



Appendix 3: Lizard Management Plan

Remarkables Ski Area Upgrade and Doolans Expansion Lizard Assessment & Management Plan

NZSki Limited

27 August 2026

Arrow Lane Arrowtown 9302
www.e3scientific.co.nz

Remarkables Ski Area Upgrade And Doolans Expansion -
Lizard Assessment & Management Plan

This document was compiled by e3Scientific
and Carey Knox, Southern Scales

Document Status

Version	Purpose of Document	Prepared By	Reviewer	Review Date
A	Draft V0.1 for internal review	TA	CK	11/5/2026
B	Draft V0.2 for internal review	TA	RT	12/5/2026
C	V0.3 FINAL	TA	RT	14/5/2026
D	Updated Draft V0.4 and V0.5 for internal review	CK	TA	28/7/2026
E	Draft V0.6 Update for review	TA	RT	6/8/2026
F	Draft V0.7 Update following internal and external review	CK	TA	11/8/2026
G	Draft V0.8	TA	TA	14/8/2026
H	Draft 0.9 (update following meeting of 21/8/26)	TA	CK	25/8/2026
I	Update following external review	TA		27/8/2026
J	FINAL	TA	CK	27/8/2026
K	FINAL updated	TA		2/11/2026

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1 Introduction

1.1 Overview

The current Remarkables Ski Area is in the upper catchment of the Rastus Burn Recreation Reserve at elevations above 1500 m a.s.l. NZSki Limited (NZSki) has undertaken a range of development activities within the Ski Area since the 1970s. NZSki is proposing a Remarkables Ski Area Upgrade and Doolans Expansion Project (the Project; REP). This includes expansion of the current ski field operational footprint (in the Rastus Burn Recreation Reserve) into the adjacent Doolans Basin (**Figure 1**). The ridgeline separating the Doolans catchment from the Rastus Burn is also the boundary of the Central Otago and Queenstown Lakes district councils. Both the Rastus Burn Recreation Reserve and the Remarkables Conservation Area are crown-owned Public Conservation Land parcels managed by the Department of Conservation (DOC).

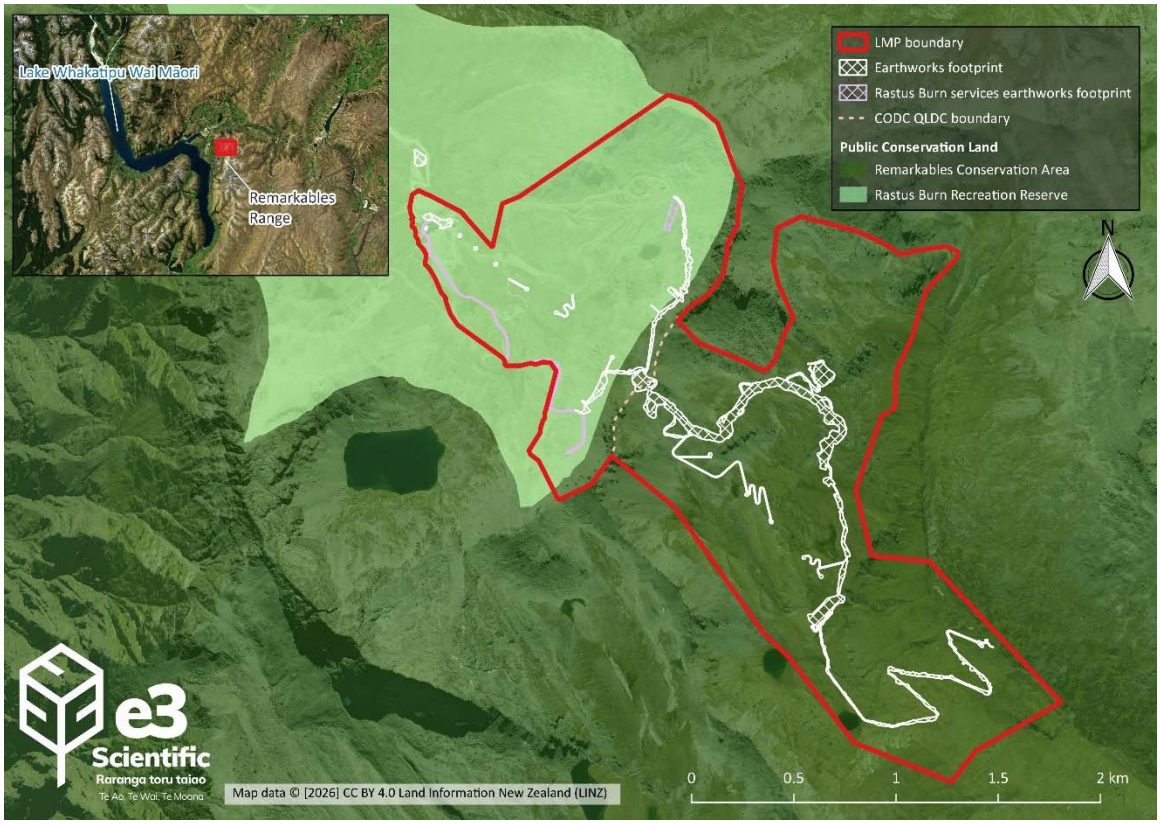


Figure 1: Lizard Assessment and Management Plan (LMP) site boundary and earthworks footprint in relation to Public Conservation Land and District Council boundaries.

This Lizard Assessment and Management Plan (LMP), has been prepared to describe and manage effects on indigenous lizards arising from the Project. It is informed by a comprehensive desktop review and an extensive field-based lizard survey undertaken during the 2024/25 and 2025/26 lizard active seasons. These review and surveys were undertaken to identify lizard species and habitats present, and to inform management to meet statutory requirements.

1.2 Remarkables Ski Area Upgrade and Doolans Expansion Project Description

The earthworks footprint for the Project is detailed in **Figure 1** above and impacts 17.5 ha of terrestrial habitats.

The key project works proposed within the existing Remarkables Ski Area are summarised below and include:

- Upgrades to existing infrastructure services and associated structures including upgrades to mains power supply, infield power distribution, water, wastewater, stormwater, communication, and snowmaking.
- Expansion of the existing Rastus Burn Base Building and reconfiguration of the arrival surrounds.
- Construction and use of the new Doolans Gondola providing access into the Doolans Basin, including construction of the new Base Station adjacent to the Rastus Burn Base Building and construction of gondola towers, cables and associated infrastructure up to the new Helicopter Ridge Mid station.
- Upgrades to existing and establishment of new access roads and ski trails to provide vehicular access and ski return trails to and from the Doolans Basin.
- Installation of new operational controls to maintain the health and safety of ski field users. Such controls include wayfinding signage, barriers/gates, permanent safety fencing/netting, snow fences, avalanche control, boundary markers.
- Curvey basin services trench situated on existing disturbed tracks
- Storage of fill in area designated for half pipe.

Refer to the full project description contained in the substantive application for further details and plans relating to the above.

The key project works proposed within the Doolans Basin are summarised below and include:

- Establishment and use of the new Doolans Gondola from the Rastus Burn Base Building into the Doolans Basin. The new gondola includes the new Base Station directly adjacent to the existing Rastus Burn Base Building, the new Helicopter Ridge Mid-station (with a patrol hut), and the new Doolans Return Station directly adjacent (and connected) to the proposed Doolans Cabin Building. It also includes construction of gondola towers, cables and associated infrastructure.
- Establishment and use of a new multi-purpose Doolans Cabin Building, designed to accommodate gondola cabin parking, integrated cabin maintenance, storage, bathroom facilities, café facilities and emergency shelter space.
- Establishment and use of ski trails and access roads between the gondola mid-station, the Doolans Cabin Building and associated infrastructure. Where practicable, ski trails and access roads will be co-located to minimise the level of ground disturbance.
- Construction of a learners snowsports area adjacent to the Doolans Cabin Building with a covered passenger conveyor lift, supported by snowmaking infrastructure.
- Establishment of supporting services and facilities in the Doolans Basin, including power, water, wastewater, stormwater, communications and snowmaking facilities.
- Installation of new operational controls to maintain the health and safety of ski field users. Such controls include wayfinding signage, barriers/gates, permanent safety fencing/netting, snow fences, avalanche control, boundary markers.

Refer to the full project description contained in the substantive application for further details and plans relating to the above.

1.3 Statutory Context

This assessment and LMP has been prepared to address the relevant information and statutory requirements of the following legislation:

- Fast-Track Approvals Act 2024;
- Conservation Act 1987;
- Wildlife Act 1953; and,
- Resource Management Act 1991.

All indigenous lizard species, including those classified as Not Threatened, are afforded absolute protection under the Wildlife Act 1953 and its subsequent amendments. Accordingly, any activity that may disturb, harm, or otherwise affect indigenous lizards requires a Wildlife Act Authority (WAA) issued by DOC.

For projects processed under the Fast-Track Approvals Act 2024 (FTAA) a WAA may be issued concurrent with resource consent. The information requirements necessary to support a WAA application under the FTAA are specified in Schedule 7 of that Act. The FTAA checklist specific to this LMP is detailed in **Appendix 1**.

1.4 Site Description

The LMP site is located on the eastern side of Lake Whakatipu, at the northern end of the Remarkables Range (**Figure 1**). It encompasses the headwaters of the Rastus Burn and the western extent of the right branch of Doolans Creek. The upper elevations consist of alpine cirques and basins characterised by steep ridgelines, exposed slopes, and irregular depressions. Above approximately 1600 m a.s.l., rockfield environments dominate, transitioning downslope into cushionfield, snow tussock, and *Dracophyllum* scrub communities. Wetlands are distributed throughout the site at a range of altitudes, and several significant waterbodies occur within the area, including three sizable tarns. **Appendix 2** provides a description of the vegetation communities within the LMP site with supporting photographs, however the extent of most of these habitats within the earthworks footprint is very limited



The Rastus Burn Recreation Reserve has undergone several phases of modification associated with establishment and operation of the existing Remarkables Ski Area. In contrast, the Doolans Basin remains largely undeveloped. Although the basin has a history of pastoral grazing and fire, it contains no modern infrastructure and retains comparatively intact alpine and subalpine environments.

1.5 LMP Objectives

The objectives of this LMP are to:

1. Describe the lizard values in the 17.5 ha project footprint and the surrounding area.
2. Identify the actual and potential effects of the Project.
3. Describe the effects management and compensation.
4. Ensure the effects on lizards are managed and/or compensated for in an ecologically appropriate manner.

1.6 Limitations and Disclaimers

e3Scientific Limited (e3s) performed the services referred to in this report in a manner consistent with the normal level of care and expertise exercised by members of the environmental science profession. No warranties, express or implied, are made. The outcomes are limited by the Scope of Work, and the parameters in which field work was able to be undertaken. The work was designed to maximise confidence in the results, however, all lizards may not have been seen or recorded.

The results of this assessment are based upon site inspections conducted by e3s personnel, and information found through desktop research, including scientific literature. All conclusions and recommendations regarding the site are the professional opinions of e3s personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, e3s assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside e3s, or developments resulting from situations outside the scope of this project.



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1.7 Code Of Conduct

The authors of this report are Trudy Anderson and Carey Knox. Trudy is a Senior Environmental Scientist – Terrestrial Ecology at e3s. She holds a BSc in Ecology and a Post-Graduate Diploma in Wildlife Management (with Distinction), both from the University of Otago. Trudy has been working ecology and conservation since 2001, mostly based at the Department of Conservation in Alexandra. This work included undertaking survey and reporting of herpetofaunal values on pastoral leases in inland Otago and further afield, for both the tenure review programme and discretionary consent processing under the crown pastoral land act. Trudy also surveyed and monitored rare lizard populations (including scree skink and lakes skink) and discovered the Leaning Rock population of the orange-spotted gecko. Trudy has also worked with the grand and Otago (and other) skinks at the DOC Macraes base, and is familiar with the activities at Mokomoko Sanctuary. Since leaving DOC in 2022 Trudy has been the e3Scientific herpetological lead and holds a Wildlife Act authority from the Department of Conservation for lizard survey and handling.

Carey Knox is an independent ecological consultant, researcher, and wildlife photographer specialising in herpetology and Lepidoptera. Carey holds an MSc degree in Zoology from the University of Otago and has 19years of experience with lizard projects across New Zealand, with particular expertise in alpine habitats of the South Island.

We confirm that we have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. This report has been prepared in compliance with that Code, as if it was expert evidence presented in proceedings before the Environment Court. Unless stated otherwise, this report is within our area of expertise, and we have not omitted to consider material facts known to us that might alter or detract from the opinions expressed in this report.

2 Lizard Values of the LMP Site

This assessment and LMP is informed by a desktop review of existing lizard information supported by comprehensive field surveys undertaken during the 2024/25 and 2025/26 lizard active seasons.

2.1 Desktop Assessment

2.1.1 Methods

A desktop assessment was undertaken to compile existing information on indigenous lizard species and their habitats in the LMP site. The assessment drew on the following sources:

- A botanical assessment describing vegetation communities and identifying actual and potential lizard habitats in the LMP site (e3Scientific, 2026c).
- Existing scientific literature, including the DOC Herpetofauna Database, DOC's threat classification for New Zealand reptiles (Hitchmough, et al., 2026), and the Regional Conservation Status of Reptile Species in Otago (Jarvie, et al., 2024).
- Previous herpetofauna surveys and assessments undertaken within, or in proximity to, the LMP site (Jewell, 2024) (Tocher, 2024) (Whitaker, 1986) (Whitaker, et al., 2002) (Wildlands Consulting Ltd, 2020a) and (Wildlands Consulting Ltd, 2021).
- Review of existing ecological information to determine terrestrial vegetation habitats and species likely to be present.

Information from these sources was collated and evaluated to identify lizard species likely to occur within the LMP site, assess the extent and distribution of suitable habitat, and inform subsequent field survey design.

2.1.2 Results

Based on the desktop assessment, only McCann's skink (*Oligosoma maccanni*), is considered to have a moderate-high likelihood of occurrence in the earthworks footprint. The newly recognised entity described as *O.* aff. *inconspicuum* "Central -



Southern" has a moderate-high likelihood of being present in the wider LMP site. Several other lizard species are known from the Remarkables Range and surrounding areas; however, based on current knowledge of their distribution and aspects/habitats, they are unlikely to occur at the LMP site (**Table 1**).

2.1.2.1 McCann's skink

McCann's skink is assessed as having a 'High' likelihood of occurrence at the LMP site (**Table 1**). Historical through to present day observations indicate that McCann's skinks are common and widespread in virtually all habitat types up to 1550 m a.s.l. in the Remarkables Range (Patterson & Patrick, 1984) (Wildlands Consulting Ltd, 2020a). Above 1550 metres, McCann's skinks are sparser in occurrence, favouring north-facing slopes and are rarely found above 1650 metres a.s.l. (C. Knox pers. obs.).

2.1.2.2 O. aff. inconspicuum "Central - Southern"

The desktop assessment identified a single 'cryptic skink' record near the current access road below the base building (this population was later genetically sampled and found to be *O. aff. inconspicuum* "Central - Southern"). Central-Southern skinks have also been recorded from a few other small pockets of habitat west of the LMP site in the Rastus Burn. Apart from McCann's skink, *O.* aff. *inconspicuum* "Central - Southern" is the only local skink species able to occur at high elevations (above 1,700 metres ASL). This is supported by records from Mt Cardrona, where the taxon has been found at the summit (1936 m a.s.l.), representing the highest confirmed altitude for any New Zealand skink. Although this species is known to occur at a wide range of elevations (from sea level on Tiwai Point to 1,936 m a.s.l.), it also appears to be of very patchy occurrence, suggesting a degree of habitat specialisation. On this basis, *O.* aff. *inconspicuum* "Central - Southern" is assessed as having a 'Moderate' likelihood of occurrence (at least somewhere within the LMP site, – but not necessarily within the 17.5 ha earthworks footprint) (**Table 1**).

2.1.2.3 Short-toed gecko

Short-toed geckos are recorded from lower elevations in the Rastus Burn Recreation Reserve (900–1350 m; (Wildlands Consulting Ltd, 2020a)) and from a single site in Doolans Creek at ~1065 m a.s.l. (Whitaker, 1986). Although their potential elevational range spans 700–1700 m a.s.l. (New Zealand Herpetological Society, 2026), suitable rocky habitat (e.g. tors, bluffs, boulderfield, or fell-field) within the LMP site is limited



and is not present within the 17.5 ha earthworks footprint. Consequently, the species is assessed as having a 'Low' likelihood of occurrence in the LMP site and earthworks footprint (**Table 1**).

2.1.2.4 Southern grass skink

Southern grass skink (*Oligosoma chionochloescens*) is the updated name for tussock skink (Hitchmough, et al., 2026). This species has been recorded up to 1700 metres in Otago (C. Knox pers. obs.) indicating that the LMP site is within their potential elevation range; however, the species has never been recorded from the Remarkables, despite numerous lizard surveys within the range by several herpetologists. Southern grass skinks are also extraordinarily rare (although present) in adjacent areas such as the Nevis Valley and Hector Mountains (C. Knox pers. obs.). Based on this, the species is assessed as having a 'Low' likelihood of occurrence (**Table 1**).

2.1.2.5 Other Potential Lizard species

The orange-spotted gecko has been assessed as having a Low likelihood of occurrence in the earthworks footprint. Whilst there are records 16-23 km south and 11 km north-east of the LMP site (in the Hector Mountains and Crown Range (Department of Conservation, n.d.)). Orange-spotted gecko occur in tor, scree, boulderfield, and talus habitats (Knox, et al., 2019) (**Table 1**) and these habitats are minimal in the 17.5 ha earthworks footprint where there is very little rock cover.

Based on desktop review all other lizard species are deemed to have a Low (or Very Low) likelihood of occurrence within the earthworks footprint. There is a low probability that Nevis skink and/or lakes skink are present in either the Rastus Burn or Doolans catchments; however, neither species has previously been reported in the Remarkables despite several previous lizard surveys in the area. The closest population of lakes skink is on Mount Cardrona 11 km north-east of the LMP site. Nevis skink is very common in the nearby Nevis Valley and Hector Mountains (C. Knox pers. obs.) but the LMP site is outside of their known distribution range. Lakes skink favour damp gullies and slopes with rock cover and as such are only minimally present in the earthworks footprint. (**Table 1**).

Two *Woodworthia* gecko species, mountain beech gecko and Kawarau gecko, are known from the wider area but neither species occurs above 1,200 metres a.s.l. Thus, both species were considered highly unlikely to occur within the LMP site.

Table 1: Lizard Species and Likelihood of Occurrence Based on Desktop Assessment.

Species	NZTCS Conservation Status (Hitchmough *et al.*, 2026)	Conservation status of reptile species in Otago, 2025 (Jarvie *et al.*, 2025)	Likelihood of Occurrence		Notes
			Earthworks footprint	LMP site	
McCann's skink (*Oligosoma maccanni)*	Not Threatened	Not Threatened	High	High	Includes all historic references to 'spotted' form of this common skink. Known at similar altitudes elsewhere on the Remarkables, including the Rastus Burn catchment.
Central-southern skink (*O.* aff. *inconspicuum* "Central - Southern")	At Risk – Declining	Not listed. Former entities At Risk – Regionally Declining.	Moderate	Moderate	Includes all references to cryptic skink, pallid skink, and "speckled" form of common skink. This taxon is known from the Rastus Burn adjoining the site and occurs at very high elevations; however, is of very patchy occurrence. Also recorded in Nevis Valley at 700 m a.s.l. (Wildlands Consulting Ltd, 2020b).
Orange-spotted gecko (*Mokopirirakau* "Roys Peak")	Threatened - Nationally Vulnerable	Threatened - Regionally Vulnerable	Low	Moderate	Not known to occur in the Remarkables Range but are known from the Hector Mountains, Crown Range, and Moke Valley near Queenstown. No suitable rock habitat in the earthworks footprint.
Short-toed gecko (*Woodworthia "southern mini"*)	At Risk – Declining	At Risk - Regionally Declining	Low	Low	Known from near the lower altitudes of the LMP site on the Rastus Burn side. Whitaker *et. al* 1986 records 'mini' gecko in one place in Doolans Creek up to 1,065 m and over western flanks of Remarkables. Suitable habitat is limited within the LMP site.
Southern grass skink *(Oligosoma chionochloescens)*	At Risk – Declining	At Risk - Regionally Declining	Low	Low	This species has been recorded up to 1,700 metres in Otago indicating that the LMP site is within their potential elevation range; however, the species has never been recorded from the Remarkables, despite numerous lizard surveys.
Nevis skink *(Oligosoma toka*)	At Risk – Declining	At Risk - Regionally Declining	Low	Low	Nearest record from Nevis catchment at 750 m asl (Wildlands Consulting Ltd, 2020b). Likely to have been misidentified as McCann's skink in the past; occurs between 660 to 1920 m a.s.l.
Lakes skink *(Oligosoma aff. chloronoton* "West Otago")	Threatened - Nationally Vulnerable	Threatened - Regionally Vulnerable	Low	Low	Known to occur up to 1600 m a.s.l. but not known to occur in the Remarkables Range. The nearest known population is on Mount Cardrona.

2.2 Lizard Survey

2.2.1 Lizard Survey – Methods

2.2.1.1 Overview of Approach

Prior to a single brief skink observation near Lake Alta in November 2024, no lizards had been confirmed from high altitude environments in the Remarkables Ski Area. Earlier walk-through surveys by experienced herpetologists in the upper Rastus Burn detected no lizards, and the high-altitude areas of the Doolans catchment remained unsurveyed. The November 2024 sighting provided the first verified evidence of lizard presence at higher elevations and demonstrated that walk-through methods were insufficient for reliably detecting cryptic or low-density populations. In response, the proposed survey approach was strengthened through the deployment of Gee's minnow traps to materially improve detectability across all habitats, in addition to Manual Habitat Searches (MHSs). This decision was also informed by outcomes at Cardrona, where reliance on walk-through surveys had missed two species in substantial numbers, and only targeted trapping during salvage accurately quantified lizard presence.

2.2.1.2 Gee's Minnow Survey – Site Selection

A GIS-based terrain analysis was undertaken across the site and adjacent areas to ensure comprehensive spatial coverage. This analysis enabled systematic stratification of Gee's minnow trap locations across all vegetation communities, altitude bands, and aspects likely to support lizard populations (**Table 2**). A total of 66 trap sites were selected through this process and subsequently surveyed: 23 in the existing Remarkables Ski Area and 43 in the Doolans catchment (**Figure 2**).

The survey locations were chosen to be in a representative sample of the best lizard habitat of the various communities, and this was replicated across altitudes and aspects where possible. There was a purposeful decision not to limit the survey to within the earthworks footprint, and include locations most likely to detect lizards. In addition, the earthworks footprint, although drafted, was not final prior to survey due to the desirability for it to be moved following ecological (and other) survey outcomes. Understanding lizard populations across the wider landscape was also considered important for possible indirect effects and potential mitigation.

There was a purposeful decision not to trap the Disturbed Vegetation community due to the lack of lizard habitat. Snowbank vegetation was also not trapped due to the extremely small extent of the habitat and similarity the High Alpine Cushionfield from a lizard habitat perspective.

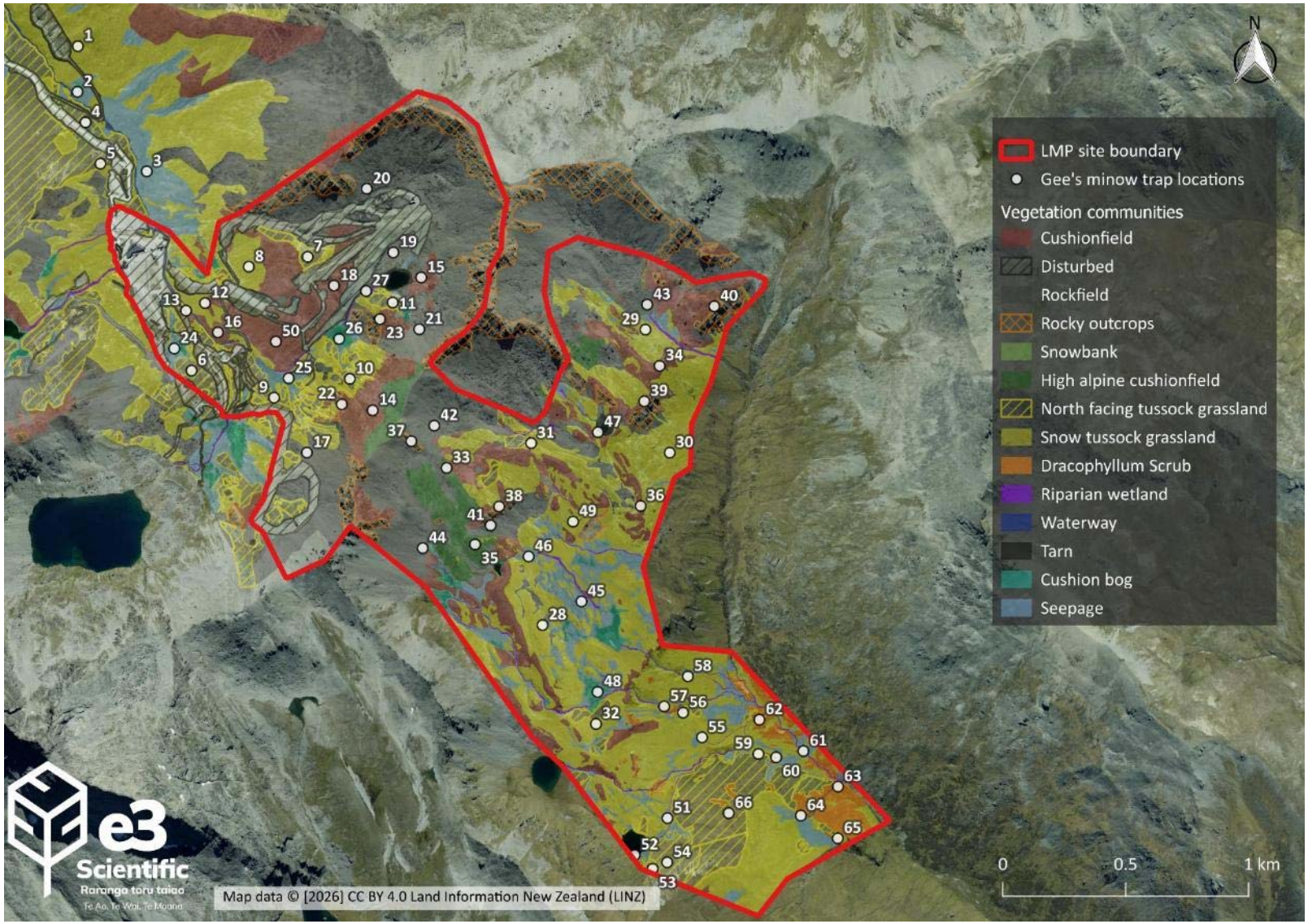


Figure 2: Gee's Minnow Trap Locations (*n* = 66) in the LMP Site (Numbered 1-66).

Table 2: Lizard Trapping Sites by Vegetation Community.

Vegetation Community*	Number of Trapping Sites
Snow Tussock Grassland	11
North Facing *Chionochloa* Tussock Grassland	10
Dracophyllum Scrub	3
Cushionfield	10
High Alpine Cushionfield	2
Rockfield	12
Rocky Outcrop	4
Seepage/Riparian Wetland	8
Cushion bog	4
Tarn (at edge)	2

*See vegetation community descriptions in **Appendix 2**.

2.2.1.3 Gee's Minnow Trapping Methods

At each Gee's minnow site, 10-20 lizard grade (1/8-inch mesh (3.18 mm)) traps were deployed in specialised patterns (grids or lines) that best fitted the terrain. Trap spacings were at approximately 10 m with minor adjustments made to ensure traps were placed in the most preferable lizard habitat at each site. Traps were baited with tinned pear, contained a moist sponge, and were covered with shade cloth. Traps were checked daily with any lizards found, recorded and released. Sponges were re-moistened daily and pear was replaced every second day.

2.2.1.4 Gee's Minnow Trapping Effort

10-20 Gee's minnow traps were deployed at each trapping site for a maximum of five days in weather conditions suitable for lizard activity (a minimum of four hours where the temperature reached or exceeded 14 °C). Traps remained open only when daytime temperatures exceeded this threshold, if temperatures fell below this for more than one day, traps were closed and reopened once conditions improved (**Appendix 3**). Due to cold weather, 10 trapping sites were operational for only three days rather than the targeted five (sites 1, 2, 3, 4, 5, 7, 8, 13 and 16). As a result, data from some of these sites are considered low confidence and do not fully represent potential lizard presence (further information is detailed in **Appendix 4**).

Across the 2024/25 and 2025/26 lizard active seasons, a total of 5,470 trap days were completed. This represents an unprecedented survey effort in an alpine environment and provides a robust basis for assessing lizard presence and distribution, and appropriate management at the LMP site.

2.2.1.5 Manual Habitat Searching

Manual Habitat Searching (MHS) was undertaken across the LMP site by Tony Jewell over the 2023/2024 lizard active season (Rastus Burn catchment only); and by e3s[i] during the 2024/2025 and 2025/2026 lizard active seasons, totalling >60 person hours[ii]. Searches followed standard herpetofauna survey protocols and involved:

- Visual scanning of rock surfaces and vegetation for active or basking lizards; and,
- Lifting rocks and other natural cover to detect lizards, shed skins, and droppings.

All searching was undertaken only in weather suitable for lizard activity (≥ 12 °C, light winds, no precipitation) (**Appendix 3**).

MHS by e3s was completed concurrently with vegetation assessment in 2024/25 and 2025/26 (**Appendix 3**). Additional searching occurred at and around Gee's minnow trap locations during trap deployment and daily checks. Opportunistic observations were also recorded while moving between survey areas. The spatial extent of some of this search effort is shown in **Appendix 5.**

2.2.2 Lizard Survey – Results

2.2.2.1 Lizard Species

Only McCann's skink were found in the LMP site (**Figure 3** and **Plate 1**), occurring mostly below 1600 m in both the Rastus Burn and the Doolans catchment. In surveyed areas above 1600 m a.s.l, McCann's skink was present but not abundant; their distribution appears to be confined to north facing tussock slopes at higher altitudes. McCann's skinks were very abundant in the Doolans trapping sites below 1500m. Lizard records from this survey are detailed in **Appendix 6**.

[i] Trudy Anderson, Liam Salemink Waldren, Lisa Milliken and Annie Wardle under the direction of Dr Mandy Tocher.

[ii] This includes the 19 hours carried out by Tony Jewell in the Rastus Burn catchment over the 2023/24 season.



Figure 3: Lizard Observations Within and Close to the LMP Site, Including Records from the Desktop Assessment.



Plate 1: McCann's Skinks Captured in the LMP Site.

O. aff. inconspicuum "Central–Southern" was not found in the LMP site. Records within the skifield are known from the Rastus Burn (**Figure 3**), where it occurs in small, highly localised pockets on north facing slopes. Dracophyllum scrub would be expected to provide good habitat for *O. aff. inconspicuum* "Central–Southern" if it were present. It

was not detected despite 250 traps days in this habitat, plus hand searching. The extent of Dracophyllum scrub that intersects with the earthworks footprint is small at 0.15 ha.

Short-toed geckos are currently known only at lower elevations in the Rastus Burn catchment (below 1300 m a.s.l.) (**Figure 3**). There is only a very small extent of rockfield habitat in the earthworks footprint that could be suitable for gecko or lakes skink (0.01 ha). This area was extensively hand-searched and trapped (50 trap days in earthworks footprint and another 50 in identical habitat nearby) with only McCanns skink detected.

Overall, lizards are not a stand-out ecological feature of the LMP site because only one 'Not Threatened' species appears to be present. Despite extensive Gee's minnow trapping and MHSs, large areas do not contain any lizard species.

2.2.2.2 Lizard Habitats of the LMP Site

Of the ten vegetation communities in the LMP site that were trapped, six of these were successful in detecting McCann's skinks (**Table 2** and **Appendix 2**). No other lizard species were found. The areas within the LMP site that are likely to provide lizard habitat (based on survey results, altitude, aspect, and vegetation) are mapped in **Figure 4** and described in **Table 3** below.

Within the LMP site above 1600 m a.sl, only North Facing Snow Tussock Grassland is likely to support lizards (4 of 8 trapping sites detected lizards). All the trapping sites above 1600 m a.sl in Cushionfield (3), Wetland (3 Cushion Bog and 2 Tarn at edge), Rockfield (4), High Alpine Cushionfield (2), Snow Tussock Grassland (6) and Tarn (At Edge; 2), were unsuccessful at detecting lizards, giving a high confidence in this result.

Below 1600m, 2 of 5 Wetland (Seepage/Riparian), 1 of 5 Snow Tussock Grassland, 3 of 4 North Facing Tussock Grassland, 2 of 6 Rockfield, 1 of 1 Rocky Outcrop, and 2 of 3 *Dracophyllum* Scrub trapping sites were successful in detecting McCann's skink. The likely McCann's skink habitat within the LMP site, based on the habitats and altitudes in which they were found, is approximately 85.5 ha (all habitats below 1600 m a.s.l. and north-facing tussock above 1600 m a.s.l. (**Figure 4** and **Table 3**).

Overall, the absence of lizard detections over large areas of the LMP site (as shown in **Figure 4** and **Table 3**), suggests that habitat suitability for McCanns skink in the LMP site is strongly influenced by aspect at higher altitudes.



Figure 4: Likely McCann's Skink Habitat in the Lizard Management Plan Site.

Table 3: Habitats Known to Support McCann's Skink at the LMP Site.

Vegetation Community	Lizard Habitat Within Earthworks Footprint		Total Lizard Habitat Within LMP Site	
	Hectares below 1600 m a.s.l.	Hectares above 1600 m a.s.l.	Hectares below 1600 m a.s.l.	Hectares above 1600 m a.s.l.
Snow Tussock Grassland	1.14	*	36.47	*
North Facing Tussock Grassland	1.23	0.84	14.37	18.58
Dracophyllum Scrub	0.15	No habitat present	7.87	No habitat present
Cushionfield	0	*	0.32	*
High Alpine Cushionfield	No habitat present	*	No habitat present	*
Snowbank+	No habitat present	*	No habitat present	*
Rockfield	0.01	*	0.08	*
Rocky Outcrop	0	*	0.17	*

Wetland – Seepage/ Riparian, Tarn (at edge) and Cushion Bog.	0.09	*	7.51	*
Disturbed Vegetation+	*	*	*	*
Total	**2.62**	**0.84**	**66.91**	**18.58**

+These habitats were not trapped, only surveyed using manual habitat searching.
* No lizards were found in these habitats.

2.3 Significance of Lizard Habitats at the LMP site

The following sets out a review of the ecological significance of habitats with respect to national, regional, and territorial authority assessment criteria.

2.3.1 DOC guidelines for Assessing Significant Ecological Values (Davies, et al., 2016)

Public Conservation Land of the LMP site that provides habitat for At Risk or Threatened lizard species trigger the 'Rarity and special features' criterion in the DOC guidelines. No At Risk or Threatened lizard species are known to be present in the LMP site, or the earthworks footprint. Therefore, no areas are considered significant.

2.3.2 National Policy Statement for Indigenous Biodiversity (Ministry for the Environment, 2023)

Areas within the LMP site that provide habitat for At Risk or Threatened lizard species qualify as a significant natural area (SNA) under Appendix 1 of the National Policy Statement for Indigenous Biodiversity (NPS-IB). No At Risk or Threatened lizard species are known to be present in the LMP site, or the earthworks footprint. Therefore, no areas are considered significant.

2.3.3 Otago Regional Policy Statement 2023

Section 6(c) of the Resource Management Act 1991 requires both Regional and District Councils to recognise and provide for the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna. Schedule 4 of the Otago Regional Policy Statement sets out criteria to assess whether an area qualifies as a significant habitat of indigenous fauna under Section 6(c) of the Resource Management Act 1991. Only one of these criteria needs to be met for the site to be considered significant, in which case it becomes subject to Policies 3.1.9, 3.2.1, and 3.2.2. The rarity

criterion is triggered by the presence of At Risk or Threatened lizard species. No At Risk or Threatened lizard species are known to be present in the LMP site, or the earthworks footprint. Therefore, no areas are considered significant.

2.3.4 Queenstown Lakes District Council District Plan (applicable for Rastus Burn catchment only).

Areas of the LMP site that provide habitat for At Risk or Threatened lizard species qualify as significant under the rarity criteria of Policy 33.2.1.8. No At Risk or Threatened lizard species are known to be present in the LMP site, or the earthworks footprint. Therefore, no areas are considered significant.

2.3.5 Central Otago District Council District Plan (applicable for Doolans catchment only).

Areas of the LMP site that provide habitat for At Risk or Threatened lizard species qualify as significant under the rarity criteria of Section 04 of the CODC District Plan. No At Risk or Threatened lizard species are known to be present in the LMP site, or the earthworks footprint. Therefore, no areas are considered significant.

2.3.6 Wildlife Act 1953

As detailed in Section 1.3, all indigenous lizard species are absolutely protected under the Wildlife Act (1953), including the 'Not Threatened' McCann's skink. An authority is required from the DOC to carry out works in the habitats of absolutely protected wildlife. For works within the LMP site, NZSki are seeking a Wildlife Act authorisation issued concurrently with Resource Consent under the Fast-Track Approval Act (2024).

3 Assessment of Effects

There will be temporary and long terms adverse effects to lizards should no avoidance or remediation actions be carried out. These effects include:

Temporary Effects

- Vegetation clearance and soil disturbance.
- Noise and vibration from machinery and vehicles.
- Damage to vegetation and habitat features (rock/scree).
- Displacement and social disturbance of lizards.
- Sediment runoff affecting microhabitats and prey.
- Creation of exposed areas increasing predator risk.
- Injury or death resulting from construction activities.

Ongoing Effects

- Permanent habitat loss or modification.
- Habitat fragmentation and edge effects.
- Ongoing disturbance from maintenance access.
- Increased vehicle use leading to disturbance, and possible injury/death.
- Light/noise pollution altering behaviour.
- Increased predator movement due to roading and disturbed areas.
- Reduced vegetation cover and diversity in rehabilitated areas.

Adverse effects are expected should no avoidance, mitigation, or remediation actions be carried out. Any lizards present on or near the earthworks footprint of an activity may be subject to displacement, social disturbance, minor injury, serious injury, or death as a result of the activity.

Displacement and social disturbance are an outcome of nearby noise and vibration generated during activities over the construction area (e.g., excavator movements, drilling and blasting to install foundations, and foot traffic). Disturbance by habitat destruction, noise, and vibration may cause lizards to move away (be displaced) from preferred retreat sites, and foraging and basking sites. The impact of this displacement can elevate predation risk, alter levels of intra-lizard species interactions/competition and reduce survival of lizards during extreme weather (due to loss of retreat sites). The scale and significance of noise, vibration and dust impacts on individuals is not possible to ascertain with certainty, but maybe a significant (though sometimes temporary) effect for a small number of individuals.

The impact of injuries (such as tail or limb loss) can be significant for the individual. Any injury can impact survival, agility, social interactions, and increase vulnerability to predation. If a tail is lost, it is very energy-intensive to replace and adds physiological stress to the individual. The additional energy required to regrow the tail is particularly problematic in cold weather and can impact reproduction.

3.1 Individual Lizard Effects

The likely number of McCann's skinks affected by the Project is estimated to be 300-600, or 100-200 per hectare. This is a best guess based on the Project Herpetologist's experience with this species. It is not based on population modelling as it is considered difficult or impossible to accurately estimate the population size of this species in expansive tussock grassland habitats.

Due to the extensive survey undertaken there is high confidence that no Threatened or At Risk species will be impacted.

3.2 Lizard Population Effects

The extent of lizard habitat in the earthworks footprint is 3.47 ha (**Table 3** and **Figure 4**). This is approximately 19.9% of the earthworks footprint (17.5 ha), 4 % of the estimated 85.5 ha of lizard habitat in the LMP site and 0.8 % of the LMP site (413.35 ha). The removal of this habitat is not expected to have any impact on the viability of the national McCann's skink population. This conclusion reflects the species' current 'Not Threatened' status under the Department of Conservation's threat classification system and its wide distribution across Southland, Otago, and Canterbury. At the local scale, within the Remarkables Range, the population is also not expected to be adversely affected given the considerably large extent of habitat and the relatively small proportion impacted.

3.3 Significance of Effects

The effects detailed above are significant in the absence of management due to all lizards being absolutely protected under the Wildlife Act (as per (Department of Conservation, 2018)).

4 Effects Management

4.1 Effects Management Overview

The effects management detailed below includes measures to avoid, minimise, remediate, and mitigate effects, and concludes with actions to address any residual adverse effects that are not fully managed through the mitigation hierarchy. When implemented effectively, the package will ensure that lizard populations will continue to persist within all lizard areas affected by NZSki development projects.

e3S consider that the steps taken to avoid, remedy and mitigate are reasonable.

4.2 Avoidance

NZSki has situated infrastructure within the footprint of existing disturbed areas, or in areas that are unlikely to contain lizards, wherever possible. For example, a prior earthworks footprint intersected with McCanns skink habitat in the Rastus Burn basin, however the updated footprint avoids these areas.

4.3 Remediation

Some remediation will occur to support vegetation values. Where this occurs in lizard habitat, it may assist in rehabilitation of McCann's skink habitat, noting that McCann's skink are known recolonise disturbed habitats. Due to uncertainty regarding quantity or quality this rehabilitation is not considered to have a measurable benefit to lizard habitat.

4.4 Mitigation

4.4.1 Lizard Salvage

No lizard salvage will be undertaken. This will result in injury, death and displacement of an estimated 300-600 McCann's skink in and near the earthworks footprint.

The rationale for the lack of salvage is as follows:

4.4.1.1 Translocation success

There is little evidence that lizard mitigation translocations work in New Zealand (Department of Conservation, 2010) (Ronjin & Hartley, 2016) (Germano & Bishop, 2008)

(Germano, et al., 2015) (Miller, et al., 2014)). These papers clearly demonstrate that mitigation translocations almost always have poor or uncertain outcomes.

Furthermore, recent research elsewhere in Otago (van Winkel, et al., 2026) outlined it is effectively not possible to salvage the majority of McCann's skink from an area of tussock grassland (essentially the same habitat type that is present in at the LMP site, despite elevation differences). Therefore, even if considerable effort was made to salvage at this site, it is likely skinks would be left behind.

These examples illustrate a need to improve practices and consider that often salvage is not always the best option.

4.4.1.2 Release Site

Salvage and relocation of McCann's skinks from the project footprint would require a suitable release site where a high survival of relocated skinks is guaranteed. No such site is available. A release site should contain either no McCann's skinks, or have available carrying capacity that the translocated skinks can fill. The release site should also be safe from mice and other predation. It is not currently possible to reliably control mice on mainland New Zealand over a large enough area to benefit lizard populations (particularly in alpine environments), in the absence of a predator proof fence. If other mammals are controlled but not mice, it may result in an unintended decline in lizard numbers (as detailed in (Norbury, et al., 2013) for example). A predator-free offshore island or a mainland fenced sanctuary (that does not already hold McCann's skinks at or near capacity) is not available within a suitable distributional range.

Therefore, at this site there is no suitable release site (or management actions) that can create reasonable confidence that the relocated skinks will survive and thrive. e3S does not considerate it is responsible to promote a salvage and translocation proposal where lizards are likely to die and also create adverse effects on a resident existing population.

4.4.1.3 Effect on McCanns Skink

Below 1600m, McCann's skink are numerous at this site, nearby, and beyond. The national population is geographically distributed from North Canterbury to Southland, occur in a wide range of habitats, number in the tens of millions, and are not a conservation priority. In this context, e3s consider that the time and resources associated with salvaging would be better allocated to research that will inform the management of At Risk and Threatened lizard species.

4.4.1.4 Best Practise and Precedent

The Project Herpetologist (Carey Knox) considers that current 'best practice' was not designed with lizards in mind, is often not fit for purpose, and, if applied incorrectly, can be detrimental to lizards or not suitably prioritise limited lizard resources. This proposal challenges typical practice in favour of an alternative option.

There is precedent for salvage to not occur (Mr Knox has had at least 3 LMPs approved by DOC in the past which did not include a salvage component).

The effects of not salvaging are addressed through the residual effects assessment.

4.4.2 Habitat Reduction

Prior to vegetation clearance, vegetation will be reduced within the earthworks footprint (plus a 1 m buffer) in places where skinks are expected to be present that overlap with the construction footprint (yellow shading in Figure 4). The purpose of this is to minimise injury and death by removing suitable habitat and giving them the opportunity to move to other habitat nearby. This has been reasonably successful in some lower altitude locations with exotic grasses but is not known to have been used in an alpine environment. Therefore, success is uncertain. Nonetheless, we expect it to reduce the overall number of skink injuries and deaths during construction to some extent, as individuals will be less likely to occur in the footprint as opposed to the immediate surrounds which will provide better shelter.

The methodology to be used is as follows:

1. All work is to be undertaken during weather suitable for lizard activity (≥14 deg C and after 10 am in the morning), and at least four weeks prior to any permanent vegetation clearance.
2. Area that is to be subject to vegetation clearance is to be clear marked on site.
3. Vegetation is to be progressively trimmed in 20 cm increments down to a height of ~40 cm using a scrub cutter with line trimmer attached. It is important that this is done progressively (in small increments) so that skinks are likely to leave the area due to the disturbance and thus not be injured by the scrub cutter.
4. Once the initial vegetation has dried out (approximately 1 week later) the area is to be trimmed again using a circular metal blade to reduce the vegetation height further, to approximately 20 cm.
5. Alternative scrub cutting methodologies may be used if they are found to be more practical or efficient (in consultation with the Project Herpetologist). No mulching or

mowing shall be undertaken to achieve the same outcome (these methods are more likely to have an adverse impact on any lizards present).

6. Additional passes with the scrub cutter may be needed if there is a time lag and vegetation regrows prior to permanent disturbance.

4.4.3 Lizard Activity

Any construction or clearance activity within the earthworks footprint where lizards are expected to be present (as mapped in yellow in **Figure 4**) shall only be undertaken in conditions that are suitable for lizard activity (>14 deg C). The purpose of this is to reduce injury and death of some individuals by providing an opportunity for them to move away from the disturbance wherever possible.

4.4.4 Fallback Option

Prior to, or during, construction it may become apparent the matters detailed in Sections 0 and 4.4.3 are impractical or too restrictive. If this is the case, additional compensation will be added to override these requirements. This is detailed further in the compensation in Section 4.7.

4.4.5 Rock pile construction

140 m^2 of rock piles will be constructed within the earthworks footprint to provide lizard habitat. McCann's skinks are known to occupy disturbed sites if suitable habitat is provided and there is a source population.

Location

Rock piles will be located at 14 sites along the earthworks footprint in the Doolans catchment that intersect with lizard habitat (as mapped in yellow in **Figure 4**). All will be positioned adjoining undisturbed habitat in locations that do not impede skier safety. The final location of the rockpiles will be decided by the Project Herpetologist, but will generally be as follows:

- 2 sites on the slope below the tarn / trapping site 54.
- 2 sites at or near each of the 4 switchbacks (8 total).
- 2 sites near the boulderfield at trapping site number 59.
- 2 sites adjoining Dracophyllum shrubland near Doolans Creek.

The above site locations may be adjusted if the rockpiles are unable to fit in the general location without extending the earthworks footprint, or the provision of rock to that site will expand the disturbance of intact lizard habitat.

Construction

Each pile shall be comprised of 10 m^2 surface area of rock rubble repurposed from construction activity nearby. The average size of the rocks in the piles shall be approximately 90mm (minimum size 50 mm, maximum 250 mm). The minimum width of the widest part of each pile shall be 2 m. At least 30% of each pile shall be a minimum of 400 mm deep. The rock used shall be free of soil as much as practical and shall be sourced entirely from the Doolans basin.

Planting

The three sides of each pile that are not adjoining undisturbed habitat shall be planted with translocated snow tussocks that have been sourced from the Doolans basin. Other native plant species present nearby (in similar habitat) may also be used provided the mature form is substantial enough to provide lizard habitat. Plantings should be at least two deep around the three sides and be no more than 0.5m apart. If plant survival after two years is insufficient to provide cover, further plants should be added until native vegetative cover within 1m of the rock pile is achieved.

Oversight

The rockpiles shall be constructed under the supervision of the Project Herpetologist. The rockpiles will be inspected by Project Herpetologist following construction to ensure piles are constructed to the specification. Any reasonable advice to maximise function of the rockpiles shall be undertaken.

4.5 Incidental Discovery Protocol

The Incidental Discovery Protocol (**Figure 5**) applies to any lizard discovered alive, dead, or injured within the LMP site. Any lizard sightings by NZSki staff, their contractors, or the public, prior to, or during, any works will be reported to the Project Herpetologist and the requirements of this LMP adhered to.

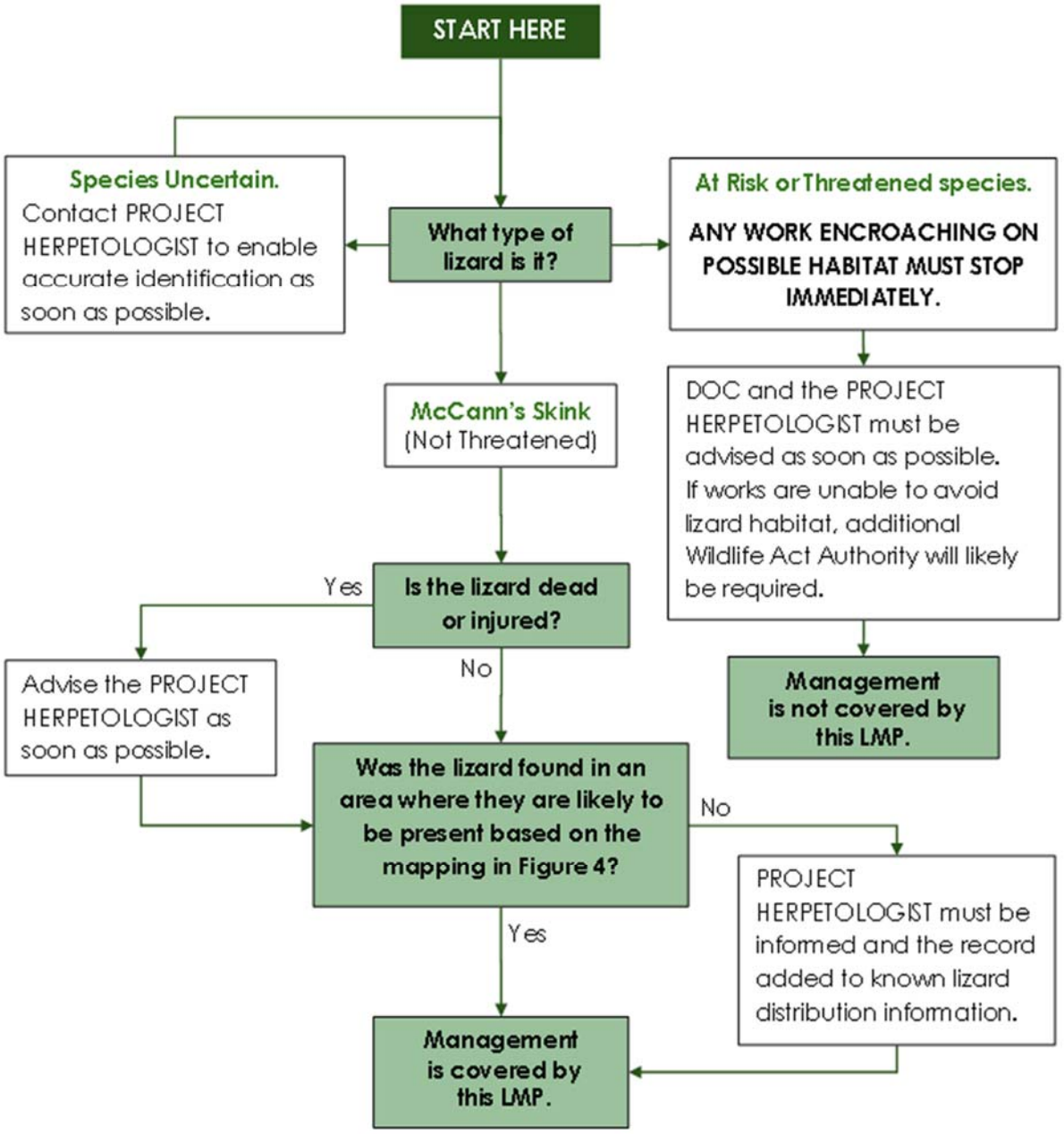


Figure 5: **Incidental Discovery Protocol**.

Any McCann's skink incidentally located in the earthworks footprint during construction will be immediately released into suitable habitat at least 200m away. The date, time, capture and release locations will be recorded and reported as detailed in Section 4.7.1. Any capture or identification of the lizard shall be under the supervision of the Project Herpetologist (as detailed in **Figure 5**). To enable practical implementation of these provisions the following actions will occur:

a) Lizard identification and expected lizard habitat information shall be provided to all construction workers as part of their induction.

b) Prior to works encroaching on identified lizard habitat for the first time the Project Herpetologist shall run a lizard training session with staff who will be leading teams on-site. This information provide will include lizard identification, procedures expected to be followed in the event of a lizard sighting (as detailed in **Figure 5**), and safe capture, handling and transfer methods for any lizards found. The information provided, and timing of this training, shall be included reporting requirements (see Section 5).

c) Details of at least two alternative Suitably Qualified and Experienced Herpetologists shall be provided to the applicant and their contractors for the possibility that the Project Herpetologists are not contactable at short notice.

To further address concerns regarding possible additional species within the earthworks footprint, it is proposed that some areas are subject to herpetofaunal supervision during initial construction. These areas are considered to be representative of the most complex or diverse lizard habitat at different altitudes within the earthworks footprint (whilst still having and very low likelihood of containing lizard species additional to McCann's skink). The four sites subject to this requirement are detailed on the three maps in Appendix 7. A Suitably Qualified and Experienced Herpetologist must be present for the initial disturbance at these locations and work with machinery operators to undertake machinery-assisted hand-searching of individual lizards.

4.6 Contingency Mitigation

This section outlines the actions to be undertaken in the event of unanticipated lizard discoveries or adverse effects on lizards resulting from activities by NZSki. This LMP does not have triggers to require contingency mitigation due to the intent that it applies to Not Threatened species only. As per the Incidental Discovery Protocol (Section 4.5) any impacts on At Risk or Threatened species are not within the scope of this LMP. Residual effects on McCann's skink following mitigation are captured in Section 4.7 below.

4.7 Residual Effects Assessment

There are significant residual effects from the activity, including the injury and death of McCann's skinks. This is due to the lack of any salvage effort, or other management (such as predator control) to ensure there is no net loss in the local skink population. The research proposal and translocation detailed below will address these, and other unidentified, residual effects.

4.7.1 Research Project

RESEARCH PROJECT UTILISING eDNA TO DETECT THREATENED AND AT RISK LIZARDS IN THE REMARKABLES ECOLOGICAL DISTRICT AND SURROUNDING ALPINE AREAS

Background

Due to the low catch-per-unit-effort of alpine lizards such as orange-spotted gecko (Knox, et al., 2019) using traditional search techniques, there is a need to develop more efficient and reliable detection methods. This will enable a better understanding of the overall distribution and abundance of our cryptic alpine lizard species, thus greatly assisting in their conservation management.

Targeted field work is required to test new tools and techniques for detecting species, like orange-spotted gecko, with greater reliability and / or efficiency (compared to spotlighting or rock-lifting). One such tool that could be tested is using Environmental DNA (eDNA), which has already proved effective with skinks at lower elevation sites in New Zealand (Reeves, et al., 2025); Cassie Mealey, DOC pers. comm.). For example, trials have shown eDNA detection rates for Otago skink (*Oligosoma otagense*) are 30–50% higher than traditional field methods (Reeves *et al*. 2025). These results provide confidence this method will detect cryptic species in alpine habitats, including species possibly missed in prior survey. Environmental DNA can detect species and measure community diversity at diverse spatio-temporal scales, and is especially useful for detection of elusive, cryptic, or rare species, making it potentially very valuable in herpetology (Nordstrom, et al., 2022).

2. Scope

The project shall target the following species:

- Orange-spotted gecko (*Mokopirirakau* "Roys Peak"): Threatened – Nationally Vulnerable.
- Lakes skink (*Oligosoma* aff. *chloronoton* "West Otago"): Threatened – Nationally Vulnerable.
- Central - Southern skink (*Oligosoma* aff. *inconspicuum* "Central – Southern"): At Risk - Declining.
- Short-toed gecko (*Woodworthia* "southern mini"): At Risk – Declining.
- Nevis skink (*Oligosoma toka*): At Risk – Declining.

Both eDNA technology and manual habitat survey will be used to search for new Threatened and At Risk lizard populations in the Remarkables Ecological District and surrounding alpine areas, and the methods will be directly compared. The project shall include two known locations of orange-spotted gecko in the Hector Mountains and two known lakes skinks sites in Central Otago, plus an additional eight locations in suitable habitat elsewhere in the Ecological District. Four of the locations will be in the Rastus Burn and Doolans catchments within, or near, ski field activities.

Environmental DNA sampling is yet to be applied to alpine lizards making such research exciting and highly novel. A lot of New Zealand's most threatened lizard species occur in the alpine zone of the South Island and are difficult to detect using traditional survey techniques. Thus, such research would be of high relevance to the detection (enabling subsequent conservation) of rare alpine lizard species or populations. Adequate funding would be required to enable processing of samples.

4. Methods

The research project will include the following actions:

1) Use of GIS mapping to identify possible orange-spotted gecko and lakes skink habitat in the Remarkable Ecological District and surrounding alpine areas at 10 sites.
2) Using tracking tunnels to collect eDNA samples from the 10 sites (these get placed around the edges of, or within cavities amongst, boulderfield and left at site for approximately two weeks before collection). Two known orange-spotted gecko populations and two lakes skink populations will be included in the project to confirm that the technique can detect geckos and skinks as expected. The technique will then be expanded to potential sites where it is uncertain what lizard species are present.
3) eDNA data will be analysed by Wilderlab NZ.
4) Manual habitat searching (including rock-lifting and/or spotlighting) will be undertaken at the survey sites whilst deploying and collecting tracking tunnels. This will allow comparison of the two survey methods.

Note the number of sites able to be covered by the research project may need to be reduced to accommodate the addition of the translocation proposal detailed in Section 4.7.2 and quantified in Section 4.7.3.

5. Resourcing

The research project will be undertaken by a research student as an MSc or PhD project via the University of Otago's Zoology Department (supervised by Dr Jo Monks) but will have some field supervision and assistance from a Suitably Qualified Herpetologist.

6. Reporting

The results will be documented in both a thesis and one or more manuscripts in the peer-reviewed scientific literature. This will enable the learnings to be easily available to, and applied by, other ecologists both in NZ and overseas.

7. Timeline

The fieldwork will be completed over summer months when the weather is suitable for lizard activity. The fieldwork will be completed within 18 months of consent being granted. Reporting shall be completed within 12 months of fieldwork being completed.

4.7.2 Lakes Skink Translocation Proposal

The Lakes skink (*Oligosoma* aff. *chloronoton* "West Otago") is currently ranked as 'Threatened - Nationally Vulnerable' (Hitchmough et al. 2026). The species is biologically sparse, has fragmented populations, is vulnerable to climate impact, and is data poor for both population size and trend (Hitchmough et al. 2026). Thus, this taxon is emerging as a high priority for further survey effort, research, and conservation management in the regions in which it occurs, including in Otago. The distribution of this species is sparse, and they are generally known from only small numbers of animals per site, or quite limited areas. Lakes skinks are threatened from habitat modification and mammalian predation. Prior to human colonisation it is likely that these skinks would have been abundant in most non-heavily forested habitats across their geographic range.

Lakes skinks are currently known from 24 sites (mostly very small and isolated populations) across their distribution range from Lake Pukaki in the north to the Takitimu Mountains in the south (Knox, 2026). Five sites are in the southern Mackenzie Country, 13 sites are in Central and West Otago, and six are in northern Southland. It is proposed to use six of the sites in the Otago Region as source populations for the translocation, sourcing 10 skinks from each site. If sites of lakes skink are detected during the eDNA research

project, these sites will be prioritised as source populations for the translocation. Multiple source locations will maximise genetic diversity of the founding population.

Lakes skinks are not currently receiving any conservation management effort and none of their wild populations are receiving predator control or any form of protection measures that would benefit the skinks. Thus, securing a population of lakes skink within a mammal-free sanctuary is a high conservation priority for this threatened species.

The suggested release site is the newly built Whakatipu Lizard Sanctuary at Kelvin Heights (https://www.whakatipulizardsanctuary.co.nz/). This 5-hectare mammal-fenced sanctuary is close to being declared mammal free and is likely to achieve this status in the near-future. The sanctuary manager Reuben Rorrison is supportive of a lakes skink translocation. The sanctuary has extensive suitable habitat including both natural and man-made rocky lizard habitats, two damp streams, and a wetland. These damp habitats with complex rock cover provide ideal habitat for lakes skink and this species is likely to thrive in the sanctuary. Lakes skink is closely related and ecologically similar to Otago green skink which was translocated by the project herpetologist to Orokonui Ecosanctuary in 2016 and reached 'Stage 4 of translocation success' by 2025 (i.e. a self-sustaining population; see (Barry, 2025)). This species was also translocated to Mokomoko Drylands Sanctuary in 2024, and initial indications of successful establishment have also been confirmed at this site, with several young and adults sighted last summer (C. Knox pers. obs.). As both translocations of Otago green skink have been successful, we are confident that the ecologically similar lakes skink is also a great candidate for translocation giving confidence that this initiative is likely to be successful.

NZSki resourcing will fund all aspects of the translocation including drafting of a translocation proposal, consultation with the Department of Conservation and iwi, the collection effort of lakes skink from the wild source populations, disease screening, and anything else required for the successful implementation of the translocation.

4.7.3 Quantification

The quantum to be provided by NZSki to support the research proposal and translocation will be a minimum of $80,000 (ex GST). The proportional split between the two proposals will be approximately $60,000 toward the research project and $20,000 toward the translocation.

If the mitigation detailed in Sections 4.4.2 and 4.4.3, regarding removal of vegetation cover and ceasing construction in temperatures below 14 deg C are not complied with, then an additional $20,000 (ex GST) will be added to the compensation package ($10,000 toward the research project and $10,000 toward the translocation proposal). This will allow more sites to be added to the eDNA project and additional contingency and/or monitoring to be added to the translocation proposal.

4.7.4 Contingency

If a student has not committed to the research project within 12 months of consent being issued, the timeframes for completion may be extended by 12 months. If, after 18 months of consent being issued, a student to undertake the research has still not been found (and timely attempts to do this are documented through emails between the applicant, herpetologists and University staff) then an alternative use of the funding shall be proposed by a Suitably Qualified Herpetologist and agreed with the Department of Conservation.

If approval to undertake the translocation is declined then an alternative use of the funding shall be proposed by a Suitably Qualified Herpetologist and agreed with the Department of Conservation. Alternative release sites, such as Mou Tapu in Lake Wanaka or Pigeon Island in Lake Whakatipu, could be considered if necessary.

Any alternative proposals for the use of funding must be focussed on conservation of Threatened and At Risk lizards in the Remarkables Ecological District and be completed within five years of consent being issued.

5 Reporting

An annual Lizard Management Report will be prepared and submitted to the Department of Conservation and consenting authorities by June 30 every year. This report will document all actions undertaken, including documentation of habitat disturbance minimisation measures, staff and contractor lizard training (content and timing), incidental lizard discoveries and outcomes, and compensation package actions. It will be accompanied by supporting materials such as maps, photographs and GPS data.

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Appendix 1: Fast Track Approvals Act Schedule 7: Approvals Relating to Wildlife.

This application seeks Wildlife Act approval to disturb, injury and/or kill the Not Threatened McCann's skink within the earthwork's footprint. Efforts have been and will be made to reduce this via avoidance and mitigation via implementation of consent conditions. This section addresses the information required for an application for wildlife approval as set out in Schedule 7, clause 2(1) of the FTAA.

The purpose of the proposed activities (clause 2(1)(a))

The purpose of the Project is to upgrade the existing infrastructure within the Remarkables Ski Area and expand the skiable terrain available through an expansion into the adjacent Doolans Basin. The Doolans Basin will be accessed via a newly established gondola and ski trails. Section 1.2 of this report provides further detail regarding the project.

The proposed activities and their location (clause 2(1)(b) and (h))

NZSki is applying for wildlife approvals to injure and kill McCann's skink within the earthwork's footprint, and disturb lizards located nearby. The location of the proposed works is within Public Conservation Land and is presented in **Figure 1** of this report. The locations where this footprint intersects with likely lizard habitat is detailed in **Figure 4** representing the area where mitigation and compensation actions are needed. NZSki are not applying to hold any protected species as the proposal is for no salvage to occur (see Section 4.4.1).

Assessment against the purpose of the Wildlife Act (clause 2(1)(c))

The purpose of the Wildlife Act includes the protection of wildlife. The Wildlife Act protects animals classed as wildlife and controls how people interact with wildlife. The application is relevant to the Wildlife Act because it proposes vegetation removal activities that provide habitat to protected wildlife species, and these species are likely be killed or injured. This activity specifically relates to McCann's skink (*Oligosoma maccanni*), as there is high certainty that At Risk or Threatened lizards are not present due to the survey effort that has occurred (Section 3).

The numbers of wildlife potentially impacted and the nature of the potential impacts/effects (clause 2(1)(d) and (e)).The only lizard species likely to be present in the area are McCann's skink (*Oligosoma maccanni*) that are classified as Not Threatened, and it is estimated that 300-600 will be impacted (see Section 3.1).

Methods to ensure best practice standards and to ensure safe, efficient and humane treatment (clause 2(1)(f) and (g))

Section 4 of this report identifies effects management to avoid, remedy, mitigate, and compensate for the impacts on McCann's skink.

Temporary holding of wildlife (clause 2(1)(i))

No wildlife is proposed to be temporarily held or relocated as part of this activity. The compensatory actions detailed in Section **Error! Reference source not found.** would be undertaken by a Suitably Qualified and Experienced Herpetologist with the separate and necessary authority to conduct the activity.

Nature and impact of the potential effects (clause 2(1)(j) and (k))

The Assessment of Effects is detailed in Section 3 of this report. The effects management is detailed in Section 4. This identifies and describes management to avoid, remedy, mitigate, and compensate for the impacts on McCann's skink. There are residual effects and these are described in the compensation outlined in Section **Error! Reference source not found.**.

Persons involved in any conviction of any offence under the Wildlife Act 1953 (clause 2(1)(l) and (m))

No persons in e3Scientifc, or their contractors, have been involved in any conviction under the Wildlife Act 1953, nor has any conviction pending before the court.

Details of consultation, including with hapū or iwi, on the application specific to wildlife impacts (clause 2(1)(n))

e3Scientific are not aware of any consultation has been undertaken relating to wildlife.

Details of any additional written expert views, advice, or opinions (clause 2(1)(o))

There are no additional written expert opinions in relation to this proposal. Dr Mandy Tocher provided input and feedback on earlier versions of the document prior to the scope being considerably changed and reduced.

Appendix 2: Lizard Habitats/Vegetation Communities of the LMP site.

The vegetation descriptions are detailed in full in (e3Scientific, 2026c). Parts of this document have been copied here for convenience.

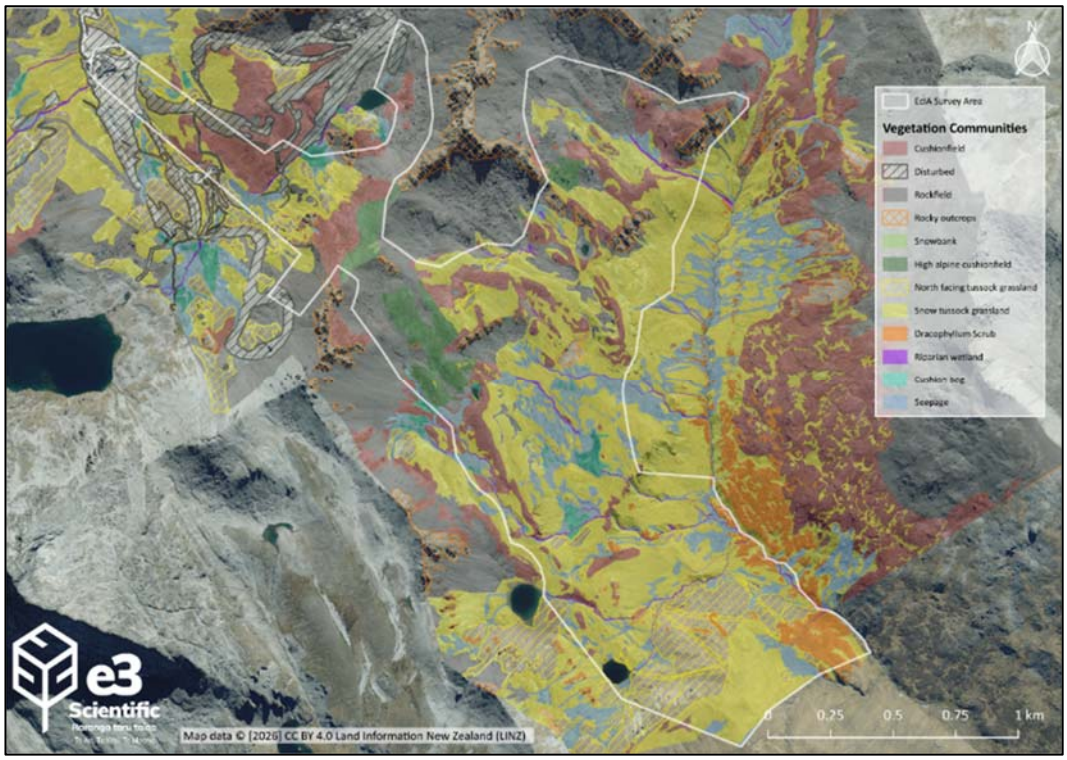


Figure 21 from (e3Scientific, 2026c): Vegetation communities within and adjacent to the ECIA study area.

Snow Tussock Grassland (AL1)

Tussock grassland is the dominant vegetation community present throughout the study area and wider Remarkables Ecological District at similar altitudes (see Figure 21 and Plate 2). *Chionochloa macra* is the dominant species above approximately 1600 m asl, with *Chionochloa rigida* becoming the more prevalent species below this elevation, with lesser amounts of *Poa colensoi* throughout all elevations. The inter-tussock community consists of a range of herbs and grasses including *Celmisia haastii, Dracophyllum muscoides, Epilobium alsinoides, Gautheria depressa, Raoulia grandiflora* and *Viola cunninghamii.* Greater than 99 % of the overall vegetation cover within this community consists of indigenous species, with isolated areas of bare ground, rock, exotic herbs and grasses. It is noted that in areas of *Chionochloa rigida*, inter-tussock species abundance is considerably lower as a result of increased tussock litter.

Twenty-one Regionally/Nationally At Risk or Data Deficient species were recorded within the surveyed area or within previous studies completed within this community.



Plate 2: Photographs of snow tussock grassland.

North Facing Tussock Grassland (AL1)

The north facing tussock grassland community is similar to the snow tussock grassland community, also being dominated by Chionochloa macra. However, due to factors such as increased solar exposure, slope, and wind induced evapotranspiration, the areas on north facing slopes tend to exhibit lower species diversity, with a higher abundance of drought tolerant native herbs and grasses. In these areas, snow tussock cover drops to approximately 50-80 % of the total vegetation cover with Poa colensoi, Rytidosperma pumilum, Raoulia grandiflora, and Viola cunninghamii becoming more prevalent.



Plate 3: Photographs of north facing tussock grassland vegetation community.

Eight Regionally/Nationally At Risk or Data Deficient species were recorded within the surveyed area or within previous studies completed within this community.

Dracophyllum Scrub (VS7)

Dracophyllum is highly characteristic of the montane to subalpine zone associated with the Ecological district, becoming increasingly prevalent below approximately 1400 m asl. *Dracophyllum rosmarinifolium* almost independently dominates the shrubland vegetation strata with scattered occurrences of *Chionochloa rigida* also being present. Due to the nutrient poor characteristics of where this community occurs and heavy organic litter production species diversity within the community is notably low. Commonly observed indigenous prostrate species include Muehlenbeckia axillaris, *Poa colensoi, Gaultheria depressa var. novae-zealandiae, Austroblechnum penna-marina subsp. alpina, Raoulia subsericea,* and *Austrolycopodium fastigiatum*. However, individually account for less than 1% of the overall vegetation cover.

No At Risk or Threatened species were observed or recorded during survey efforts or within previous studies undertaken in this community.

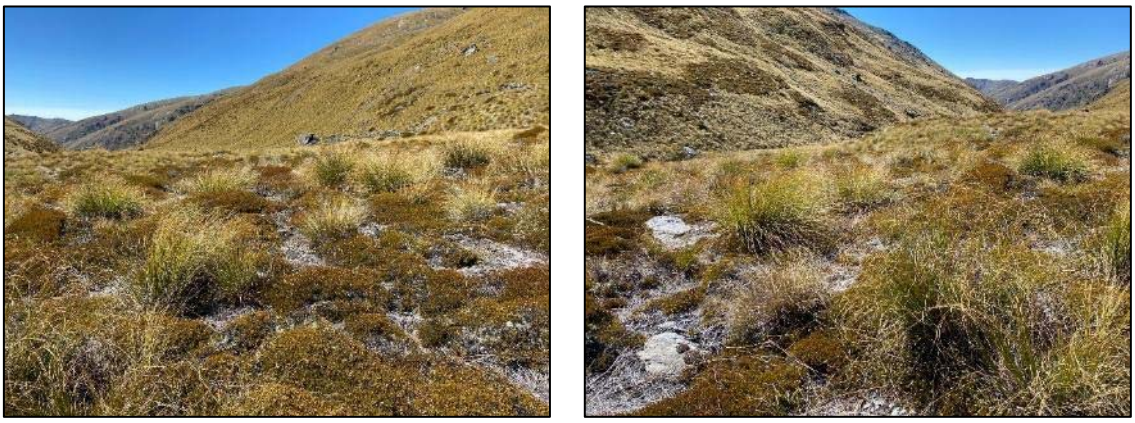


Plate 4: Photographs of *Dracophyllum* scrub vegetation community.

Cushionfield

Cushionfield communities are scattered across the study area, becoming extensively prevalent along exposed ridges and knolls and alpine locations prone to drought or higher snowfall (see Figure 21 above and Plate 5). These communities have developed in response to high wind and sun exposure with relatively stoney substrate, and shallow soil depths. The dominant species throughout this vegetation community are *Dracophyllum muscoides* with indigenous herbs, grasses and rushes including *Poa colensoi, Raoulia grandiflora, Luzula pumila, Abrotanella inconspicua, Rytidosperma pumilum, Leptinella goyenii, Hectorella caespitosa* and *Anisotome imbricata* common throughout.

Twenty-two Regionally/Nationally At Risk were recorded within the surveyed area or within previous studies completed within this.



Plate 5: Photographs of cushionfield vegetation community.

High Alpine Cushionfield (AH2)

A variation of the cushionfield community occurs across the high alpine areas within the study area (see Figure 21 above and Plate 6), which are exposed to frost heave, snow accumulation and/or a high level of evapotranspiration. Within this community are micro sites of fellfield and snowbank forming across the variable gradients in substrate and climactic conditions. Key species throughout this vegetation community include *Phyllachne rubra, Carex pyrenaica* var. *cephalotes,* and *Raoulia aff. bryoides* with lesser amounts of *Dracophyllum muscoides, Poa colensoi, Raoulia grandiflora, Luzula pumila, Abrotanella inconspicua, Leptinella goyenii, Kellaria childii, Hectorella caespitosa* and *Anisotome imbricata* also present.

Twelve Regionally/Nationally At Risk species were recorded within the surveyed area or within previous studies completed within this community.

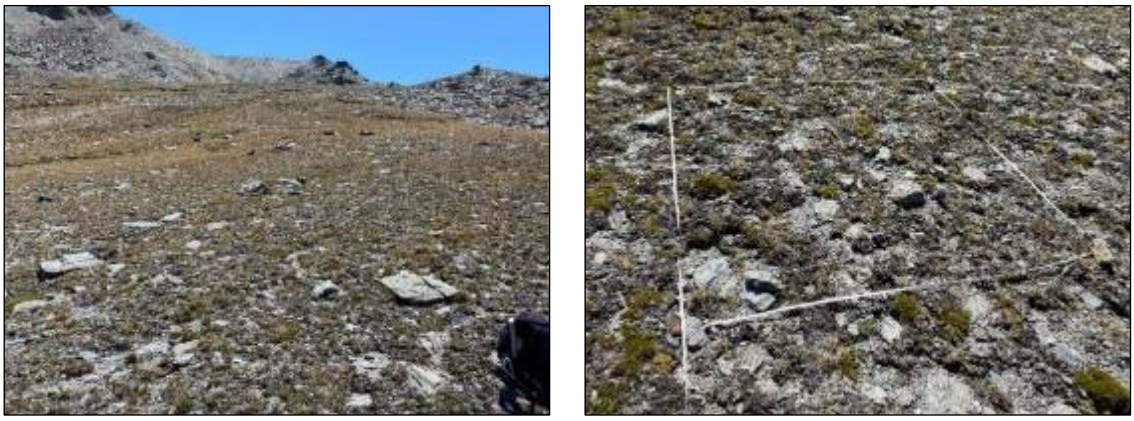


Plate 6: Photographs of cushionfield vegetation community.

Cushion Bog (WL9)

The lower faces of the Doolan's Basin are covered in numerous interconnected cushion bog, riparian and seepage wetlands. Cushion bogs are present on relatively level or gently sloping ground within hill crests, basins, terraces, and adjacent to other wetland types. Enclosed within are small formations of string mire. The soils are predominantly peat and have high water tables, often exhibiting extensive areas of standing water. *Oreobolus pectinatus* is the most prevalent species throughout the cushion bog communities, with *Carex gaudichaudiana, Caltha obtusa* and *Abrotonella inconspicua* also abundant throughout.

Twenty Regionally/Nationally At Risk and three Threatened species were recorded within the surveyed area or within previous studies completed within this community.



Plate 7: Photographs of Cushion bog vegetation community.

Riparian Wetland (WL9)

Riparian wetlands are present along the edges of streams throughout the Doolans catchment (see Figure 21 above and Plate 8) and are characterized by being wet or saturated for at least part of the year; often occurring in association with ephemeral or intermittent creeks. *Oreobolus pectinatus* and *Schoenus pauciflorus* are the most dominant species with *Acaena saccaticupula, Caltha obtusa, Celmisia alpina, Celmisia sessiliflora, Centrolepis pallida, Coprosma perpusilla* subsp. *perpusilla, Craspedia lanata* var. *lanata, Euchiton lateralis, Poa colensoi* and *Viola cunninghamii common throughout.*

Eighteen Regionally/Nationally At Risk and four threatened species were recorded within the surveyed area or within previous studies completed within this community.



Plate 8: Photographs of riparian wetland vegetation community.

Seepage (WL17)

Seepage wetlands are present throughout the lower faces of the Doolans Basin (see Figure 21 above and Plate 9); occurring where groundwater emerges on hillsides or at the edge of slopes as a result of upwelling or subsurface geomorphological patterns. Throughout the study area seepages drain to or from other wetland classes connecting the large freshwater features. The most dominant species present throughout this vegetation community include *Schoenus pauciflorus. Oreobolus pectinatus,* and *Caltha obtusa.* A wide range of other indigenous herbs and grasses are common throughout seepage wetlands throughout the study area, however, generally occurring in lower abundance.

Twenty eight Regionally/Nationally At Risk or Data deficient, and five Threatened species were recorded within the surveyed area or within previous studies completed within this community.



Plate 9: Photographs of seepage vegetation community.

Rockfield (AH2)

Rockfield communities are prevalent across the study area, particularly in the upper elevations of the study area where the ridgeline drops into the Doolans and Rastus Burn catchments (see Figure 21 above and Plate 10). The rockfield areas have steep slopes prone to movement of the rock substrates, within avalanche prone areas, thus lacking suitable conditions for rapid vegetative stabilisation. Therefore, a significant proportion of these areas do not contain any vegetation. Where vegetation is present it is scattered, commonly accounting for less than 25 % of the total cover. Species commonly noted throughout this vegetation type include *Chionochloa macra, Epilobium tasmanicum, Hectorella caespitosa, Poa colensoi* and *Raoulia grandiflora*. Isolated areas occur as a subset of this community at lower elevations (below 1600 m asl) constituting deep seated rocky rubble/boulders with indigenous sprawling species (*Coprosma perpusilla* subsp. *perpusilla, Melicytus alpinus, Myrsine nummularia,* and *Pimelia notia*).

Six Regionally/Nationally At Risk species were recorded within the surveyed area or within previous studies completed within this community.



Plate 10: Photographs of rockfield vegetation community.

Rocky outcrop (AH2)

Rocky outcrop plant communities are present in small pockets across the landscape (see Figure 21 above and Plate 11). They occur in areas where bedrock is exposed at or near the surface. These communities are defined by their harsh conditions including limited soil accumulation, nutrient poor environments, and exposure to the elements. As a result of these conditions, vegetation within rocky outcrop communities tends to be sparse and patchy. Prevalent species across these areas include *Poa colensoi, Luzula pumila, Leptinella goyenii, Veronica thompsonii, Hectorella caespitosa, Koelaria cheesemanii, Colobanthus buchananii*, *Epilobium porphyrium* and *Agrostis muelleriana.*



Plate 11: Photographs of rocky outcrop vegetation community.

Twenty-three Regionally/Nationally At Risk and one Threatened species were recorded within the surveyed area or within previous studies completed within this community.

Snowbank (AH2)

Three small areas of snowbank community were noted within the study area in high alpine areas which hold snow cover for up to seven months of the year (see Figure 21 and Plate 12). *Carex pyrenaica* var. *cephalotes, Dracophyllum muscoides, Kelleria childii* and *Poa colensoi* are prevalent species found within snowbank communities across the study area, alongside a range of other indigenous herbs and grasses.

Nine Regionally/Nationally At Risk species were recorded within the surveyed area or within previous studies completed within this community.

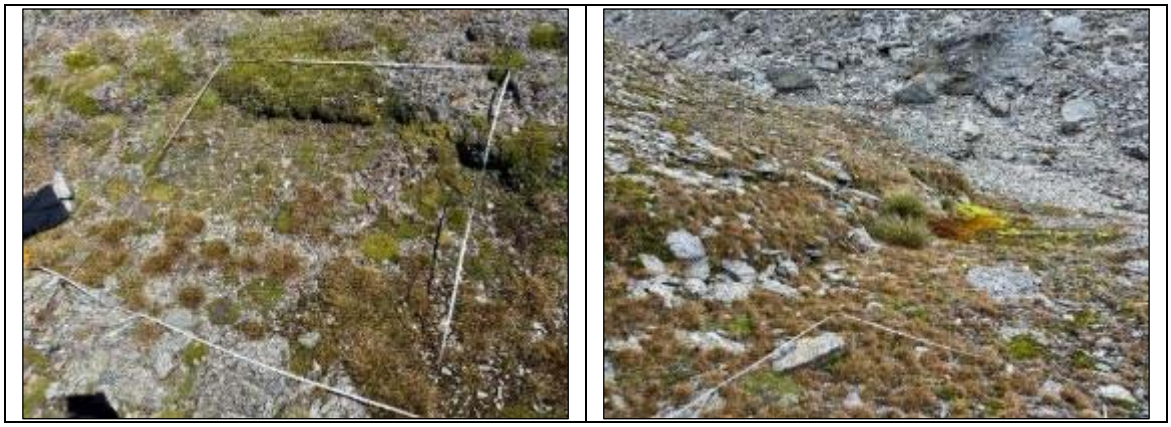


Plate 12: Photographs of snowbank vegetation community.

Disturbed Vegetation

Areas of disturbed vegetation are limited to within the current ski area boundary in the Rastus Burn Basin (see Figure 21). Disturbed vegetation communities exist where ski trails, roads, carparks etc., have been developed. Bare ground is prevalent throughout this vegetation community, as well as scattered early colonising indigenous species and exotic grasses and herbs (see Plate 13). Commonly observed species include, *Acaena saccaticupula, Agrostis muelleriana, Chionochloa macra, Colobanthus buchananii, Luzula pumila, Poa colensoi, Raoulia grandiflora, Raoulia subsericea, Raoulia tenuicaulis, Rytidosperma pumilum,* and *Scleranthus uniflorus.*

Six Regionally/Nationally At Risk or Data Deficient species were recorded within the surveyed study area.



Plate 13: Photographs of disturbed vegetation community.

Appendix 3: Summary of Survey Effort (Hours) And Weather Conditions at Remarkables Ski Area (And Doolan's Expansion) During the January-March 2025 and January-February 2026 Lizard Survey.

Date/Round	Weather	Activity and Effort	Rastus Burn Basin	Doolans Basin
30 January - 7 February 2025	Fine with warm temperatures over this period.	• Manual habitat searching while completing vegetation surveys: 10 hours.	X	X
12-17 February 2025 (Round 1)	12/02/25: Fine, light winds, warm temps light drizzle 13/02/25: Fine, light winds, warm temps light drizzle 14/02/25: Fine light winds, warm temps 15/02/25: Fine light winds, warm temps 16/02/25: Fine light winds, warm temps 17/02/25: Fine, light winds, warm temps	• Trapping: 200 g-minnow traps. 5 trap nights per trap. • Manual habitat searching: 6 hours (1 hour/day).		X
26 February - 2 March 2025 (Round 2)	26/02/25: Fine, light winds, warm temps 27/02/25: Fine, light winds, warm temps 28/02/25: Fine, light winds, warm temps 01/03/25: Cloudy, light winds, gusts up to 40km/h 02/03/25: Cloudy, moderate winds, light afternoon rain	• Trapping: 200 g-minnow traps. 4 trap nights per trap. • Manual habitat searching: 5 hours (1 hour/day).	X	X
9-15 March 2025 (Round 3)	09/03/25: Fine, partly cloudy, moderate winds 10/3/25: Fine, partly cloudy, moderate winds 12/03/25: Snow on ground, cloudy 13/03/25: Fine, light winds, moderate temps 14/03/25: Fine, light winds, moderate temps 15/03/25: Fine, light winds, moderate temps	• Trapping: 200 g-minnow traps 5 trap nights per trap. • Manual habitat searching: 6 hours (1 hour/day).	X	X
15-22 March 2025 (Round 4)	15/03/25: Fine, light winds, moderate temps 16/03/25: Fine, light winds, moderate temps 20/03/25: Fine, light winds, moderate temps 21/03/25: Fine, light winds warm temps 22/03/25: Fine, light winds, warm temps	• Trapping: 200 g-minnow traps 5 trap nights per trap. • Manual habitat searching: 5 hours (1 hour/day).	X	
24-31 March 2025 (Round 5)	24/03/25: Fine, light winds, warm temps 25/03/25: Fine, light winds, moderate temps 26/03/25: Fine, light winds, moderate/low temps 29/03/25: Fine, light winds, moderate/low temps 30/03/25: Fine, light winds, moderate/low temps 31/03/25: Fine, light winds, moderate/low temps	• Trapping: 200 g-minnow traps. 4 trap nights per trap • Manual habitat searching: 6 hours (1 hour/day Temperatures during 29-31 March were cooler than expected and were not forecast to improve. Survey was not completed. There is low confidence that results reflect lizard activity in suitable conditions (**Appendix 4**).	X	

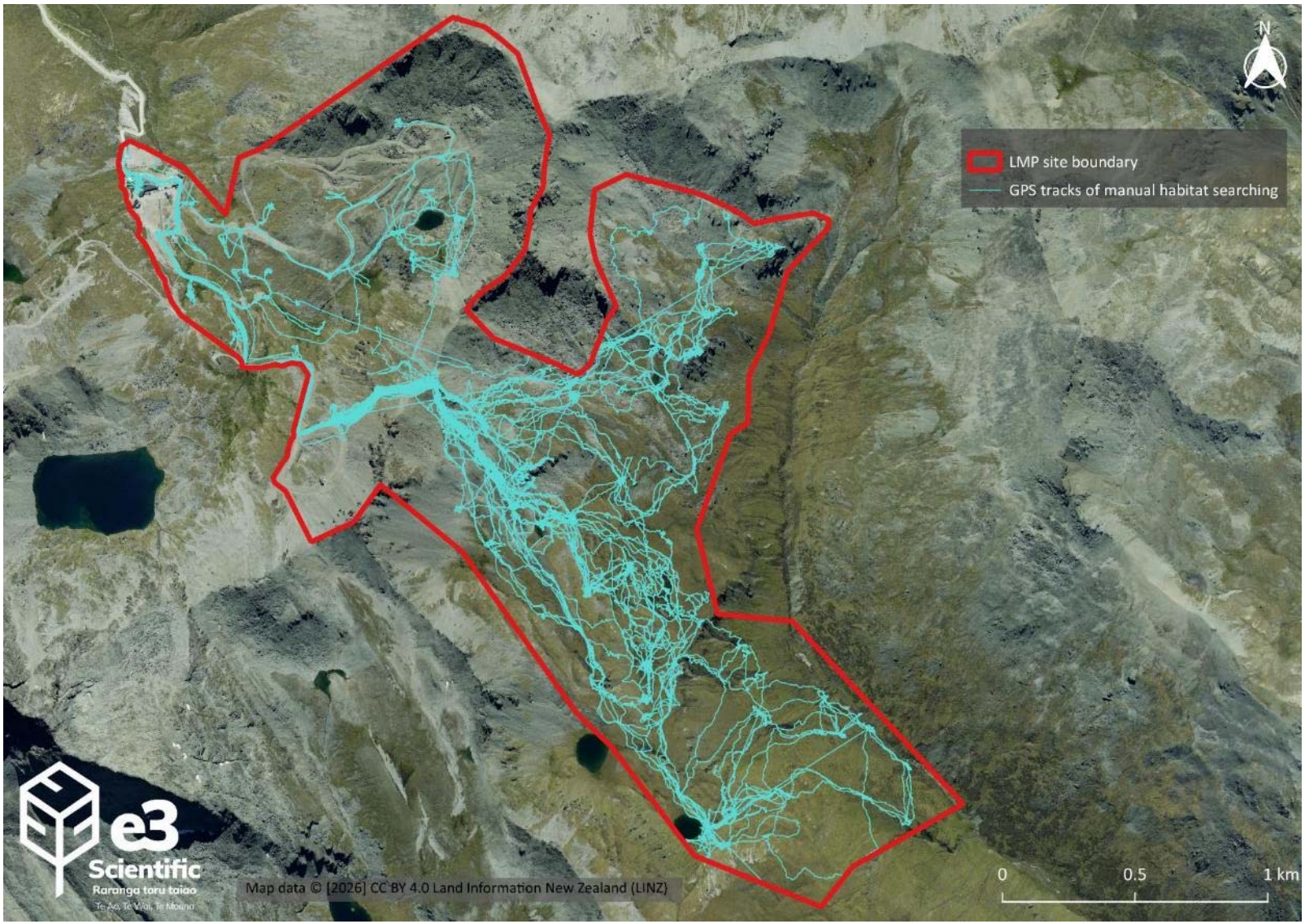
27 January – 1 February 2026 (Round 6)	27/01/26: Fine, light winds with moderate NW gusts in the evening, moderate/warm temps (3-18+◦C) 28/01/26: Fine, light winds with moderate NW gusts, moderate/warm temps (3-18+◦C) 29/01/26: Fine, light winds with moderate NW gusts in the evening, moderate/warm temps (3-18+◦C) 30/01/26: Fine, light winds with moderate SW gusts in the morning, moderate/warm temps (4-20◦C) 31/01/26: Fine, light winds with moderate NW gusts in the evening, moderate/warm temps (4-20+◦C) 01/02/26: morning low cloud clearing to fine, light winds, moderate /warm temps (6-20+ ◦C)	• Trapping: 130 g-minnow traps 4 traps nights per trap • Trapping: 70 g-minnow traps 5 traps nights per trap • Manual habitat searching: 6 hours (1 hour/day) plus 3 hours dedicated on 1 day.		X
Total		• 5470 g-minnow trap nights across 60 locations. • 41people hours Manual habitat searching.		

Appendix 4: Round 5 Trapping Result Implications.

The Round 5 lizard survey could not be completed due to the onset of cold weather, affecting results from ten trap sites (1, 2, 3, 4, 5, 7, 8, 13, 16, 20). Sites located below the Remarkables Ski Area base building (sites 1, 2, 3, 4, 5) contain potentially suitable lizard habitat; for example, Site 5 is north-facing and captured two lizards on the first trap night, but none thereafter (**Appendix 6**). Survey effort at these sites is therefore considered incomplete.

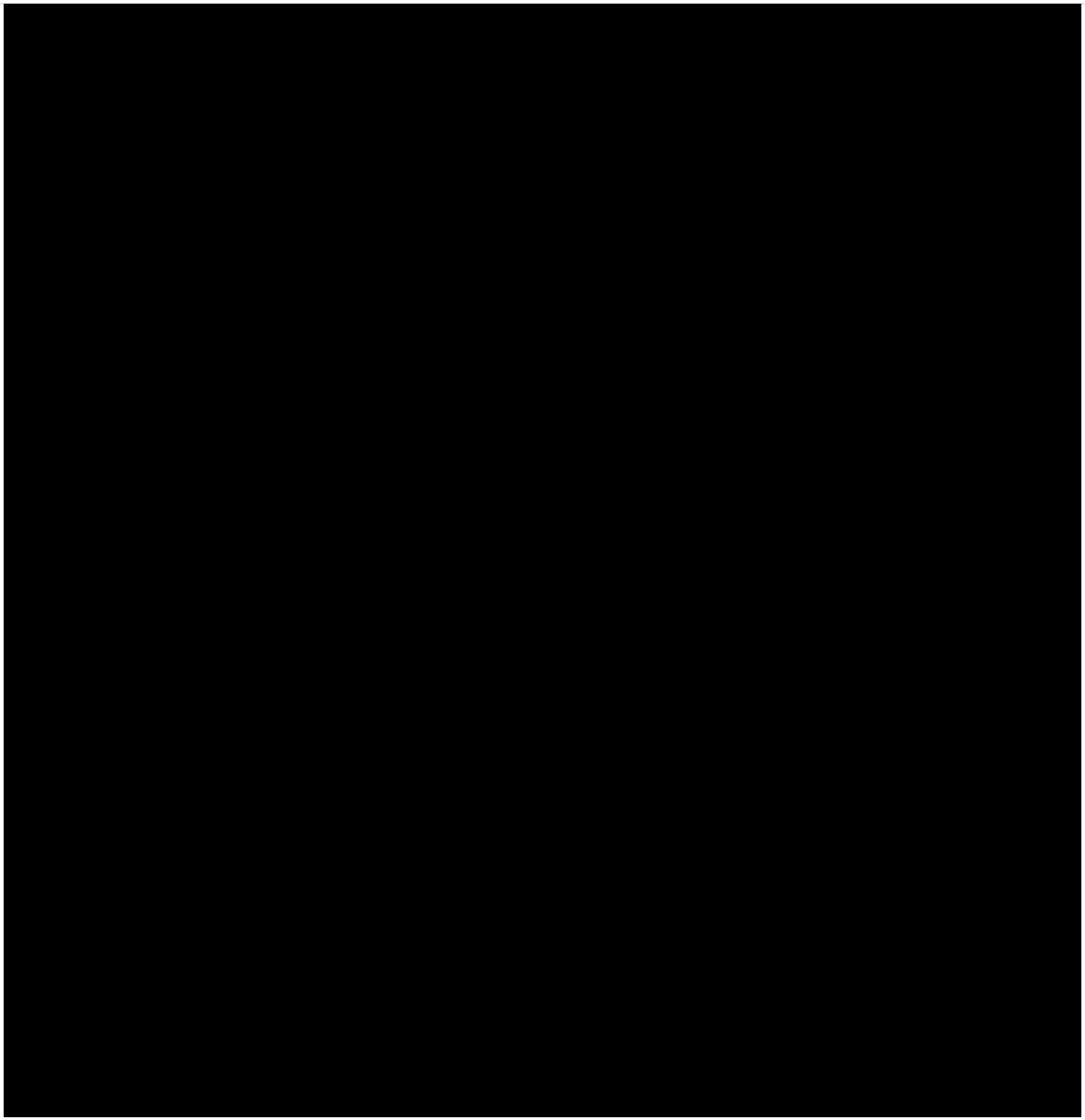
In contrast, the partially trapped sites above the base building (sites 7, 8, 13, 16, 20) were colder, lacked suitable habitat, and produced no detections during trapping or manual habitat searching. Further comprehensive survey at these locations is not considered necessary.

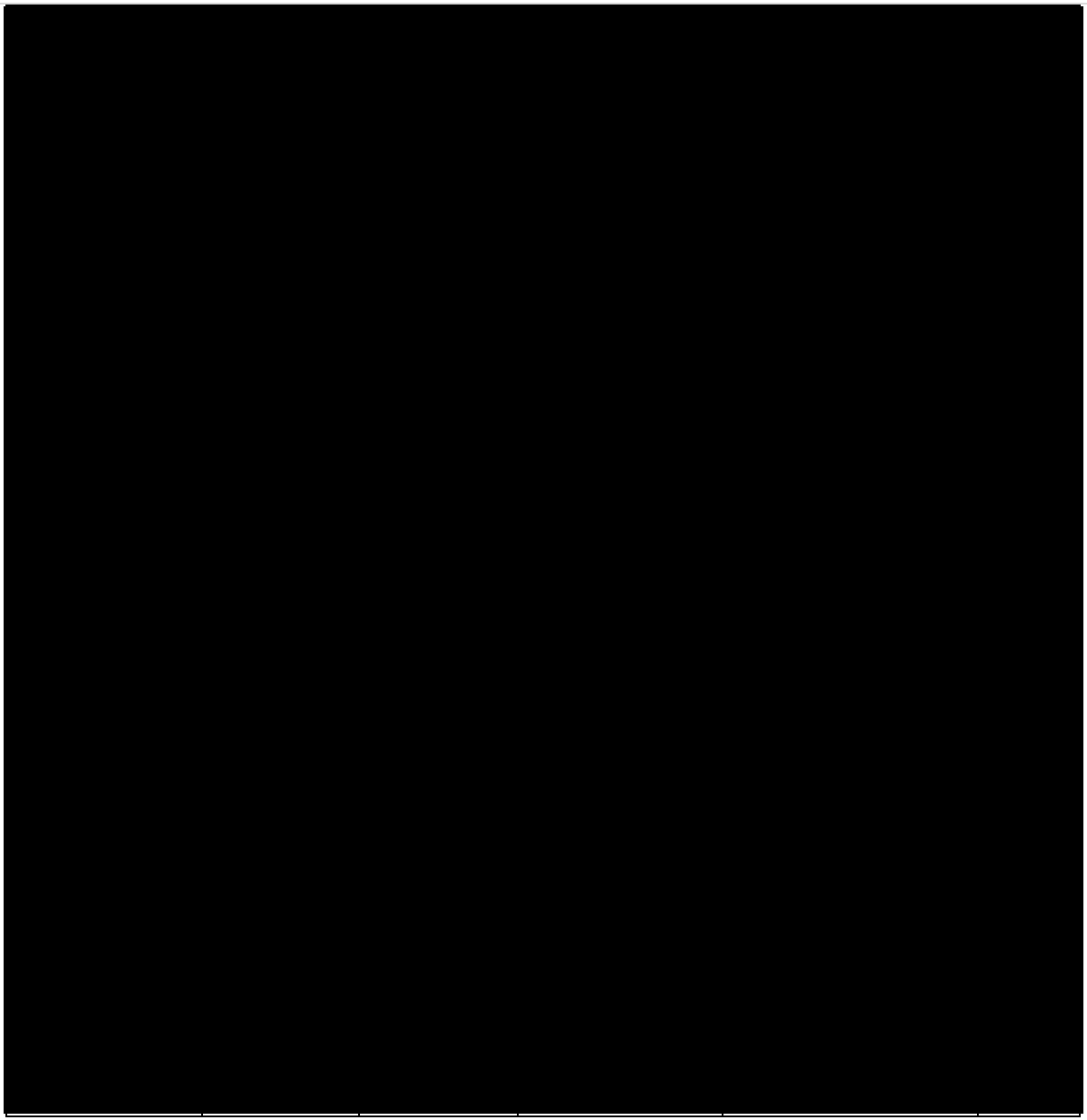
Appendix 5: Hand-Held GPS Tracks from some Manual Habitat Searching of Lizard Habitats.

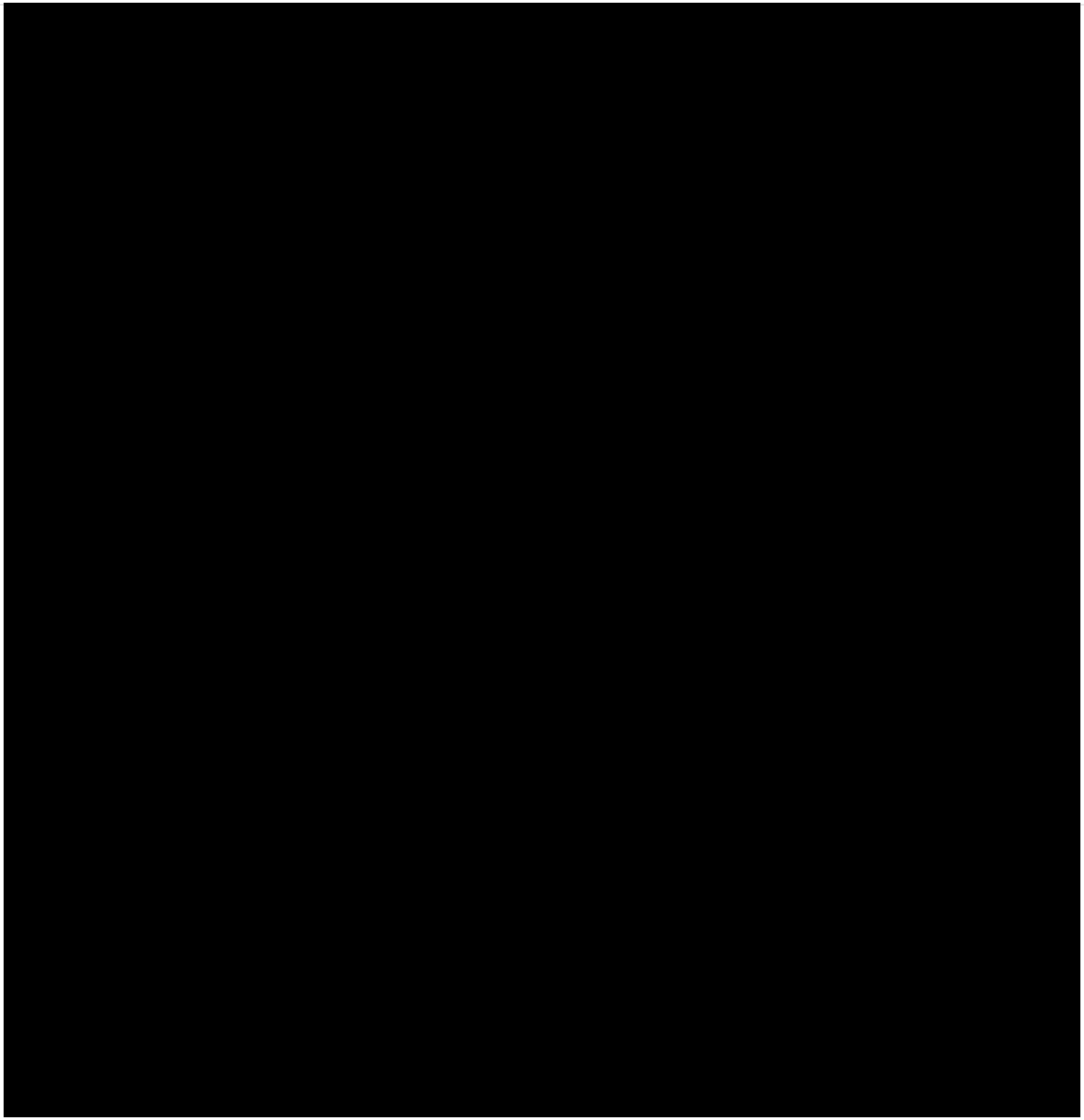


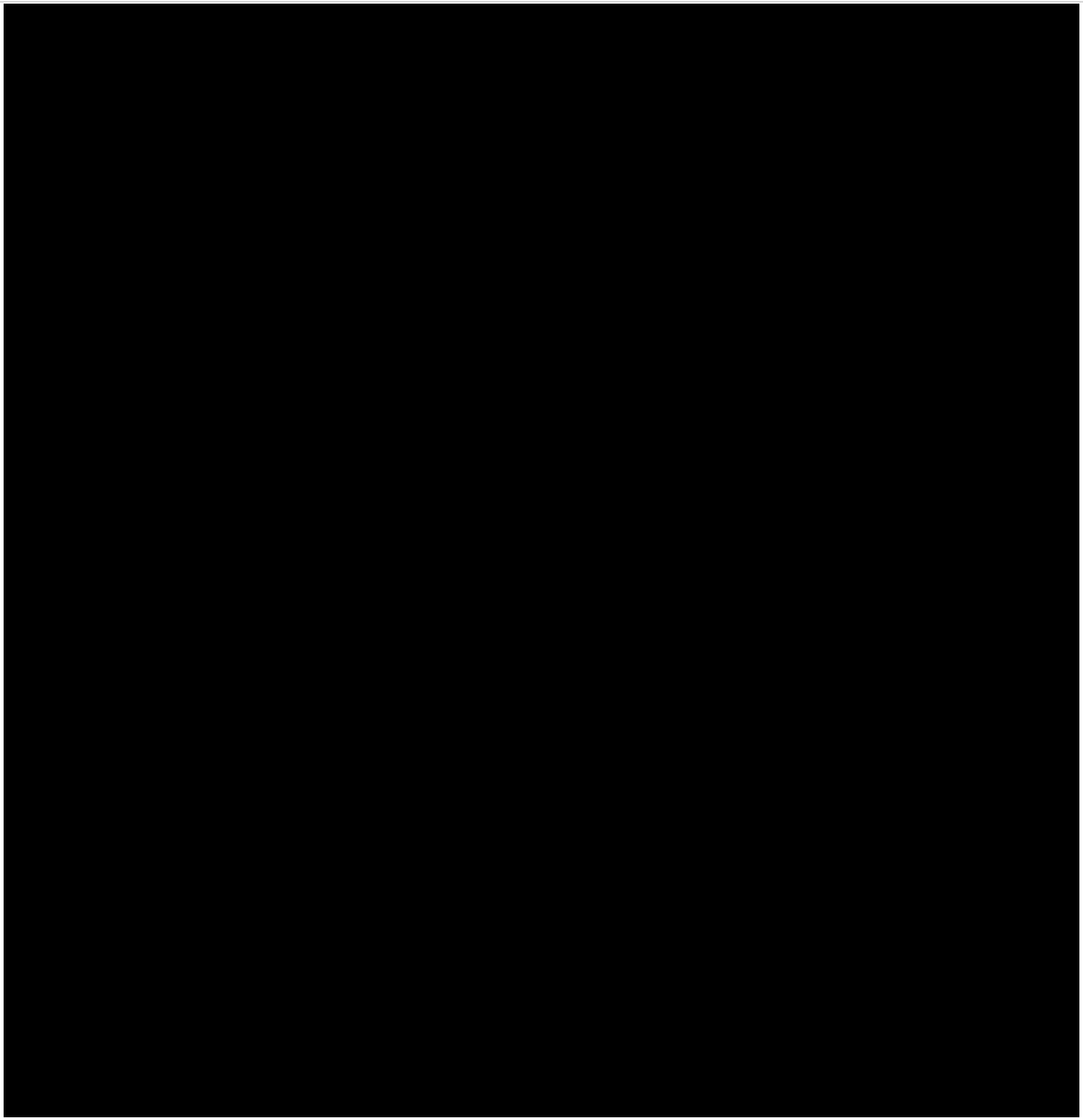
Appendix 6: Locations Where McCann's Skink Were Caught or Observed in Surveys Undertaken Over the 2024/2025 And 2025/26 Season.

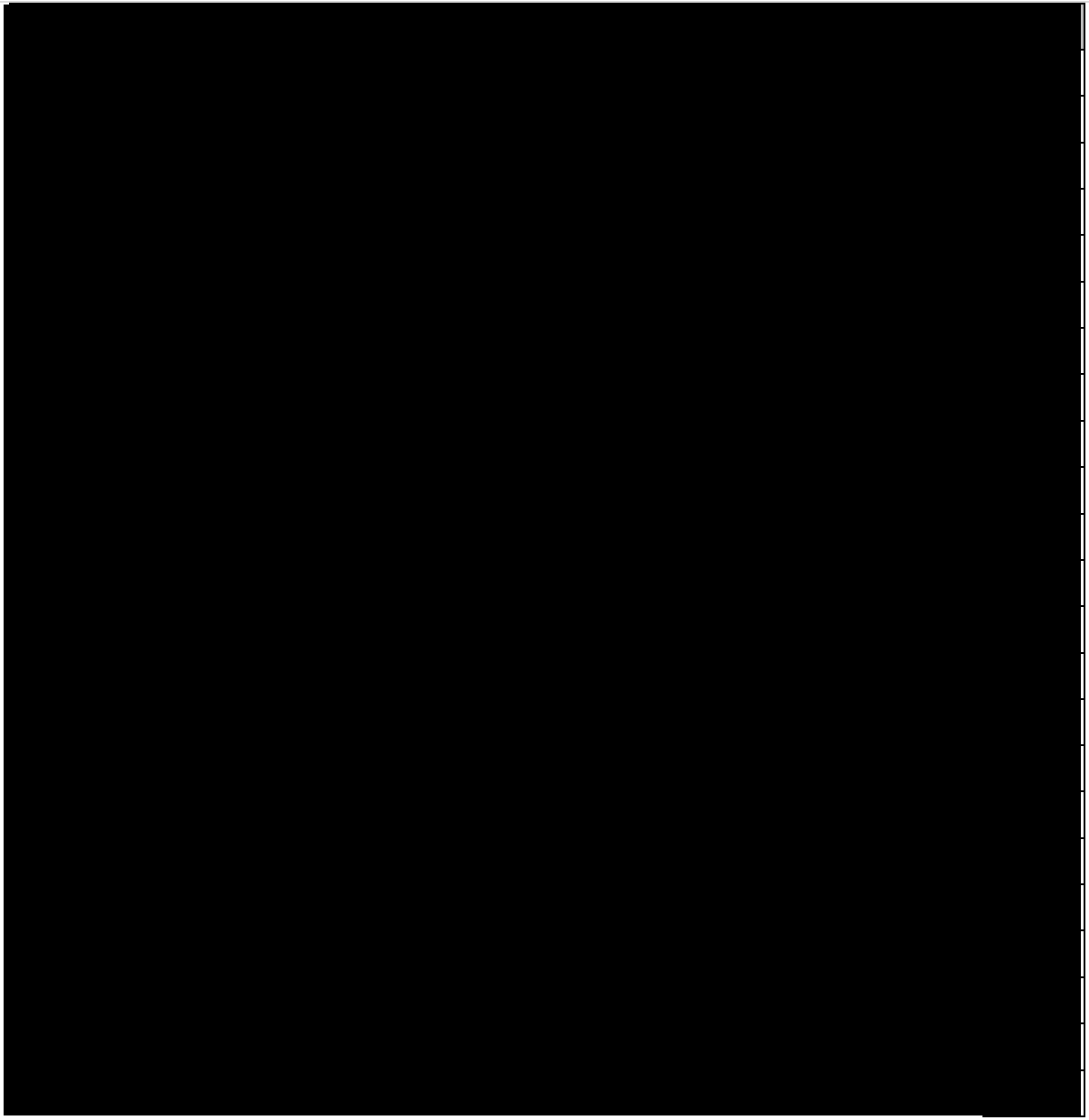








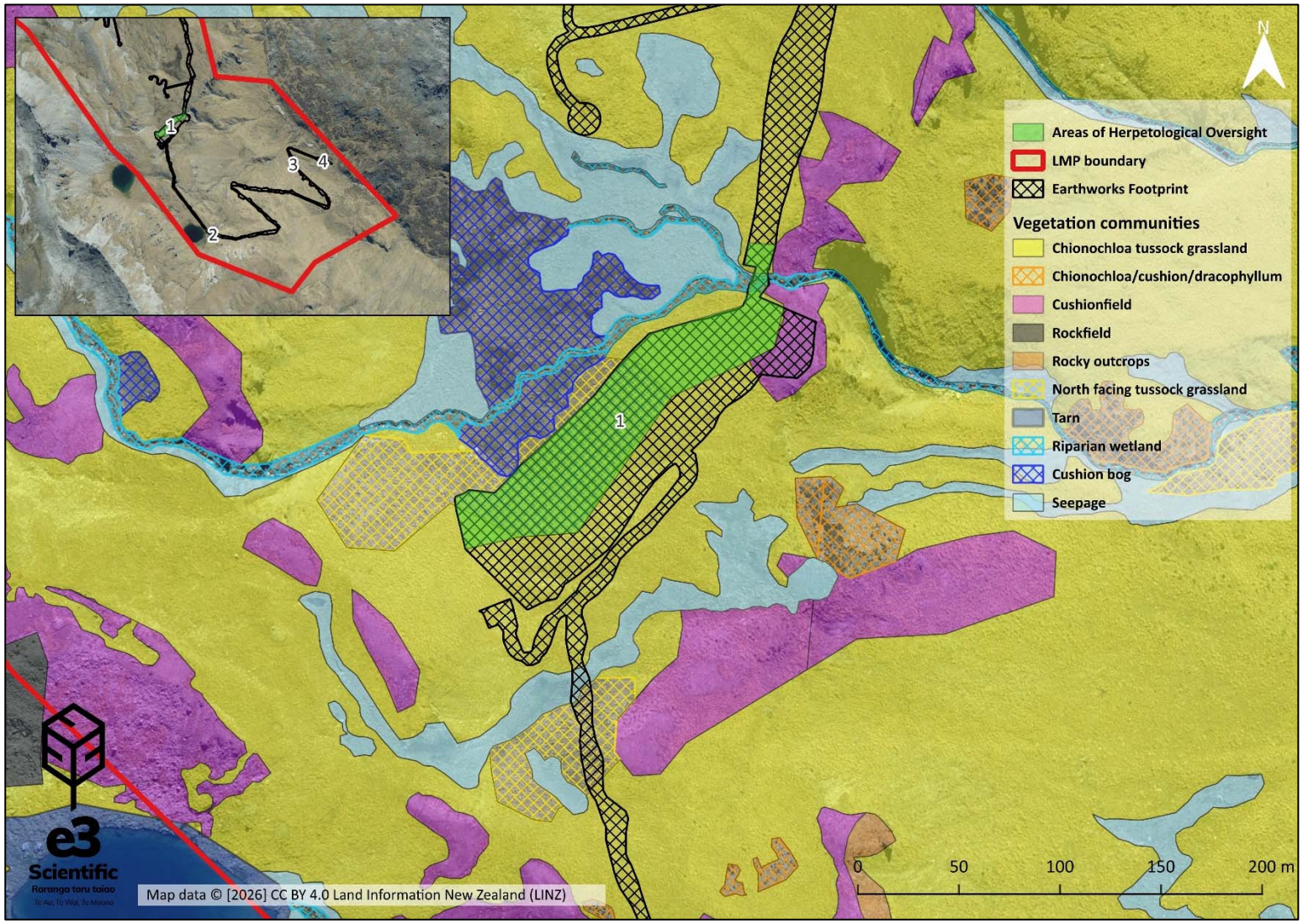




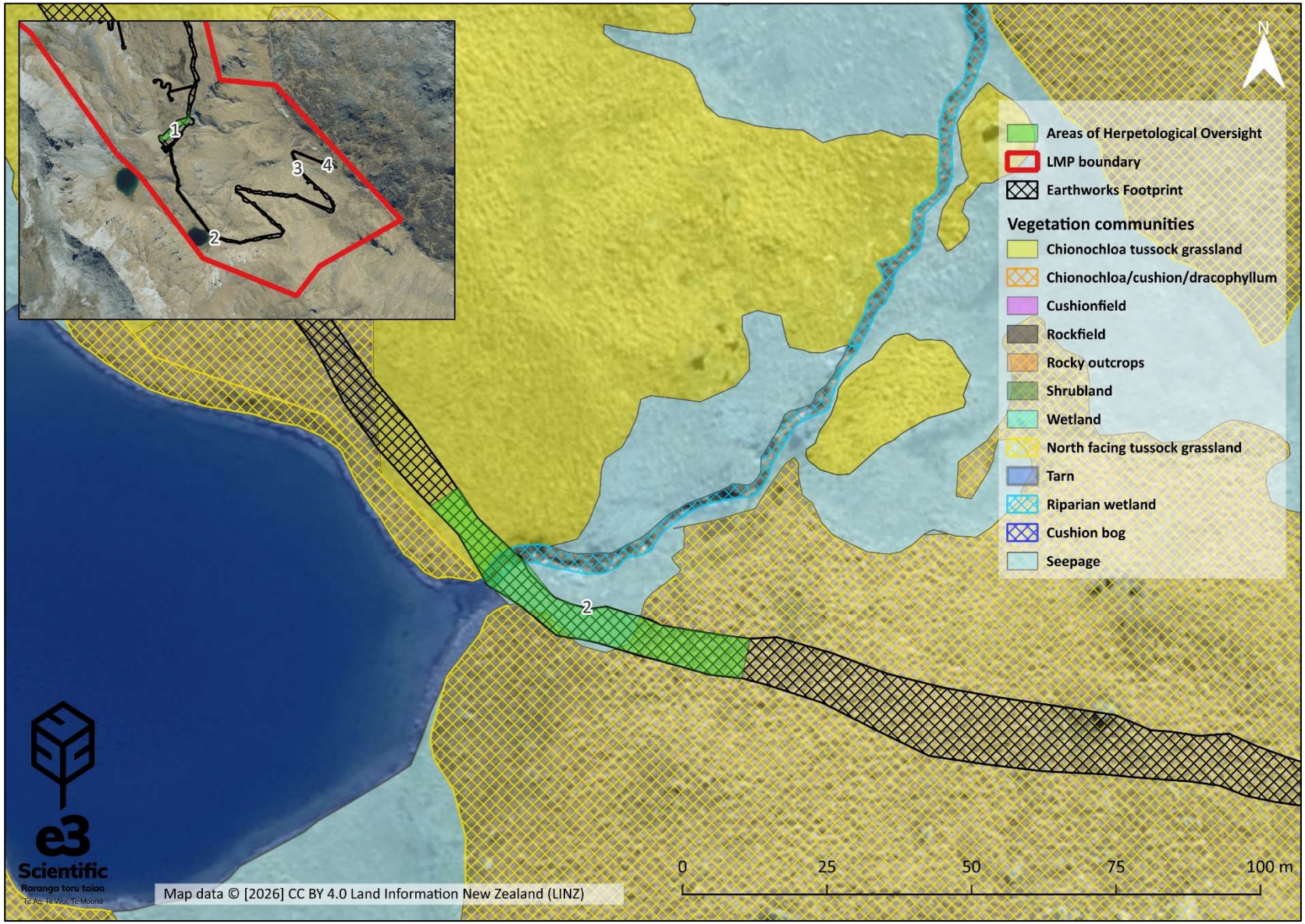


Appendix 7: Maps detailing locations 1 -4 where herpetological oversight is required during initial disturbance.

Map 1: Map detailing the location 1 (north facing tussock and riparian vegetation at base building) where herpetological oversight is required during initial disturbance.



Map 2: Map detailing the location 2 (riparian vegetation and north-facing tussock near Tarn 2) where herpetological oversight is required during initial disturbance.



Map 3: Map detailing locations 3 (wetland, tussock and dracophyllum) and 4 (rockfield and tussock) near Doolans Creek where herpetological oversight is required during initial disturbance.

