

Remarkables Ski Area Upgrade & Doolan Expansion – Car Park and Bus Hub Ecological Impact Assessment

Prepared for NZSki Limited
May 2026

Version 1



Contact Details

Document Details:

Date: May 2026
Reference: NZSki01
Report No: Version 1
Status: FINAL

Prepared by:

Reviewed by:

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1. Introduction

1.1. Background

NZSki Limited (NZSki) proposing to expand the existing Remarkables Ski Area into the adjacent Doolans Basin. The Remarkables Ski Area upgrades and Doolans Expansion Project is listed in Schedule 2 of the Fast track Approvals Act 2024.

In association with the Project, NZSki is proposing to establish a new car park (Car Park B) at the lower end of the Remarkables Ski Field Access Road. The location of the car park is indicated on Figure 1.



Figure 1: Location Plan

NZSki is also proposing to reconfigure an existing car park (Car Park A) and an existing storage yard (the Boneyard Car Park) for car parking purposes. As these areas comprise of existing highly modified environments and lack any naturalised indigenous vegetation, they have not been considered further within this terrestrial ecology assessment.

The area to be ultimately developed as a car park is herein defined in this assessment as the site.

1.2. Scope of Ecological Impact Assessment

The assessment covers the following items:

- the ecological setting of the site;
- present day vegetation communities and habitats;
- indigenous fauna;
- ecological values and significance;
- ecological effects of the proposed works; and,
- measures to avoid, minimise and remediate adverse ecological effects.

Code of Conduct

The author of this report is Simon Beale. I am a terrestrial ecologist with over 30 years' experience. I am a Certified Environmental Practitioner and a member of EIANZ, the NZ Ecological Society, the NZ Plant Conservation Network and NZPI.

I confirm that I 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 I state otherwise, this report is within my area of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this report.

2. Description of Activity

2.1. Location

The location of the site relative to the existing car park is outlined on Figure 2-1. The site is located between 350 to 380 m a.s.l on a hillslope with a moderate gradient and a westerly to north-westerly aspect. It encompasses an area of approximately 3 ha.



Figure 2-1: Satellite image of the site as outlined.

2.2. Vegetation Clearance

At the outset of the works, the site will be cleared of vegetation comprising areas of grey shrubland dominated by matagouri, trees and shrubs of hawthorn, broom, sycamore, elderberry and sweet briar and exotic grasses and forbs. Further details on the affected vegetation communities is provided in Section 6.

Delineation of the areas of grey shrubland during the site survey as described in Section 3.2 indicates that approximately 5,000 m² of shrubland will be removed during site clearance.

2.3. Remedial Plantings

To address the loss of indigenous grey shrubland vegetation from the site NZSki propose to plant an adjacent area of land covering approximately 6,000 m² as outlined on Figure 2-2 with a diverse assemblage of species that occur naturally in less modified areas of grey shrubland in the Remarkables Ecological District.

The plantings will comprise matagouri (*Discaria toumatou*), mingimingi (*Coprosma propinqua*), porcupine shrub (*Melicytus alpinus*) and desert broom (*Carmichaelia petriei*) that occur in the site along with lancewood (*Pseudopanax crassifolius*), kāpuka (*Griselinia littoralis*), *Olearia lineata*, *Olearia odorata*, *Olearia avicennifolia*, *Coprosma dumosa*, *Coprosma crassifolia*, weeping mapou (*Myrsine divaricata*), mountain cottonwood (*Ozothamnus vauvilliersii*) and koromiko (*Veronica salicifolia*).



Figure 2-2: Remedial planting area, outlined in green.

3. Assessment Methodology

3.1. Desktop Assessments

A desktop assessment of aerial and satellite imagery was conducted to identify the broad vegetation communities and patterns, and habitats in the site.

A desktop assessment of potential lizard presence within the site and surrounding area was completed by herpetologist Carey Knox of Southern Scales, based on interrogation of DoC's Bioweb herpetofauna database, iNaturalist NZ records, expert observations, field guides, site maps and site photographs. The assessment is provided as Appendix 1 and summarised in Section 8.2. It forms part of the evaluation of ecological values inherent to the site and ecological effects of the proposed works.

3.2. Field Assessments

Walk-over site surveys were conducted across the site on 13 and 17 April 2026. These inspections served to inform the initial desktop assessment of the vegetation patterns and to record plant species

focussing on any species ranked as Nationally Threatened or At Risk or considered distinctive ecological features. A plant species list was compiled and is provided as Appendix 2.

Areas of grey shrubland that occur amongst the prevailing cover of exotic woody weeds were delineated using a hand held GPS and subsequently mapped to approximate their collective area in the site.

Incidental observations of native birds seen or heard during the walk over surveys were recorded. These are listed in Section 8.1.

3.3. Impact Assessment

The Environmental Institute of Australia and New Zealand Guidelines (EIANZ guidelines) have been used as the framework to assess the ecological values of the affected indigenous vegetation and habitats of indigenous fauna and to assess both the magnitude of ecological effect and level of ecological effect of the proposed works.

3.3.1. Ecological Values

The EIANZ guidelines employ four assessment matters in assigning ecological value to ecological features, e.g. indigenous vegetation, indigenous flora and fauna and their habitats as set out in Table 3-1 as well as enabling an overall value of the area of concern to be derived using the criteria set out in Table 3-2.

Table 3-1: Attributes to be considered when assigning ecological value of a vegetation community and habitat.

EIANZ Assessment Matters	Attributes
Representativeness	<p>Criteria for representative vegetation and aquatic habitats:</p> <ul style="list-style-type: none"> • Typical structure and composition • Indigenous species dominate • Expected species and tiers are present • Thresholds may need to be lowered where all examples of a type are strongly modified <p>Criteria for representative species and species assemblages:</p> <ul style="list-style-type: none"> • Species assemblages that are typical of the habitat • Indigenous species that occur in most of the guilds expected for the habitat type.
Rarity/ distinctiveness	<p>Criteria for rare/distinctive vegetation and habitats:</p> <ul style="list-style-type: none"> • Naturally uncommon, or induced scarcity • Amount of habitat or vegetation remaining • Distinctive ecological features • National priority for protection <p>Criteria for rare/distinctive species or species assemblages:</p> <ul style="list-style-type: none"> • Habitat supporting Nationally Threatened or At Risk species¹, or locally uncommon species • Regional or national distribution limits of species or communities • Unusual species or assemblages • Endemism

¹ Habitat supporting species classified as Threatened, At Risk-Declining as set out under the Rarity/Distinctiveness assessment matter convey very high to high scores respectively.

Diversity and Pattern	<ul style="list-style-type: none"> • Level of natural diversity, abundance and distribution • Biodiversity reflecting underlying diversity • Biogeographical considerations – pattern, complexity • Temporal considerations, considerations of lifecycles, daily or seasonal cycles of habitat availability and utilisation
Ecological Context	<ul style="list-style-type: none"> • Site history, and local environmental conditions which have influenced the development of habitats and communities • The essential characteristics that determine an ecosystem’s integrity, form, functioning, and resilience (from “intrinsic value” as defined in RMA) • Size, shape • Buffering function • Condition and sensitivity to change • Contribution of the site to ecological networks, linkages, pathways and the protection and exchange of genetic material • Species role in ecosystem functioning – high level, key species identification, habitat as proxy • Is important for indigenous fauna during some part of their life cycle.

Table 3-2: Criteria for assigning ecological value to vegetation communities and habitats.

Value	Description
Very high	Area rates High for 3 or all the four assessment matters. Likely to be nationally important and recognised as such
High	Area rates High for 2 of the assessment matters. Moderate and Low for the remainder, or Area rates High for 1 of the assessment matters. Moderate for the remainder. Likely to be regionally important and recognised as such.
Moderate	Area rates High for one assessment matter. Moderate and Low for the remainder, or Area rates Moderate for 2 or more assessment matters. Low to Very Low for the remainder. Likely to be important at the level of the Ecological District.
Low	Area rates Low or Very Low for majority of assessment matters and Moderate for one. Limited ecological value other than as local habitat for tolerant native species.
Negligible	Area rates Very Low for 3 matters and Moderate. Low or Very Low for remainder.

The EIANZ guidelines align closely with Appendix 1 of the National Policy Statement – Indigenous Biodiversity (NPS-IB), both sharing the same four assessment matters.

3.3.2. Ecological Effects

Magnitude of Ecological Effects

The ranking of the magnitude of effects on each ecological feature under the EIANZ Guidelines requires consideration of:

- The scale of habitat loss relative to the size of the available resource,

- The duration of the effect,
- The likely population-level impact for relevant species, and
- The degree to which the proposed works may affect the integrity of habitats and associated species.

The magnitude of effect is scored using the categories Negligible, Low, Moderate, High, or Very High, as outlined in Table 3-3. In some instances, a positive magnitude of effect may also be assigned where the activity is expected to result in a measurable ecological gain.

Table 3-3: Criteria for describing the magnitude of effects (EIANZ, 2018).

Magnitude	Description
Very high	Total loss of, or very major alteration to, key elements/features of the existing baseline conditions, such that the post-development character, composition and/or attributes will be fundamentally change and may be lost from the site altogether; AND/OR Loss of a very high proportion of the known population or range of the element/feature.
High	Major loss or major alteration to key elements/features of the existing baseline conditions such that the post-development character, composition and/or attributes will be fundamentally changed; AND/OR Loss of a high proportion of the known population or range of the element/feature.
Moderate	Loss or alteration to key elements/features of the existing baseline conditions such that the post-development character, composition and/or attributes will be partially changed; AND/OR Loss of a moderate proportion of the known population or range of the element/feature.
Low	Minor shift away from existing baseline conditions. Change arising from the loss/alteration will be discernible, but underlying character, composition and/or attributes of the existing baseline condition will be similar to pre-development circumstances or patterns; AND/OR having a minor effect on the known population or range of the element/feature.
Negligible	Very slight change from the existing baseline condition. Change barely distinguishable, approximating to the 'no change' situation; AND/OR having negligible effect on the known population.

Level of Ecological Effects

The final step in the effects assessment is to determine the level of ecological effect using the matrix provided in the EIANZ guidelines (Table 3-4). This matrix combines the ecological value of each feature with the magnitude of effect to generate an overall level of effect.

Levels of effect are scored from Very High to Net Gain. In accordance with the Guidelines, effects assessed as Moderate or greater warrant measures to avoid, remedy, or mitigate adverse impacts. Effects scored as Low or Very Low are typically not of regulatory concern, although care may still be required to minimise potential impacts through project design, construction practices, or operational controls.

Table 3-4: Criteria for describing the level of effects (EIANZ, 2018).

Ecological Value	Very High	High	Moderate	Low	Negligible
Magnitude					
Very High	Very High	Very High	High	Moderate	Low
High	Very High	Very High	Moderate	Low	Very Low

Moderate	High	High	Moderate	Low	Very Low
Low	Moderate	Low	Low	Very Low	Very Low
Negligible	Low	Very Low	Very Low	Very Low	Very Low
Positive	Net Gain	Net Gain	Net Gain	Net Gain	Net Gain

4. Ecological Setting

4.1. Overview

The site is located within the Remarkables Ecological District and Central Otago Ecological Region. Aspects of the Remarkables Ecological District as described by McEwen (1987) that typify the site and surrounding area are:

“...in rain shadow of Main Divide; mainly stony steepland soils, ...with deeper loess derived soils on easier slopes; ...scrub, fernland, tussockland...”

4.2. Land Environments

Land Environments of New Zealand (LENZ) classification is commonly used in ecological assessments to detail a project’s ecological setting. LENZ groups together land environments throughout the country with similar environmental characteristics such as climate, landform, geology and soils as these influence the distribution of indigenous vegetation and habitat types. The LENZ classification is hierarchical in scale, from the high Level 1 classification to the most detailed Level IV classification.

The site lies within LENZ² Level IV Environment N5.1c. The landform of this land environment is described as very gently undulating plains with imperfectly drained soils, of moderate fertility derived from a mixture of colluvium and loess from schist.

An analogous Threatened Environments Classification 2012 (TEC) was developed by Landcare Research (Walker et al., 2007) to help identify places in New Zealand in which the terrestrial indigenous ecosystems, vegetation types and habitats are much reduced and poorly protected nationally. Examination of the TEC with respect to the LENZ Level IV Environments that apply to the site indicates that the indigenous vegetation remaining nationally in land environment N5.1c is 2.7%. This land environment is classified as a category 1 or acutely threatened land environment reflecting the very small extent of indigenous vegetation remaining. The threat status of the land environment where the site is located elevates the ecological value of the indigenous vegetation that remains.

4.3. Climate

GrowOtago maps indicate the site experiences a median rainfall between 700 – 750 mm per annum and median annual temperatures ranging between 9.1 to 10.0 °C. The LENZ technical guide records Land Environment N5.1c as receiving moderate solar radiation and having high annual water deficits (Landcare, 2002).

5. Historic Vegetation

Analysis of historic aerial photography from 1964 indicates the area and surrounding countryside was covered in exotic grassland with woody vegetation limited to scattered shrubs of matagouri and sweet briar.

² LENZ is a national environment-based classification of ecosystems mapped across New Zealand’s landscape based on fifteen climate, landform and soil parameters (Leathwick et al., 2002).

6. Current Vegetation

6.1. Overview

The vegetation communities and associated habitats encountered within the site are:

- Mixed hawthorn-broom-sweet briar-matagouri scrub;
- Exotic grassland.

No wetlands or perennial or ephemeral streams occur in the site.

6.2. Mixed matagouri-hawthorn-broom-sweet briar-matagouri scrub

This vegetation community is dominated by hawthorn and broom while sweet briar and matagouri are more localised in distribution. Sycamore trees are locally abundant on the elevated parts of the site in the vicinity of the southern boundary along with the occasional elderberry tree.

The more extensive areas of matagouri occur mostly in the southern half of the site as shown on Figure 2-2. Elsewhere matagouri tends to occur as small stands amongst a prevailing cover of hawthorn, broom and sweet briar. Shrubs of mingimingi occur in small stands.

Both matagouri and mingimingi are of a variable age with the canopies of mature specimens reaching 4 m in height. No seedlings or saplings of matagouri or mingimingi were observed owing to presence of rabbits and deer as observed during the site inspections. A small number of porcupine shrub (*Melicactus alpinus*) and desert broom (*Carmichealia petriei*) occur as scattered plants around the scrub margins.

Vines of pohuehue (*Muehlenbeckia australis*) festoon a large number of the trees and shrubs across the site. The native bush lawyer *Rubus schmidelioides* var. *subpauperatus* was recorded at one locality near the access road.



Figure 6-1: Westward view in direction of Peninsula Hill from top of site showing scattered sycamore trees and dense broom and hawthorn growth bordered by tall swards of cocksfoot



Figure 6-2: Mature mingimingi shrub in centre of photograph surrounded by hawthorn shrubs. Numerous fronds of male fern (*Dryopteris filix-mas*) are evident in the foreground.



Figure 6-3: Stand of mature and sub-mature matagouri shrubs within a grassland understorey.



Figure 6-4: Vines of pōhuehue (*Muehlenbeckia australis*) enveloping part of the canopy of a matagouri shrub.

6.3. Exotic Grassland

Exotic grassland is present throughout the site covering the roadside margins and glades bordered by scrub.

The dominant grassland species are cocksfoot (*Dactylis glomerata*), browntop (*Agrostis capillaris*), and sweet vernal (*Anthoxanthum odoratum*). These species generally occur together as tall swards. Other less common grass species include Chewings fescue (*Festuca rubra*) and ryegrass (*Lolium perenne*). Some of the more common forbs occurring in the grassland and margins are St John's wort (*Hypericum perforatum*), hawksbeard (*Crepis capillaris*), prickly sow thistle (*Sonchus asper*) and yarrow (*Achillea millefolium*).

7. Flora

56 plant species were recorded in the site, comprising 6 indigenous species and 50 exotic species. A list of the recorded plant species is provided in Appendix 2.

The recorded indigenous plant species, matagouri, mingimingi, porcupine shrub, bush lawyer, pōhuehue and prickly shield fern are classified as Not Threatened while desert broom is classified as At Risk-Declining (de Lange et al, 2023).

8. Fauna

8.1. Avifauna

During the site walk overs the introduced Californian quail was commonly observed and to a lesser degree the introduced blackbird, song thrush, starling, dunnock, goldfinch and chaffinch which were either observed or heard on an incidental basis.

The Australasian harrier was observed soaring over nearby farmland, but no other native birds were observed or heard in the site.

The survey records contained in the Atlas of Bird Distribution in New Zealand, 1999-2004 indicates that Eastern falcon (*Falco novaeseelandiae*), grey warbler (*Gerygone igata*), New Zealand fantail (*Rhipidura fuliginosa*) and silvereye (*Zosterops lateralis*) are present in the general area and may inhabit the site owing to the presence of suitable breeding, feeding and roosting habitat. The vegetation cover and presence of native and introduced birds provide suitable hunting opportunities for Eastern Falcon. Eastern Falcon is classified as Nationally Vulnerable and grey warbler, New Zealand fantail and silvereye are classified as Not Threatened (Robertson et al, 2021).

8.2. Herpetofauna

The desktop assessment by Southern Scales indicates that two indigenous lizard species are present on the lower slopes of the Remarkables. These are McCann's skink (*Oligosoma maccanni*) and mountain beech gecko (*Woodworthia* "south-western"). No other species are known within a 5 km radius of the site.

Southern Scales notes that mountain beech gecko is sparse and found only in rocky habitat while McCann's skink are widespread.

Southern Scales considers the site to be unsuitable for mountain beech gecko as it is heavily wooded and has little rocky ground. McCann's skink are considered by Southern Scales to be present in the site but in low numbers.

8.3. Invertebrates

The site provides a range of habitats for terrestrial invertebrates. These include arboreal and ground dwelling invertebrates such as weta (*Orthoptera*), beetles (*Coleoptera*), ants (*Formicidae*), spiders (*Araneae*), millipedes (*Diplopoda*), litter hoppers (*Amphipoda*) and slaters (*Porcellionidae*) many inhabiting leaf litter and decaying logs.

These in turn provide food sources for insectivorous birds such as grey warbler and fantail.

Patrick, 1994 notes the special features of New Zealand invertebrate fauna including the high rate of endemism, the adaption of many host plants to cold climates, and dominance of beetle, moths, flies and true bugs in terms of species numbers. While native invertebrates are generally found in relatively undisturbed natural plant communities, research conducted in Otago has highlighted the importance of semi-natural sites for the conservation of the characteristic invertebrate of an area. For example, indigenous shrubs and in particular *Coprosma* species are known to host a diverse assemblage of invertebrates (Derraik et al 2003).

9. Assessment of Ecological Values

The ecological value of indigenous vegetation and habitats of indigenous fauna occurring within the site has been assessed using the EIANZ Guideline assessment matters set out in Tables 3-1 and 3-2. The ranking of each assessment matter specific to the site with supporting commentaries is set out in Table 9-1.

Table 9-1: Ecological value assessment of the site.

EIANZ Assessment Matters	Attribute Ranking
<p>Representativeness:</p> <p>Indigenous plant species comprising small leaved shrubs (e.g. matagouri), vines and ferns represent a minor component of the vegetation cover in the site. Species representative of grey shrubland are partially present.</p> <p>The site is dominated by woody exotic weed species and exotic grasses.</p>	Low
<p>Rarity/Distinctiveness</p> <p>The site is located in land environment N5.1c where nationally the indigenous vegetation cover remaining is 2.7%. The amount of indigenous vegetation remaining in this land environment elevates the importance of the indigenous vegetation in the site.</p> <p>The site provides habitat for desert broom which is an At Risk-Declining species.</p> <p>The stands of mature matagouri in the site are a distinctive ecological feature.</p>	Moderate
<p>Diversity and Pattern</p> <p>The level of biodiversity in the site is low.</p> <p>The exotic woody vegetation and indigenous shrubs however provide feeding and breeding habitat for small insectivorous native bird species. The plant cover provides suitable habitat for arboreal and ground dwelling invertebrates.</p>	Low
<p>Ecological Context</p> <p>Areas dominated by matagouri and other indigenous plant species are collectively small relative to the site area and are fragmented in distribution.</p> <p>The contribution of these areas to ecological corridors or linkages to other areas of grey shrubland in the general area is low.</p>	Low

Based on the rankings set out in Table 9-1 and the EIANZ criteria set out in Table 3-2, the overall ecological value of the indigenous vegetation and habitats of indigenous fauna in the site is assessed as **low**.

10. Assessment of Ecological Significance

The ecological significance of the affected indigenous vegetation and habitats of indigenous fauna encountered in the site has been assessed using the criteria set out in Appendix 1 of NPS-IB.

NPS – IB Assessment Criteria Attributes	Yes/No	Comments
<p>Representativeness:</p> <p>(a) indigenous vegetation that has ecological integrity that is typical of the character of the ecological district: (b) habitat that supports a typical suite of indigenous fauna that is characteristic of the habitat type in the ecological district and retains at least a moderate range of species expected for that habitat type in the ecological district.</p>	<p>No</p>	<p>The affected areas of indigenous grey shrubland comprises small leaved shrubs, vines and ferns and represent a minor component of the vegetation cover in the site. The shrublands lack ecological integrity due to the degree of fragmentation, herbivore browse and exotic weed competition. Species representative of grey shrublands are partially present compared to more expansive areas of grey shrubland that are a feature of the Remarkables Ecological District.</p>
<p>Rarity and Distinctiveness:</p> <p>(a) provides habitat for an indigenous species that is listed as Threatened or At Risk (declining) in the New Zealand Threat Classification System lists: (b) an indigenous vegetation type or an indigenous species that is uncommon within the region or ecological district: (c) an indigenous species or plant community at or near its natural distributional limit: (d) indigenous vegetation that has been reduced to less than 20 per cent of its pre-human extent in the ecological district, region, or land environment: (e) indigenous vegetation or habitat of indigenous fauna occurring on naturally uncommon ecosystems: (f) the type locality of an indigenous species: (g) the presence of a distinctive assemblage or community of indigenous species:</p>	<p>Yes</p>	<p>The site provides habitat for a small number of scattered desert broom plants which has a threat classification of At Risk-Declining. Desert broom does however occur in similar habitats throughout the Remarkables Ecological District.</p> <p>The site likely provides feeding habitat for Eastern falcon which has a threat classification of Nationally vulnerable.</p> <p>The vegetation within the land environment where the site is located has been reduced to less than 20% of its pre-human extent.</p>

(h) the presence of a special ecological or scientific feature.		
<p>Diversity and Pattern:</p> <p>(a) at least a moderate diversity of indigenous species, vegetation, habitats of indigenous fauna or communities in the context of the ecological district:</p> <p>(b) presence of indigenous ecotones, complete or partial gradients or sequences.</p>	No	<p>The affected areas of indigenous vegetation and habitats of indigenous fauna are considered to be of a low diversity.</p> <p>Indigenous ecotones or sequences are absent.</p>
<p>Ecological Context:</p> <p>(a) at least moderate size and a compact shape, in the context of the relevant ecological district:</p> <p>(b) well-buffered relative to remaining habitats in the relevant ecological district:</p> <p>(c) provides an important full or partial buffer to, or link between, one or more important habitats of indigenous fauna or significant natural areas:</p> <p>(d) important for the natural functioning of an ecosystem relative to remaining habitats in the ecological district.</p>	No	<p>Areas dominated by matagouri and other indigenous plant species are small in area and fragmented compared to other areas of grey shrubland in the Remarkables Ecological District.</p> <p>These areas do not provide important ecological corridors or linkages to other areas of grey shrubland in the general area.</p>

The application of the NPS-IB assessment criteria shows that the indigenous vegetation and habitats of indigenous fauna in the site are ecologically significant as the rarity and distinctiveness criterion is triggered.

11. Assessment of Ecological Effects

11.1. Indigenous Vegetation and Habitats of Indigenous Fauna

Clearance of the site as discussed in Section 2.2 will result in the removal of approximately 5,000 m² of grey shrubland.

The magnitude of ecological effect of permanently removing this vegetation is ranked initially as **high** in accordance with the EIANZ Guideline criteria (Table 3-3) but reducing to **low** as the proposed remedial plantings become established. The guideline criteria informing the high-ranking correlates to the extent of loss of indigenous vegetation and associated habitats in the site such that the post development character will be fundamentally changed. While the loss of this vegetation will be discernible at a local level it will have a negligible effect on the populations of those shrub species in the Remarkables Ecological District.

The level of ecological effect is ranked as **low** in accordance with the EIANZ matrix (Table 3-4) based on an assessed temporal high and an assessed low ranking assigned to the ecological value of the affected indigenous vegetation and habitats of indigenous fauna (Section 9).

11.2. Avifauna

The magnitude and level of ecological effect of vegetation clearance on indigenous avifauna is assessed as low due to a minor loss of habitat and displacement of a small resident population of native birds.

It is recommended that a suitably qualified ornithologist undertake a site survey in advance of the clearance works to determine whether any nests of grey warbler, New Zealand fantail and silvereye are present. Should any nests be detected, it is recommended the works are undertaken outside of the peak breeding season of these species (August to January) to avoid any potential nestling mortality. It is noted the site does not provide suitable breeding habitat for Eastern falcon.

11.3. Lizards

The small number of McCann's skink that Southern Scales consider are resident in the site will be salvaged and transferred to a suitable release site in accordance with an existing Lizard Management Plan, prepared by NZSki.

On the basis of these measures the magnitude and level of ecological effect of the works on lizards is scored as negligible in accordance with the EIANZ criteria (Tables 3-3 and 3-4).

11.4. Invertebrates

The magnitude and level of ecological effects of vegetation clearance on indigenous invertebrates is assessed as moderate owing particularly to the loss of mingimingi shrubs that are a favoured habitat for invertebrate taxa.

12. Effects Management Hierarchy

This section sets out the measures that will be implemented by NZSki in managing the adverse effects of the proposed car park on indigenous vegetation and habitats of indigenous fauna as set out in the NPS – IB. The NPS requires that:

- (a) adverse effects are avoided where practicable; then
- (b) where adverse effects cannot be avoided, they are minimised where practicable; then
- (c) where adverse effects cannot be minimised, they are remedied where practicable; then
- (d) where more than minor residual adverse effects cannot be avoided, minimised, or remedied, biodiversity offsetting is provided where possible; then
- (e) where biodiversity offsetting of more than minor residual adverse effects is not possible, biodiversity compensation is provided; then
- (f) if biodiversity compensation is not appropriate, the activity itself is avoided.

A range of avoidance, minimisation and remediation measures is proposed by NZSki in accordance with the effects management hierarchy. These are outlined below.

12.1. Avoiding Adverse Effects

- The clearance works shall take place outside the peak bird breeding season (August to January) to avoid any potential mortality to nestlings of grey warbler, New Zealand fantail and silvereye.

12.2. Minimise Adverse Effects

- Implementing site controls that require all works to take place within clearly defined boundaries.

12.3. Remedy Adverse Effects

- Actively revegetate an area of land (6,000 m²) adjacent to the site as proposed by NZSki (Section 2.3) to create an area of grey shrubland of high diversity.
- Achieve a 80% plant survival rate in the revegetation area by Year 3.

- Achieve a measurable increase in indigenous vegetation cover and stature in the revegetation area on an annual basis, based on annual monitoring conducted over a period of three years.
- Removal of invasive exotic weeds from the revegetation site prior to planting.

Details on plant spacing and grade, growing medium, site preparation, species numbers, aftercare management, monitoring and reporting will be documented in a rehabilitation plan to be prepared in advance of the works.

12.4. Effects Summary

The avoidance, minimisation and remediation measures proposed by NZSki involving active revegetation and aftercare management of an adjacent area of land including ongoing weed control will result in a residual adverse effect that is less than minor.

Biodiversity offsetting or biodiversity compensation is therefore not required as part of the effects management hierarchy.

13. Monitoring

The revegetation site will be monitored on an annual basis for a period of three years to ensure that the 80% survival rate is achieved over this period and to record growth rates.

The site shall be inspected annually for a period of three years to detect the presence of any problem weeds. All necessary steps will be undertaken to eradicate these weeds.

14. Conclusions

The site contains small areas of indigenous grey shrubland that will be removed during development of the site for a car park.

56 plant species were recorded in the site, comprising 6 native and 50 exotic species. One native species desert broom has a threat classification of At Risk-Declining. The remaining species are classified as Not Threatened.

No wetlands and no perennial, intermittent or ephemeral streams occur in the site.

The ecological value of the affected vegetation and habitats they support is scored as low in accordance with the criteria set out in the EIANZ Guidelines.

The site is ecologically significant in terms of the assessment criteria set out under Appendix 1 of the NPS-IB owing to the rarity/distinctiveness criterion being triggered.

NZSki propose to remedy the loss of this vegetation through planting of an adjacent area of land with a diverse suite of indigenous shrubs local to the Remarkables Ecological District.

The magnitude of ecological effect of the proposed works has been assessed initially as high in accordance with the EIANZ criteria but reducing to low as the remedial plantings become established. The overall level of ecological effect (ecological value x magnitude of effect) of the proposed works is assessed as low in accordance with the EIANZ criteria.

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Appendix 1 – Lizard Desktop Assessment

15 April 2026

To: Simon Beale (Beale Consultants)

Please find below an assessment of lizard species (or potential lizard species) present at the bottom of the Remarkables ski field access road, Otago.

Methods

A desktop assessment of indigenous lizard (gecko and skink) values present in the vicinity of the Remarkables ski field access road, was undertaken. This involved evaluation of previous records in the area from iNaturalist NZ and the Department of Conservation's Bioweb herpetofauna database, expert observations from the area (including my own), and a consideration of the habitat present and its suitability for relevant lizard species. Google Earth imagery, field guides, site maps, and site photographs of the habitats present on site also aided in this assessment.

Results

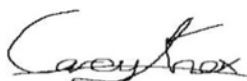
The desktop assessment for indigenous lizards (along with my own personal observations from lizard surveys that I have undertaken in the area) indicate that only two species of lizard are present on the lower slopes of the Remarkables. These are McCann's skink (*Oligosoma maccanni*; Not Threatened¹) and mountain beech gecko (*Woodworthia* "south-western"; At Risk, Declining¹). Mountain beech gecko is sparse and is only found in rocky habitats; whereas McCann's skinks are widespread.

No other lizard species are known from within a 5 km radius of the site except for two species that are restricted to high elevations (800–1,800 metres ASL) in the Remarkables Range (*Woodworthia* "southern mini" and *Oligosoma* aff. *inconspicuum* "Central - Southern"). Unusually, southern grass skink (*Oligosoma chionochloescens*) have never been located in, or close to, Frankton or the Remarkables.

The site of concern for this assessment is heavily wooded and is structurally scrub dominated by hawthorn, matagouri, broom and sweet briar. Areas of rank grassland exist around the margins and across intervening glades. There is very little rocky ground. Due to the habitat in the area of concern being unsuitable for mountain beech gecko I believe only low numbers of McCann's skink are likely to be on this site.

Yours sincerely,

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¹ Hitchmough R., Barr B., Knox C., Lettink M., Monks J., Patterson G., Reardon J., van Winkel D., Mekan T. & Michel P. (2026): Conservation status of New Zealand reptiles. Department of Conservation - Te Papa Atawhai, Te Whanganui a Tara | Wellington.

Appendix 2 – Plant Species List

The following is a list of native and naturalised plants observed across the site during the course of the site visit. This list is by no means exhaustive and identifies the more common plants encountered on the site. Nomenclature for indigenous plants follows the New Zealand Plant Conservation Network, and Wilson (1993). Introduced or naturalised plants are indicated by *.



Trees, Shrubs

Matagouri	<i>Discaria toumatou</i>
Mingimingi	<i>Coprosma propinqua</i>
Porcupine shrub	<i>Melicytus alpinus</i>
Desert broom	<i>Carmichaelia petriei</i>
Rowan*	<i>Sorbus aucuparia</i>
Broom*	<i>Cytisus scoparius</i>
Sweet briar*	<i>Rosa rubiginosa</i>
Hawthorn*	<i>Crataegus monogyna</i>
Sycamore*	<i>Acer pseudoplatanus</i>
Elderberry*	<i>Sambucus nigra</i>
Gooseberry*	<i>Ribes uva-crispa</i>
Tree lupin*	<i>Lupinus arboreus</i>
Flowering currant*	<i>Ribes sanguineum</i>
Plum*	<i>Prunus sp.</i>
Cherry*	<i>Prunus sp.</i>
Apple*	<i>Malus sp.</i>
Douglas fir*	<i>Pseudotsuga menziesii</i>
Buddleia*	<i>Buddleja davidii</i>

Vines

Bush lawyer	<i>Rubus schmidelioides</i> var. <i>subpauperatus</i>
Pohuehue	<i>Muehlenbeckia australis</i>
Blackberry*	<i>Rubus fruticosus</i>

Forbs

Moth mullein*	<i>Verbascum virgatum</i>
Woolly mullein*	<i>Verbascum thapsus</i>
Hemlock*	<i>Conium maculatum</i>
Foxglove*	<i>Digitalis purpurea</i>
Purple-top*	<i>Verbena bonariensis</i>
Stinging nettle*	<i>Urtica urens</i>
Mouse ear* hawkweed	<i>Pilosella officinarum</i>
Horehound*	<i>Marrubium vulgare</i>
Californian stinkweed*	<i>Navarretia squarrosa</i>
Yarrow*	<i>Achillea millefolium</i>
St John's wort*	<i>Hypericum perforatum</i>
White clover*	<i>Trifolium repens</i>
Mouse ear chickweed*	<i>Cerastium glomeratum</i>
Oxtongue*	<i>Picris echioides</i>
Clevers*	<i>Galium aparine</i>
Catsear*	<i>Hypochaeris radicata</i>
Hawksbeard*	<i>Crepis capillaris</i>
Prickly sow thistle*	<i>Sonchus asper</i>
Californian thistle*	<i>Cirsium arvense</i>
Scotch thistle*	<i>Cirsium vulgare</i>
Prickly thistle*	<i>Lactuca serriola</i>
Harefoot trefoil*	<i>Trifolium arvense</i>
Catsear*	<i>Hypochaeris radicata</i>
Selfheal*	<i>Prunella vulgaris</i>

Grasses

Ripgut brome*
Vulpia hairgrass*
Cocksfoot*
Browntop*
Sweet vernal*
Ryegrass*
Chewings fescue*
Kentucky bluegrass*

Bromus diandrus
Vulpia myuros
Dactylis glomerata
Agrostis capillaris
Anthoxanthum odoratum
Lolium perenne
Festuca rubra
Poa pratensis

Ferns

Prickly shield fern
Male fern*

Polystichum vestitum
Dryopteris filix-mas

Mosses

Polytrichum sp.