

Appendix VI

Private Structures Application Environmental Impact Assessment

Location on public conservation land	Special feature or value	Potential effects of your activity on the feature or value (positive or adverse)	Methods to remedy, mitigate or avoid any adverse effects identified
<p>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’.</p>			
<p>Motatapu Conservation Area; North Motatapu Conservation Area; and Treble Cone Access Road Conservation Area.</p>	<p>Landscape values</p>	<p>Refer Landscape and Visual Assessment.</p> <p>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.</p> <p>The potential of a landscape to absorb change mainly depends on two key factors:</p> <ul style="list-style-type: none"> a) Its landscape character sensitivity; and b) Its visibility. <p>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.</p> <p>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 development as it is already developed and is not readily visible from the valley floor; compared to the remainder of the landform with its generally highly visible</p>	<p>The main ski field infrastructure is located in the Home Basin which, due to the mountain topography cannot be seen from the valley floor or the surface of Lake Wanaka.</p> <p>Current structures and utilities are well maintained to ensure any potential impacts on the environment are avoided, remedied, or mitigated.</p> <p>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 and impact on the Harris Mountain skyline.</p> <p>Building and infrastructure colour schemes are chosen in collaboration with the Department of Conservation. Accordingly, the ski field infrastructure is mostly in neutral colours and low light reflectivity to enable it to be visually recessive, especially in the summer months when there is little snow on the mountain.</p> <p>Visitors to Treble Cone ski field expect a certain amount of facilities on the mountain to cater for visitors accordingly visitors are generally accepting of the built infrastructure present at Treble Cone.</p>

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		<p>slopes (refer – figure 19-20 in Appendix IV). ¹ That is, at the distance the existing ski area infrastructure can be viewed from, it is barely legible to the untrained eye.</p> <p>Treble Cone is renowned for the breath-taking views it affords of the surrounding landscape. This proposal will have the positive effect of continuing to enable use of the ski field with the contingent benefits of being able to appreciate the surrounding landscape from the ski field.</p>	
	<p>Existing infrastructure such as roads, tracks, carparks, huts etc.</p>	<p>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.</p>	<p>N/A</p>
	<p>Other users (tangata whenua, recreational users, and concessionaires) of the Land.</p>	<p>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.</p>	<p>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.</p>
	<p>Cultural values of Tangata Whenua</p>	<p>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</p>	<p>Ensure adequate toilet facilities are supplied on the ski field which is aligned with CARL’s proposal to provide additional toilet facilities away from the Home Basin.</p> <p>Maintain wastewater treatment plant (including drains that feed into the plant) in optimum condition including regular maintenance and monitoring.</p>

¹ <https://www.gldc.govt.nz/media/z3fc1esj/s0583-glendhubaytrustees-t12-fergusonc-supplementaryevidence.pdf>

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		<p>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. Hence activities on the Ski Field may have the potential to adversely affect the mauri of Lake Wānaka.</p> <p>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.² Accordingly, it is not only Lake Wānaka which is of significance to Ngāi Tahu it is the wider catchment.</p> <p>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.</p>	<p>Ensure appropriate spill kits are maintained in site (sullage and petrochemical).</p> <p>Ensure any bulk fuel stored on site is bunded and maintain stationary container system compliance certification.</p> <p>Maintain the groomers and other machinery used on site, in the best condition with regular maintenance including the regular checks of hydraulic hoses.</p> <p>Mop up any spills which do occur by using best practice spill retrieval techniques and prevent any spillage into waterways. Remove any affected snow from the site to an appropriate site for disposal.</p> <p>Avoid grooming areas with shallow snowpack and uncovered vegetation.</p>
	<p>Cultural values of other members of the public</p>	<p>The value of the Treble Cone Ski Field and a recreational asset is generally recognised by the wider community.</p>	<p>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.</p>

² <http://www.kahurumanu.co.nz/atlas>

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	<p>Historic sites or objects including Wāhi Tapu</p>	<p>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. That is, 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.</p>	<p>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 established around the find to minimise damage; and immediately advise the Operations Manager.</p> <p>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.</p>
	<p>Existing natural environment</p> <p>VEGETATION/FLORA</p> <p>The Treble Cone ski area is a coherent ecosystem comprising relatively intact expanse of snow tussock and <i>Dracophyllum</i> shrubland. The tussock grassland as a whole is diverse, as it is interspersed with a range of distinct plant communities associated with:</p> <ul style="list-style-type: none"> ➤ Wetlands (Seepages); ➤ Fellfields, boulderfields and rock outcrops; ➤ Cushionfields; 	<p>Refer Simon Beale’s Ecological Assessment</p> <p>The tussock grassland vegetation and to a lesser extent the <i>Dracophyllum</i> 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 case of ski runs and less palatable indigenous grass and herbaceous species due to the influence of grazing and burning.</p> <p>The following communities are vulnerable to human induced disturbances as they have narrow ecological tolerances and lack the ability to adapt to alterations to their habitat:</p>	<p>Wherever possible invasive activities on wetlands, <i>Dracophyllum</i> shrublands and cushionfields are avoided due to the sensitivities of these plant communities to disturbance and inability to recover once disturbed.</p> <p>Keep vehicle use (except for snow groomers and snow mobiles) to formed roads and tracks on ski field).</p> <p>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 and other land disturbance activities are undertaken on the downgradient of wetlands to further avoid alterations to surface and groundwater regimes.</p> <p>Wherever possible earthworks and other disturbances are</p>

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	<ul style="list-style-type: none"> ➤ Snowbanks; and ➤ Screes <p>The distribution of these plant communities and habitat types across the ski area reflect the wide altitudinal range, topography, geological and hydrological processes inherent to the area.</p>	<ul style="list-style-type: none"> ➤ Wetlands (seepages); ➤ Cushionfield communities; ➤ Dracophyllum shrublands; and ➤ Boulderfields, fellfields, rocky outcrops and screes. <p>The main threat to the wetland communities is variations 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.</p> <p>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 wetlands. Sediment runoff can also alter nutrient levels increasing the susceptibility of wetlands to weed invasion.</p> <p>Cushionfield communities are also sensitive to disturbance. Cushion plants such as <i>Dracophyllum muscoides</i> 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.</p> <p>Wetland, Dracophyllum shrubland and cushionfield communities have a limited ability to recover from physical disturbance brought about by loss of plant cover, crushing,</p>	<p>undertaken on tussock grassland owing to the great degree of resilience of this grassland. The salvage and replacement of tussock vegetation during construction of ski-field facilities is undertaken to reinstate affected areas of tussock grassland.</p> <p>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). 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.</p>

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		<p>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 because of frost heave, sun, and wind.</p>	
	<p>WILDLIFE / WILDLIFE HABITAT High alpine and tussock land areas have high indigenous invertebrate values</p>	<p>The potential adverse effects are as follows:</p> <ul style="list-style-type: none"> ➤ Loss and/or damage to indigenous vegetation which can in turn impact on the site’s overall biodiversity; ➤ Erosion and sedimentation which can in turn adversely affect downstream waterways; ➤ Establishment of invasive weed species which displace endemic species which provide habitat for indigenous invertebrates; and ➤ Predation by introduced mammals. 	<p>The follow the direction of 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 details measures to rehabilitate work sites to a high standard.</p> <p>The maintain wide tussock grassland buffers around the wetlands are important to ensure the water regime is not altered and that sediment 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.</p> <p>Equipment used for any development or remedial works within the ski area boundary associated with either winter or summer activities must be checked, cleaned, and dried to ensure no introduction of exotic materials.</p> <p>Continue weed control programmes (wooded weeds) and where appropriate, with the approval of the Department of Conservation, implement further weed control programmes as required.</p>

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			Continue with predator trapping programmes with the approval of the Department of Conservation, implement further pest control programmes.
	Aquatic habitat	<p>Refer Water Ways Consulting Limited Report</p> <p>One major catchment drains much of the Home Basin. This catchment has several 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.</p> <p>The only major modifications are the culverted sections of stream at the base facility. There are no fish present in the stream in the Home Basin and given the altitude and location this is to be expected. Macroinvertebrate communities are of high quality and indicate excellent habitat and water quality. This modified channel is also stable, have good riparian vegetation and high-quality macroinvertebrate faunas.</p> <p>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.</p>	<p>Follow the direction of the attached Site Restoration Protocol between Treble Cone and the Department of Conservation (DOCdm1598630) which details the mitigation methods to minimise the impacts on the environment from the works undertaken and how to rehabilitate work sites to a high standard.</p> <p>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 and other land disturbance activities should be constructed on the downgradient of wetlands to further avoid alterations to surface and groundwater regimes.</p> <p>Maintain wastewater treatment plant (including drains that feed into the plant) in optimum condition including regular maintenance and monitoring.</p> <p>Ensure appropriate spill kits are maintained in site (sullage and petrochemical).</p> <p>Ensure any bulk fuel stored on site is bunded and maintain stationary container system compliance certification.</p>

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			<p>Maintain the groomers and other machinery used on site, in the best condition with regular maintenance including the regular checks of hydraulic hoses.</p> <p>Mop up any spills which do occur by using best practice spill retrieval techniques and prevent any spillage into waterways.</p>
	<p>Herpetofauna</p>	<p>Four gecko and two skink species have been recorded from within the Wanaka Ecological District and these are Orange Spotted (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. Nonetheless they concluded that Orange-spotted gecko could still possibly occur in the ski area, despite not being detected.</p> <p>Threats to Herpetofauna may include predation by introduced mammals, habitat modification, climate change, illegal collection, unlawful interference and disturbance.</p>	<p>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 how to rehabilitate work sites to a high standard.</p> <p>Continue weed control programmes (wooded weeds) and where appropriate, with the approval of the Department of Conservation, implement further weed control programmes as required.</p> <p>Continue with predator trapping programmes with the approval of the Department of Conservation, implement further pest control programmes.</p> <p>Not highlight to visitors the likely presence of Herpetofauna on the mountain to mitigate possible illegal collection, unlawful interference and disturbance.</p>

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	<p>Avifauna</p>	<p>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; and Paradise Shelduck around bogs.</p> <p>Threats to Avifauna may include predation by introduced mammals, habitat modification, climate change and in the case of Kea being fed or disturbed by visitors to the mountain. https://www.youtube.com/watch?v=nH4hUcM6xHQ&feature=youtu.be</p>	<p>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 how to rehabilitate work sites to a high standard; to maintain endemic vegetation to support native avifauna.</p> <p>Continue weed control programmes (wooded weeds) and where appropriate, with the approval of the Department of Conservation, implement further weed control programmes as required.</p> <p>Continue with predator trapping programmes with the approval of the Department of Conservation, implement further pest control programmes.</p> <p>Provision of signage (particularly in the car parks and around patio adjacent the base building) to advise visitors not to feed or harru Kea.</p> <p>Provision of adequate and kea proof litter bins along with emptying outdoor rubbish bins at the end of every day. Also 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 and therefore</p>

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			make it less likely Kea can forage in rubbish bins and ingest plastics. ³
	Earthworks	<p>The potential adverse effects are as follows:</p> <ul style="list-style-type: none"> ➤ Loss and/or damage to indigenous vegetation which can in turn impact on the site's overall biodiversity; ➤ Erosion and sedimentation which can in turn adversely affect downstream waterways; ➤ Establishment of invasive weed species; and ➤ Adverse visual effects through scars being created on the landscape. 	<p>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 how to rehabilitate work sites to a high standard.</p> <p>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.</p>
	Increase threats (pests, weeds, pathogens, and fire) to public conservation land.	Introduction and establishment of invasive weeds species and mammalian pests resulting in loss of biodiversity.	<p>Continue site restoration programs to maintain and enhance indigenous vegetation.</p> <p>Continue weed control programmes and where appropriate, with the approval of the Department of Conservation, implement further weed control programmes as required.</p>

³ <https://www.cardrona.com/content-hub/news/2021-sustainability-update-no-landfill-bins-and-free-shuttles/>

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			<p>Continue with predator and mammalian pest trapping programmes and with the approval of the Department of Conservation, implement further pest control programmes.</p> <p>There will be no outdoor fires lit as part of this proposal.</p>
	<i>Didymosphenia germinata</i>	Spreading <i>Didymosphenia germinate</i> adversely impacting on quality of waterways.	<p>The majority of Ski Field visitation occurs during winter months and if visitors wear contaminated footwear or apparel on to the mountain this will not result in spreading of <i>Didymosphenia germinate</i>. 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.⁴</p> <p>If <i>Didymosphenia germinate</i> 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, which is fed by the streams that run through these Motatapu Conservation Areas.⁵</p>
	Rubbish, toilet waste or debris left on public conservation land	Littering and pollution of the Motatapu Conservation Area 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. . Also 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.

⁴ <https://fishandgame.org.nz/assets/Uploads/didymo-survival-dec-06-rev-may-07.pdf>

⁵ <https://www.orc.govt.nz/media/6193/didymo-in-otago-report-card-final.pdf>

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			<p>Keep the wastewater treatment plant well maintained.</p> <p>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.</p>
	<p>Cumulative effects</p>	<p>This proposal is effectively for the operation of status-quo; hence the effects are generally well understood. In particular, the Treble Cone Home Basin has capacity to absorb development as it is already developed and is not readily visible from the valley floor; compared to the rest of the ski field with its generally highly visible slopes. That is, at the distance the existing ski area infrastructure can be viewed from, it is barely legible to the untrained eye reducing the cumulative effects.</p>	<p>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.</p>