Appendix V

Easement Application Environmental Impact Assessment

CHARACTER DESCRIPTION SUMMARY

Geology	• Mostly Schist with associated rockslides and landfall
Soils	• Predominantly upland and high-country Yellow Brown Earths and stony steep-land soils from schist and related slope deposits
Ecology	• Ranges from low ecological value at base of mountains to high ecological values with increasing altitude • Low and tall bracken fernland • Tall tussock grassland • Cushionfields and alpine herbfields • Snowbank/Fellfield and Boulderfield communities
Visibility	• High visibility from most viewpoints, excluding some areas of valley floor • Treble Cone 'Home Basin' is hidden from view from the Lower Motatapu Valley floor.
Existing Land Uses	• Recreation, open space, conservation
Potential Land Uses	• Limited due to steepness and visibility • Further intensification of Treble Cone Ski Field • Visual amenity/open space/conservation
Potential to Absorb Change	• Low - Steep slopes highly visible with low mitigation potential, some areas not visible from valley floor • However, most of the Treble Cone Home Basin is hidden from view from the Lower Motatapu Valley floor
Infrastructure	• Access to the upper basin is a limiting factor for further development of Treble Cone as well as access to mountains • Generally, Ski field infrastructure – provides an existing base for further intensification of activity and the infrastructure will require up-grading over time.
Public Access and Recreation	• Access via Treble Cone ski field access road available. • Skiing, snowboarding, tramping, mountain biking.

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
Refer attached reports: Beale Consultants – 'Terrestrial Ecological Assessment'; Water Ways Consulting Limited – 'Treble Cone Ski Area Assessment of Aquatic Ecological Values'; and Land Landscape Architects – 'Landscape and Visual Assessment'			
Effects on the **landscape** including **visual** composition of the landscape e.g. ability of landscape to accommodate changes.	Treble Cone Ski Field is on the east facing slopes of the Harris Mountains above the Matukituki and Motatapu Valleys and lies in the "Southern Alps". The Southern Alps were formed from 100 to 300 million-years ago, as a result the collision between the Pacific Plate with the Indo-Australian plate along the Alpine Fault. For much of the past two million years, the rising Southern Alps were buried under huge ice-age glaciers up to 1,000 metres thick. These glaciers filled valleys as far as 100 kilometres east of the main divide of the Southern Alps; and extended westward beyond today's coastline. The glaciers carved out the sheer-walled, U-shaped valleys and fiords of Fiordland, and the deep southern lakes. The mountain slopes of the Harris Mountains are steep to very steep and are characterised by steeply dipping schist with rugged rock outcrops and bluffs evident at all elevations. The mountain faces also exhibit extensive areas of downward creep, boulderfields and	Treble Cone Ski Field contains various buildings, passenger lift systems and other infrastructure to facilitate Ski Area Activities including summer sport activities such as mountain biking. This infrastructure has the potential to adversely affect the landscape values of the Harris Mountains. The potential of a landscape to absorb change mainly depends on two key factors: a) Its landscape character sensitivity; and b) Its visibility. It is also acknowledged that landscape is only one component when considering the potential for change and that other considerations relating to heritage, cultural values, servicing, access, geology, hydrology also play a role in this assessment. Being Outstanding Natural Landscape (ONL) Treble Cone Ski Field generally has high landscape character sensitivity. However, the Treble Cone Home Basin (where the base building is located) provides a significantly higher capacity to absorb	All the ski field infrastructure is below the ridgeline from Black Peak in the north through to Treble Cone itself to End Peak in the South. That is no lift towers project past the ridgeline to impact on the Harris Mountain skyline. The ski field infrastructure is mostly in neutral colours to enable it to be visually recessive especially in the summer months when there is little snow on the mountain. In the context of this easement application the effects of the following rights of 'way' are mostly mitigated because where possible, all the infrastructure associated with these activities is buried making it less visually conspicuous. Some of the pipes that convey water to the mobile snow making guns are not buried yet when the mountain is most visited these pipes are buried in snow and are not readily detectable: a) drain water; store and convey water for snow making; b) drain sewage and process wastewater; c) to convey electricity;

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	slot gorges. Glacial landform patterns are highly legible and include ice worn slopes and lumpy ice shaped topography, rocky bluffs, and boulder fields. Waterfalls cascading over steep slopes and bluffs are a feature. The Treble Cone area is mostly in the catchment of the north branch of the Motatapu River. The Twin Falls along with the Treble Cone Access Road are dominant features when viewing the mountains from the valley floor (Wanaka – Mount Aspiring Road). Yet, the curvature of the mountain range obscures views of the ski field infrastructure from the valley floor. Between Lake Wanaka and the foot of the Harris Mountains lie a series of glacial schist bedrock features; Roches mountonnees. These features block views of the lower reaches ski field access road when viewed from Lake Wanaka. Yet, when the Treble Cone Access Road was first constructed significant visual scars were created on the landscape and these scars could be seen from many areas. Over the years the scarring effect has diminished, and the road's	development as it is already modified to a degree; it is not readily visible from the valley floor; compared to the remainder of the landform with its generally highly visible slopes, (refer figure 19-20 in Appendix IV).[2] That is, at the distance the existing ski area infrastructure can be viewed from, it is barely legible to the untrained eye. With respect to the Ski Field Access Road the scars in the landscape created by the access road construction have diminished overtime. However, because the road criss-crosses the lower slopes of the Harris Mountains it will always remain to a degree visually conspicuous. Moreover, the visible lower slopes of the Harris Mountains traverse through modified farmland lessening the adverse effects of the access road on landscape values.	d) convey LPG; and e) convey telecommunications and computer media. Consequently, it is the infrastructure associated with 'right of way' activities including the access road which has the potential to adversely impact the landscape. The Ski Field 'right of way' infrastructure is mitigated by the significant distance and lack of legibility from within the Wanaka Basin and other public places. Regarding the access road, the clay banks above the road (road cuts) are now covered with algae, mosses and lichens making the road cuts much less visible today. Also, the minerals present in the surface soils of the road cuts have oxidised over time darkening the road cut surfaces making them less visually conspicuous. In the overall setting of the Harris Mountains the Treble Cone Access Road will not detract from the appreciation of the wider and more prominent landscape vistas.

[2] https://www.qldc.govt.nz/media/z3fc1esj/s0583-glendhubaytrustees-t12-fergusonc-supplementaryevidence.pdf

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	impact is not that great in comparison to some other ski field roads. [1] Nevertheless, the Harris Mountain range forms a dramatic backdrop to the Glendhu Bay area when the ski field area is viewed from Lake Wanaka. Visually impressive peaks and alpine basins occur along the Harris range with Treble Cone (the peak) and End Peak being the most notable. However, from this distance the ski field infrastructure is not readily visible this is especially so in winter when snow blankets the ski field.		
Effects on **cultural values** of Tangata Whenua or members of the public	Ngai Tahu In pre-European times the mountain's Maori name, Kapakapa-toitoi, described a fluttering bird.[3] Wanaka is one of the lakes referred to in the tradition of "Ngā Puna Wai Karikari o Rakaihautu" which tells how the principal lakes of Te Wai Pounamu were dug by the Rangatira (chief) Rakaihautu. For Ngāi Tahu, traditions such as this represent the links between the cosmological world of the gods and present generations. These histories reinforce tribal identity and solidarity, and continuity between	The main commentary with respect to Ngai Tahu cultural values relates mainly to Lake Wānaka. Nonetheless the mauri of Wānaka represents the essence that binds the physical and spiritual elements of all things together, generating and upholding all life. Consequently since Treble Cone Ski Field area is mostly in the catchment of the north branch of the Motatapu River which in turn flows into Matukituki River and then Lake Wānaka. In addition, the Matukituki River (Mātakitaki is the correct spelling), is also fed by streams from Treble Cone, which flows into the west side of Lake Wānaka.	Maintain wastewater treatment plant (including drains that feed into the plant) in optimum condition including regular maintenance and monitoring. Ensure appropriate spill kits are maintained in site (sullage and petrochemical). Ensure any bulk fuel stored on site is bunded and maintain stationary container system compliance certification.

[1] https://www.linz.govt.nz/crown-property/crown-pastoral-land/status-and-location-crown-pastoral-land/cattle-flat-otago
[3] CONWAY,M. *Treble Cone.* Clean Green Press, 2014.

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
	generations, and document the events which shaped the environment of Te Wai Pounamu and Ngāi Tahu as an iwi.[4] The name "Wanaka" is considered by some to be a South Island variant of the word "wānanga" which refers to the ancient schools of learning. In these schools, Ngāi Tahu tohunga (men of learning) would be taught whakapapa (genealogies) which stretched back to over a hundred generations and karakia for innumerable situations. Lake Wānaka was traditionally noted as a rich tuna fishery, with many thousands of the fish once being caught, preserved, and transported back to the kainga nohoaka of coastal Otago. A kaika known as Nehenehe lay in the shadow of Treble Cone at the junction of Motatapu and Matukituki Rivers.[5] The tüpuna had considerable knowledge of whakapapa, traditional trails and tauranga waka, places for gathering kai and other taonga, ways in which to use the resources of Wānaka, the relationship of people with the lake and their dependence on it, and tikanga	Hence activities on the Ski Field may have the potential to adversely affect the mauri of Lake Wānaka. During the 1879 Smith-Nairn Royal Commission of Inquiry into the Ngāi Tahu land claims, Ngāi Tahu kaumātua recorded Mātakitaki as a kāinga mahinga kai (food-gathering place) where tuna (eels), kāuru (cabbage tree root), and aruhe (bracken fernroot) were gathered. [8] Accordingly, it is not only Lake Wānaka which is of significance to Ngāi Tahu it is the wider catchment. Of particular concern, is Treble Cone Ski Fields: wastewater management; oil, diesel, or hydraulic fluid spills; and damage to vegetation which causes topsoil and sediment to flow into the catchment during snow melt or rainfall events.	Maintain the groomers and other machinery used on site, in the best condition with regular maintenance including the regular checks of hydraulic hoses. Mop up any spills which do occur by using best practice spill retrieval techniques and prevent any spillage into waterways. Removing any affected snow from the site to an appropriate site for disposal. Avoiding grooming areas with shallow snowpack and uncovered vegetation. Follow the direction of the attached Site Restoration Protocol between Treble Cone and the Department of Conservation (DOCdm1598630) that details the mitigation methods to minimise the impacts on the environment from the works undertaken and to rehabilitate work sites to a high standard.

[4] https://www.legislation.govt.nz/act/public/1998/0097/latest/DLM430869.html
[5] CONWAY,M. *Treble Cone.* Clean Green Press, 2014
[8] http://www.kahurumanu.co.nz/atlas

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	for the proper and sustainable utilisation of resources. These values remain important to Ngäi Tahu today. Consequently, under Ngai Tahu Claims Settlement Act 1998 Lake Wanaka is a statutory acknowledgement area. The mauri of Wänaka represents the essence that binds the physical and spiritual elements of all things together, generating and upholding all life. All elements of the natural environment (including the Harris Mountains) possess a life force, and all forms of life are related. Mauri is a critical element of the spiritual relationship of Ngäi Tahu whänui with the area. [6] The Ngāi Tahu believed snow was the offspring of the deity Whēkoi. When it snowed, they would say, 'Kai te rere te tama a Whēkoi' (the son of Whēkoi is falling). Others saw ice and snow as the children of Whaitiri (goddess of thunder) or described them as 'the fish of Whaitiri'.[7]		
Effects on **cultural values** of other	Europeans had been aware of the presence of large, mountain lakes with good pastoral prospects in this part of the South Island's	The value of the Treble Cone Ski Field and a recreational asset is generally recognised by the wider community.	N/A

[6] https://www.waitaki.govt.nz/our-services/planning-and-resource-consents/Documents/RMA/Useful/Kai%20Kahu%20Ki%20Otago%20Natural%20Resources%20Management%20Plan%202005.pdf
[7] https://teara.govt.nz/en/tawhirimatea-the-weather/page-6
[8] https://www.orc.govt.nz/media/1209/4-water-perspective.pdf

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
members of the public	interior since the 1840s. However, the first Pastoral Runs in this part of the South Island were first surveyed and taken up in 1858. James McKerrow an acolyte of Otago's Chief Surveyor John Turnbull Thomson is credited as naming Treble Cone during his surveying expedition of 1862. [9] The Wanaka Run was purchased by Robert Wilkin and Archibald Thomson, though it is possible that the land was merely used seasonally, rather than permanently settled. The first major landholder in the district, Henry Campbell, who arrived in 1866. In the last decades of the 19th century the scourge created by the burgeoning rabbit population and the economic depression of the 1880s and '90s led to many run holders defaulting on their leases. In 1889, the government auctioned run leases cheaply, though many runs failed to sell. The late 19th and early 20th centuries also saw the forced break-up of many large stations in Canterbury and Otago.		

[9] CONWAY,M. *Treble Cone.* Clean Green Press, 2014

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	Treble Cone was located on what was Cattle Flat Station prior to Tenure Review. Cattle Flat was originally part of the West Wanaka Station, which in 1861 became one of the first run holdings taken up in the district. This station was subdivided in 1901 to create the Cattle Flat Station.[10] The Treble Cone Access Road traverses through the former Cattle Flat Station that went through tenure review in the early 2000's. It was this tenure review process, that recognised the importance of the Treble Cone Ski Field and saw the Treble Cone Access Road carved out from the surrounding farmland to provide ongoing access to the Treble Cone Ski Field.		
Effects on **historic sites or objects** including Wahi Tapu e.g., disturbance of the ground.	QLDC, DOC and Heritage New Zealand do not identify any historic sites in the vicinity of Treble Cone Ski Field. However, with more than 60,000 recorded archaeological sites in New Zealand there is a chance of finding additional sites or material during earthworks and in context of Treble Cone this is more likely	Earthworks carry the potential for accidental discovery which may include koiwi, artefacts, middens, hangi/umu, storage pits, early building foundations which maybe Maori or early European origin.	Treble Cone implements accidental discovery protocols with respect to earthworks. Specifically following the discovery of material that could be an archaeological site, koiwi and/or taonga, the machine operator will cease all work in the discovery area, with a 20m exclusion zone

[10] CONWAY,M. *Treble Cone.* Clean Green Press, 2014

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	when undertaking maintenance on the lower reaches of the access road. All archaeological sites are protected by the Heritage New Zealand Pouhere Taonga Act 2014 . Sites may not be damaged or destroyed unless an Authority to modify an archaeological site has been issued by Heritage New Zealand. Taonga tuturu are also protected under the Protected Objects Act 1975.		established around the find to minimise damage; and immediately advise the Operations Manager. The Operations Manager shall then notify the following of the discovery: New Zealand Police, if any koiwi are uncovered; and the Regional Archaeologist at HNZPT. Once the Regional Archaeologist has been contacted, they will advise on the best way to proceed.
Effects on **existing infrastructure** such as roads, tracks, carparks, huts etc.	All the infrastructure that is the subject of these Treble Cone applications is Cardrona Alpine Resort owned infrastructure consequently this proposal will not result in any effects on Department of Conservation infrastructure.	N/A	N/A
Effects on **existing vegetation** e.g. disturbance or removal of vegetation.	Refer Terrestrial Ecological Assessment Report **Treble Cone Ski Field** The Treble Cone ski area is a coherent ecosystem comprising relatively intact expanse of **snow tussock and *Dracophyllum* shrubland**. The tussock grassland as a whole is diverse, as it is interspersed with a range of distinct plant communities associated with: ➢ **Wetlands (Seepages);**	**Treble Cone Ski Field** The tussock grassland vegetation and to a lesser extent the Dracophyllum shrubland has been adversely affected by pastoral farming, ski-field development and from the influence of plant and animal pests. Ski-field development and pastoral farming have resulted in changes to the composition of the grassland communities to one dominated by exotic grassland species in the	**Treble Cone Ski Field** Wherever possible wetlands, Dracophyllum shrublands and cushionfields should be avoided in view of the sensitivities of these plant communities to disturbance and inability to recover once disturbed. The maintain wide tussock grassland buffers around the wetlands to ensure the water regime is not altered and that sediment

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	➢ **Fellfields, boulderfields and rock outcrops;** ➢ **Cushionfields;** ➢ **Snowbanks; and** ➢ **Screes** The distribution of these plant communities and habitat types across the ski area reflect the wide altitudinal range, topography, and geological and hydrological processes inherent to the area. **Snow tussock grassland and Dracophyllum shrubland** occurs across much of the ski area beyond the ski trails is generally in good condition. The areas of Dracophyllum shrubland cover is extensive within the lower parts of the Saddle Basin and Motatapu Basin. The snow tussock grassland and Dracophyllum shrubland provide a range of food sources for New Zealand Falcon, Kea and New Zealand Pipit and support a range of host plants which sustain nationally threatened and uncommon invertebrate species. **Wetlands (Seepages) and Stream Margins** are mostly undisturbed. Extensive unmodified seepages occur in the ski area especially across parts of the Hollywood Bowl and in the upper Saddle Basin. The wetlands are floristically diverse and support a range of invertebrate	case of ski runs and less palatable indigenous grass and herbaceous species due to the influence of grazing and burning. The following communities vulnerable to human induced disturbances as they have narrow ecological tolerances and lack the ability to adapt to alterations to their habitat: ➢ Wetlands (seepages); ➢ Cushionfield communities; ➢ Dracophyllum shrublands; and ➢ Boulderfields, fellfields, rocky outcrops and screes. The main threat to the wetland communities is fluctuations to their water regime due to changes that either decrease water supply or significantly increase water supply from runoff from tracks or other bare areas. A further threat to the wetlands is from sedimentation caused by runoff from gravelled areas and from exposure of underlying soils. Sufficient quantities of sediment derived from surface water runoff can cause die back in downgradient	deposition is avoided. Where possible tracks and other land disturbance activities should be constructed downgradient of wetlands to further avoid alterations to surface and groundwater regimes. Wherever possible earthworks and other disturbances should be undertaken on tussock grassland owing to the great degree of resilience of the grassland. The salvage and replacement of tussock vegetation during construction of ski-field facilities at Remarkables and Coronet ski-fields is proving to be effective in the reinstatement of affected areas of tussock grassland. Accordingly these practices will be adopted at Treble Cone. Vegetation reinstatement and other restorative measures specific to the Treble Cone ski field have been formalised through a Site Restoration Protocol agreed to between DOC and the Treble Cone Investments Limited (DOCdm1598630). Continue weed control programmes (wooded weeds) and where appropriate, with the approval of the Department of Conservation, implement further weed control programmes as required.

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
	fauna, and are important for parts of their life cycles The **cushionfields** are in good condition and lack evidence of disturbance beyond the ski trails. These are floristically diverse and provide habitat for threatened plants such as the button daisy *Leptinella albida*. The cushionfields support a range of invertebrate fauna and are important for parts of their life cycles. **Snowbanks** communities cover relatively small areas yet, add considerably to the diversity of the alpine vegetation. Snowbanks occur on lee slopes and in hollows where the snow lies for extended periods and, are found along all the summit areas. They have a similar range of species as the cushionfields, as well as other plants that are able to survive for long periods under snow such *Ourisia glandulosa, Coprosma niphophila, Ranunculus pachyrrhizus* and *Ranunculus royi.* **Boulderfields, Rock Outcrops, Fellfields:** Boulderfields are more widespread and usually found down slope often in the tussockland. Plants usually associated with these areas include porcupine shrub *(Melicytus alpinus*), mountain fern (*Polystichum cystostegia*),	wetlands as has been observed below the Cardrona ski-field road. Sediment runoff can also alter nutrient levels increasing the susceptibility of wetlands to weed invasion. Cushionfield communities are also sensitive to disturbance. Cushion plants such as *Dracophyllum muscoides* are especially prone, as they have deep tap roots making them difficult to uplift without breaking the tap root. The soils under the cushionfields are generally shallow and rocky increasing the vulnerability of these vegetation communities to disturbance. Wetland, Dracophyllum shrubland and cushionfield communities have a limited ability to recover from physical disturbance brought about by loss of plant cover, crushing, compaction, exposure of the underlying peaty and mineral soils and alteration to drainage patterns. The climatic rigours of the alpine environment can lead to further deterioration of the affected vegetation cover due to the effects of frost heave, sun and wind. **Treble Cone Access Road**	Continue with introduced mammals trapping programmes with the approval of the Department of Conservation, implement further pest control programmes. **Treble Cone Access Road**

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
	prickly shield fern (*Polystichum vestitum*), *Hypolepis millefolium Celmisia angustifolia, Stellaria gracilenta, Myrsine nummularia* and *Aciphylla* sp. *"lomond".* **Fellfields** have sparse vegetation with a scattering of the cushion plants mentioned above, small shrubs such as *Hebe buchananii* and *Kelleria dieffenbachii*, the small herbs *Epilobium tasmanicum* and *Epilobium porphyrium* as well as two alpine forget-me-nots, *Myosotis pulvinaris* and *Myosotis lyallii*. **Scree** slopes, rocky or stony areas with little or no soil, occurring all along the upper ridges where species such as edelweiss (*Leucogenes grandiceps*) grow. The purple willow herb (*Epilobium purpuratum*) is a rare plant of cold, damp screes along the Harris Mountains. **Treble Cone Access Road** The vegetation types along the road margins include alpine tall tussock grasslands, rough exotic grasslands, short tussock grasslands, remnants of native forest, native shrublands, bracken fern land, pasture, and exotic scrub. Included in the native vegetation is Matagouri shrub which occurs on the lower hillslopes and is of variable spread and density. It is interspersed by typical grassland species and	The proposed easement areas have already been hardened and gravelled; consequently, ongoing use of the access road will not result in significant disturbance of vegetation. However, some vegetation may be disturbed and / or removed during road maintenance activities or the installation of new infrastructure such as fibre.	Such disturbance activities will be short in duration and mostly confined to the immediate vicinity of the access road hence will not significantly affect the wider Treble Cone Access Road Conservation Area vegetation outside the access road envelope.

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	bracken; with the bracken patches becoming shorter in stature and smaller in size with increasing altitude. The remaining native vegetation on the lower slopes has only moderate ecological value due to modification by grazing and fire and the abundance of exotic species. The tall tussock grassland occurs above an altitude of approximately 900 masl. The transition between this vegetation type and the aerial, over-sown, top-dressed grassland is quite defined and probably relates to old burn lines. Despite being largely dominated by native species (snow tussocks are estimated to comprise 60% cover for the whole area), this vegetation type also contains a high proportion of exotic species. Grazing is also likely to have influenced the relative composition of the plant community, with the more palatable species becoming less abundant over time. Brown top (*Agrostis capillaris*), sweet vernal (*Anthoxanthum odoratum*), white clover (*Trifolium repens*) and tussock hawkweed (*Hieracium lepidulum*) are often present. Below 1100 metres (approximately) the vegetation is highly modified with predominately bracken, matagouri / Coprosma		

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	scrub and introduced pasture with remnants of mountain beech confined to tight gorges and gullies. The pattern of vegetation on the lower slopes of the Harris Mountains has been heavily modified by grazing and burning. Shrubland and bracken occurs on the steep slopes and rocky bluffs, while toe slopes and colluvial slopes are a mix of pasture and bracken, extending up to about 900-1000m. However, because of the predominance of tussock the tall tussock grassland within the access road corridor has moderate ecological value.[11]		
Effects of **earthworks** e.g. removal of topsoil and where removed earthworks will be stored. Note: All earthworks storage on public	**Treble Cone Ski Field** Modern ski fields require more than groomed trails to attract skiers and snow boarders. Ski Fields now need to incorporate ramps / jumps, rails, half pipes, tabletops, and banks all of which require earthworks to create and maintain. Often such speciality ski field features are developed over summer and only tested thoroughly over winter and then refined in the following summer.	**Treble Cone Ski Field** The potential adverse effects are as follows: ➢ Loss and/or damage to indigenous vegetation which can in turn impact on the sites overall biodiversity; ➢ Erosion and sedimentation which can in turn adversely affect downstream waterways; and ➢ Establishment of invasive weed species.	**Treble Cone Ski Field** Follow the direction of the attached Site Restoration Protocol between Treble Cone and the Department of Conservation (DOCdm1598630) details the mitigation methods to minimise the impacts on the environment from the works undertaken and to rehabilitate work sites to a high standard.

[11] RM060587 Application https://edocs.qldc.govt.nz/Consent?QFVULt5LL-OYnZ58hWw1X-FOrAEiDB8D

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conservation land needs to be authorised.	These jumps and half pipes etc. are subject to trends and after a few seasons a particular feature, of the ski field may need to be replaced or refined requiring more earthworks. Moreover, Treble Cone is now a year-round destination for the following activities: Mountain Biking, Walking and Mountain Carting which involves the development and maintenance of mountain trails which also involves earthworks. **Treble Cone Access Road** Ongoing road maintenance is required due to the relatively severe climatic conditions and quality of underlying schist rock which can be subject to landslides; in addition, the provision of new infrastructure such as guard rails or installation of fibre maybe required which will result in the need to undertake 'earthworks'.	The potential adverse visual effects of such damage are likely to be minor as the site can only be viewed from a distance and they would not be apparent from a distance. **Treble Cone Access Road** The predominate area in use in the Treble Cone Access Road Conservation Area is hardened, gravelled, and cleared of vegetation. Consequently, loss and/or damage to indigenous vegetation; establishment of invasive weeds are not factors in this assessment. Further in most instances, earthworks undertaken on the access road will be confined to a localised area limiting potential erosion and sediment distribution into waterways.	To avoid sedimentation runoff where necessary preventing scouring and slips; by capturing surface water in water tables and cut off drains over the ski field footprint. This prevents sediment run off, stabilises access tracks and provides sufficient drainage to prevent slumping and slips. **Treble Cone Access Road** Such works will not be visually prominent, since they are distant from the main public area they can be viewed from (Mount Aspiring – Wanaka Road) and very minor in scale by comparison with surrounding landforms. We will use bunds and sediment trapping devices when undertaking any earthworks in the vicinity surface streams to minimise sediment being washed into the stream during earthworks. Where significant earthworks (creating visible scars) are required we propose, where possible, to revegetate with native plant material to mitigate the visual effects and re-stabilise the ground.
Effects on **wildlife or wildlife habitat**	Refer Terrestrial Ecological Assessment Report and Aquatic Ecological Assessment Report.	**Treble Cone Ski Field** The potential adverse effects are as follows:	**Treble Cone Ski Field** Follow the direction of the attached Site Restoration Protocol between Treble Cone

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	Treble Cone Ski Field High alpine and tussock land areas have high indigenous invertebrate values, with threatened Alpine Shield Bug (*Hypsithocus hudsonae*) being found in the area. The following other species are likely to be present: ➢ Grasshoppers and weevils as primary native herbivores of *Chinonchloa* sp. grasslands; ➢ A range of moths (Lepidoptera) such as *Orocrambus ordishi;* ➢ The predatory Tachnid fly *Protohystricia* sp.; ➢ Under rocks nymphs of alpine black cicada *Maoricicada* spp.; ➢ Carabid beetles including *Mecodema lucidum;* ➢ Ground weta *Hemiandrus focalis*; ➢ Flightless chafer *Prodontria* sp; ➢ Caddis *Tiphobiosis montana;* and stonefly in the cascades, stony reaches, and seepages. Streams within the upper areas tend to have had little modification apart from changes in catchment vegetation. As such, aquatic invertebrate communities are healthy and generally indicative of pristine environments. Four gecko and two skink species have been recorded from within the Wanaka Ecological District and these are Orange Spotted	➢ Loss and/or damage to indigenous vegetation which can in turn impact on the sites overall biodiversity; ➢ Erosion and sedimentation which can in turn adversely affect downstream waterways; and ➢ Establishment of invasive weed species.	and the Department of Conservation (DOCdm1598630) details the mitigation methods that minimise the impacts on the environment from the works undertaken and to rehabilitate work sites to a high standard. Continue weed control programmes (wooded weeds) and where appropriate, with the approval of the Department of Conservation, implement further weed control programmes as required. Continue with predator trapping programmes with the approval of the Department of Conservation, implement further pest control programmes. Not highlight to visitors the possible presence of Herpetofauna on the mountain to mitigate possible illegal collection, unlawful interference, and disturbance. Actively discourage visitors from feeding Kea. We have removed as much food packaging as possible from Treble Cone's food and beverage outlets to reduce the amount of rubbish generated on the ski field

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
	(Mokopirirakau Roys Peak Gecko), common gecko (complex of species), Cromwell Gecko, Southern Alps gecko, McCann's Skink and Common Skink (Whitaker et al., 2002). Of these species, the Orange Spotted Gecko, Common Gecko and Cromwell Gecko have been recorded within the local study area (Whitaker et al., 2002) however; Wildlands Consultants found no evidence of Herpetofauna on the ski field. Native and endemic species include: Australasian Hawks are widespread; NZ Pipit, Falcon, Kea and Rock Wren, are present at higher elevations; Scaup occur on ponds and tarns; Paradise Shellduck around bogs. Mammal pest species such as possums, hares, rats, mice, stoats, ferrets, and cats are also found on site. **Treble Cone Access Road** Native and endemic species include: Australasian Hawks, are widespread; NZ Pipit, Shining Cuckoo, and Silvereye. Exotic species dominate at lower altitudes and include Magpies, Canadian Goose, Thrush, Chaffinches, Redpolls, Yellow hammers,	**Treble Cone Access Road** The Treble Cone Access Road has been hardened and gravelled, consequently ongoing use of the access road will not result in significant disturbance of invertebrates, lizards, or nesting birds. However, some vegetation may be disturbed and / or removed during road maintenance activities or the installation of new infrastructure (earthworks) such as fibre which will in turn disturb invertebrates and lizards.	and therefore make it less likely Kea can forage in rubbish bins and ingest plastics. [12] **Treble Cone Access Road** Such disturbance activities will be mostly localised, short term in duration and mostly confined to the immediate vicinity of the access road hence will not significantly affect the wider Treble Cone Access Road Conservation Area outside the access road envelope. Therefore, the effects on invertebrates, lizards, or nesting birds will be minor.

[12] https://www.cardrona.com/content-hub/news/2021-sustainability-update-no-landfill-bins-and-free-shuttles/

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	Skylarks, Dunnocks, Chukar, and Californian Quail. Many introduced mammals such as rabbits, hares, possums, hedgehogs, mice, rats, stoats, ferrets, and cats are present. All of these species are likely to have impact on native fauna and flora but in varying ways. Rats and stoats are likely the key predators of native birds, reptiles and invertebrates, with mice and rats being key seed predators and possums browsing native (and exotic) species inhibiting regeneration of native tree and shrubs species, as well as altering the floristic composition of alpine vegetation.		
Effects on **aquatic habitat** (waterways, swamps, freshwater animals, and vegetation)**.**	Refer Water Ways Consulting Limited Report. One major catchment drains much of the Home Basin. This catchment has a number of small streams at higher altitudes that converge to a single large stream on the lower slopes. This stream system is largely natural and undisturbed aside from one upper stream channel with a high bed load, a 4WD track crossing and a water take. The only major modifications are the culverted sections of stream at the base facility. There are no fish present in the stream on the Home Basin and given the altitude and location this is	Of particular concern, is Treble Cone Ski Fields: wastewater management; oil, diesel, or hydraulic fluid spills; and damage to vegetation which causes topsoil and sediment to flow into the catchment during snow melt or rainfall events.	**Treble Cone Ski Field** Follow the direction of the attached Site Restoration Protocol between Treble Cone and the Department of Conservation (DOCdm1598630) details the mitigation methods to minimise the impacts on the environment from the works undertaken and measures to rehabilitate work sites to a high standard. The maintain wide tussock grassland buffers around the wetlands to ensure the water regime is not altered and that sediment deposition is avoided. Where possible tracks

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	to be expected. Macroinvertebrate communities are of high quality and indicate excellent habitat and water quality. This modified channel is also stable, has good riparian vegetation and high-quality macroinvertebrate faunas. The Matukituki Basin drains into separate streams from the Home Basin; specifically, Stockyard Creek which in turn drains to the east into the Motatapu River adjacent the Wanaka Mount Aspiring Road. Whereas the Motatapu Basin and Saddle Basin drain to the south, eventually feeding into the North Branch of the Motatapu River. These basins are significantly less modified than the Home Basin and although not assessed by Water Ways Consulting Limited it is expected these waterways, will also be excellent habitat and maintain very high-water quality. **Treble Cone Access Road** The Treble Cone Access Road crosses several streams that drain to the east into the Motatapu River adjacent the Wanaka Mount Aspiring Road. These streams are either bridged by the access road or run-in culverts under the road.		and other land disturbance activities should be constructed downgradient of wetlands to further avoid alterations to surface and groundwater regimes. To avoid sedimentation runoff where necessary preventing scouring and slips; by capturing surface water in water tables and cut off drains over the ski field footprint. This prevents sediment run off, stabilises access tracks and provides sufficient drainage to prevent slumping and slips. Maintain wastewater treatment plant (including drains that feed into the plant) in optimum condition including regular maintenance and monitoring. Ensure appropriate spill kits are maintained in site (sullage and petrochemical). Ensure any bulk fuel stored on site is bunded and maintain stationary container system compliance certification. Maintain the groomers and other machinery used on site, in the best condition with

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
			regular maintenance including the regular checks of hydraulic hoses. Mop up any spills which do occur by using best practice spill retrieval techniques and prevent any spillage into waterways. Removing any affected snow from the site to an appropriate site for disposal. Avoiding grooming areas with shallow snowpack and uncovered vegetation.
		Treble Cone Access Road The access road spans some streams (some of which are sizeable) and these streams run through culverts under the road – refer road aerial view. However this application includes road maintenance activities (and possibly laying of fibre) which will incorporate activities such as clearing drainage ditches and culverts (even culvert replacement) which will result in bed disturbance activities which will temporarily affect the water quality.	**Treble Cone Access Road** In the normal course of use of the road there will be no effects on these streams also there will be no contaminants or hazardous chemicals kept on site or used as part of the operation of the road which could result in discharges which could impact on the water quality of this river. Any heavy machinery brought on site for these activities will be checked for oil leaks and cleaned of weeds, seeds, and soil prior to entering the Treble Cone Access Road Conservation Area.

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
			We will use bunds and sediment trapping devices when undertaking any earthworks in the vicinity surface streams to minimise sediment being washed into the stream during earthworks. Where significant earthworks (creating visible scars) are required we propose, where possible, to revegetate with native plant material to mitigate the visual effects and re-stabilise the ground.
Effects **on other users** (tangata whenua, recreational users, and concessionaires) of the Land.	As this application relates to activities which are already occurring the effects on other users are well understood. The ongoing use of the Treble Cone Ski Field and Treble Cone Access Road Conservation Area will not change significantly accordingly the effects on other users will remain unchanged.	The displacement of other users of these Conservation Areas will likewise remain unchanged. Also, the existing and ongoing use of the access road through the site; and the Treble Cone Ski Field enables public access hence the public are not displaced by the operation and maintenance of the ski field or the access road.	We will work collaboratively with the Department and other concessionaires to ensure public access to these conservation areas is maintained. Nonetheless, Cardrona Alpine Resort must reserve the right to close the access road and the Ski Field for health and safety purposes such as avalanche risk management.
Effects of the easement **increase threats** (pests, weeds, pathogens, and fire) to public	**Weed introductions from seeds / plant materials carried into area.** The areas where vehicles and visitors from outside the Ski Field traverse are mostly hardened. Once on the mountain visitors are wearing ski boots which are not likely to be contaminated with weeds / seeds accordingly	Introduction and establishment of invasive weeds species resulting in loss of biodiversity.	Continue weed control programmes and where appropriate, with the approval of the Department of Conservation, implement further weed control programmes as required. With respect to any earthworks, road maintenance activities or the installation of

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
conservation land.	we do not believe weed / plant introductions are an issue in this location. Also, the majority of vehicles accessing these Conservation Areas are road vehicles and it is unlikely they would have been in locations to pick up any plant materials.		new infrastructure such as fibre which involves the use of heavy machinery, which is not based on Treble Cone, we would ensure all machinery brought on site was cleaned of weeds, seeds and soil prior to entering the Treble Cone Access Road and Treble Cone Ski Field Conservation Areas.
Spreading *Didymosphenia germinata*	**Treble Cone Ski Field** The majority of Ski Field visitation occurs during months and if visitors wear contaminated footwear or apparel on to the mountain this will not result in spreading of *Didymosphenia germinate.* As freezing causes 100% mortality and there was no difference in response between freezing at -2 °C and -15 °C, although the time taken for cells to freeze solid occurs faster in lower temperatures.[13] If *Didymosphenia germinate* was brought on to the mountain in the summer months the subsequent winter would kill off the Didymo. In addition, Didymo is already present in the Motatapu River the main river feed by the streams that run through these Conservation Areas.[14]	N/A	N/A

[13] https://fishandgame.org.nz/assets/Uploads/didymo-survival-dec-06-rev-may-07.pdf
[14] https://www.orc.govt.nz/media/6193/didymo-in-otago-report-card-final.pdf

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
	Treble Cone Access Road We do not believe the proposed use of the Treble Cone Access Road Conservation Area could contribute to spreading Didymo.		
Risk of Fire	**Treble Cone Ski Field** There will be no fires lit as part of this proposal. **Treble Cone Access Road** There will be no fires lit as part of this proposal. The predominate area in use in Conservation Area is the access road, which is hardened and cleared of vegetation, and in the unlikely event of a fire it would be most likely be confined to a vehicle fire. Such a fire would only be likely spread to adjacent vegetation in the summer months and if the vehicle were in close proximity to the margins of the road. However, the predominate use of the road is in winter months when the vegetation adjoining the access road is often damp or partially snow covered and in these circumstances a vehicle fire is unlikely to ignite any vegetation.	**Treble Cone Ski Field** Under our current operating structure with no commercial summer activities, the most likely source of fire would be from the Workshop or isolated maintenance tasks on the field, predominately around the 2 chair lift lines. The source of fire is most likely to be from hot works welding, grinding, sparks, generator/engine exhaust on grass or tussock. The workshop is well equipped with fire blankets, extinguishers and is fire detection protected. Any hot works that are carried out in the field are done so under strict SOPs which include stand over fire watch and extinguishers on hand at all times for such an event. If and when Treble Cone adds summer activities to its operation, the source or risks of fire will be extended to people being in the high country for walking and tramping.	Fire Risk Mitigation at TC is provided by the extensive snow making system installed on the mountain. Without notice, the 15 permanently fixed snow guns would provide protection to 50% of the home basin and most importantly the Base Building. With 6-12 hrs notice a further 10 mobile snow guns could be operational, in a focused firefighting situation. If necessary, appropriate staff could be flown on to the ski field to deploy the snow making system to fight any fire. If for maintenance, or reasons related to the fire itself, we find the snow making system is inoperable, our simplest and quickest mode of firefighting would be through helicopter slung monsoon buckets. Aspiring Heli are based less than two minutes transit time to the ski area and our onsite reservoirs that hold in excess of 7 million litres.

Effects	Description	Potential effects (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
		This risk would be no different to what currently exists on Mount Roy, Matukituki Valley, North Motatapu Conservation Area, Mount Aurum Recreation Reserve and Shotover Conservation Area. The operation or running of chairlift(s) would only slightly increase this risk but not by a great deal.	In terms of response time, via Helicopter and resources on site, Treble Cone would be one of the more well-equipped sites in the region purely due to the abundant availability of water at high altitude and the close proximity to Wanaka based Helicopter operators. All these measures are and can be independent of NZ Fire Service resources. Although in the event of a fire a call to 111 would most certainly be made. Therefore, the risk of fire in relation to this easement application is minimal.
Effects of **increased rubbish, toilet waste or debris left on public conservation land** during construction and regular use of the easement.	This is an application to provide for the continued operation of an existing ski field. This proposal with not result in an increase in rubbish, toilet waste or debris left on public conservation land. Any waste generated during the operation, maintenance and ongoing use of the Ski Field will be dealt with using existing channels. That is; where possible waste is diverted into recycling channels or taken to landfill or disposed of through the on-mountain wastewater treatment plant.	Littering and pollution of the Motatapu Conservation Area and Treble Cone Access Road effectively degrading the quality of the mountain environment.	Provision of adequate outdoor rubbish bins (that are emptied regularly) especially around the cafés on the mountain. Moreover, in the winter 2021 CARL is actively reducing the food packaging generated by Treble Cone's food and beverage outlets to decrease the amount of rubbish going to landfill. [15] Keep the wastewater treatment plant well maintained.

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Cumulative effects that could be caused by the easement.	The proposed continued use of the site by Cardrona Alpine Resort will not introduce elements that are inconsistent with the natural character of the site and surrounding landscape. The ski field and the ski field access road and their maintenance (and any improvements) will not compromise the remaining natural character of these Conservation Areas.	It is not considered that the proposal will result in any effects which will breach any threshold relating to the site's ability to absorb development. Furthermore, it is not considered that the proposal will result in degradation of natural values or inappropriate domestication of the landscape because of the significantly modified nature of the site.	Also the Treble Cone Ski Field itself is clearly part of the developed character of the area, coupled with the existing level of landscape modification as a result of constructing the ski field and the access road, suggests that any adverse effects on the natural character of the landscape will be minor.
Positive effects of the easement.	The most important positive effect of this proposal is maintaining access to the Treble Cone Ski Field and maintaining the availability of this Ski Field as an important recreational asset.	The Treble Cone Ski Field offers a mix of trails for skiing and snowboarding, catering for beginners through to expert skiers and boarders, as well as equipment sales and hire, food and beverage services and sightseeing. The ski field access road is also used by other recreationalists such as the Southern Hang Gliding and Paragliding Club, and mountain bikers.	N/A