2. ENVIRONMENTAL SETTING

2.1 OVERVIEW

This section outlines the key characteristics of the Remarkables Ski Area Upgrade and Doolans Expansion Project site, as well as the surrounding area.[4] It provides details of the:

- Site location and general characteristics, including relevant landownership;
- Existing relevant authorisations and approvals;
- Site zoning and planning framework;
- Cultural setting;
- Climate;
- Hydrology;
- Freshwater Ecology setting;
- Natural Character and Landscape setting;
- Geological setting;
- Archaeological and heritage features;
- Recreation and public access;
- Transportation network; and
- Existing infrastructure and servicing.

Together, these factors provide a thorough analysis of the environment, establish a baseline for assessing the Project's effects, and guide associated decision-making.

Technical assessments have been commissioned by NZSki to establish an understanding of the Site environment and the wider environment in which the Project sits. The following sections provide a concise summary of the existing physical and environmental characteristics identified in the technical assessments. For further details, refer to the corresponding technical report(s) provided in **Part B** of the application documents.

[4] As required by Schedule 5, clauses 5(b) and 5(d) of the FTAA.

2.2 SITE LOCATION AND GENERAL CHARACTERISTICS

The Site is located 24 km east of central Queenstown (refer to **Figure 1-1**) within the Kawarau / Remarkables mountain range of the Wakatipu Basin. Access to the Site is via State Highway 6 ("**SH6**") and the 13 km long Remarkables Ski Field Access Road.

Queenstown International Airport and the township of Frankton are located approximately 4 km north of the Site (as the crow flies). The rapidly urbanising residential suburbs of Hanley Farm, Jacks Point and the recently approved Homestead Bay are located approximately 5 km south of the Site. The Coneburn industrial precinct is located approximately 1 km south of the Site.

2.2.1 Existing Remarkables Ski Area

The Remarkables Ski Area and is located within the Rastus Burn catchment, to the north of geographically prominent Double and Single Cone peaks (2307m and 2319m in height respectively) and Lake Alta.

The Remarkables Ski Area offers approximately 449 hectares of skiable terrain, with access throughout the area provided by four chair lifts, four conveyor lifts and approximately 20 km of groomed and earthworked ski trails (**Figure 2-1**). Off-piste skiing is also available throughout the ski area, particularly around the Homeward Bound and Outward Bound trails.

The current occupancy of the Remarkables Ski Area is approximately 3,500 skiers per day. During the 2025 season, the ski area accommodated a total of 294,735 skier days. Local residents account for approximately 23% of all of the skier days, with visitors to the district comprising the remaining 77%.

While the Remarkables Ski Area is typically open for ski operations from mid-June through to mid-October each year, winter operation of the ski lifts is authorised to occur daily between 7am and 5pm from 1 May to 31 October. Summer operation and use of the ski lifts, although rarely utilised, is authorised to occur daily between 7am and 6:30pm from 1 November to 30 April.

Maintenance and upgrade activities associated with the ski area occur year-round.

Figure 2-1: Map of existing ski field with trails and lifts.

The main Remarkables Base Building is located at the bottom of the ski area and hosts food and beverage, ski rental and bathroom facilities. A range of support activities, including the on-site medical facilities, guest service facilities, NZSki administration and staff facilities, maintenance areas, utilities and car parks are also located in the general vicinity of the base area (**Figure 2-2**).

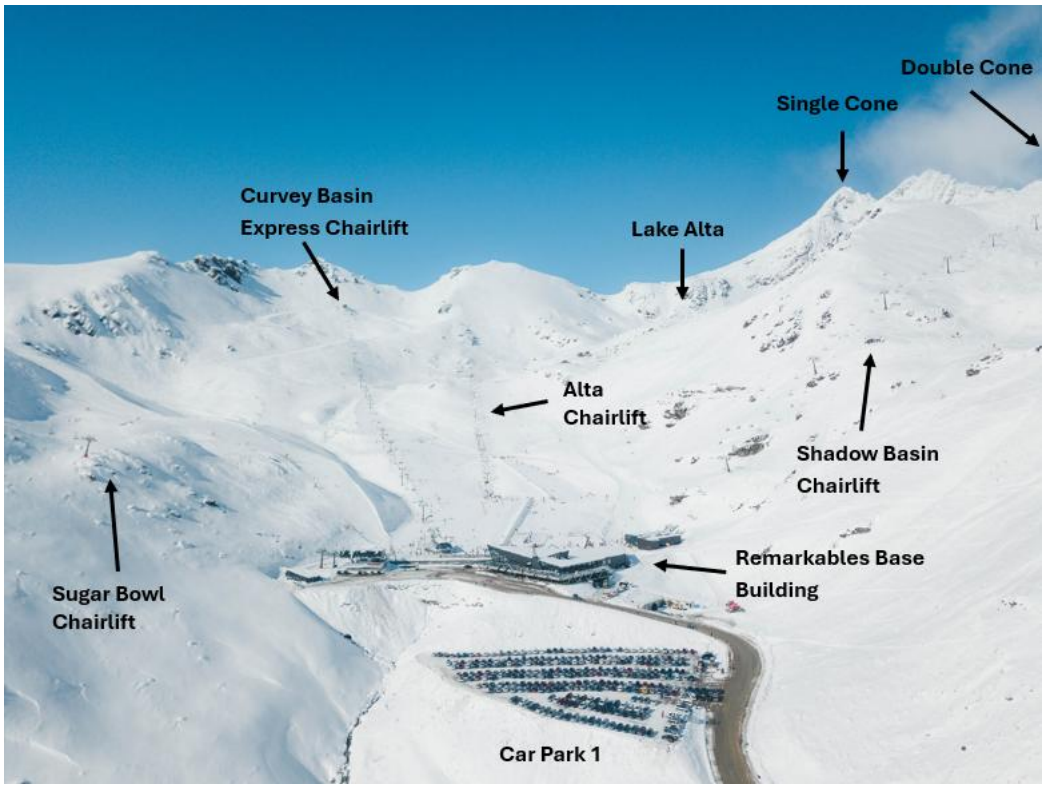

Figure 2-2: Overview of the Remarkables Ski Area.

The Remarkables Ski Area is located at the headwaters of the Rastus Burn catchment, at an elevation of approximately 1,600 m asl. Notable geological features resulting from glaciation and erosion include rock tors, areas of shingle, boulder fields, exposed ridges with gentle slopes, as well as complex hydrological patterns that interlink the terrain.

The area retains a high degree of natural character, set within the wider surroundings of a mountain cirque. The most prominent geological features include Double Cone, the highest peak in the wider Kawarau / Remarkables Range, and Lake Alta, a 14 hectare alpine tarn which forms the head of the Rastus Burn. The land cover is characterised by an altitudinal succession of tall tussock grassland, interspersed with alpine wetlands and cushion fields, culminating in rock fields.

2.2.2 Doolans Basin

The Doolans Basin is located adjacent to the existing ski area and to the immediate south east. The basin is south facing, with no modified terrain or artificial structures located in the upper basin (**Figure 2-3**).

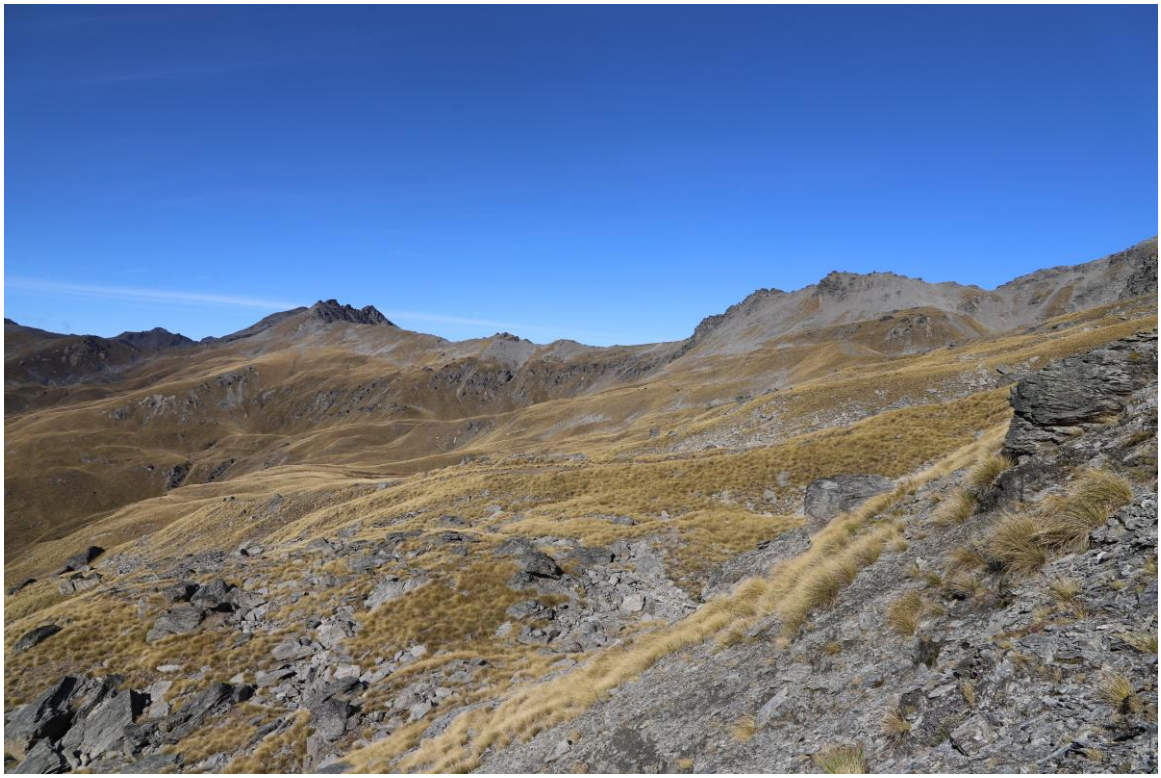

Figure 2-3: Doolans Basin, looking northwards.

Several alpine tarns, streams and wetlands traverse the basin, draining towards Doolans Creek. Vegetation within the basin varies from alpine tussock grasslands at higher elevations to subalpine shrublands at lower altitudes. This is addressed in further detail in **Section 2.9**.

The basin is encased in snow during winter and experiences hot, dry summers. Its waterways are predominantly fed by snowmelt.

Access to the Doolans Basin is currently available via foot or winter ski touring. The most commonly used routes include access via the Remarkables Ski Area (via the Curvey Basin or Sugar Bowl ski trail or chairlift routes) or via the Lake Alta area. Other access options include via Wye Creek or via the Coalpit Saddle or Gibbston Valley (**Figure 2-4**).

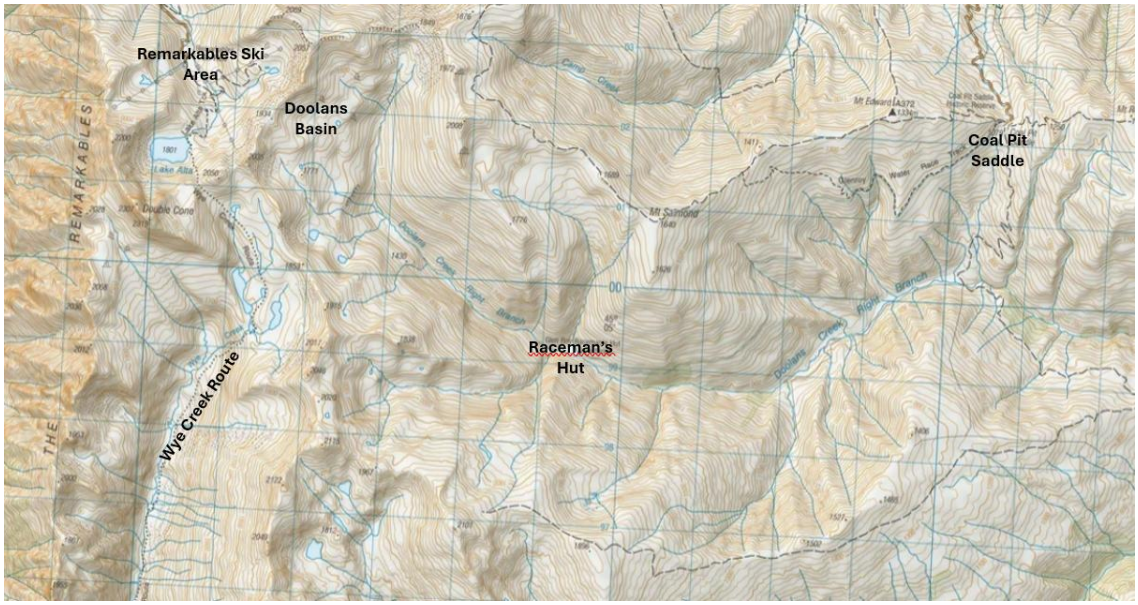

Figure 2-4: Doolans Basin Access Routes.

2.2.3 Lower Remarkables Transit Hub

The Lower Remarkables car park is located at the end of the Remarkables Ski Field Access Road, near the intersection with SH6 (**Figure 2-5**). The large, gravelled area is used during the winter as a car park, park and ride facility and shuttle pick up and drop off zone. During the summer, a toll gate operates, with visitors required to pay a small fee to access the Rastus Burn by vehicle from the Lower Remarkables car park.

Approximately 500 m along the Remarkables Ski Field Access Road is an area referred to as “the Boneyard”. The Boneyard is used by NZSki for temporary storage of equipment during the offseason, or during the winter season when space is at a premium in the Rastus Burn. The Boneyard is entirely closed by vegetation, with a locked gate located at its entrance.

Opposite the Boneyard is an area of mixed vegetation, including exotic grassland, hawthorn, broom, sweet briar and matagouri scrub. The undeveloped 4 hectare site is bound by the Remarkables Ski Field Access Road to the north, and the adjacent property boundary to the south. The site has a moderate west to north west aspect and is absent of any waterbodies.

Figure 2-5: Existing configuration of the Lower Remarkables Transit Hub.

Land Ownership

The Site is primarily owned by the Crown and administered by the DOC. The lower car park (including the proposed areas of new parking) and the access road is owned by NZSki.

Records of Title are provided in **Part I** of the application documents and are summarised in **Table 2-1** below. The relevant parcels are also identified in **Table 2-1**. For completeness, a list of all adjacent property owners and copies of the relevant Records of Title are also provided in **Part I** of the application documents.

Table 2-1: Land Ownership of Project Site.

Address	Owner	Title	Appellation
253 Remarkables Ski Field Access Road, Kawarau Falls, Queenstown	The Crown	OT8D/636	Section 1 SO 22561
-	The Crown	OT8D/636	Part 1 Section 1 Block X Kawarau SD
-	The Crown	OT8D/636	Section 2 SO 22561
-	The Crown	8279	Section 1 SO 24738
-	The Crown	OT81C/804	Section 8 SO 24742
-	The Crown	2529 3328	Section 12 SO 24636

Address	Owner	Title	Appellation
-	NZ Ski Limited	OT8C/1489	Lot 2 DP 17411
-	The Crown, Signature Investments Limited, Southern Alpine Recreation Limited	163502 183930 2454	Section 1 SO 24060

2.3 EXISTING AUTHORISATIONS AND APPROVALS

NZSki operates the Remarkables Ski Area under a number of existing authorisations issued under the RMA, the Reserves Act[5] and the Wildlife Act. These authorisations are summarised in the proceeding sections, with a copy of each authorisation attached in **Part D** of the application documents.

2.3.1 Existing Approvals from the Minister of Conservation (Reserves Act and Wildlife Act)

NZSki holds four concessions for its existing operations at the Remarkables Ski Area. Issued under the Reserves Act, the concessions include a combination of leases, licences and easements, as summarised in **Table 2-2**. The geographical extent of each concession is shown in **Figure 2-6** and **Figure 2-7**.

NZSki also holds a single Wildlife Permit which allows for the collection, capture, handling, release or (accidental) killing of McCann's and Pallid Skink within the Shadow Basin area.

Table 2-2: Summary of Existing Approvals issued by the Minister of Conservation held by NZSki at Remarkables Ski Area

Approval or Authorisation	Expiry Date	Summary
DOC Concessions/Leases/Easements		
96118-SKI	30/11/2063	Renewed on 19th December 2025, this concession comprises a combination of leases, licences and easements associated with the ongoing operation of the existing Remarkables Ski Area.

[5] However, these are authorised under the Conservation Act 1987.

Approval or Authorisation	Expiry Date	Summary
OT-34108-SKI	30/04/2043	A concession (lease) for the redevelopment of a car park and the associated access road alignment, culverting of the Rastus Burn and the redevelopment and expansion of the Learners Ski Area.
OT-34109-SKI	30/04/2043	A concession (easement) for the construction and operation of the Curvey Basin Chairlift, trails and associated snow making.
49957-SKI	30/04/2043	An easement for the installation of an underground pipe and intake structure (in Lake Alta) to take water from the lake into the Rastus Burn for the purpose of increasing flows for snowmaking.
Wildlife Permit		
112632-FAU	8/02/2027	Permits to collect, capture, handle, release or kill wildlife (McCann's Skink and Pallid Skink) at Shadow Basin.

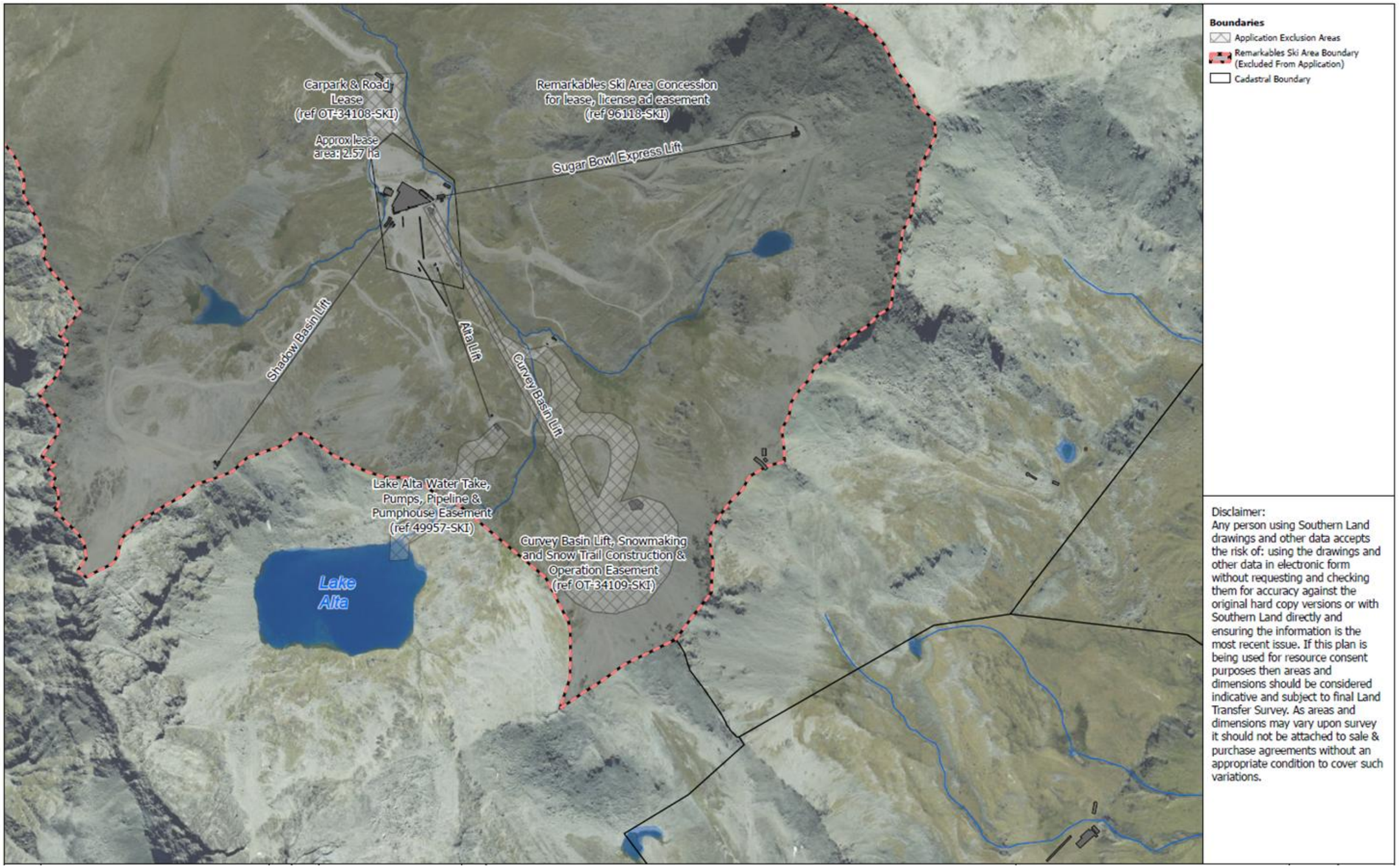

Figure 2-6: Geographical extent of NZSki's existing concessions

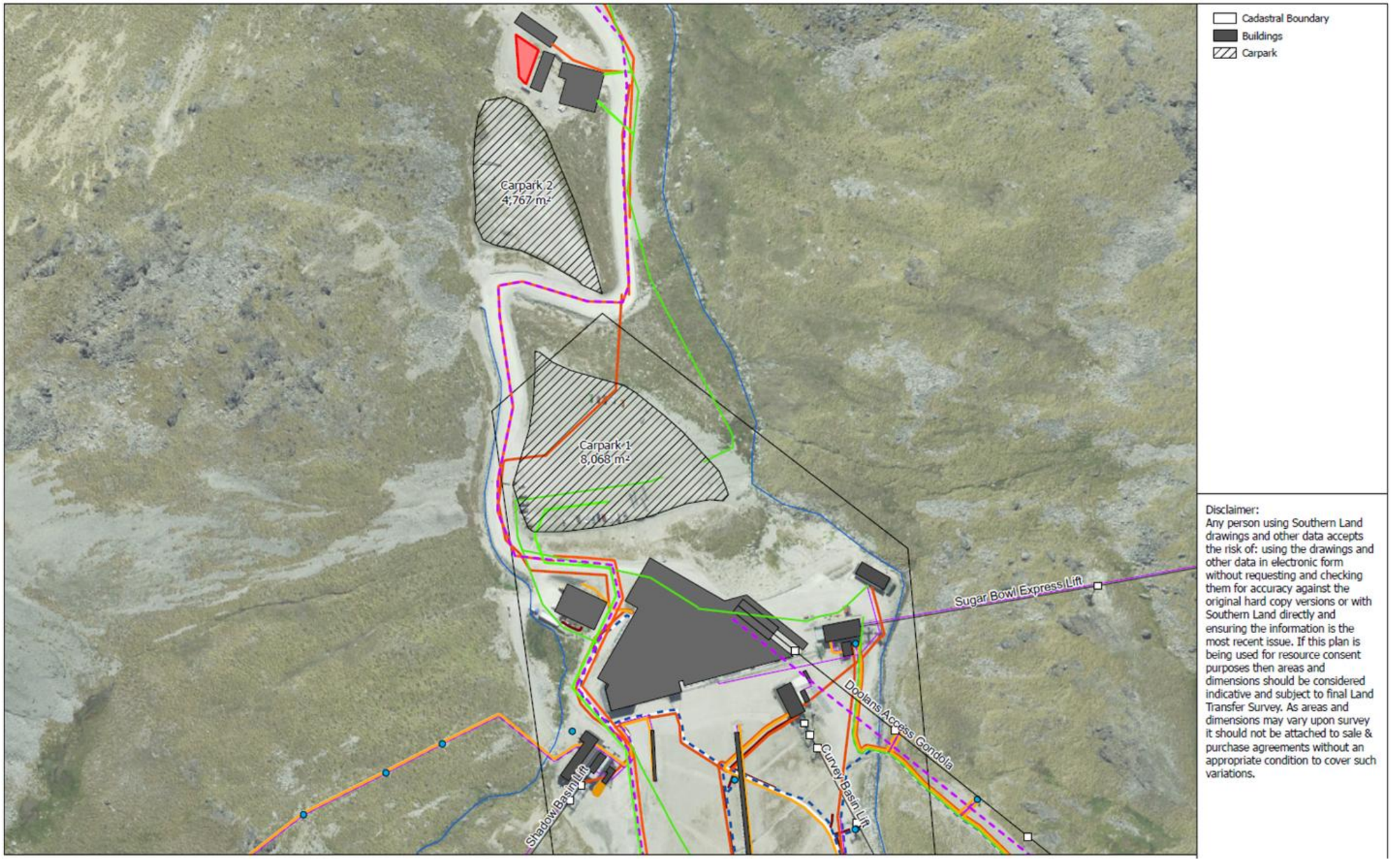

Figure 2-7: The Remarkables DOC Concession OT - 34108-SKI Revised Carparking Areas

2.3.2 Existing Regional Council Resource Consents

NZSki holds a number of existing regional consents and these are summarised in **Table 2-3.**

As the wastewater system within the Rastus Burn is proposed to be upgraded in association with the Project, a detailed description of the existing system and the consents is provided in **Section 2.16.**

Table 2-3: Existing Regional Council Consents.

Consent Number	Consent Type	Granted	Term	Summary
Regional Consents / Approvals				
RM15.055.02	Water Permit	31/3/2015	25/3/2050	Discharge permit to divert an ephemeral stream for the purpose of creating a car park at the Remarkables Ski Area.
RM14.336.01	Discharge Permit	16/4/2015	10/4/2030	Discharge permit to discharge treated wastewater to land for the purpose of disposal of treated wastewater and water supply bywash from the Remarkables Ski Area buildings.
RM14.336.02	Land Use Consent	16/4/2015	Unlimited	To construct three monitoring bores for the purpose of monitoring groundwater linked to the disposal of treated wastewater and water supply bywash from the Remarkables Ski Area.
RM25.376.01	Land Use Consent	23/10/2025	23/10/2028	To undertake earthworks within proximity to a natural inland wetland for the purpose of constructing specified infrastructure (Maintenance Building Redevelopment).
RM22.515.01	Land Use Consent	09/12/2022	09/12/2027	To disturb the bed of an unnamed stream, to install a temporary culvert and undertake earthworks and vegetation removal and reinstatement within 10 m of a natural wetland, for the

Consent Number	Consent Type	Granted	Term	Summary
				purpose of construction of a new chairlift at Shadow Basin.
RM22.515.02	Divert Water Permit	09/12/2022	09/12/2027	Temporary damming and diversion of a stream associated with the construction of a new chairlift at Shadow Basin.
RM14.105.01	Discharge to Air Permit	21/3/2014	20/5/2049	To discharge contaminants to air for the purpose of operating a generator and boiler.
RM11.368.03	Surface Water Take Permit	23/1/2013	23/1/2043	To take and use water as primary allocation from Lake Alta and the Rastus Burn for the purpose of snow making.
RM11.368.04	Surface Water Take Permit	23/1/2013	23/1/2043	To take and use water as supplementary allocation from Lake Alta and the Rastus Burn for the purpose of snow making.
RM16.115.01	Surface Water Take Permit	16/12/2016	16/12/2031	To take and use surface water from the Rastus Burn Stream for the purpose of a constant flow water supply to the Remarkables Ski field complex.

2.3.3 Existing District Council Resource Consent

A total of 23 land-use resource consents have been obtained from Queenstown Lakes District Council (**"QLDC"**) for the Remarkables Ski Field Area. The key relevant land-use consents for this Project (i.e. those that are being relied upon or are a core component of the ski area operations) are summarised in **Table 2-4**. These consents demonstrate the long-established incremental development of the ski field, which can be broadly categorised into the following activities:

> Construction or upgrade of ski-lift infrastructure;

> Ski-terrain development (trails and snow-making);

> Erection of ski-field buildings and facilities;

> Installation of utilities and servicing; and

> Provision of visitor amenities (vehicle access, car-parking and helicopter landings).

Table 2-4: Relevant Land-Use Consents at Remarkables Ski Area.

Consent Number	Date Granted	Summary
RM021053	29/11/2002	Upgrade of the Alta double chairlift to a quad chairlift.
RM130708	25/11/2013	Vegetation clearance to enable earthworks.
RM130754	20/12/2013	Construction of the new Curvey Basin ski lift, associated two (2) terminal buildings, the Alta Pump House, gabion basket retaining walls, and snow-making infrastructure.
RM1410139	17/4/2014	Construction of a new Base Building at Remarkables Ski Area and amendment of Curvey Basin chair lift terminal foundation details.
RM150112	26/03/2015	Creation of a new car park at Homeward Turnaround.
RM171331	15/03/2018	Construction of two surface escalators, earthworks, and vegetation within a wetland to extend the learners' area and realignment of access.
RM181311	28/6/2019	Replacement and realignment of the existing Sugar Basin passenger lift (constructed in 1986) system and formation of new ski trails.
RM230257	13/10/2023	Establishment of a replacement and realigned passenger lift system at Shadow Bain and associated buildings, and for earthworks and indigenous vegetation clearance associated with the formation of new ski trails.
RM250596	29 October 2025	Variation to Condition 1 of RM140139 (above) to enclose the deck area of the Remarkables base building.

2.4 SITE ZONING AND PLANNING FRAMEWORK

2.4.1 Site Zoning and Overlays

The Site lies within the regulatory boundaries of Otago Regional Council (**"ORC"**), QLDC and Central Otago District Council (**"CODC"**). Specifically, the existing Remarkables Ski Area is within the Queenstown Lakes District, and the Doolans Basin is within the Central Otago District. The Site comprises entirely of Conservation Land, except for the existing and proposed car park and lower access road, which is owned by NZSki (**Section 2.2.4** above).

2.4.1.1 Department of Conservation – Conservation Estate

The Site is located within the Rastus Burn Recreation Reserve and the Remarkables Conservation Area (**Figure 2-8**). These areas are managed under the Reserves and Conservation Acts respectively.

The purpose of a recreation reserve is to provide for recreation and sporting activities, the physical welfare and enjoyment of the public and the protection of the natural environment.[6]

A conservation area is managed so as to afford a level of protection to land with important natural and intrinsic values that are not otherwise protected. The Project area within the Doolans Basin represents less than 1% of the wider Remarkables Conservation Area.

The Remarkables Ski Field Access Road is a Government Purpose Reserve. This area has been gazetted[7] for the purposes of an access road.

[6] Section 17 of the Reserves Act 1977.

[7] New Zealand Gazette 2004 p 3011.

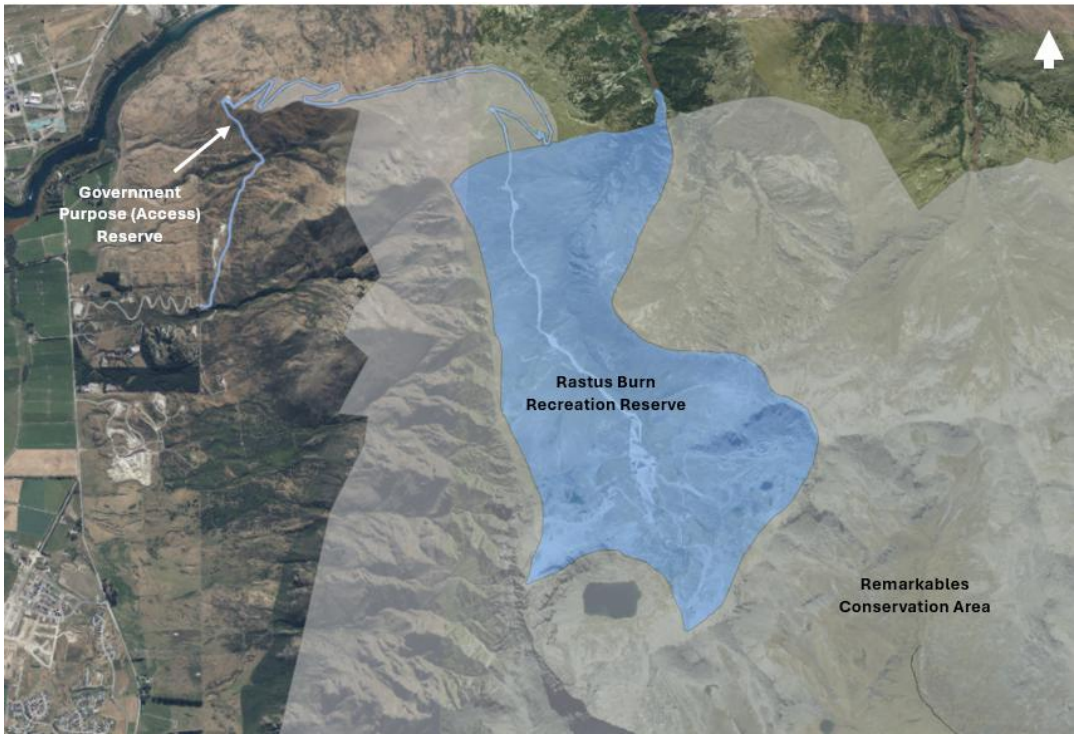

Figure 2-8: Conservation Areas.

The Otago Conservation Management Strategy (**"CMS"**) applies two different recreation classifications to the Site. The Remarkables Ski Area and the Rastus Burn Recreation Reserve are located within an area described as a front country visitor management zone. These areas are typically accessible for people of most ages and abilities and are located on the periphery of large natural areas. The Doolans Basin is located within a "back country visitor management zone", which typically requires further distances to be travelled to reach the area and often on foot.

2.4.1.2 Queenstown Lakes District Plan

QLDC has been undertaking a rolling review of the Queenstown Lakes Operative District Plan ("**Operative Plan**") since 2015. Over the past nine years, the Queenstown Lakes Proposed District Plan ("**Proposed Plan**") has been subject to multiple decisions and appeals. As the decisions are issued and appeals resolved, the Proposed Plan becomes operative, and the earlier 1995 Operative Plan provisions (and zones) cease to have legal effect.

Neither the zoning nor any overlays in the Proposed Plan relevant to the Project Area are subject to appeal and so the 1995 Operative Plan can be ignored. That said, a high level overview of the relevant provisions is set out below for context.

Operative Plan

Under the Operative Plan, the Remarkables Ski Field is located within the Ski Area Sub Zone of the wider Rural General Zone. The Ski Area Sub Zone provides for skifield development, within defined parameters. The Shadow Basin tarn is identified in the Operative Plan as an area of significant vegetation. This area is identified as comprising of a montane lake and flush, surrounded by steep slopes of snow tussock and herb fields. The area is also located within the Wakatipu Basin Outstanding Natural Landscape (**"ONL"**).

The Lower Remarkables Transit Facility is located within the Rural General Zone of the Operative Plan. No overlays or notations apply to this area.

The relevant zoning and overlays within the Operative Plan are shown in **Figure 2-9.**

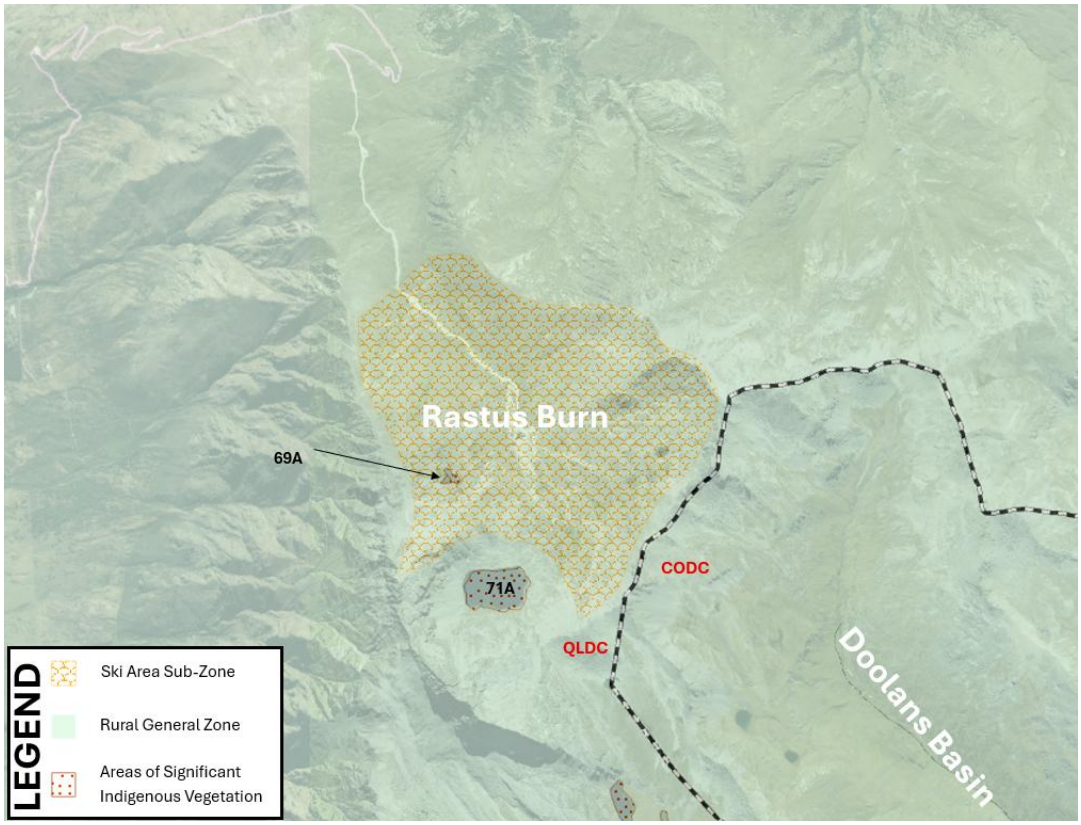

Figure 2-9: Operative Queenstown Lakes District Plan Zoning.

Proposed Plan

Under the Proposed Plan, the Remarkables Ski Area is located within the Ski Area Sub Zone of the Rural Zone. The purpose of the Ski Area Sub Zone is to enable the continued development of ski areas as year-round destinations for skiing, tourism and recreation

activities. Ski Area Activities[8] are permitted within the zone 'as of right', while the development of passenger lift systems and buildings requires consent as a controlled activity (meaning the consent must be granted, subject to conditions).

The Remarkables Ski Area is also subject to the following zones, overlays and notations (refer to **Figure 2-10** to **Figure 2-12**):

- Wāhi Tūpuna (Kawarau – The Remarkables is a Wāhi taoka (treasured site) and mauka (important mountains);
- The Northern Remarkables Priority Area Landscape is recognised as an ONL encompassing the broader mountainous area of the Remarkables;
- The southern tip of the Remarkables Ski Area Sub-Zone contains a Building Restriction Area; and
- The Rastus Burn Significant Natural Area is located within the existing Remarkables Ski Area.

The Lower Remarkables Transit Facility is located within the Rural Zone of the Proposed Plan. The existing car park area (renamed Car Park A) and proposed Car Park B are not subject to any other overlays or notations in the Proposed Plan. The Boneyard Car Park is located within the Northern Remarkables Priority Area ONL.

[8] Defined as: the use of natural and physical resources for the purpose of establishing, operating and maintaining the following activities and structures:

a. recreational activities either commercial or non-commercial;
b. passenger lift systems;
c. use of snow groomers, snowmobiles and 4WD vehicles for support or operational activities;
d. activities ancillary to commercial recreational activities including avalanche safety, ski patrol, formation of snow trails and terrain;
e. installation and operation of snow making infrastructure including reservoirs, pumps and snow makers;
...

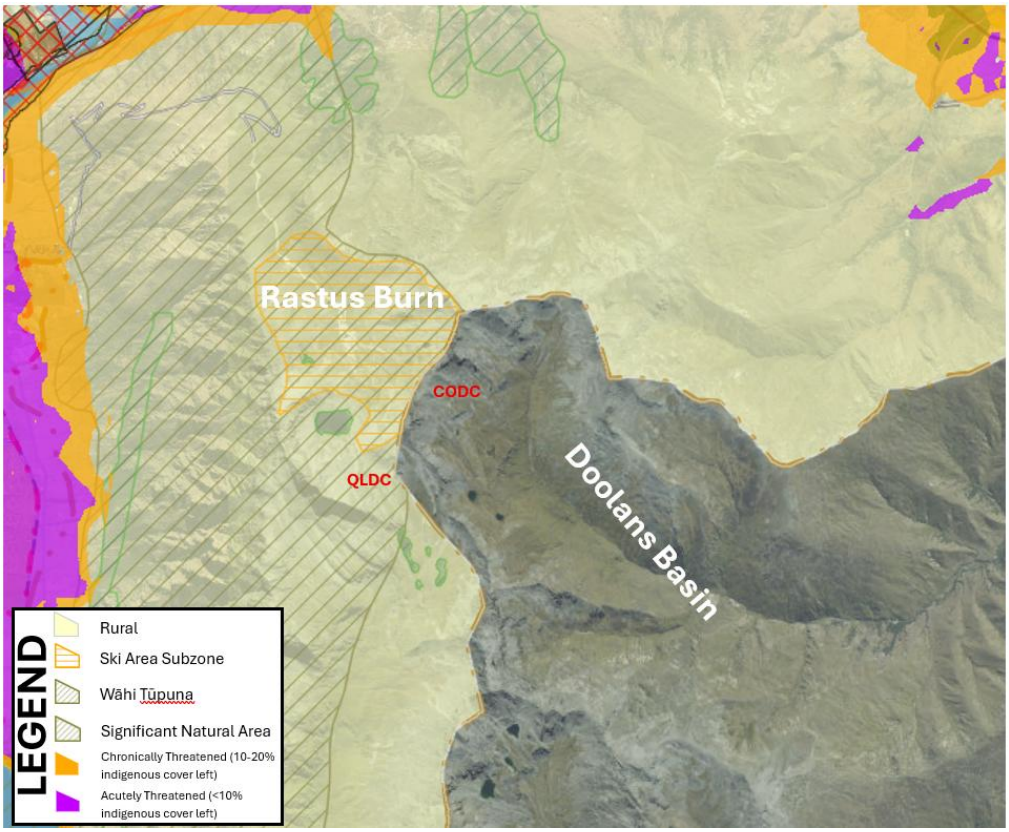

Figure 2-10: Proposed Queenstown Lakes District Plan Zoning.

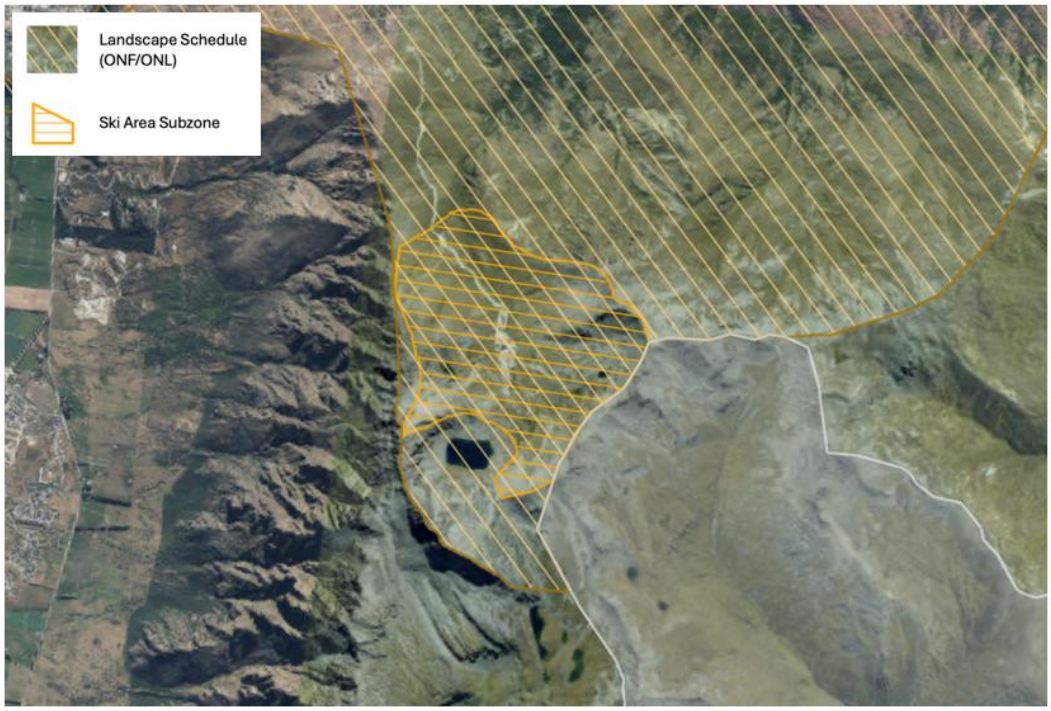

Figure 2-11: Proposed Queenstown Lakes District Plan Zoning.

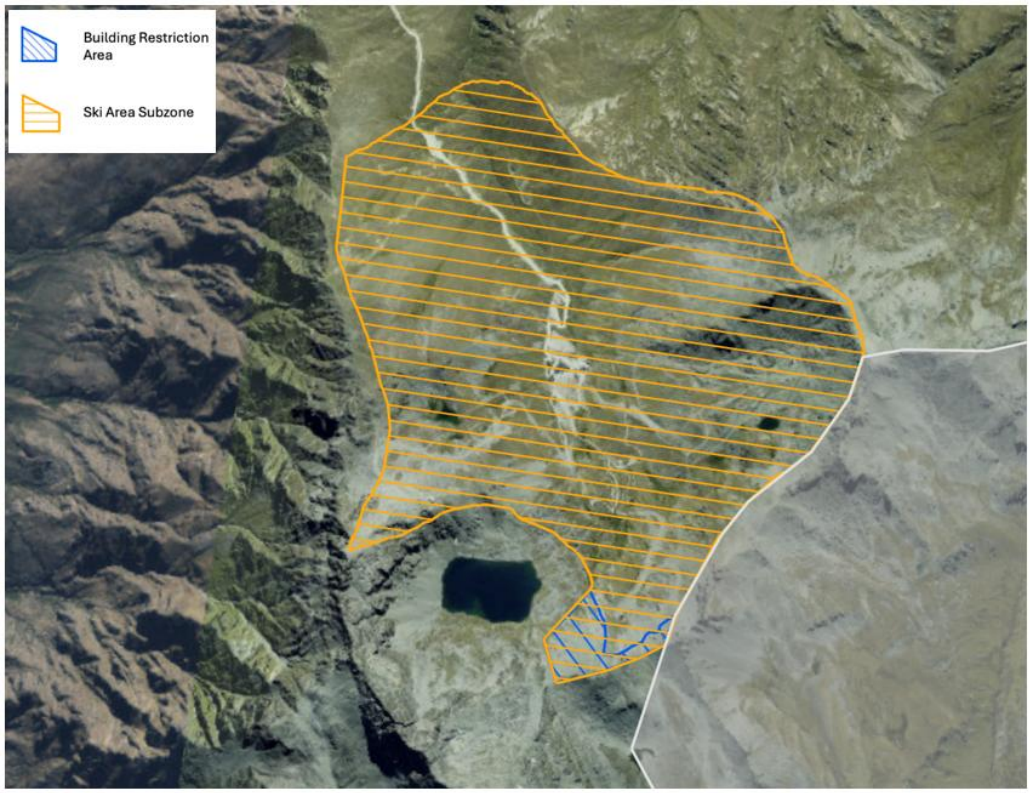

Figure 2-12: Proposed Queenstown Lakes District Plan Zoning.

Te Tapuae Southern Corridor Structure Plan

In September 2025, QLDC adopted the Te Tapuae Southern Corridor Structure Plan. The Structure Plan covers an area of approximately 1,300 hectares and incorporates land south of the Kawarau River, around Hanley's Farm, Jack's Point and Homestead Bay.

The Te Tapuae Southern Corridor is identified as a Priority Development Area in the Queenstown Lakes Spatial Plan. The area is currently experiencing significant growth, with the Structure Plan intended to guide that growth over short, medium and long term.

Under the Structure Plan, the land surrounding the lower portion of Remarkables Ski Field Access Road is proposed to be zoned for "Business Mixed Use" and "Ski Area Support" purposes (**Figure 2-13**). The Structure Plan also identifies a new roundabout and a "High Capacity Public Transport Station" being located near the existing Remarkables Ski Field Access Road frontage.

The Structure Plan has yet to be implemented through a Council initiated plan change.

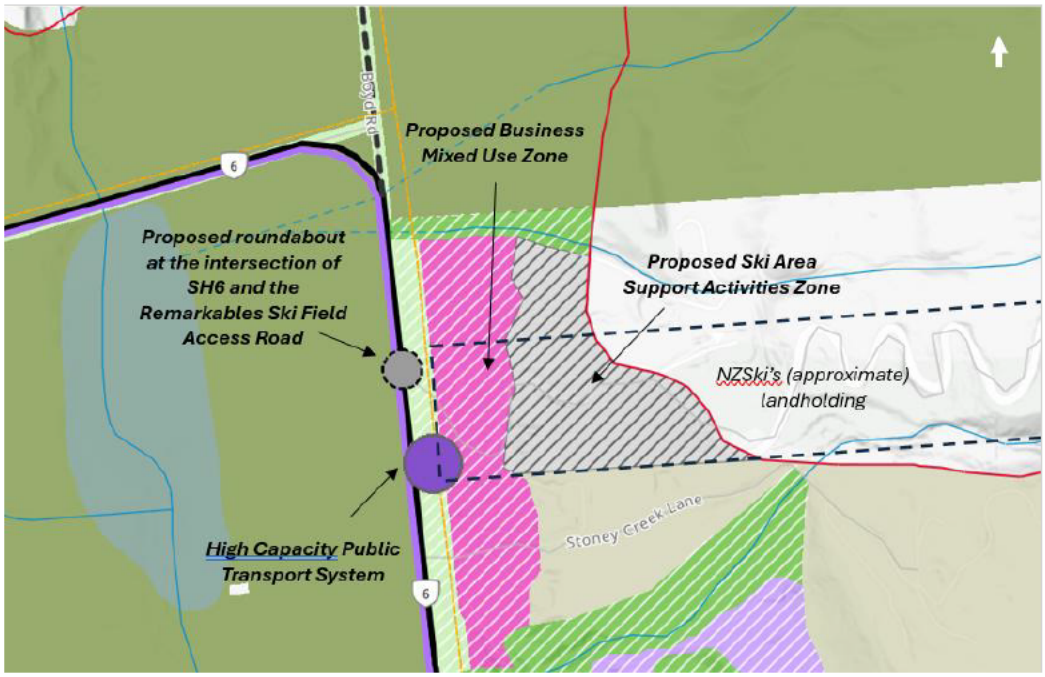

Figure 2-13: Extract from Te Tapuae Southern Corridor Structure Plan.

2.4.1.3 Central Otago District Plan

The Doolans Basin is located within the Rural Resource Area of the operative CODC District Plan ("**CODP**"). The Rural Resource Area is identified as retaining a high natural character and significant scenic values, which may be enhanced by human-made elements.

Skiing activities are not specifically contemplated by the CODP,[9] however the plan seeks to maintain and enhance recreation opportunities and public access within the Rural Resource Area, including by promoting access to significant natural and physical features.[10] Several overlays apply to the Doolans Basin, as shown in **Figure 2-14**. Most notably:

> The area is within the Hector, Garvie and Old Woman Ranges and Nevis Valley ONL, and

> Significant Natural Landscapes ("**SNLs**") SN18 Cone Peak, SN26 Glenroy and SN28 Wentworth cover the proposed expansion area.[11]

[9] However, have previously been discussed with CODC in the context of their District Plan review.

[10] Objective 4.3.4, Policy 4.4.13.

[11] These SNLs, listed in Schedule 19.6.1 of the Central Otago District Plan are areas of significant indigenous vegetation, habitats of indigenous fauna and wetlands.

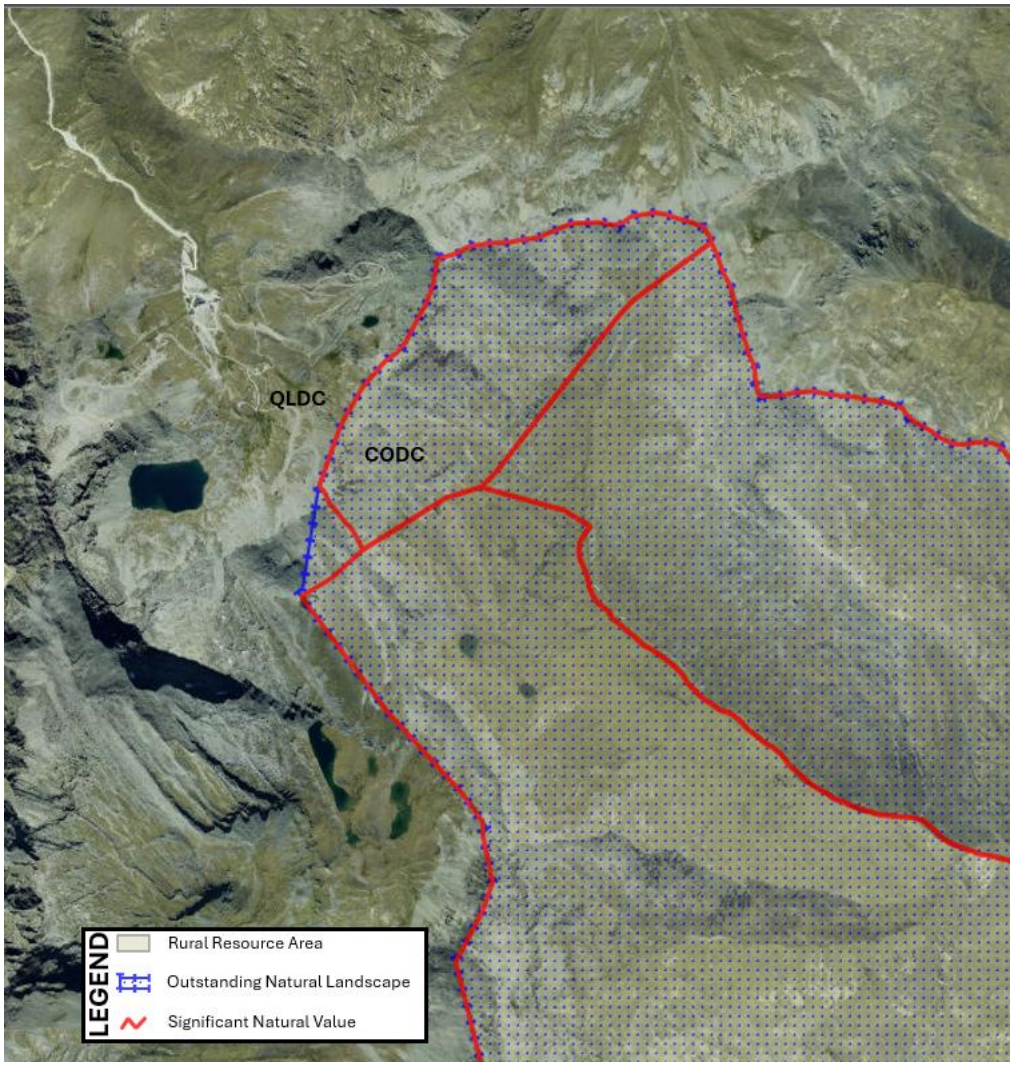

Figure 2-14: Central Otago District Plan Zoning.

2.5 CULTURAL SETTING

2.5.1 Kāi Tahu

The site is located within the Kāi Tahu takiwā. Kāi Tahu is the collective of individuals who descend from the whakapapa of Kāi Tahu, Kāti Māmoe, and Waitaha. The takiwā over which Kāi Tahu holds rakatirataka extends to more than 80 % of Te Waipounamu (the South Island) and has been statutorily recognised by the Crown.

The tribal institutions of Kāi Tahu consist of:

> 18 Papatipu Rūnaka that are the traditional communities of Ngāi Tahu Whānui; and

> Te Rūnanga o Ngāi Tahu, iwi authority and post settlement governance entity who is the representative of Ngāi Tahu Whānui for all purposes and was constituted by Te

Rūnanga o Ngāi Tahu Act 1996. Te Rūnanga o Ngāi Tahu also is responsible for protecting and advancing Treaty Settlements.

The seven Papatipu Rūnaka who have shared interest in the Queenstown Lakes and Central Otago districts are:

> Te Rūnaka o Moeraki, based in Moeraki;

> Kāti Huirapa ki Puketeraki, based in Karitane;

> Te Rūnaka o Ōtākou, based on the Otago Peninsula;

> Waihōpai Rūnaka, based in Invercargill;

> Te Rūnaka o Awarua, based in Bluff;

> Te Rūnaka o Ōraka-Aparima, based in Riverton; and

> Hokonui Rūnaka, based in Gore.

As explained in an Overview of the Ngāi Tahu Treaty Settlements ("**a-Rautaki 2026**" or "**Treaty Settlements**"), which is relevant to the Project, the a-Rautaki (2026) report is attached to **Part B** and in Section 9 of the application documents.

2.5.2 Cultural Setting of Kawarau / Remarkables Conservation Area

In 2020, Kauati (2020) prepared a Summary of Ngāi Tahu Values, Practices and Associations for the Remarkables Conservation Area. The report was prepared when land classification of the stewardship land within the wider Remarkables Conservation Area, including the Doolans Basin, was being considered.

While it is acknowledged that the Kauati (2020) report was prepared for a specific purpose, it provides some useful insights into the Kāi Tahu setting of the Remarkables Conservation Area. The overview below has therefore been prepared on that basis and may not accurately reflect the cultural setting of Kawarau for the purposes of this Project.

The Kawarau landscape holds deep cultural significance for Kāi Tahu, whose whakapapa connections to the land and water create a kaitiaki responsibility to protect their mauri. The range's prominence above Whakatipu-wai-māori links it to the Ātua, while the Kawarau River served as an important traditional route between Whakatipu-wai-māori and Mata-au, and a key mahika kai site for gathering native species such as tuna and weka. Mana whenua values, including mauka, wāhi taoka, ara tawhito, mahika kai, and nohoaka, continue to underpin the cultural identity and meaning of the landscape.

The Nevis Valley, traditionally known as Te Papapuni, holds deep cultural and historical significance. Ngāi Tahu has a long association with Central Otago and its rivers, with Te Rūnanga o Ōtākou recognising values such as kaitiakitanga, mauri, wāhi tapu, wāhi taoka, and traditional trails. Mana whenua used the valley as part of extensive inland routes that linked communities socially and economically, following river corridors through the high country, which were traversed, occupied, and utilised for their extensive resources, including mahika kai gathering and the transport of pounamu from the Lake Wakatipu area. There are no kāika or stone sources identified within the proposed expansion zones, but the wider area includes mahika kai and some mahika toi, including freshwater fish from the Doolans Creek, and bush and trees across the hilly slopes.

The connections Kāi Tahu has with Ngā Puna Wai Karikari a Rākaihautū and Kawarau are both historical and contemporary, tangible and intangible. Kawarau is both the name of the mountain range and the adjacent river to the north, thought to have been named after a local rangatira, although there is now no direct reference to this tūpuna. This whakapapa connection with the archaeological, written and oral records enables the exchange, expression and recognition of Kāi Tahu mātauranga tuku iho. It provides an ongoing presence of Kāi Tahu mana in its takiwā.

Historically, the maunga was a significant landmark, surrounded on all sides by mahinga kai and nohoanga. Historically, the Conservation Area is part of a much larger network of mahinga kai and a highly visible landmark in Te Ara a Tamatea, the Whakatipu route across the lake to the West Coast, and the link to Potiki-whaka-rumaki-nao and the Mata-au Clutha River.

Traditional nohoanga have been identified in the Conservation Area, with more suspected to have existed, although there is no physical evidence of this at present. A nohoanga entitlement is active at Wye Creek. Kawarau is recorded as a mahinga kai site where weka, kākāpō, kea and tuna (eel) were gathered. It is also a place of seasonal occupation. While most species traditionally harvested in the Conservation Area can no longer be found in sustainable quantities, the area still provides habitat for native fish and plants. The Conservation Area contains recorded, known, and suspected wāhi tapu and wāhi tūpuna, some of which are archaeological sites.

2.6 CLIMATE

The climate at the Site is heavily influenced by its elevation and position relative to the Southern Alps, which act as a barrier, separating the wet West Coast from the drier Central Otago region. This gives the area a semi-arid ‘continental’ climate. Annual median rainfall

at the site, as mapped on the Grow Otago website, ranged from 1000-1250 mm in the valley and up to 1500 mm on the ridge.[12]

The Remarkables Ski Area experiences seasonal weather, with the Rastus Burn and Doolans Basin typically covered in snow during the winter months, while summers are often hot and dry. The waterways in this area are primarily fed by snowmelt, rather than consistent rainfall.

By contrast, the Lower Remarkables Transit Facility is located at much lower elevation, quite close to Queenstown Airport where the average rainfall is some 757mm.

2.7 HYDROLOGY

Several alpine tarns, creeks and wetlands are located within the Rastus Burn and Doolans Basin. E3 Scientific ("**e3s**") have described the hydrology (and in some instances, geohydrology) of these waterbodies in the following reports attached in **Part B** of the application documents:

- Remarkables Ski Area Upgrade and Doolans Expansion - Doolans Creek Water Take Assessment of Effects (May 2026) ("**Water Take Assessment**" or "e3s **2026a**");
- Remarkable Ski Area Upgrade and Doolans Expansion - Rastus Burn Wastewater Freshwater Ecological Impact Assessment (May 2026) ("**Rastus Burn Wastewater Assessment**" or "e3s **2026c**";
- Remarkable Ski Area Upgrade and Doolans Expansion – Wastewater Discharge Impact Assessment (May 2026) ("**Wastewater Discharge Assessment"** or "e3s **2026d"**); and
- Remarkables Ski Area Upgrade and Doolans Expansion - Stormwater Concept Report ("**Stormwater Report**", or "**Stantec 2026b**").

An overview of the hydrology of the waterbodies within the Rastus Burn and Doolans Basin is provided in the following sections. A detailed overview of the hydrology of the Rastus Burn in the vicinity of the existing wastewater treatment system is provided in **Section 2.16.1.**

2.7.1 Rastus Burn Catchment

The Rastus Burn (**Figure 2-15**) is a steep mountain tributary of the Kawarau River. Fed by Lake Alta and other smaller tributaries, the approximately 2 m wide stream traverse the

[12] https://maps.orc.govt.nz/OtagoViewer232/?map=a3d75c9e135142e68f4e02b6fb64eaf7, accessed 4/03/2026.

Remarkables Ski Area before entering a steep gorge. The stream begins to level out approximately 1 km upstream from the confluence with the Kawarau River.

The Rastus Burn has a distinct seasonal flow pattern of very low flows in winter due to freezing in the upper catchment, a late-spring peak from snowmelt and westerly storms, and a lower summer minimum in February–March. The Rastus Burn has a low flow of 25 L/s and a median flow predicted to be approximately 70 L/s.

Groundwater and surface water quality within the upper Rastus Burn is considered to be excellent, based on the high alpine source (cool temperatures), modest human modification of the catchment, limited nutrient inputs or other contaminants, and the relatively high velocity/throughput of the Rastus Burn due to the steep catchment which aerates the water.

Figure 2-15: Rastus Burn. Top left image is looking upstream from the "Upstream Monitoring Site. Top right image is looking downstream of the "Upstream Monitoring Site. Bottom left image is looking downstream from the "Downstream 200 m Monitoring Site". Bottom right image is looking at the "Downstream 200 m Monitoring Site" from the Wastewater Disposal Field 3.

2.7.2 Doolans Catchment

Doolans Creek is a steep alpine tributary of the Nevis River. Doolans Creek enters the Nevis River shortly before its confluence with the Kawarau River. The Doolans Creek Left Branch and Doolans Creek Right Branch are the two main tributaries feeding Doolans Creek, with a number of smaller tributaries also contributing to the overall flow in the Creek.

Doolans Creek Right Branch flows north-south along the eastern boundary of the Site within the Doolans Basin. The Doolans Creek Right Branch is fed by several small tributaries, which are themselves fed by tarns. The creek resides in a high-gradient valley situated at elevations ranging from 1380 to 1750 meters above sea level.

Within the Site, 13 small and steep tributaries feed into the Doolans Creek Right Branch. Seven of the 13 streams flow permanently, while the remaining six are intermittent flowing only during spring and early summer snow melt.

The modelled mean annual low flow within the Doolans Creek Right Branch (at the Project's proposed water intake location) is 67 L/s, with a median flow of 132 L/s. The Doolans Creek Right Branch has a flashy hydrological regime, indicating high sediment potential during storm events and snowmelt periods.

An illustration of the hydrological features of the upper Doolans Creek Right Branch is provided in **Figure 2-16**. An image of the Doolans Creek Right Branch, approximately 100 m from the water intake structure location, is provided in **Figure 2-17**.

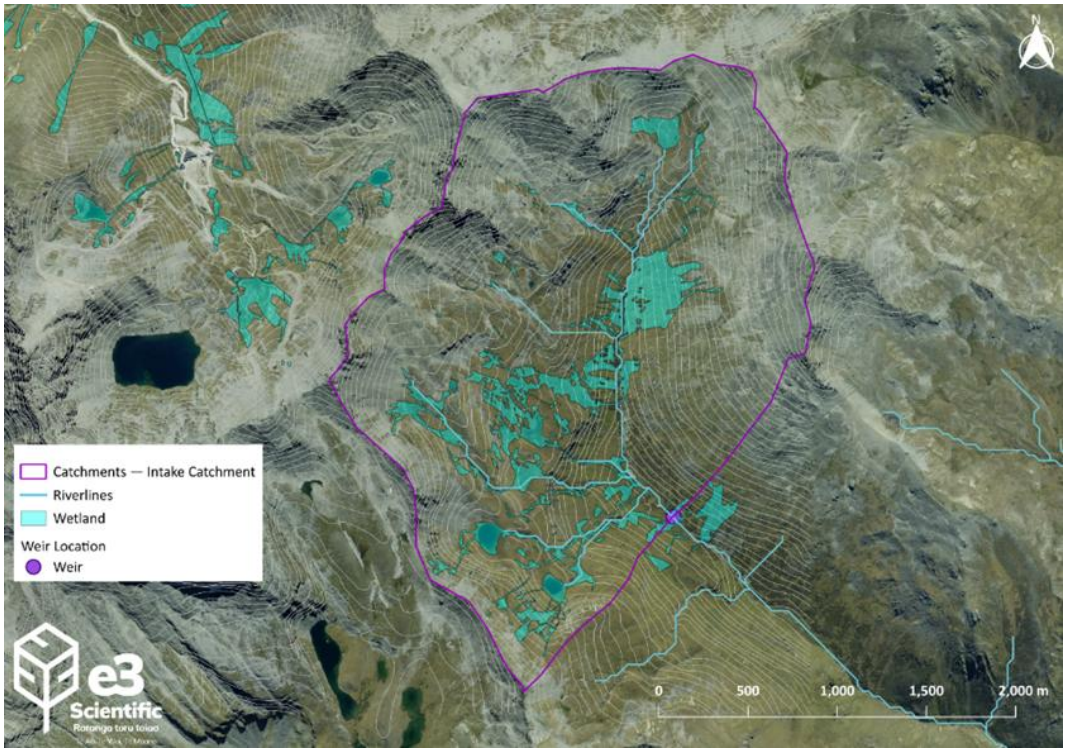

Figure 2-16: Hydrological features within the Doolan Basin Site (Doolans Creek Right Branch).

Figure 2-17: Doolans Creek Right Branch, approximately 100 m from the intake structure location.

Doolans Creek's suitability for drinking water is characterised by very high water quality with low levels of salts, heavy metals, nutrients, and E. coli, all well within safe limits for drinking and aesthetic quality. This reflects low-flow conditions due to the high-elevation, undisturbed catchment. Surveys conducted in April 2025 and January 2026 confirmed that

all study-area locations had cool, clear, well-oxygenated water. The freshwater quality here is high, better than the Nevis River at Wentworth Station (about 19 km downstream), based on Otago Regional Council data (LAWA, 2026).

2.7.3 Lower Remarkables Transit Hub

There are no wetlands or perennial or ephemeral streams are located within Car Park A, proposed Car Park B or the Boneyard.

2.8 FRESHWATER ECOLOGY

Several alpine tarns, creeks and wetlands are located within the Rastus Burn and Doolans Basin. E3s have described the freshwater characteristics and values of these waterbodies in the following reports attached in **Part B** of the application documents:

- Remarkable Ski Area Upgrade and Doolans Expansion Freshwater Ecological Impact Assessment (May 2026) (**"Doolans Freshwater Ecology Assessment"** or **"2026b")**;
- Remarkables Ski Field Expansion Project Terrestrial Ecology Impact Assessment (May 2026) (**"Terrestrial Ecology Assessment" or "2026e")**;
- Rastus Burn Wastewater Assessment; and
- Stormwater Report.

An overview of the key freshwater ecology characteristics and values within the Site (alpine areas only) is provided in the following sections.

There are no water bodies located with the Lower Remarkables Transit Facility area.

2.8.1 Freshwater Ecology Rastus Burn

Streambed habitat within the Rastus Burn is dominated by bedrock, large boulders, cobbles, and coarse gravels, with very limited accumulation of fine sediment. Steep cascades, chutes, and waterfalls are common, particularly downstream of the ski field area, resulting in high flow velocities and frequent re-aeration, as shown in **Figure 2-18.**

At the Lake Alta outlet, the streambed consists primarily of cobbles and gravels, with extensive coverage of the invasive diatom Didymosphenia geminata (didymo). Downstream habitat varies spatially, with:

- Alpine tussock, spaniard, and low shrubland dominating riparian margins in upper reaches;
- Moss growing on stream margins and instream substrates; and

> Increasing riparian vegetation complexity further downstream, including mountain flax, Coprosma spp., and matagouri.

Instream habitat quality is generally high but naturally constrained by steep gradients and limited habitat heterogeneity typical of alpine streams.

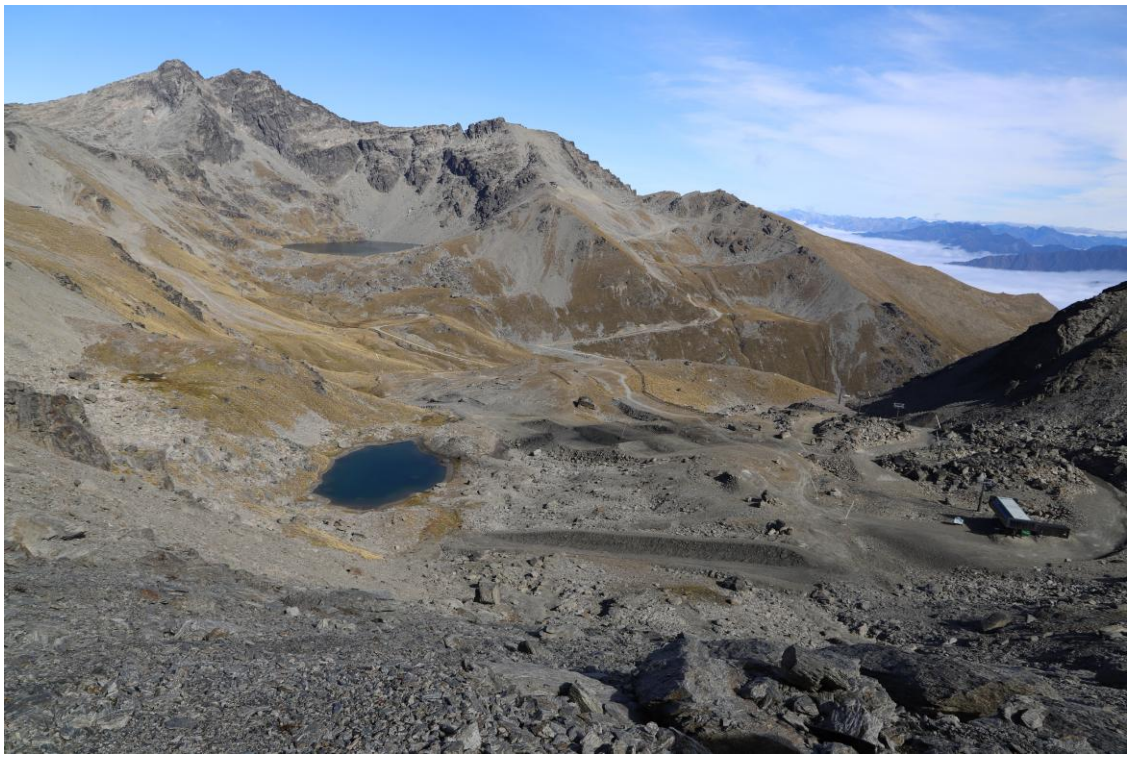

Figure 2-18: Rastus Burn and Lake Alta

Periphyton biomass within the Rastus Burn is generally low, reflecting cold water temperatures, high flow velocities, seasonal snow and ice cover, and low nutrient availability. The periphyton community is dominated by diatoms and filamentous red algae typical of oligotrophic alpine streams.

Didymo has been confirmed as present in the Rastus Burn headwaters at the Lake Alta outlet and at some downstream monitoring locations. At the outlet, didymo forms extensive mats on stable substrates where flows are relatively consistent and light levels are high. Elsewhere in the stream, didymo has been recorded as rare or low in cover.

The presence and distribution of didymo in the Rastus Burn is primarily influenced by natural conditions associated with alpine lake outlets—stable flows, low turbidity, high light availability, and very low dissolved reactive phosphorus—rather than anthropogenic nutrient enrichment, as shown in **Figure 2-19**.

Overall periphyton cover downstream of the existing wastewater infiltration area remains low and consistent with baseline alpine conditions.

Figure 2-19: Lake Alta outlet sampling within the Rastus Burn with didymo present (13/4/2025).

Macroinvertebrate communities within the Rastus Burn are typical of high-gradient alpine streams and are dominated by pollution-sensitive taxa adapted to cold, well-oxygenated water. Communities are numerically dominated by mayflies (particularly Deleatidium), with stoneflies, chironomid larvae, flatworms, and oligochaete worms also present. Caddisflies and beetles occur less frequently.

Long-term compliance monitoring indicates that macroinvertebrate communities downstream of the existing wastewater infiltration area are generally of good to excellent ecological condition. Metric scores (including MCI and QMCI) have varied over time but, aside from a temporary decline associated with a system failure in 2023, have consistently returned to values indicative of a healthy alpine stream.

Macroinvertebrate diversity is naturally low due to alpine constraints on dispersal, growth rates, and food availability. Upstream at the Lake Alta outlet, macroinvertebrate communities display lower metric scores, reflecting natural lake-outlet conditions and the influence of didymo mats rather than degraded ecological condition.

The upper Rastus Burn, including Lake Alta and all reaches upstream of the gorge section, is naturally fishless. Historical surveys and recent eDNA sampling confirm the absence of fish in these areas. Steep waterfalls and bedrock chutes downstream of the ski area form effective barriers to upstream fish passage.

Fish species, including brown trout, rainbow trout and kōaro, are present in the lower Rastus Burn near its confluence with the Kawarau River. Of these, kōaro are the only species capable of climbing waterfalls; however, there is no evidence of kōaro occurring above approximately 1,100 m asl, and they are not present within the upper Rastus Burn or Lake Alta due to altitude, water temperature, and multiple physical barriers. Fish absence in the upper Rastus Burn is therefore a natural characteristic of the existing environment.

Analysis of aerial imagery indicates the presence of two small seepage wetlands located downslope of the existing wastewater infiltration ponds. These wetlands are situated within 100–250 metres of the infiltration ponds and appear to be associated with shallow groundwater flow paths.

The hydrological connection between these wetlands and the infiltration area is uncertain. Under existing conditions, no evidence of wetland degradation or nutrient enrichment has been identified, and the wetlands appear to be functioning naturally within the alpine landscape.

2.8.2 Freshwater Ecology Doolans Basin

2.8.2.1 Doolans Creek Right Branch

The Doolans Creek Right Branch and its tributaries exhibit physical characteristics typical of alpine headwater streams. The streambeds are dominated by coarse substrates (cobbles and boulders) with exposed bedrock in steeper sections and very limited fine sediment accumulation. Channels are largely unshaded due to the alpine setting and tussock-dominated riparian vegetation.

Algal and periphyton cover across all surveyed sites within the Right Branch were found to be low, reflecting cold water temperatures and low nutrient availability. Submerged bryophytes were also present at several locations and provide a localised microhabitat for aquatic invertebrates.

At the proposed weir location, the channel consists largely of a uniform riffle habitat with lower hydraulic heterogeneity than upstream reaches. Slightly higher proportions of gravel substrate and algal cover were recorded at this site. Didymo was observed at this location during the January 2026 survey but was not observed upstream or during earlier surveys, indicating a limited and localised presence.

Macroinvertebrate communities within Doolans Creek and its tributaries display low taxa richness and abundance, consistent with naturally low-productivity alpine environments. Communities are dominated by pollution-sensitive mayflies, stoneflies, and caddisflies (EPT taxa), with high proportions of EPT taxa across sites.

Standard macroinvertebrate indices (macroinvertebrate community index (**"MCI"**), quantitative macroinvertebrate community index (**"QMCI"**), average score per metric (**"ASPM"**)) indicate good to excellent ecological condition, noting that lower MCI and ASPM scores reflect natural alpine species limitations rather than anthropogenic disturbance. Overall, stream macroinvertebrate communities are characteristic of intact, cold-water headwater systems.

No fish are present within the Right Branch of the creek. There are no New Zealand Freshwater Fish Database or Wilderlab eDNA records for this reach of Doolans Creek, and no fish eDNA was detected during sampling. The absence of fish is attributed to natural factors including high altitude, cold temperatures, distance from the sea, and the presence of downstream waterfalls and steep gorges that restrict upstream fish passage. Introduced salmonids and native galaxiids, including the nationally endangered Nevis galaxias, are present in the wider Nevis River catchment several kilometres downstream, but do not extend into the Doolans Basin.

2.8.2.2 Doolans Tarns

Four alpine tarns are located within the Doolans Basin. Three of these were surveyed as part of the freshwater ecology assessment undertaken by e3s, including "Tarn 3" which is proposed to be modified into a water storage reservoir as part of the Project.

Tarn 1 was large and deep, with gravel around the littoral edge and outlet. Sandy silt covered deeper areas, and small tufts of brown algae were present on some boulders, surrounded by tussockland (**Figure 2-20**). Tarns 2 and 3 were much smaller and shallower. Tarn 2 had a bed of short macrophytes with areas of filamentous algae cover, and a sandy bed in deeper areas, surrounded by a herbfield (**Figure 2-21**). Tarn 3 had low water levels at the time of the assessment. The bed was mainly sand, with some stunted macrophytes and brown algae, and was surrounded by bare rocks (**Figure 2-22**).

The macroinvertebrate community showed a low diversity and fewer types of taxa, which is common for cool, clean water sites and typical of alpine environments with limited organic matter. This community mainly included chironomid midges, oligochaete worms, Sphaeriidae, and a few cased caddisflies. The zooplankton diversity in the tarns was also modest compared to many South Island lakes, but it matched most alpine and subalpine lakes. Tarn 1 had a more varied community with four taxa, while Tarn 2 had two, and Tarn 3 had just one or two zooplankton taxa. eDNA samples from the three tarns surveyed showed no fish DNA in any of the samples.

Figure 2-20: Photograph of Tarn 1.

Figure 2-21: Photograph of Tarn 2.

Figure 2-22: Photograph of Tarn 3.

2.9 TERRESTRIAL ECOLOGY

The terrestrial ecology characteristics and values of the Rastus Burn and Doolans Basin are described in the e3s, Terrestrial Ecology Assessment. The characteristics and values associated with the Lower Transit Facility are described in the Beale Consultants Remarkables Ski Area Expansion Project Proposed Base Area Car Park Ecological Impact Assessment (May 2026) (“**Carpark & Bus Hub Ecological Impact Assessment” or “Beale Consultants 2026**”). A copy of both assessments is provided within **Part B** of the application documents, and key sections are summarised below.

2.9.1 Rastus Burn and Doolans Basin Terrestrial Ecology

2.9.1.1 Rastus Burn and Doolans Basin Flora

The vegetation and habitats within the Rastus Burn and Doolans Basin are representative of unmodified communities found throughout the Remarkables Conservation Area. The only exception is disturbed environments associated with the Curvey Basin chairlift alignment, access roads, and trails in the Rastus Burn. These disturbed areas typically consist of bare ground, exotic species, and regenerating early-colonising native species. **Figure 2-23** shows all 14 vegetation communities present, with the terrestrial ecology assessment providing a full species list for each community.

A total of 247 indigenous plant species have been recorded in the Rastus Burn and Doolans Basin with one species listed as Threatened – Nationally Endangered, 34 species listed as 'At Risk' and a further 38 listed as Regionally At Risk, Data Deficient or Regionally Threatened.

One or more plant species listed as either Nationally/Regionally At Risk or Threatened are present in all 12 vegetation communities.

All of the vegetation communities contain ecological values that are significant under assessment criteria set out in the relevant national, regional and district level policy documents.

A brief summary of each vegetation community is provided in the following sections.

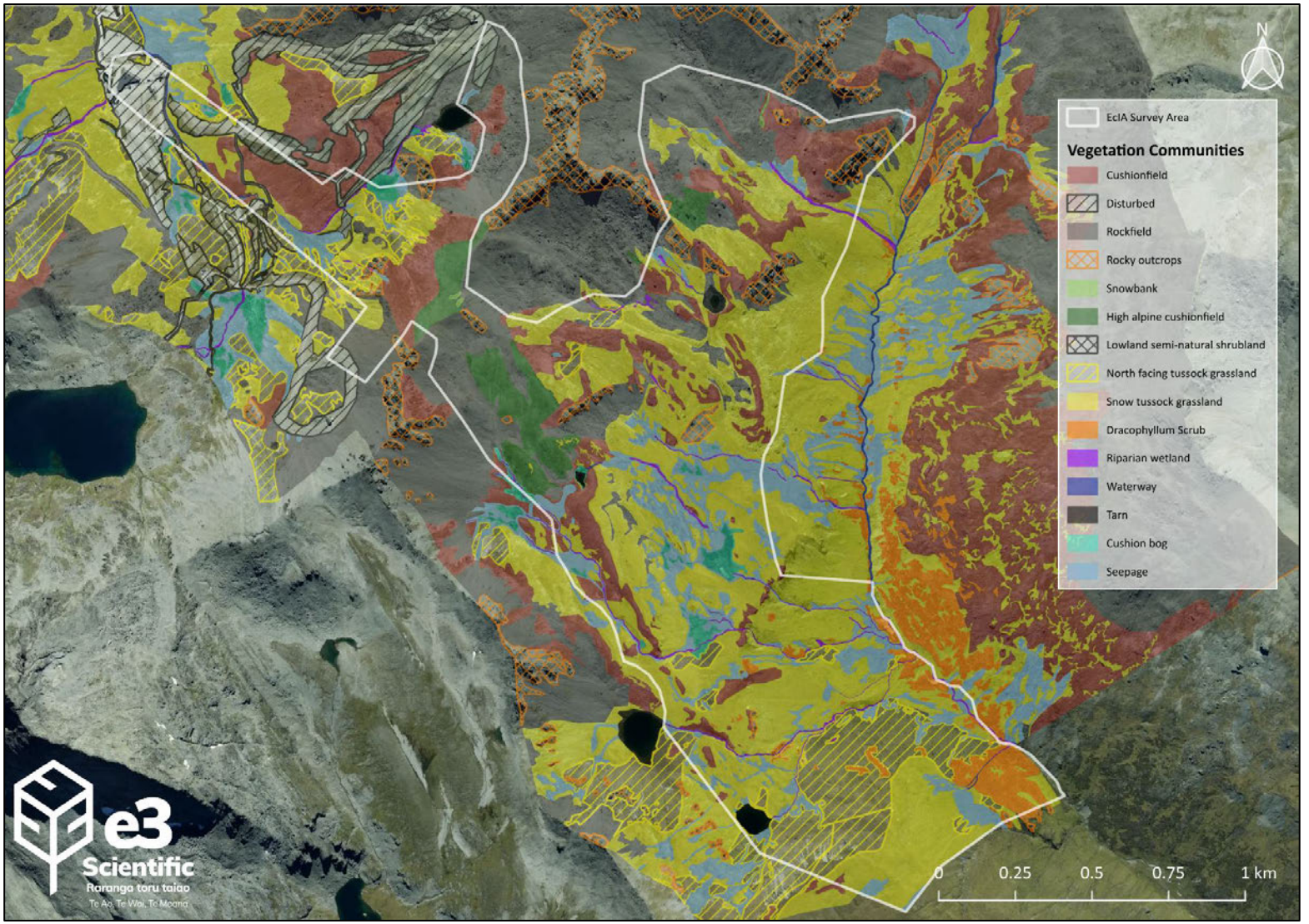

Figure 2-23: Vegetation communities within and adjacent to the Site.

Snow Tussock Grassland

Snow Tussock Grassland is the dominant vegetation community present throughout the Site and wider Remarkables Ecological District at similar altitudes. The majority of the overall vegetation cover in this community consists of indigenous species, with isolated areas of bare ground, rock, exotic herbs, and grasses.

Twenty-one[13] Regionally/Nationally At Risk or Data Deficient species were recorded within the surveyed area or within previous studies completed within this community.

A representative image of the Snow Tussock Grassland found within the Project Site is provided in **Figure 2-24** below.

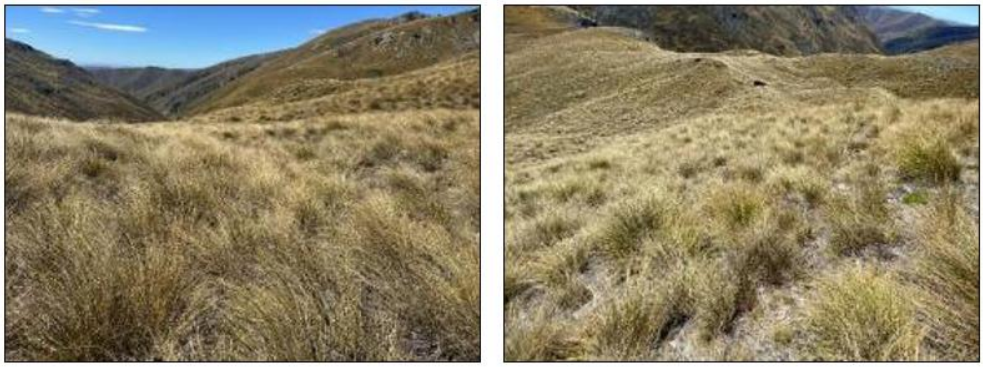

Figure 2-24: Snow Tussock Grassland communities found within the Rastus Burn and Doolans Basin.

North Facing Tussock Grassland

The north-facing tussock grassland community is similar to the snow tussock grassland community. However, due to factors such as increased solar exposure, slope, and wind-induced evapotranspiration, areas on north-facing slopes tend to exhibit lower species diversity, with higher abundances of drought-tolerant native herbs and grasses.

Eight[14] Regionally/Nationally At Risk or Data Deficient species were recorded within the surveyed area or within previous studies completed within this community.

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[13] A*caena caesiiglauca*, *Aciphylla lecomtei*, *Aciphylla kirkii*, *Aciphylla simplex*, *Azorella haastii* subsp. *haastii*, *Brachyscome montana*, *Carex kirkii* var. *kirkii*, *Carex purpurata*, *Colobanthus strictus*, *Festuca matthewsii* subsp. *matthewsii*, *Geranium microphyllum*, *Kelleria childii*, *Lobelia linnaeoides*, *Myosotis lyallii* subsp. *elderi*, *Pimelea notia*, *Poa lindsayi*, *Poa tonsa*, *Rytidosperma pumilum*, *Shawia cymbifolia*, *Taraxacum zealandicum*, and *Veronica hectorii* subsp. *demissa*.

[14] *Acaena caesiiglauca*, *Aciphylla kirkii*, *Brachyscome montana*, *Carex kirkii* var. *kirkii*, *Pimelea notia*, *Poa lindsayi*, *Rytidosperma pumilum*, and *Shawia cymbifolia*.

A representative image of the North Facing Tussock Grassland communities found within the Project Site is provided in **Figure 2-25** below.

Figure 2-25: North Facing Tussock Grassland communities found within the Rastus Burn and Doolans Basin.

Dracophyllum Scrub

Dracophyllum is highly characteristic of the montane to subalpine zone associated with the Ecological district, becoming increasingly prevalent below approximately 1400 m asl.

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

A representative image of the Dracophyllum communities found within the Project Site is provided in **Figure 2-26** below.

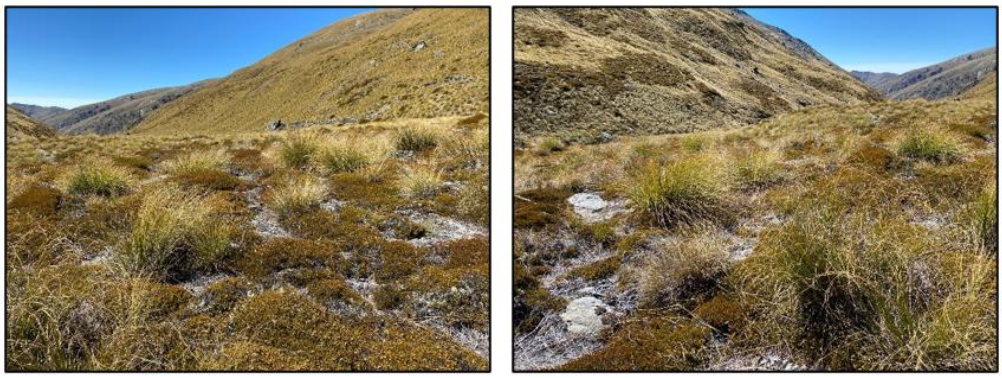

Figure 2-26: Dracophyllum Scrub communities found within the Rastus Burn and Doolans Basin.

Cushionfield

Cushionfield communities are scattered across the Site, becoming particularly prevalent along exposed ridges and knolls, and in alpine locations prone to drought or high snowfall. These communities have developed in response to high wind and sun exposure, a relatively stony substrate, and shallow soil depths.

Twenty-two[15] Regionally/Nationally At Risk species were recorded within the surveyed area or within previous studies completed within this community.

A representative image of the Cushionfield communities found within the Project Site is provided in **Figure 2-27** below.

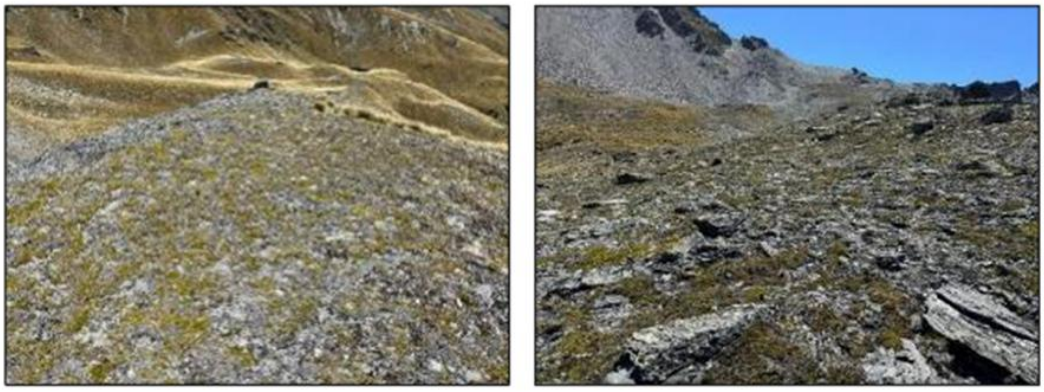

Figure 2-27: Cushionfield communities found within the Rastus Burn and Doolans Basin.

High Alpine Cushionfield

A variation of the Cushionfield community occurs across the high-alpine areas within the Site, which are exposed to frost heave, snow accumulation, and/or high evapotranspiration. Within this community are microsites of fellfield and snowbank that form across variable gradients in substrate and climatic conditions.

[15] *Aciphylla lecomtei*, *Aciphylla kirkii*, *Aciphylla simplex*, *Anisotome lanuginosa*, *Azorella exigua*, *Azorella haastii* subsp. *haastii*, *Brachyscome montana*, *Celmisia ramulosa* var. *tuberculata*, *Gaultheria nubicola*, *Kelleria childii*, *Leptinella albida*, *Leptinella goyenii*, *Luzula colensoi*, *Myosotis antarctica* subsp. *antarctica*, *Myosotis lyallii* subsp. *elderi*, *Myosotis pulvinaris*, *Pachycladon novae-zelandiae*, *Phyllachne rubra*, *Raoulia hectorii* var. *mollis*, *Raoulia subulata*, *Veronica ciliolata* var. *fiordensis*, and *Veronica hectorii* subsp. *demissa*.

Twelve[16] Regionally/Nationally At Risk species were recorded within the surveyed area or within previous studies completed within this community.

A representative image of the High Alpine Cushionfield communities found within the Project Site is provided in **Figure 2-28** below.

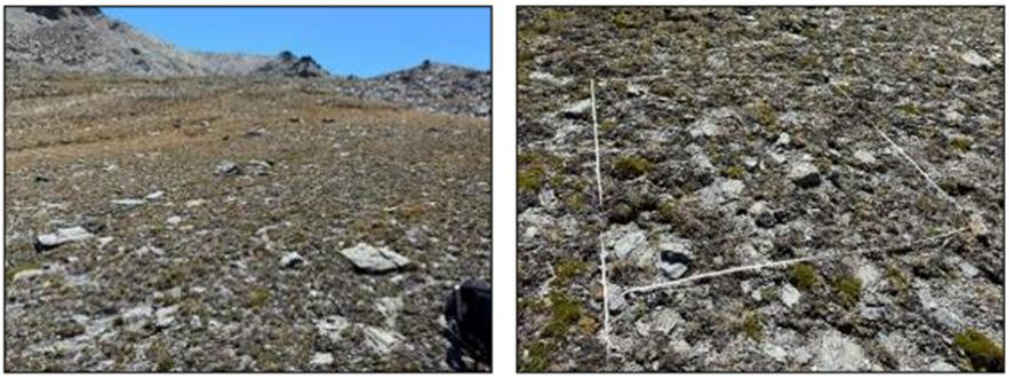

Figure 2-28: High Alpine Cushionfield communities found within the Rastus Burn and Doolans Basin.

Cushion Bog

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 with extensive standing water.

Twenty[17] Regionally/Nationally At Risk and three[18] Threatened species were recorded within the surveyed area or within previous studies completed within this community.

A representative image of the Cushion Bog communities found within the Project Site is provided in **Figure 2-29** below.

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[16] *Aciphylla simplex*, *Anisotome lanuginosa*, *Azorella exigua*, *Brachyscome montana*, *Kelleria childii*, *Leptinella goyenii*, *Myosotis antarctica* subsp. *antarctica*, *Myosotis pulvinaris*, *Pachycladon novae-zelandiae*, *Phyllachne rubra*, *Veronica ciliolata* var. *fiordensis*, and *Veronica hectorii* subsp. *Demiss*.

[17] *Anisotome "Otago bog", Azorella exigua, Centrolepis pallida, Colobanthus apetalus, Dracophyllum prostratum, Epilobium komarovianum, Euchiton traversii, Gentianella amabilis, Geranium microphyllum, Kelleria paludosa, Luzula leptophylla, and Myosotis bryonoma*.

[18] *Craspedia uniflora* var. *uniflora*, *Juncus pusillus*, and *Ranunculus royi*.

Figure 2-29: Cushion Bog communities found within the Rastus Burn and Doolans Basin.

Riparian Wetland

Riparian wetlands are present along the edges of streams throughout the Doolan's catchment. They are characterised by being wet or saturated for at least part of the year, often associated with ephemeral or intermittent creeks.

Nineteen[19] Regionally/Nationally At Risk and four[20] threatened species were recorded within the surveyed area or within previous studies completed within this community

A representative image of the Riparian Wetland communities found within the Project Site is provided in **Figure 2-30** below.

[19] *Anisotome* "Otago bog", *Centrolepis pallida*, *Colobanthus apetalus*, *Carex petriei*, *Carex hectorii*, *Dracophyllum prostratum*, *Epilobium komarovianum*, *Epilobium porphyrium*, *Euchiton lateralis*, *Gentianella amabilis*, *Geranium microphyllum*, *Gunnera dentata*, *Kelleria paludosa*, *Luzula leptophylla*, *Myosotis bryonoma*, *Phyllachne rubra*, *Ranunculus maculatus*, *Ranunculus pachyrrhizus*, and *Veronica ciliolata* var. *fiordensis*.

[20] *Carex edgariae*, *Carex talbotii*, *Craspedia uniflora* var. *uniflora*, and *Ranunculus royi*.

Figure 2-30: Riparian Wetland communities found within the Rastus Burn and Doolans Basin.

Seepage

Seepage wetlands are present throughout the lower faces of the Doolans Basin, occurring where groundwater emerges on hillsides or at the edges of slopes due to upwelling or subsurface geomorphological patterns. Throughout the Site, seepages drain to or from other wetland classes, connecting the large freshwater features.

Twenty eight[21] Regionally/Nationally At Risk or Data deficient, and five[22] Threatened species were recorded within the surveyed area or within previous studies completed within this community.

A representative image of the Seepage Wetland communities found within the Project Site is provided in **Figure 2-31** below.

[21] *Anisotome* "Otago bog", *Azorella exigua*, *Brachyscome longiscarpa*, *Brachyscome montana*, *Carex edgariae*, *Carex hectorii*, *Carex petriei*, *Centrolepis pallida*, *Colobanthus apetalus*, *Dracophyllum prostratum*, *Epilobium komarovianum*, *Epilobium porphyrium*, *Euchiton lateralis*, *Euchiton traversii*, *Gentianella amabilis*, *Geranium microphyllum*, *Gunnera dentata*, *Juncus pusillus*, *Kelleria paludosa*, *Luzula leptophylla*, *Myosotis bryonoma*, *Myosotis antarctica* subsp. *antarctica*, *Phyllachne rubra*, *Ranunculus maculatus*, *Ranunculus pachyrrhizus*, *Raoulia apicinigra*, *Veronica ciliolata* var. *fiordensis*, and *Veronica hectorii* subsp. *demissa*.

[22] *Carex talbotii*, *Craspedia uniflora* var. *uniflora*, *Juncus pusillus*, *Ranunculus royi*, and *Ranunculus buchananii*.

Figure 2-31: Seepage communities found within the Rastus Burn and Doolans Basin.

Waterways

This community is characterised by a channelised flowpath that either permanently or periodically channels water, often with a shingle substrate, shallow soils, or subsurface flow overtopped by boulders.

A representative image of the Waterway communities found within the Project Site is provided in **Figure 2-32** below.

Figure 2-32: Waterway communities found within the Rastus Burn and Doolans Basin.

Rockfield

Rockfield communities are prevalent across the site, particularly in the upper elevations where the ridgeline drops into the Doolans and Rastus Burn catchments. The rockfield areas have steep slopes prone to movement of the rock substrates and are thus within avalanche-prone areas, thus lacking suitable conditions for rapid vegetative stabilisation. Therefore, a significant proportion of these areas contains no vegetation.

Six[23] Regionally/Nationally At Risk species were recorded within the surveyed area or within previous studies completed within this community.

A representative image of the Rockfield communities found within the Project Site is provided in **Figure 2-33** below.

Figure 2-33: Rockfield communities found within the Rastus Burn and Doolans Basin.

Rocky outcrop

Rocky outcrop plant communities are present in small pockets across the landscape. They occur in areas where bedrock is exposed at or near the surface. As a result of these conditions, vegetation within rocky outcrop communities tends to be sparse and patchy.

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

A representative image of the Rocky Outcrop communities found within the Project Site is provided in **Figure 2-34** below.

[23] *Aciphylla simplex*, *Anisotome lanuginosa*, *Carex hectorii*, *Carex petriei*, *Ranunculus maculatus*, and *Ranunculus pachyrrhizus*.

Figure 2-34: Rocky Outcrop communities found within the Rastus Burn and Doolans Basin.

Snowbank

Three small areas of snowbank community were noted within the Site in high-alpine areas that hold snow cover for up to seven months of the year.

Nine[24] Regionally/Nationally At Risk species were recorded within the surveyed area or within previous studies completed within this community.

A representative image of the Snowbank communities found within the Project Site is provided in **Figure 2-35** below.

Figure 2-35: Snowbank communities found within the Rastus Burn and Doolans Basin.

[24] *Carex lachenalii* subsp. *parkeri*, *Epilobium porphyrium*, *Kelleria childii*, *Leptinella goyenii*, *Myosotis pulvinaris*, *Phyllachne rubra*, *Ranunculus pachyrrhizus*, *Raoulia apicinigra*, and *Rytidosperma pumilum*.

Disturbed Vegetation

Areas of disturbed vegetation are limited to within the current ski area boundary in the Rastus Burn Basin. Disturbed vegetation communities exist where ski trails, roads, carparks, and similar developments have been built. Bare ground is prevalent throughout this vegetation community, along with scattered early-colonising indigenous species and exotic grasses and herbs.

Six[25] Regionally/Nationally At Risk or Data Deficient species were recorded within the surveyed study area.

An image of the communities found within areas of disturbed vegetation is provided in **Figure 2-36** below.

Figure 2-36: Communities within areas of disturbed vegetation found within the Rastus Burn and Doolans Basin.

2.9.1.2 Rastus Burn and Doolans Basin Fauna

The Site includes a variety of suitable habitats that may be utilised by a range of indigenous faunal species. In the following sections, an overview of the bird, lizard and invertebrate species found within the Rastus Burn and Doolans Basin is provided.

Rastus Burn and Doolans Basin Avifauna

The indigenous avifauna species observed or known to occur within the Remarkables alpine environments include the Eastern falcon, Australasian harrier, Paradise shelduck, Kea, Southern black-backed gull, and New Zealand pipit. Excluding kea, these species were all observed during ecological survey work in the Doolans Creek area.

[25] *Carex kirkii* var. *kirkii*, *Epilobium porphyrium*, *Myosotis antarctica* subsp. *antarctica*, *Poa lindsayi*, *Raoulia apicinigra*, and *Rytidosperma pumilum*.

New Zealand pipit ('At Risk – Declining') was the most abundant bird species throughout the study area, across a range of habitats. Paradise shelducks and southern black-backed gulls were recorded in moderate abundance at seven and five locations, respectively. Both species were repeatedly observed in the same locations.

Eastern falcons ('Threatened – Nationally Vulnerable') were observed on multiple occasions patrolling large extents of both the Rastus Burn and Doolans Catchments. Based on repeated sightings, it was determined that up to three pairs had territorial ranges that overlapped or were directly adjacent to the proposed study area. The distinct areas included Upper Rastus Burn (encompassing the lake Alta, Curvey Basin, and Sugar Bowl area), Lower Rastus Burn (along the valley and adjacent faces below the Rastus Burn Base Building), and the headwaters of the Doolans Creek Right Branch, including the montane to subalpine faces.

Rastus Burn and Doolans Basin Herpetofauna

Four species of lizard are known to be present within the wider Rastus Burn Recreation Reserve: McCann's skink, short-toed gecko, tussock skink, and pallid skink. With the exception of the north facing tussock area below the Doolans Base Area, no herpetofauna species were recorded within the survey or works area of the Project. McCann's skink were the only lizards found during the surveys, below the Doolans Base Area.

McCann's skink are located within north-facing tussock grassland above 1600 m in both catchments and are widespread across aspects and communities below this, as shown in **Figure 2-37**. Skink density in Doolans Basin increases substantially below approximately 1450 m.

Rastus Burn and Doolans Basin Invertebrates

A diverse invertebrate assemblage of ground-dwelling and flying invertebrates were recorded by e3s during the survey period, comprising of 120 distinct taxa across 15 Orders and 64 Families. **Figure 2-38** below provides the location of the notable species found.

In total, 24 invertebrate species were either unclassified or classified as Data Deficient, At Risk, or Threatened.

The most commonly observed species found during the surveys included Otago Alpine Cockroach, Grey Wolf Spider, Alpine Grasshopper, Mountain Stone Wētā, Ground Wētā, and Ground Beetle.

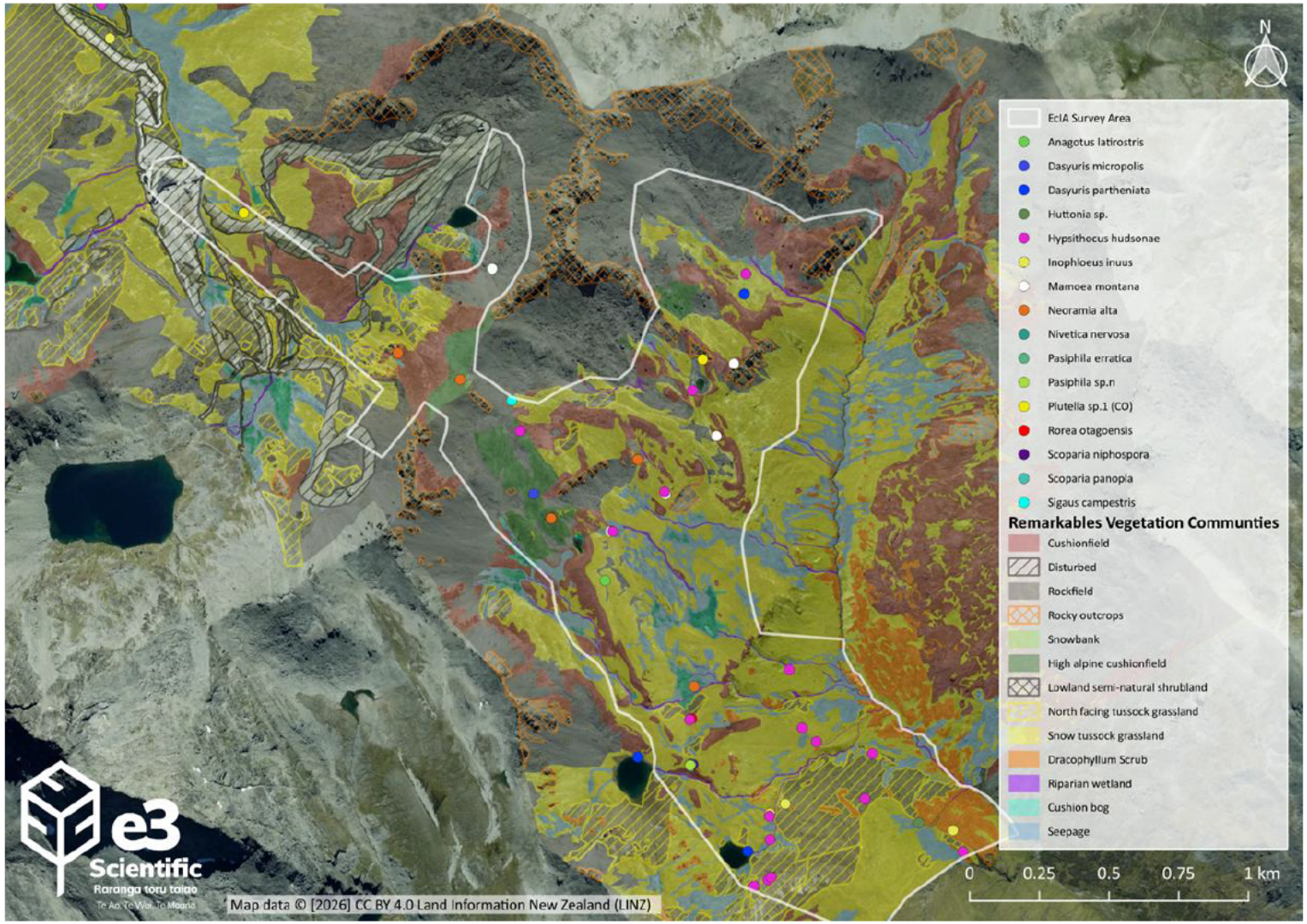


Figure 2-38: Location of Unclassified, Data Deficient, At Risk, Threatened invertebrate species.

2.9.2 Lower Remarkables Transit Hub Terrestrial Ecology

2.9.2.1 Lower Remarkables Transit Hub Flora

Car Park A and the Boneyard Car Park comprise large, gravelled areas that are largely devoid of vegetation. In contrast, Car Park B supports a mosaic of exotic grassland and scrub vegetation dominated by hawthorn, broom, sweet briar and matagouri. No wetlands, or perennial or ephemeral streams, are present within Car Park B.

Vegetation within Car Park B is characterised by dense exotic scrub interspersed with indigenous shrub species. More extensive areas of matagouri scrub are concentrated in the southern half of the site, with smaller stands occurring elsewhere amongst hawthorn, broom and sweet briar. Mingimingi is present in small, scattered stands. Mature specimens of both matagouri and mingimingi reach up to approximately 4 m in height Sycamore trees are locally abundant on elevated ground near the southern boundary, with occasional elderberry also present. Porcupine shrub and desert broom occur as scattered individuals around scrub margins. Vines of pōhuehue are widespread across the site, and a single occurrence of the native bush lawyer was recorded near the access road.

Exotic grassland is widespread throughout the site, particularly along roadside margins and within scrub-bordered glades. The grassland is dominated by cocksfoot, browntop and sweet vernal, with lesser components of Chewings fescue and ryegrass. Common forb species include St John's wort, hawksbeard, prickly sow thistle and yarrow.

A total of 56 plant species were recorded across the site, comprising six indigenous and 50 exotic species. The indigenous species recorded—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*.

2.9.2.2 Lower Remarkables Transit Hub Fauna

The terrestrial fauna assemblage within the site is dominated by introduced bird species. Introduced Californian quail are commonly present, with blackbird, song thrush, starling, dunnock, goldfinch and chaffinch occurring at lower frequency. The Australasian harrier has been recorded foraging over adjacent farmland; however, no native bird species are known to regularly occupy the site itself.

Bird distribution records for the wider area indicate that grey warbler, New Zealand fantail and silvereye are present in the surrounding landscape and may utilise the site intermittently due to the availability of feeding, nesting and roosting habitat associated with scrub and grassland vegetation. These species are classified as *Not Threatened*.

Desktop herpetofauna assessment identifies two indigenous lizard species within the broader area: McCann's skink and mountain beech gecko. Mountain beech gecko is known to occur sparsely and is typically restricted to rocky habitats; the site is considered unsuitable for this species due to the lack of extensive rocky substrate. McCann's skink is widespread in the region and is considered likely to be present within the site, albeit at low densities.

The site provides a range of habitats for terrestrial invertebrates, including arboreal and ground-dwelling species associated with scrub vegetation, grassland, leaf litter and decaying woody material. Likely invertebrate groups include wētā, beetles, ants, spiders, millipedes, amphipods and slaters. These invertebrates form an important component of the terrestrial ecosystem and provide a food resource for insectivorous bird species that may intermittently utilise the site. Semi-natural habitats such as those present are recognised as contributing to the maintenance of local invertebrate diversity, particularly where indigenous shrub species are present.

2.10 NATURAL CHARACTER AND LANDSCAPE

The existing landscape and natural character values attributed to the Site are detailed in the Remarkables Ski Area Upgrade & Doolans Basin Ski Expansion Landscape Effects Assessment by Boffa Miskell (2026) (**"Landscape Assessment**" or "**Boffa Miskell 2026a**") and the Remarkables Ski Area Car Park and Bus Hub Landscape Assessment (2026) (**"Carpark & Bus Hub Landscape Assessment" or "Boffa Miskell 2026b")**. A copy of these assessments is provided within **Part B** of the application documents and key sections are summarised below.

2.10.1 Landscape Context

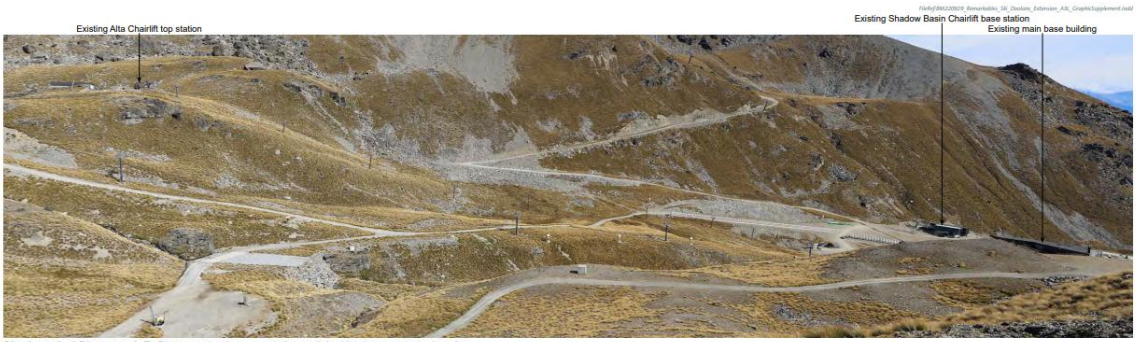
Located in the Remarkables Mountains, the site is part of one of the district's most iconic landscapes. The steep mountain slopes, ridges and peaks have formed over time through past glaciation activity, tectonic uplift and ongoing fluvial processes and are highly expressive of their formative processes. As a result, the mountains are highly valued for their skyline views across the wider Queenstown area.

From a landscape perspective, the Site can be divided broadly into three:

> The modified Rastus Burn/Kawarau catchment to the north, containing the existing Remarkables Ski Field infrastructure (**Figure 2-39**);

> The Doolans Basin catchment to the south, which is almost entirely unmodified and natural (**Figure 2-40**); and

> The lower Remarkables access and carpark, located on the lower Remarkables within an environment transitioning from rural to residential and mixed-use (**Figure 2-41)**.



Site Appraisal Photograph E: Photograph taken on existing trail, looking in a westerly direction.

Site Appraisal Photograph F: Photograph taken from upper Curvey Basin, looking in a northwesterly direction. The icebar Site is in the immediate foreground of the photograph.

Figure 2-39: Existing Remarkables Ski Field Infrastructure.

Site Context Photograph 5: Photograph looking in a southeasterly direction. The proposed water intake for snow making is located in the Doolans Creek and the access road will connect to the gondola base station on the right.

Figure 2-40: Doolans Basin Catchment

Site Photograph 5: Photograph from SH6, just ot the south of the ski field access road turn-off

Site Photograph 6: Photograph of existing carpark A, taken from an informal mountain bike track adjacent to proposed carpark B

Figure 2-41: Lower Remarkables access and car park

2.10.2 Rastus Burn/ Kawarau Catchment

The Rastus Burn is located within an ONL and is characterised by highly articulated alpine geomorphology, with notable geological features dominated by steep schist slopes, extensive scree fields, and large-scale post-glacial landslide formations. Hydrological features, including Lake Alta and a network of smaller tarns, contribute to both the landscape and ecological values of the area. The Landscape Assessment assesses the unmodified tarns and streams in the catchment as having very high natural character, but assesses the tarns and streams modified by the existing ski field as having moderate to high natural character due to the modifications.

Vegetation patterns display clear ecological stratification corresponding to altitude, aspect, and soil substrate. Regenerating indigenous Grey Shrubland and Turpentine Scrub (*dracophyllum)* dominate mid- to lower-slope environments, while higher-elevation zones, where the existing ski field is located, are defined by snow tussock grassland and alpine cushionfields, with alpine cushion bogs forming in moist areas adjacent to tarns and streams. These vegetation communities deliver ecological functions including erosion control, habitat provision, and hydrological regulation, while maintaining the visual coherence of the alpine system.

The landscape is subject to ecological pressures from a range of pest species that alter vegetation and faunal composition. Mammal pests such as deer, goats, and mustelids

exert grazing and predation pressures, while invasive plant species, including wilding conifers, disrupt native plant communities and visual integrity.

Land use on the lower terraces is characterised by pastoral activities, while built development has a low visual impact. The Remarkables Ski Area is visually recessive in wider landscape views but easily visible from within the basin, with the large Rastus Burn Base Building, chair lifts, and modified land clearly noticeable, detracting from the area's natural appearance. Additionally, the existing ski field access road introduces a linear visual element that contrasts with the mountain's natural form when viewed from the wider Wakatipu Basin.

Overall, while the wider Remarkables catchment has high geomorphological, hydrological, perceptual and cultural values, these values are reduced within the Rastus Burn due to the modified nature of the area by ski field-related infrastructure, roads, structures, and associated human activity, as shown in **Figure 2.42 - 2.43**.

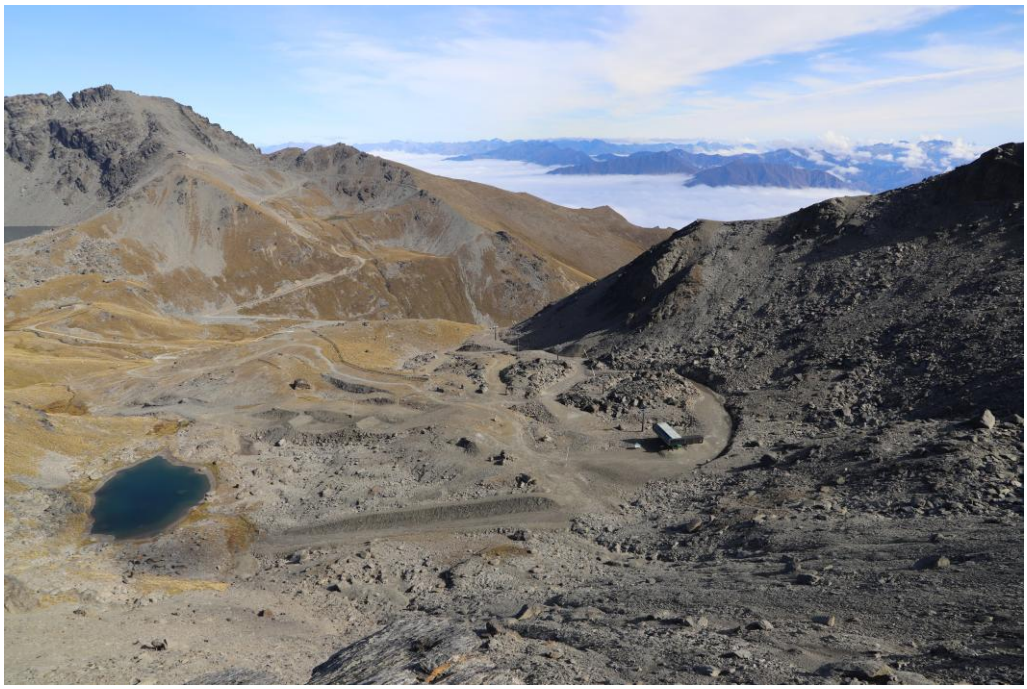


Figure 2-42: Rastus Burn catchment and Remarkables Ski Area looking down the mountain

Figure 2-43: Rastus Burn catchment and Remarkables Ski Area looking up the mountain

2.10.3 Doolans Basin Catchment

The Doolans Basin is located within an ONL and within the Kawarau Remarkables Conservation Area. The wider catchment exhibits exceptionally high visual and scenic values, defined by its rugged landforms, steep tussock and shrubland-covered slopes, and expansive valley sequences.

The Doolans Basin is characteristic of the broader glacial geomorphology. This includes steep schist slopes, alluvial fans and large-scale post-glacial landslide formations. Key local features within the Doolans Catchment include Mount Tūwhakarōria, and Te Kārearea Peak to the south, and Mount Salmond to the north.

A network of small tarns within the Doolans Basin contributes to surface water retention and ecological connectivity. These upper alpine streams are devoid of structures and modifications and are flanked by extensive alpine tussockland, with gravel and rock in the upper reaches. The hydrological system exhibits strong interdependence with geomorphological processes, influencing slope stability, vegetation zonation, and visual legibility and is assessed by Boffa Miskell as having very high natural character.

The landscape is renowned for jagged rocky peaks, rocky outcrops, schist slopes/rock fields and scree. This also includes the associated ecological values, such as herb fields,

tussock lands, seepage areas, wetlands, tarns, and waterfalls, with numerous vegetation communities present, as described in Sections 2.8 and 2.9 of this report.

Due to the remoteness of this area, there are few human-made modifications or structures. Four-wheel drive tracks can be found at lower elevations associated with high country farming activities, including a rough 4WD track that extends from Coal Pit Saddle to Ben Cruachan via Mt Salmond. Additionally, some low-level gold working and the Glen Roy Racemans' Hut and water race were established in the lower elevations of the Doolans Creek Catchment. These areas are located outside of the project area.

The Tāpuae o Uenuku Hector Mountains, including the Doolans Basin catchment, are an excellent example of a highly intact and legible glacial landscape expressive of the fluvial and alluvial formative processes. This is reinforced by the unmodified hydrology within the catchment and vegetation patterns, which remain coherent from the screes in the upper reaches to the more-modified pasture in the valley below.

The alpine environment of the Doolans Basin catchment affords several transient and aesthetic characteristics. This includes seasonal snow cover, shifting light and shadows, and atmospheric conditions. The intact, legible transition from the sublime, wild alpine landscape in the upper reaches to the valley floor's pastoral character is a key feature of this landscape.

Overall, the Doolans Basin catchment has a very high level of intactness, expressiveness of formative processes, and coherent vegetation sequence across the wider context, as shown in **Figure 2-44**.

Figure 2-44: Doolans Basin Catchment

2.10.4 Lower Remarkables Transit Hub

The lower Remarkables Transit Hub is located at the base of the western face of the Remarkables Range, within the lower slopes and fans of the range. As identified in Section 2.4, the Boneyard is located within an ONL, however the remaining Lower Remarkables Transit Hub fall outside of this area.

The Lower Remarkables Transit Hub area is characterised by a modified landscape comprising grazed exotic pasture, grey shrublands, and invasive woody species such as broom, briar, and hawthorn, with limited remnants of indigenous vegetation.

Since the development of the Jacks Point Resort Zone, the southwest portion of the valley floor has transitioned from a rural landscape to one of substantial residential developments, including Hanley Farm, Coneburn, and Parkridge. The eastern side of the valley, including the lower Remarkables slopes, has experienced more intensive modification. This area contains the Remarkables Ski Field access road, ski-related car parking areas, industrial activities within the Coneburn Industrial Zone, gravel extraction and storage areas, and residential development along Stoney Creek Lane and north of the ski field road. These developments are generally located on upper terraces behind earth bunds, which reduces their visual prominence. The existing ski field access road introduces a strong linear element that cuts across the natural landform pattern of the

lower and mid-slopes as it winds northwards toward the Kawarau River and into the Rastus Burn catchment.

Vegetation patterns reflect historic land use and disturbance. The lower slopes are dominated by grazed exotic grassland, with dense shrubland of invasive species adjacent to the ski field road. Stands of old-growth matagouri are present in the southwest, while mature exotic conifers occur in southern parcels. Indigenous mountain beech is limited to narrow ribbons along some watercourses, which, like other streams in the area, are lined with a mix of native and exotic trees and shrubs. Gravel surfaces dominate Carpark A and the Boneyard, while Carpark B remains largely in dense shrubland.

Across the wider landscape, the scale, form, and physical dominance of the Remarkables Range remain the defining landscape element, with built development generally subordinate to the underlying landform, as shown in **Figure 2-45**.

Site Photograph 3: Photograph of existing carpark A, looking in an easterly direction, showing existing bus shelter

Site Photograph 4: Photograph of existing carpark A, looking in a northerly direction

Figure 2-45: Existing Carpark A and Access Road

2.11 GEOLOGY

The 1:250,000 Geological Map of New Zealand characterises most of the site as situated on greyschist and minor greenschist, interlayered with psammitic and pelitic greyschist. The area is characterised by a hard sedimentary geology.

Doolans Creek is characterised by steep slopes, shallow soils, and schist bedrock, with its geomorphology shaped by glacial and fluvial processes. Moraine remnants are visible on site, with active scree zones and confined channel forms.

Geological descriptions from the recent groundwater monitoring borehole installation[26] confirms that the disposal ponds are comprised of sandy gravels overlying schist bedrock. There appears to be a bedrock high on the northwestern edge of the terrace which is at a consistent elevation with the top of a schist outcrop on the opposite side of the Rastus Burn. The terrace that the disposal ponds are located on is likely to be a ledge in the bedrock formed during previous glaciations.

Soil within the Site is typical of that of the wider Otago Region, generally 'Brown Soil', a mature soil with dark grey-brown topsoil and brown or yellow-brown subsoil. The soils mostly occur on hilly to steep landscapes and have good drainage and structure with low fertility.

The Site does not sit over any groundwater protection zones. The aquifer is expected to be low-yielding within the low-permeability schist bedrock. The water table would be expected to be a subdued reflection of the local topography with low flows but steep gradients towards Doolans Creek.

2.12 ARCHAEOLOGICAL AND HERITAGE VALUE

The history of both the existing Remarkable Ski Area and the Doolans Basin, as well as an assessment of the Site's heritage values for the Project, is detailed in the Remarkables Ski Area Upgrade and Doolans Expansion – Heritage Assessment, which was prepared by New Zealand Heritage Properties Ltd ("**Heritage Assessment**" or "**NZ Heritage Properties 2026**). The Heritage Assessment is provided in **Part B** of the application documents. A summary of the archaeological and heritage values for the sites recorded within the Site is provided below.

The Heritage Assessment reports no documented archaeological or scheduled heritage sites in the CODP.

2.12.1 Archaeological Values

The Heritage Assessment has identified that no specific archaeological sites were documented or observed during an on-site walkover at the Site. **Figure 2-46** shows the

[26] Additional groundwater monitoring bores were installed in early 2026 as part of preparing this application.

Site, identified archaeological and heritage features and areas located across the wider conservation estate.

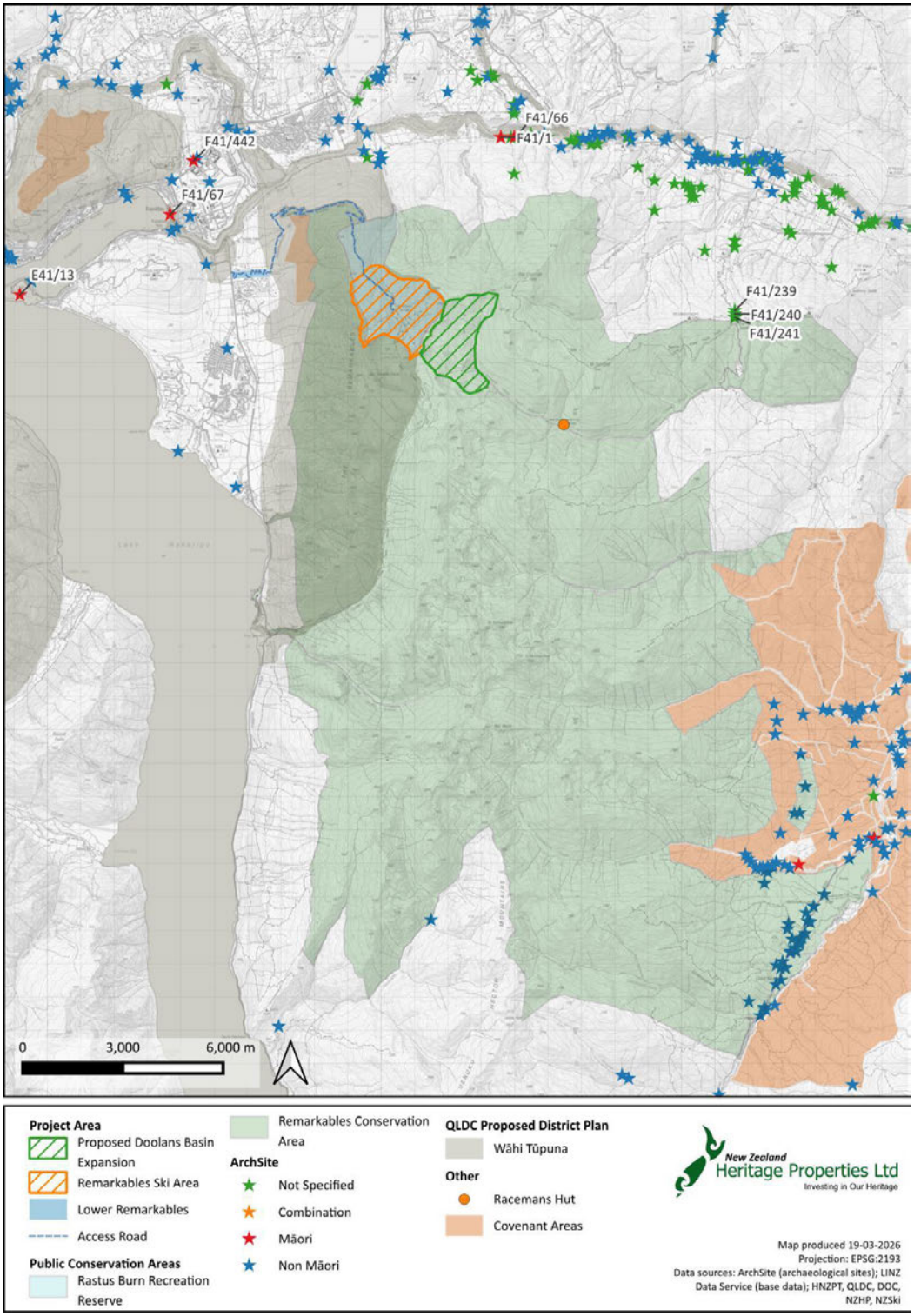


Figure 2-46: Remarkables Conservation Area, Ratus Burn Recreation Reserve, adjacent covenant areas, and recorded archaeological sites.

The historical significance of the region is deeply anchored in Māori occupation and navigation. Iwi groups, including Waitaha, Kāti Mamoe, and Kāi Tahu, utilised the interior for seasonal hunting (mahinga kai), collection of stone resources (mahinga toi), and as a crucial transit network for trading pounamu (greenstone). The Kawarau and Nevis Rivers historically served as travel routes (ara tawhito). Although permanent settlements before contact were infrequent due to the challenging climate, the landscape features nohoaka (temporary camps) and holds substantial spiritual and traditional importance as a wāhi tūpuna (ancestral landscape).

Although the wider Wakatipu landscape contains places associated with Māori seasonal travel, mahika kai and ara tawhito, no specific evidence of Māori activity was found within the Site. The high alpine elevation is considered unlikely to have supported nohoaka or permanent occupation.

Historical documentary sources indicate 19th-century activities near, but not within, the Site. These include gold mining on the right branch of Doolans Creek during the mid-1860s, the construction of the Welshmen's/Cambrian water race between 1869 and 1872 sourced from upper Doolans Creek, and coal mining in nearby localities such as Doolans Saddle and Coal Pit Saddle. However, no physical remains of these activities were identified within the Project's footprint. There is low archaeological potential within the Site, and no evidence of archaeological sites within the Project's footprint.

2.12.2 Heritage Values

These values are primarily attributed to historic gold and coal mining systems, including water races, tailings, and mining shafts, as well as the region's pastoral farming history. Additionally, broader Māori ancestral connections are evident in the region's travel routes and resource areas.

With considerations specific to the Project footprint, there are no listed heritage items (HNZPT, District Plan, or local schedules) within the Remarkables Ski Area / Rastus Burn, and the Doolans Expansion Area, and no heritage buildings, structures, or recorded sites occur within the development area.

The Welshmen's water race and Glenroy Raceman's Hut are heritage features in the wider landscape; however, they are located approximately 5 km south of the Site and outside the Project area.

The Heritage Assessment describes the historical land-use context of the Site and its surrounding landscapes. It notes that the area was previously part of extensive pastoral runs. High alpine elevations limited pastoral habitation, with no recorded huts, yards, or other built pastoral structures within the expansion areas. Although gold and coal mining

took place in the broader Doolans Creek environment, documentary evidence does not indicate the presence of structures or workings within the Project area itself.

The Heritage Assessment states that the Site is an undeveloped, remote alpine environment and therefore does not exhibit significant landscape heritage character. The Project area itself contains no identified heritage features, but the Doolans Basin area contributes to the setting of the heritage values present elsewhere in the Kawarau/Remarkables Conservation Area.

2.13 RECREATION AND PUBLIC ACCESS

The existing recreational uses and public access attributes of the Site are detailed in the Remarkables Ski Area Upgrade and Doolans Expansion - Recreation Assessment by Rob Greenaway & Associates (2026) ("**Recreation Assessment" or "Greenaway 2026")** which provides an assessment of existing public access and recreation values and activities in the vicinity of the Site, as set out in **Part B** of these application documents.

The Doolans Basin and the surrounding Remarkables/Rastus Burn area support a wide range of year-round recreational activities. The setting is characterised by its steep alpine landforms, high elevation, and proximity to Queenstown, providing accessible backcountry terrain within a largely undeveloped natural environment. There is a diverse range of year-round recreational activities, with a distinct seasonal focus.

Winter recreational use in Doolans Basin is popular, especially for ski touring and split-boarding, supported by the south-facing slopes and reliable snow. Typically, 20-50 visitors come on fine days, with occasional higher numbers. Other activities include mountaineering, ice climbing in Wye Creek, alpine skills training, and outdoor education. The terrain suits all skill levels, from beginners to experts. Mountaineers and ice climbers often use Wye Creek and nearby ridges for access and training. Snowshoeing is less common but has been observed by NZSki staff.

Summer recreation use is lower, mainly around Wye Creek and routes to Coal Pit Saddle, Lake Alta, and ridges, with limited activity in the wider Doolans catchment. Activities include hunting (late Nov to late May targeting red deer, fallow deer, chamois, goats), hiking, tramping, trail running, camping near water sources, and occasional paragliding, snow-kiting, and speed-riding.

2.14 TRANSPORTATION

An overview of the existing transportation network and car parking associated with the Project are detailed in the Remarkables Ski Area Upgrade and Doolans Expansion – Integrated Transport Assessment prepared by Stantec NZ (**"Transportation Assessment"**

or "**Stantec 2026j"**). The Transportation Assessment is provided in **Part B** of the application documents. A summary of the transportation network and assets within the Site is provided below.

2.14.1 Roading Network

Figure 2-47 shows the Remarkables Ski Area's location relative to the highway network and nearby residential areas. The Site is located approximately 10 km by road from central Queenstown, less than 4 km from Frankton and Queenstown Airport, with Jack's Point and Hanley Farm about 5 km and 4 km south, respectively. Homestead Bay lies south of Jack's Point, and the Coneburn industrial zone is about 1 km south of the access road. The 13 km-long Remarkables Ski Field Access Road runs from SH6 to the Rastus Burn Base Area.

Figure 2-47: Site location in wider context.

Key roads and roading infrastructure near the Project are shown in **Figure 2-48**. SH6 is a two-lane road with a posted speed limit of 100 km/h. It is classified as an Arterial under the Operative Plan and as SH6 under the Proposed Plan.

SH6 is designed to facilitate high-capacity movement of freight, tourists, and general vehicular traffic. This road is constructed to safely and efficiently accommodate large volumes of vehicles. SH6 connects all major settlements within the Wakatipu Basin. Near the Project site, SH6 is signposted with advisory speed limits of 55 km/h and 65 km/h.

Boyd Road, a local road situated approximately 300 meters north of the Remarkable Ski Area Access Road, has an advisory speed limit of 65 km/h. It has two approaches, both controlled by give-way signs. Additionally, Coneburn roundabout, located 1.2 km south of the Remarkable Ski Field Access Road, provides access to the Coneburn Industrial Zone and the Park Ridge residential subdivision.

Traffic volume data indicate that daily vehicle movements on SH6 near the Project have increased from approximately 9,000 in 2021 to over 17,700 in 2025. This signifies an average annual growth rate of about 13%. The increase in traffic volumes is attributed to recent residential development in the southern area, with the existing ski field having had only a minor impact on these volumes.

Figure 2-48: Remarkables Ski Field local area Context.

2.14.2 Site Access

An existing give-way-controlled intersection is situated at the junction of the Remarkables Ski Field Access Road and SH6 (see **Figure 2-49**). The straight alignment of the highway at this location ensures that the available sight distances are notably favourable, approximately 250 meters to the north and 300 meters to the south. The intersection

features a widened shoulder on the northern approach of SH6, facilitating left-turning vehicles to initiate deceleration from the southbound traffic lane.

During the ski season, temporary traffic management at the access road/SH6 intersection directs visitors to turn left initially and then U-turn at the Coneburn roundabout in the afternoon. Queue lengths on the access road during peak departure periods indicate that the intersection is already operating at or beyond capacity.

Figure 2-49: SH6 / Remarkables Ski Field Access Road.

The 13 km access road (of which 9 km is sealed and the upper 4 km are gravelled) has a winding alignment that ascends from about 330 m to 1,600 m at the base station car park, with short sections of moderate to steep gradients. Roadside barriers have been installed along much of the road to protect vehicles from running off the road during loss-of-control situations. The sealed section provides two marked lanes, generally with edge lines (**Figure 2-50**).

Figure 2-50: Typical view of Remarkables Ski Field sealed part of the access road.

The gravelled section of road provides ample width for two-way vehicle movement (**Figure 2-51**). The lower section of the road has several widened shoulders, allowing slow vehicles to pull over so faster vehicles can pass. These areas are also used informally as stopping points for tourists during the summer and snow chain bays in the winter.

Figure 2-51: Typical view of Remarkables Ski Field gravelled section of the access road.

2.14.3 Parking Facilities

The locations of car parking facilities at the Remarkables Ski Area are shown in **Figure 2-52**.

Figure 2-52: Remarkables Ski Area car parks.

There are currently six parking areas. Car parks 1, 2 and 3 are close to the Rastus Burn Base Area, with car park 4 being about 1.5 km lower down the Remarkables Ski Field Access Road. Car park 5 is located about 11 km from the Rastus Burn Base Area and is used only on days with very high parking demand. NZSki does not permit visitors to walk on the Remarkables Ski Field Access Road below car park 3 for safety reasons and provides a shuttle service between the Rastus Burn Base Area and car parks 4 and 5.

A large parking area near the SH6 car park serves as a transit point for 'park and ride' with NZSki bus services during ski season. In summer, it has two parking zones: one before a barrier controlling access to the Remarkables Ski Field Access Road, and one beyond it, with capacities of about 90 and 300 spaces respectively. During the ski season, barriers and parking controls are removed.

The existing car parks, including parking facilities near SH6, can accommodate a total capacity of 1,357 vehicles.

The car parks are managed by the NZSki operations centre using traffic marshals, radio communication, and dynamic signage to direct vehicles to available spaces and manage flow along the access road.

Observed car park occupancy rates indicate that the upper ski field car park capacity is just sufficient to meet the 90th percentile of existing demand, but not on the busiest days of the season. It is understood that the SH6 carpark is underutilised.

There are no bus stops for public transport services near the ski field. NZSki operates shuttle buses ("**the Ski Bus**") from Queenstown and Frankton to the Remarkables Ski Area. All buses stop at the lower parking area at the start of the Remarkables Ski Field Access Road.

Private vehicle travel, including pick-up/drop-off, typically accounts for over 70% of the travel mode share, with ski bus services accounting for about 20-22%. On busier days, more visitors choose to travel by private vehicle.

2.14.3.1 Travel Mode Share Management

NZSki implements 'carpool priority days' during the season for the anticipated busiest days, including school holidays, weekends following school holidays, and powder days.

A tiered parking strategy is implemented to minimise the potential for congestion at the base station. This includes prioritising the use of carparks 1 to 3 for high occupancy vehicles (i.e., three or more people). Lower elevation carparks cater to early arrivals and bus staging, while mid- and upper-level carparks serve later arrivals, staff, and operational vehicles. The base area parking provides short-stay, accessible, and priority spaces closest to guest facilities.

2.14.4 Road safety

In the five-year period from 2021 to 2025, 16 crashes were reported on the highway, with one causing serious injury and five resulting in minor injuries; none of the injury crashes occurred at the ski field access. The primary hazard along this section of SH6 is the number of private driveways.

On the Remarkables Ski Field Access Road, three crashes have been recorded in the five-year period between 2021 to 2025. One crash caused serious injury to a van driver descending the road in June when they lost control on a curve and slid into a bank. Two minor injury crashes were reported during the winter ski season and involved only single vehicles, with drivers losing control while travelling downhill in slippery conditions.

2.15 INFRASTRUCTURE AND SERVICES

The existing infrastructure and servicing within the Site with respect to existing water supply, stormwater, power supply and telecommunications is discussed in the following sub-sections and is described in detail in the following reports prepared by Stantec:

- Remarkables Ski Area Upgrade and Doolans Expansion – Electric Power Concept Report (**"Electricity Report"** or **"Stantec 2026h"**);
- Stormwater Report;
- Remarkables Ski Area Upgrade and Doolans Expansion – Telecommunications Infrastructure Concept Report (**"Telecommunications Report"** or **"Stantec, 2026i**"); and
- Remarkables Ski Area Upgrade and Doolans Expansion - Potable Water Supply Infrastructure Concept Report (**"Water Supply Report"** or **"Stantec 2026e**").

These assessments are provided in **Part B** of the application documents, and key baseline information is summarised in the following sub-sections.

The existing wastewater treatment system within the Rastus Burn is discussed separately in Section 3.16.

2.15.1 Water Supply

2.15.1.1 Existing Water Supply

The existing buildings and activities at the Remarkables Ski Area have access to potable water and firefighting supplies, sourced from the Rastus Burn Stream via a weir and intake approximately 400 meters above the base building.[27] This system allows a maximum instantaneous take rate of 5.2 L/s, a daily volume of 450 m^3, and an annual total of 151,200 m^3.

NZSki holds two consents[28] which allows for the taking of primary and supplementary allocation from Lake Alta and the Rastus Burn for the purposes of snow making.

2.15.1.2 Potable Water Treatment System

The existing Base Building Water Treatment Plant operates on demand and has a maximum treatment capacity of 6.4L/s. Treated potable water is distributed throughout

[27] RM16.115.01.

[28] RM11.368.03 and RM11.368.04.

the building, to the Maintenance Workshop, and the Medical Facility / Patrol Building. There are no existing treated water tanks in the water supply system.

2.15.1.3 Firefighting System

The existing Rastus Burn Base Building has fire sprinklers, requiring a minimum supply volume of 45,000 L, supplied from the same 24 m^3 potable water supply tanks. No other buildings on the Site require or are provided with firefighting systems.

2.15.2 Stormwater

The existing Rastus Burn Base Building includes a stormwater system with downpipes and piped discharge to the adjacent creek, which originates in Shadow Basin.

Stormwater flow on existing trails and access roads in the Rastus Burn is generally collected in side water channels and directed to the original flow path via either ephemeral streams or sheet flow.

Stormwater from the existing lift stations generally flows through narrow, robust gutters that drain to cantilevered pipes discharging at the machine deck level. Downpipes under the machine deck level are at risk of contacting the carriers during windy conditions, preventing snow management beneath the structure, and are therefore avoided.

2.15.3 Power Supply

Electricity for ski field operations is delivered from a substation on the right bank of the Kawerau River via a 33 kV short spur line from the main trunk system serving Frankton and the Whakatipu Basin. A transformer supplies 11 kV through an overhead line up to the Rastus Burn before terminating in a below-ground cable feeding the base facilities.

2.15.4 Communications Infrastructure

An existing wireless bridge between Coronet Peak and the ski field provides a data connection for the ski field, with infield buried cables providing telecommunications connectivity across the ski field. Satellite internet units (i.e. SpaceX Starlink units) are maintained on the site for redundancy.

A lease area measuring 25 m^2 at the base of the Curvey Basin chairlift encompasses an existing telecommunications facility comprising a mast and antenna array operated by various network utility providers, namely One NZ and 2 Degrees. The facility comprises the following components:

> A freestanding monopole mast, 10.5 meters in height;

- A microwave dish antenna, 0.997 meters in diameter, connected to the monopole and mounted at 5.0 meters above ground level; and
- Three ancillary equipment cabinets, each not exceeding 2 meters in height.

Radio communication within the Rastus Burn is provided via a radio repeater on the north side of Shadow Basin for internal use.

2.16 WASTEWATER INFRASTRUCTURE

The existing wastewater treatment system and associated disposal field, which is made up of three dispersal fields, (collectively referred to as being the "**Wastewater System**"), is located within Rastus Burn. The wastewater system is located near the Rastus Burn Base Building with the dispersal field located lower down the ski area, as shown in **Figure 2-53**.

The dispersal fields are elevated approximately 50 m to 100 m above the true right bank of the Rastus Burn, with a horizontal buffer of 50 m to 100 m. A representative image of the dispersal fields is provided in **Figure 2-54.**

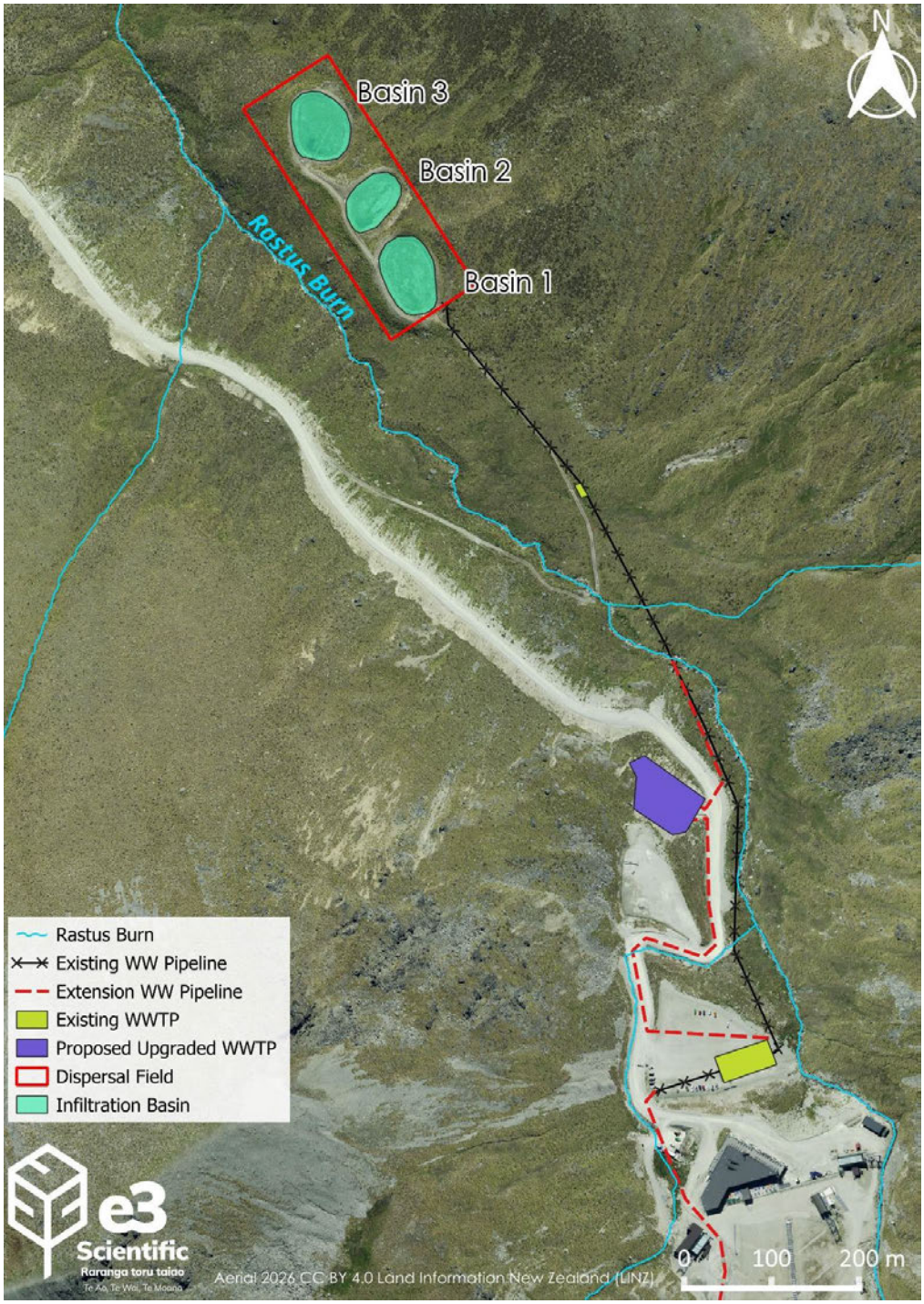


Figure 2-53: Wastewater System overview.

Figure 2-54: Dispersal Field 3 looking north.

2.16.1 Existing Wastewater Discharge

NZSki holds an existing discharge permit[29] for the discharge of treated wastewater to land for the purpose of disposal of treated wastewater and water supply by wash from the Remarkables Ski Area. This discharge permit was granted on 16 April 2015 and expires on 10 April 2030. A copy of the discharge permit is included in **Part D** of the application documents.

The discharge permit includes the following consent conditions that are relevant to this application:

- Condition 2 describes the existing Wastewater System;
- Condition 3 limits the volume of the discharge to 127.44 m3/day and limits the hydraulic loading rate to 20 mm/day in any part of the disposal area;
- Condition 4 requires a flow meter to be in place to monitor the volume of effluent being discharged;
- Condition 6 requires an Operation and Management Manual to be in place and that the Wastewater System be operated in accordance with this manual;

[29] RM14.336.01.

- Condition 7 requires sampling of effluent discharged to the dispersal field, water in the Rastus Burn upstream of the dispersal field and 50 m, 200 m and 1,500 m below the dispersal fields, and groundwater in three monitoring bores;
- Condition 8 specifies what each sample collected in Condition 7 must be analysed for;
- Condition 9 specifies that the sampling required by Condition 7 must be undertaken monthly, unless there is a reason why the sampling could not be undertaken; and
- Condition 11 requires a biological survey be undertaken in the Rastus Burn every two years, with a report prepared summarising the results to be submitted to ORC.