Environmental Impact Assessment

Sunshine Bay to 12 Mile Creek

Traill Development Application

July 2024

Queenstown Trails

Queenstown Trails

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Appendix [A] - Site Location Plan

Appendix [B] – Ecological Assessment

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Appendix [D] – Email from QLDC about future maintenance of structures

1.0 THE APPLICANT AND PROPERTY DETAILS

Site Address:	Sunshine Bay to 12 Mile Recreation and road reserve bordering Lake Whakatipu
Applicants Name:	Queenstown Trails Trust (QT) & Queenstown Mountain Bike Club (QMTBC)
Address for Service	PO BOX 91070 Whakatipu 9300
Site Legal Description:	Sunshine Bay – 7 Mile Pt Reserve B Blk I Mid Wakatipu SD Section 4 SO 434205 7 Mile – 12 Mile: Queenstown – Glenorchy Road Reserve Section 39 Blk IV Mid Wakatipu SD
Brief Description of Proposal:	Construct a trail for pedestrians and cyclists between Sunshine Bay and 12 Mile
Summary of Environmental Impact Assessment:	Various natural, historic, recreational and cultural values have been identified in association with the proposed trail between Sunshine Bay and 12 Mile. The effects have been assessed, and where deemed to be adverse, mitigation measures have been proposed along with suggestions for monitoring to ensure efficacy of protection of conservation outcomes.

The following is an assessment of environmental impact that has been prepared in accordance with the Department of Conservation Environmental Impact Assessment Guide. The assessment of environmental impact corresponds with the scale and significance of the effects that the proposed activity may have on the environment, culture, and heritage.

2.0 SITE DESCRIPTION AND RECEIVING ENVIRONMENT

2.1 Site Location and Land Status

The site subject to this environmental impact assessment is located along the foreshore of Lake Whakatipu between Queenstown to the east, and Bobs Cove to the west.

A site location plan is contained within **Appendix [A].**

The site comprises reserve and tenure land, the legal descriptions are listed in Table 1. The subject reserves are administered by the Department of Conservation (DOC) and Queenstown Lakes District Council (QLDC).

The land that is administered by DOC is managed within the Western Lakes and Mountains/ Ngā Puna Wai Karikari a Rākaihautū Place of the Otago Conservation Management Strategy (CMS) 2016.

Table 1 - Land Traversed by the proposed Sunshine Bay - 12 Mile trails

Trail Section	Legal Description	Land Status	Owner/Administrator
One Mile	Section 2 SO 409197	Recreation Reserve	Owned and administered by QLDC
Sunshine Bay- 7 Mile Carpark	Part Res B Sec. 45-47 Blk I Mid Wakatipu SD	Recreation Reserve	Owned and administered by QLDC
	Road Reserve	Road Reserve	Administered by QLDC
Sunshine Bay to 7 Mile Carpark	Lot (1 – dwelling present) & 2 DP 573743 Lot 2 DP 27509	Private land	Villa Reef
Seven Mile Recreation Reserve - Sunshine Bay to Wilson Bay	Sec. 3 & Pt Sec 2 Blk XIII Sec 41 Blk IV Pt Reserve B Blk I Mid Wakatipu SD	Recreation Reserve.	Conservation Area S25 Cons Act; administered as part of the "7 Mile RR" Administered by DOC
Seven Mile Recreation Reserve - Sunshine Bay to Wilson Bay	Part Sec 39 Block IV Mid Wakatipu SD	Recreation Reserve	S17 Reserves Act, 1977 Administered by DOC
Twelve Mile Carpark – Twelve Mile Scenic Reserve	Part Sec. 1 SO 24167	Scenic Reserve/ Conservation Area	Administered by DOC

2.2 Description of Activity

The proposed Sunshine Bay to Twelve Mile Track will provide off road access to the bike parks, cycling and walking tracks at the Twelve Mile and Seven Mile Recreation Reserves, and the Mt Crichton Scenic Reserve.

The proposed new trail will be constructed within the band of broadleaf forest and shrubland between Glenorchy Road and Lake Whakatipu. This land is generally very steep and contains rock bluffs, but also contains flatter section of land formed by geological processes and the construction of historical tracks, roads and gold mining.

The proposed trail will, where possible, follow the existing system of tracks, old road benches and terraces. The trail will require bridges, culverts, board walks and possibly other engineered structures to enable the route to be established below the Glenorchy Road.

Table 2 – Summary of description of activity for the proposed trail

Trail Type	Dual use commuting/recreational	
Grade	3 – intermediate biking, easy walking track	
Length	Sunshine Bay – Seven Mile	3—3.5km
	Seven Mile – Wilson Bay	3.5-4km
	Wilson Bay – 12 Mile/Mt Crichton	1.5-2km
Width	1.2m	

Gradient	0-8% for safe and efficient two-way /dual use travel 10% up to 20m 15% very short sections where unavoidable (followed with reversal to neutralise)
Drainage	Min 200mm culverts, sumps on entry and exit for silt control Culvert size to be matched to that of road above Open bowl drains in dry areas Rock fords where suitable Frequent grade reversals to avoid erosion and sediment build up
Construction	1.7t excavator, rock-breaking and blasting, engineered solutions (e.g. 'clip on structures), bridges
Drainage	Min 200mm culverts, sumps on entry and exit for silt control Culvert size to be matched to that of road above Open bowl drains in dry areas Rock fords where suitable Frequent grade reversals to avoid erosion and sediment build up
Construction	1.7t excavator, rock-breaking and blasting, engineered solutions (e.g. 'clip on structures), bridges

3.0 EXISTING NATURAL ENVIRONMENT

3.1 Significant natural features

Outstanding Natural Landscape - most of the land through which the proposed trail will be located is classified as Outstanding Natural Landscape (ONL) within the Queenstown Lakes District Council (QLDC) Proposed District Plan (PDP).

Lake Whakatipu is identified as an important geological features, landform and landscape within the Otago CMS.

3.1.1 Geology

Much of the underlying geology of the proposed trail is Schist, with areas comprising beach deposits left by Lake Whakatipu when the water levels were historically higher. Beach deposits comprise of layered sand, gravel and silty sediments.

West of Wilson Bay, there are pockets of glacial till and ice margin sediments which comprise loose clay and sandy gravel.

Fan Deltas are present at the Seven Mile Creek and Twelve Mile Creek.

The soils along the lakeshore are Pallic, moderately well drained, and with low to moderate fertility.

3.1.2 Existing natural ecosystems and important vegetation

Seven ecosystems have been identified and detailed in the ecological assessment, attached as Appendix [B]

Table 3 - Existing ecosystems and considerations

Existing Ecosystem	Characterised by	Sensitivity	Considerations
Broadleaved low forest	Broad leaf tree species, mature, <10m height, understory open – dense, majority native, some exotics	Medium sensitivity – can absorb trails but need to be carefully located and constructed	Avoid introduction of weed species
Manuka shrubland/scrub	Mature and regenerating manuka shrubland, bracken fern understory	Medium sensitivity – can absorb trails but need to be carefully located and constructed	Avoid introduction of weed species, good source of pioneering species for forest regeneration
Mixed mountain-red beech forest	Mountain beech dominated canopy, some eucalyptus, regenerating beech forest and shrubland, mature stands of beech with open understory	Medium sensitivity – can absorb trails but need to be carefully located and constructed	Avoid any root disturbance in vicinity of beech, hand-built tracks are more easily absorbed. Remove wilding conifers were possible. Avoid impact on margins
Introduced shrubland	Introduced, invasive species including conifers, some of which have been felled making way for regenerating native forest, and exotic weed species	Low sensitivity, can absorb trail construction very well	Opportunity to control and remove exotic weed species, regenerative native planting in vicinity of trail Prevent spread of weed species with appropriate management of machinery and equipment (cleaning)
Tree tutu/vineland/bracken fern land	Bracken, tree tutu, bush lawyer and pohuehue (muehlenbeckia), very dense, possible stick insect habitat	Low sensitivity, can absorb trail construction very well	Good root structure, colonising species, responds to disturbance, bracken provides nursery to regenerating forest.

Bluffs and rock outcrops	Rock outcrops and bluff habitats, shrubland and grasses, potential lizard habitat, possible habitat of Kawarau Cress	Medium sensitivity – can absorb trails but need to be carefully located and constructed	Bluff should be checked prior to rock breaking or earthworks and a plan for management be developed accordingly
Southern Rātā	Southern rātā – threatened, nationally vulnerable species	High sensitivity – should be avoided	Avoid as much as possible, ensure trees are identified, and root structures are undisturbed

The existing eco systems are mature, diverse and support bird, lizard, and invertebrate life.

3.1.3 Freshwater habitats

The ecological report, attached as Appendix [B] identified several stream and creek habitats in the vicinity of the proposed trail. Fresh water habitats range from creeks to ephemeral drainages and damp ground associated with landslip areas.

Fresh water fish (kōaro and brown trout) records exist between One Mile and Twelve Mile Creeks. It is also expected that invertebrate fauna would be present in the creeks.

Culverts and small stream crossings would be required in several locations along the proposed trail. It is recommended that stream crossings are identified to ensure that no upstream barrier to fish passage is created by trail development.

3.1.4 Habitats of indigenous animals and threatened species

Several species of native birds, indigenous lizards and invertebrates, and their associated habitats have been identified in the ecological report, attached as Appendix [B].

Three species of identified bird are classified as threatened:

- Karearea - New Zealand Falcon (near threatened)
- Koekoeā -Long -tailed cuckoo (nationally vulnerable)
- Kākā (endangered)

Two species of lizards were identified.

Observations of various species of invertebrates were noted as part of the ecological report, these include infestations of borer beetles and aphids, which are noted for their adverse effects on the plant life in the area. Two species of non-threatened native insects, a stick insect and a ground creeping liane are noted as being possibly present in the tree tutu/vineland/bracken fern habitat. The presence of these insects was not confirmed.

3.1.5 Assessment of ecological significance and value

A comprehensive assessment of the ecological significance and value of the land between Sunshine Bay and Twelve Mile is included in the ecological report, attached as Appendix [B].

Table 4 - Summary of assessment of ecological significance of vegetation and habitats for Sunshine Bay to Twelve Mile

Criteria	Assessment	Significance
Representativeness	The vegetation is representative of communities, ecosystems and habitats typical of the Shotover Ecological District. Indigenous species are dominant	Very High
Rarity and Distinctiveness	The broadleaves low forest, tree tutu/vineland/bracken fern land and pockets of Southern Rātā are noteworthy.	High to Very High

	At risk (declining) species identified: Manuka *Woodworthia* Lizards McCanns Skink Threatened: Nationally Vulnerable species identified: Southern Rātā Eastern Falcon Long tailed cuckoo Kākā	
Diversity and Pattern	The mature habitats (identified in 2.3.3 and the ecological report attached in Appendix [B]) have been disturbed and fragmented by fire, clearance, and residential development. 49 species were recorded as part of the ecological investigation. The mature nature	

4.0 ARCHAEOLOGICAL SITES & HISTORIC CONTEXT

4.1 Archaeological Assessment

An archaeological assessment was prepared by Origin Consultants for Queenstown Trails in 2004. The assessment covers the area of the proposed new section of trail between Sunshine Bay and Seven Mile. The assessment included a site visit as well as desk-top research. The *Sunshine-Crichton Trail Archaeological Assessment* (Origin, 2003) is attached as Appendix [C].

4.2 Tangata Whenua Historical Background

Lake Whakatipu and the surround area is significant in Māori history, as a place that was visited to gather food and other resources, for both people travelling through the region, and for permanent settlements.

Previous archaeological investigations have not identified any features associated with Māori occupation.

4.2.1 Wahi Tupuna

Most of the land in the area where the proposed trail will be located, is within the Wahi Tūpuna Statutory Acknowledgement Area of Whakātipu-wai-māori and the Punatapu area which were historically used by manuwhenua as nohoaka or staging areas while this land was being travelled through.

4.3 Colonial Historical Background

After the arrival of Europeans in New Zealand, the Whakatipu Basin was initially farmed under various pastoral leases. The initial era of farming settlement was quickly followed by the gold rush of the early 1860s.

The stretch of shoreline and hill side between Sunshine Bay and Seven Mile, was the site of various gold mining operations. Gold mining dates back to the 1860s and included individuals who were hand mining and panning, as well as large-scale dredging and sluicing operations. There are various archaeological sites along the banks of Lake Whakatipu ranging into the foothills and alongside tributary waterways.

Gold claims were worked by European and Chinese miners.

4.4 Archaeological Sites

Research of the New Zealand Archaeological Associations recording scheme identified six sites in the vicinity of the proposed trail. The archaeological sites are summarised in Table 5.

Table 5 - Archaeological sites in the vicinity of the proposed trail

Site Number	Site Name	Site Type	Details
E41/113	Sluicing Deposit	Mining – Gold	Sluicing deposits from the gold working in 12 Mile Creek
E41/314		Mining – Gold	Gold mining field includes one hut site, loose rock tailings, prospecting pits, bridle/pack track and associated artifacts
E41/283	Closeburn Homestead	Historic – Domestic	The cottage built on the site in the 1860s by James Kirkpatrick
E41/115	Adze	Artefact Find	Adze found beside sheepyard at Closeburn Station
E41/253	Seven Mile Goldfield	Mining-Gold	Gold mining field includes four hut sites, an enclosure, loose rock tailings, stacked sludge channels, prospecting pits, bridle/pack track and associated artifacts
E41/313		Mining – Gold	Gold mining field includes loose rock tailings, a large patch of tailings,

			prospecting pits, bridle/pack track and associated artefacts

Of the recorded archaeological sites in the vicinity of the proposed trail, E41/313, and E41/314 were in close enough proximity to the proposed trail to be potentially affected by trail construction. These two sites formed the subject for the site visits. Archaeological values were assessed for these sites.

2.3.2 Assessment of Archaeological Values: Site E41/313

Table 6 - Assessment of archaeological values for E41/313

Site	Value	Assessment	Notes
E41/313 One hut site, loose rock tailings, prospecting pits, bridle/pack track and associated artefacts	Condition	Poor – Fair	All of the features identified within E41/13 have been impacted by vegetation growth
	Rarity/ Uniqueness	Moderate	Numerous sites relating to gold mining history in the area. Tailings common. Numerous stone hut ruins in Central Otago, but rare across wider country
	Contextual value	Moderate	Gold mining features identified at the site are not unique, but important in a local historical context
	Information potential	Moderate	Archaeological investigation of the site has potential to provide information about domestic life on the goldfields of the shores of Lake Whakatipu
	Amenity value	Low-Moderate	The impact of heavy vegetation growth on the sites has diminished the amenity value of the above ground features
	Cultural associations		Pakeha and/or Chinese

2.3.3 Assessment of Archaeological Values: Site E41/314

Table 7 - Assessment of archaeological values for E41/314

Site	Value	Assessment	Notes
E41/313 Gold mining field includes loose rock tailings, a large patch of tailings, prospecting pits, bridle/pack track and associated artefacts	Condition	Fair - Good	Most features of E41/314 are in good condition, with minor affect from the surrounding vegetation
	Rarity/ Uniqueness	Moderate	Gold mining sites are common in the Whakatipu Basin, but less common nationally. E41/314 includes a greater than usual variety of features
	Contextual value	Moderate	Gold mining features identified at the site are not unique, but important in a local historical context
	Information potential	Low	Investigation of this site is considered to have little potential to provide new insights into historic mining
	Amenity value	Low	Although visible, the dense vegetation make it difficult for the features to be readily identified
	Cultural associations		Pakeha and Chinese

5.0 EXISTING SOCIAL ENVIRONMENT

5.1 Visitors

5.1.1 Current Activities

The majority of the subject area of the proposed trail is not currently utilised for any activity. The Sunshine Bay Track is located in the eastern most portion of the reserve land. There are several small beaches that are accessible from the water and are used for picnicking and swimming.

The Queenstown – Glenorchy Road runs through portions of the reserve land, this is heavily trafficked by motor vehicle, with a high proportion of tourist traffic. Mountain bikers sometimes utilise this road for access to 7 Mile bike park, but the 100kmph speed limit, and the narrow shoulder are major deterrents for mountain bikers.

The Queenstown – Glenorchy Road forms a portion of the Te Araroa Trail and is often by-passed by walkers due to the high exposure to motor vehicles.

Camping

5.1.2 Recreation Motivations

Within the immediate vicinity of the proposed trail, people are attracted to the area for mountain biking, walking and water-based activities including power boating and kayaking. People value the dramatic mountain scenery and lake views, the native bush and native bird life.

The Queenstown district is highly prized for its scenery, outstanding natural landscapes, lakes, rivers and plethora of adventure activities. Queenstown's network of trails is recognised as world class for both walking and cycling.

People are motivated by health and wellbeing, connectedness to nature etc

5.1.3 Visitor Attitudes to Proposal

Safe, off-road route options are always popular for visitors and locals. Provision of additional cycling and walking trails are well received and often requested by visitors. In addition to the benefits of increased safe access and active transport travel routes, the trails will both showcase the natural environment, as well as providing access for conservation outcomes such as restoration planting, wilding species control and predator monitoring and trapping.

Sustainable tourism is increasingly becoming a more conscious choice amongst travellers. These trends in visitor attitudes are aligned with aspirations for the future landscape of tourism and conservation within the region, for example Destination Queenstown *Carbon Zero 2030*, QLDC *Vision Beyond 2050*, and *Predator Free 2050* which is being championed by Southern Lakes Sanctuary and Whakatipu Wildlife Trust.

5.1.4 Concession Activities

Multiple concession activities operate in the area of the proposed trail, these include:

- Utilities
- Rights of Way for vehicles, pedestrians, cyclists, and livestock
- Structures
- Boating
- Campgrounds

5.2 Tangata Whenua

Portions of the Wāhi Tūpuna area designated as Whakātipu-Wai-Māori (Lake Whakātipu) cover the reserve land through which the proposed trails will be constructed. From Wilsons Bay, the Punatapu Wāhi Tūpuna area covers the whole area through which the proposed trails will be constructed.

5.2.1 Māori history and spiritual significance

Whakātipu-Wai-Māori

The name Whakātipu-wai-māori originates from the earliest expedition of discovery made many generations ago by the tupuna Rākaihautū and his party from the Uruao waka. In tradition, Rākaihoutū dug the lakes with his kō known Tūwhakarōria. The Lake is key in numerous Kāi Tahu pūrakau (stories) and has a deep spiritual significance for mana whenua. For generations, the Lake also supported nohoaka, kāika, mahika kai as well as transportation routes for pounamu. The knowledge of these associations hold the same value for Kāi Tahu to this day. It also has Statutory Acknowledgement status under the Ngāi Tahu Claims Settlement Act 1998.

The mana whenua values associated with Whakātipu-wai-māori are:

- Whakapapa – Māori identity and connection to land, tribal groupings
- Rakatirataka – Leadership, integrity, responsibility
- Kaitiakitaka – Guardianship for the sea, sky and land
- Mana – Prestige
- Mauri – life spark/essence inherent
- Wāhi taoka – importance of an area to cultural traditions
- Mahika kai – traditional value of food resources and ecosystems
- Ara tawhito – traditional travel routes

Punatapu

Punatapu was used as a nohoaka or staging post for mana whenua ancestors who travelled up and down Whakatipu Waimāori (Lake Wakatipu).

The mahuwhenua values associated with Punatapu are:

- Whakapapa – Maori identity and connection to land, tribal groupings
- Rakatirataka – Leadership, integrity, responsibility
- Kaitiakitaka – Guardianship for sea, sky, and land
- Mana – Prestige
- Muri – life spark/essence inherent
- Tauraka waka- landing place
- Nohoaka – proud spiritual and cultural association, ‘a place to sit’ during seasonal travels inland for resources
- Archeological values
- Wāhi tapu – a sacred place in the traditional, spiritual, religious, ritual, or mythological sense

5.2.2 Māori environmental issues

Whakātipu-Wai-Māori

Environmental concerns for Māori in the Whakātipu-Wai-Māori area include:

- Activities affecting water quality.
- Tracks
- Earthworks
- Structures

Punatapu

Environmental concerns for Māori in the Punatapu area include:

- Earthworks
- Structures

5.2.3 Iwi Consultation

It is anticipated that DoC will undertake formal Iwi Consultation as part of the application process. Advice from iwi/hapū/whānau is vital to gain understanding of how the proposal may have effect on Māori cultural interests and associations with the location.

5.2.4 Retelling & Interpretation of Māori history

Depending on the outcome of the formal iwi consultation, there may be an opportunity to portray messages associated with the cultural or spiritual history of Tangata Whenua. It is anticipated that guidance will be provided by iwi/hapū/whānau as to the requirements for and the most appropriate way to portray this information.

6.0 ENVIRONMENTAL IMPACT ASSESSMENT

The following environmental impact assessment attempts to identify all direct, indirect and cumulative effects of the proposal.

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
Terrestrial (Land) Values	Native trees/plants	Reduction or, or damage to indigenous biodiversity	Adverse Significant	Construct trail, and trail supporting infrastructure in locations that can absorb a trail with minimal impact and damage to indigenous biodiversity. Avoid trail construction in sensitive areas. Comprehensive survey of proposed trail route to identify sensitive environments. Ensure construction methodology results in minimal damage and reduction to indigenous biodiversity Ensure that once the trail is in use, trail users stick to constructed trail surface, and trail activity does not spill over into the surrounding environment Proposed trail location designed to respond to local environment, and located to ensure minimal reduction/damage to indigenous biodiversity Trim rather than remove natives where possible Avoid sensitive species Reduce trail width through sensitive ecosystems, hand build where possible Enlist professional botanical advice for sensitive environments	The trail to be monitored on an on-going basis to determine the impact of use on indigenous biodiversity, and to ensure that trail users are staying on the formed trails, and not causing damage to the surrounding environment
	Vegetation	Clearance, disturbance, modification or destruction of any vegetation or natural area	Adverse Significant	Restoration and revegetation of any disturbed or modified areas Educate trail users about low impact trail use, why they should keep to the existing trail and that collecting vegetation is not permitted	

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
	Wildlife	Damage to wildlife or habitat through disturbance, alteration of habitat or direct killing of wildlife. Activity that results in adaptation, migration disturbance, reproduction levels, effect population change and species composition.	Adverse Unacceptable	Determine appropriate proximity distances, educate contractors, and trail users about appropriate methodology/behaviours in any setting where wildlife is present. Warn trail users of potential danger (e.g. defensive behaviour of nesting Karearea) Ensure that vehicles associated with construction adhere to minimum impact code Alternative location for trail proposed if the area is a sensitive habitat or breeding area Possible construction of causeway at tailing section to west of 5 Mile Creek to protect lizard habitat. Advice sought from DOC to confirm requirements.	Report any unusual activity to nearest DOC office
	Predator Species	Introduction of new, or increase in existing threats to indigenous eco systems	Adverse	Monitor for presence of predator species, place traps along trail to supress and eradicate predators.	Monitor site for infestation and implement control programs if necessary
		Reduction of existing threats to indigenous eco systems	Positive	Trapping and monitoring programs enabled by proposed trails, reduction in predator numbers, monitoring of types and numbers of predator species and impact of trapping on native species	
	Weed/Exotics	Introduction of new, or increase in existing threats to indigenous eco systems	Adverse	Clean boot and bike policy in place, provide wash stations and educational information at trail heads, educate trail users and operators on importance of threat to conservation in NZ. Ensure all machinery and construction vehicles are weed free	Monitor site for infestation and implement control programs if necessary

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
		Control and removal of wilding/exotic species	Positive	Trail construction provides access and opportunity for removal of wilding/exotic species and rehabilitation of native plants	
	Discharge of pollutants	Leaking fuel or machine oil from construction equipment, exhaust fumes	Adverse	Ensure machinery is well serviced and in good working order, fuel is properly stored, and refuelling occurs over bunded areas or fuel spill matting. Have contingency plan for mop up in case of accident Ensure fuel/chemical storage areas, and refuelling areas are carefully selected Ensure spill response equipment shall be commensurate with the site location, topography, type and quantity of chemicals and fuels being stored on site. Remediation for any contamination resulting from spill, leaks or discharge shall be to a condition similar to that existing prior to contamination Refuelling of machinery shall occur at least 30m from any water way, fuelling activity to be supervised at all times, fuel hoses to be fitted with a stop valve at the nozzle end Machinery shall be maintained to minimise leakage of fuel, oil, hydraulic and other fluids.	
	Landform	Damage to landform, impingement on the landscape, damage to geological features, reduction of the natural character of wetlands, rivers, and streams	Negative	Design and construction of the proposed trail should bed into the landscape and be rehabilitated with planting where necessary to ensure the impact to the landform is minimal.	

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
Aquatic and marine values	Water pollution	Discharge of pollutants including sediment to waterways		Ensure machinery is well serviced and in good working order, and that fuel is properly stored and that re-fuelling occurs over bunded areas or fuel spill matting. Have contingency plan for mop up in case of accident. Ensure adequate toilet facilities are provided and utilised. Use sediment traps/booms if working near waterways. Ensure appropriately designed and sized soakage fields are used for disposal to ground. Water discharge from the trail should comply with qualitive water quality criteria: no litter or waste, no silt contamination, no chemical/pollutant discharge. Refuelling shall occur at least 30m from any water way.	Monitor effluent discharges. Monitor machinery for leakage of pollutants. A water quality management plan will ensure effective management of water quality risks from the site during construction and post construction.
	Aquatic life and habitat	Damage disturbance or modification to aquatic life or stream habitat	Adverse Significant	Ensure that water habitats are comprehensively researched to determine presence of aquatic life, ensure that sensitive areas are avoided and that structures are utilised to keep pedestrians and cyclists out of water ways. Construction of trails and structures should be carefully planned and monitored to ensure water habitats are minimally disturbed and effectively protected. Culvert crossings should be designed to ensure that fish passage is enabled in existing waterways, bridges are more desirable crossing structures	
	Native Fish	Restriction on native fish passage	Adverse Significant	Use alternative methods and locations, be especially aware of culvert placement and design impeding fish passage, if unavoidable, install a purpose designed fish passage	

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
	Erosion/scouring/ sediment	Erosion, scouring or deposition of riverbed or banks Sediment can be a significant issue with any track, rain events carry suspended sediment down slope, sediment enters waterway and , the fine silt materials infill the space in the stream bed, filling that habitat used by small fish and invertebrates, this can result in the smothering and death of fish during spawning, upstream migrating fish avoid dirty streams – change of habitat	Adverse	Ensure all 'uphill' activities are well managed to reduce run off and water quality reduction. Restore native vegetation to river banks Concentrate and harden point of stream crossing or utilise bridge/board walk structures to carry traffic out of water way. Use silt management – filter cloth and settling ponds to allow sediment to settle out of ground water. Erosion and sediment controls are integrated with construction planning, and are based on soil type, site slope, weather, construction conditions and the receiving environment. The extent and duration of soil exposure is minimised Water movement throughout the site is controlled – in particular, clean water is diverted around the site and 'dirty' and 'clean' water is kept separated as far as practically possible Soil erosion is minimised as far as reasonable and practical Areas of disturbed soil are promptly stabilised Sediment retention on site is maximised Sediment and erosion controls are maintained in proper working order at all times Vegetation increases slope stability, reduces overland flow and protects soil	The site is monitored and erosion and sediment practices are adjusted to maintain the required performance standard. Ongoing monitoring during construction to respond to any significant changes to construction methodology. Monitoring during and after storm events to ensure that erosion and sediment controls are operating adequately, and that addition measures can be taken in a timely manner where required

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
				Avoid tracks descending long distances directly down to streams Have cut off drains that direct run off into thick vegetation that can trap sediment Ensure gravel laid on track surface is washed clean of mud and sand before it is used	
	Alteration of water levels	Alteration of water levels in water courses or wetlands.	Adverse	Investigate alternative locations to negate the alteration of water levels. Investigate alternative designs to ensure fish passage is not disturbed	
	Ground Water Management and Drainage	Formation of trails can intercept, and concentrate run off from rain events, resulting in overland flow and potential erosion – affects water quality and conservation values		Planning for placement of trails in landscape is important. Planning for water management and downhill dissipation of water, minimising water accumulation on trail. Utilise trail construction techniques such as choosing best available trail pathway and anticipating extreme weather events and how the trail will respond to these. Utilise rolling dips, water bars, trail out-slope, broad based dips, rubber belt water bars, wooden box culvers and cross drainage culverts. Divert water off trails and infiltrate to ground – no trail accumulation into streams. Over oversize culverts and dissipate energy. Encourage trail users to stick to formed trails, don't create additional tracking through landscape. Regular drain to infiltrate to ground to minimise collection on trail. Culvert design is important – especially delivery of water on downstream side, consideration of fish passage, avoid high energy outfalls from culverts – use socks where appropriate	

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
				Look uphill for water accumulation patterns in the landscape, trail placement and water management designed to respond accordingly Plan design and engineer for the most extreme weather events	
	Culverts in streams and water ways (as opposed to for ground water management)	Poorly designed and maintained culverts prevent fish passage and can be problematic in flood events. Poor culverts can lead to the loss of upstream fish populations	Potentially adverse	Culverts for stream crossings need to be adequately sized, sensitively installed and maintained to ensure fish passage is protected, and that they have the capacity to withstand flood events. Culverts to be in accordance with National Policy Statement Freshwater Management	
	Introduced Threats	Introduction of new, or increase in existing threats to indigenous ecosystems e.g. pests & weeds	Adverse Significant	Educate trail users about significance of introduced threats to conservation in NZ. Ensure footwear, bikes, equipment and vehicles are kept clean, dry and weed free. Provide wash down stations at trail heads to encourage trail users to clean equipment and prevent the introduction and spread of threats	Monitor for infestation, have control programs in place to control pests and weeds if infestation occurs
	Ground Water Management and Drainage	Formation of trails can intercept, and concentrate run off from rain events, resulting in overland flow and potential erosion – affects water quality and conservation values	Adverse	Planning for placement of trails in landscape is important. Planning for water management and downhill dissipation of water, minimising water accumulation on trail. Utilise trail construction techniques such as choosing best available trail pathway and anticipating extreme weather events and how the trail will respond to these. Utilise rolling dips, water bars, trail out-slope, broad based dips, rubber belt water bars, wooden box culvers and cross drainage culverts. Divert water off trails and infiltrate to ground – no trail accumulation into streams. Over oversize culverts and dissipate energy.	

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
Historic Values	Archaeological authority	An archaeological authority under section 44 of Heritage New Zealand Pouhere Taonga Act (2014) should be obtained prior to works commencing	Positive	Trail building contractors will be informed of the requirements of the archaeological authority, and briefed by site archaeologist to ensure that the site archaeology is protected and to ensure that correct protocols are observed. Any archaeological features uncovered during works should be recorded using appropriate archaeological standards by an archaeologist	Archaeological management plan will provide operational guidelines and procedures for day-to-day activities that may affect archaeological sites during works
	Earthworks	Side cast materials	Adverse	Where possible side case materials are transported away from trail in the vicinity of historic sites, to minimise the impact to the sides of the immediate trail. Suitable locations for stockpiling materials to be identified and agreed with construction contractors with the aim of avoiding archaeological features	Earthworks that may affect archaeological material should be monitored by an archaeologist
	Construction	Construction methodology	Potentially adverse	Ensure that trail formation, and gravel surfacing is performed by the smallest, least impactful tools and machinery that are practical for the site.	
	Water management	Water management	Potentially adverse	Ensure that the trail is shaped to minimise run off leading to scouring, and erosion of historic sites. Use best practice trail design, culverts, and soak pits to manage ground water.	
	Earthworks	Earthworks	Potentially adverse	Where constraints of topography result in the trail alignment going through historic sites, earthworks will destroy any archaeological features. Where possible the trail must be aligned to avoid historical features. Where impact is unavoidable, HIA deems	

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
				that impact can be mitigated through the recording of all features to a high standard. HIA has determined that the impact of the trail alignment where it is likely to encroach on tailings, will have a minimal impact on a site that is deemed to have low to moderate archaeological value.	
	Education/Awareness	Provide education to avoid impact on historical values, and to increase awareness/appreciation of the significance of the site	Positive	Limit approach distance/access , require that trail users stay on the formed trail/hardened traffic areas. Provide interpretation panels and warning signage to educate about and protect sites	
	Site management		Positive (if correctly implemented, observed, and managed)	Consideration of ongoing site management following trail construction will help to ensure the protection of the sites and the history. Stabilization and protection of the sites is important Interpretation signage, and warning signage to educate trail users about the fragile nature of the sites, will help to protect the historic sites.	Sites should be monitored for damage, and repair work be instituted where required.
Cultural Values	Accidental Discovery	If at any stage during site works Māori material is discovered	Positive	Works must cease immediately, and manawhenua and HNZPT shall be consulted immediately about how to proceed	
	Cultural sensitivity	Works/land use offensive to Tangata Whenua	Negative	Consult with Iwi over proposal, ensure any cultural interpretation is consistent with Iwi values, educate trail users to respect cultural values and traditions	
	Misinformation	Incorrect stories/history about the site	Negative		
Recreation/	Crowding/Conflict	High numbers of trail users impacting on the experience of the trail, conflict between cyclists, pedestrians, trail users, different experience levels	Negative	Education, signage, operator education, information about busy/quiet times, multiple entry points/lay down points on the trail to ensure that there is less likely to be bottle necks and pressure points,	Monitor using trail count data and collect feedback to determine if

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
					there is an approach that can help to moderate numbers and potential conflict
	Displacement	Commercial operators placing visitor numbers on the trail that might make locals or individual trail users feel displaced	Negative Significant	Limit use for commercial operators (or provide guidelines around what acceptable number are) trail use etiquette etc	
	Noise	Noise levels of trail users impacting on the experience of other trail users, or residents living within proximity of the trail	Negative	Educate trail users and operators on respectful behaviour and noise levels	
	Safety	Trail use activity encompasses inherent risk that is expected in association of recreating on a trail.	Negative	Health and safety policy, operator and individual responsibility, code of conduct, signage, snap send solve, reporting of hazards, maintenance, mitigation, trail design standards, access for retrieval, emergency services plan, barriers etc where required, liaising with DOC to manage and mitigate.	Health and safety register, reporting, best practice, regular meetings to discuss improvements and or changes, snap send solve for maintenance
	Fire risk	Risk of fire that could start or develop on conservation land… Risk of sparks or incendiary activity from machinery and hot engines/brakes in dry vegetation	Negative	Ensure that the risk of fire on conservation land is minimised, adequate restriction and prohibition administered by doc, signage, and information on website and on the ground to ensure that trail users are adequately informed.	

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
	Pets	Dog are allowed on the Sunshine Bay Track currently, horses are not.	Potential negative	Dogs allowed on leash, managed by QLDC Work with DOC for management plan around allowance of pets on new trail	Monitoring and reporting and enforcement
	Bridges, Boardwalks & Gantry's	Less footprint	Positive	Bridges are a desirable water/wetland crossing structure – they have a smaller footprint, allow retention of vegetation and have minimal impact on fish passage, not riding and walking through water way/wetland Positive tracks	
	Rubbish	Trail users have potential to dump rubbish during their time on the trail	Negative	Educate trail users and operators to utilise and enforce a "carry it in, carry it out policy", discarding waste on the trail is unacceptable, promote culture of trail use that does not tolerate littering or dumping of waste	Visible monitoring, bin strategy/pack out strategy

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
	Toilet Waste	Trail users have potential to urinate or defecate at any location along the trail. This is a public health hazard as well as an environmental concern.	Negative	Provision of toilets and management of waste, regular signage to inform trail users of distance to nearest facility, increased education around the unacceptability of pissing and shitting in the woods. Facilities need to be maintained to a standard where they are appealing to use.	Visible monitoring, recording of issues, sight and smell, increase facilities where necessary
	Infrastructure	Effects on existing infrastructure: car parks, adjoining tracks, toilets	Adverse	Ensure infrastructure is adequate and frequently provided so that track users are provided for, and that the existing infrastructure does not become over burdened, ensure users utilise the provided infrastructure, stay on tracks, used provided toileting facilities	Monitor usage to provide necessary upgrades when required and to ensure users are educated about facilities and the importance of using them

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
Construction	Dust	Dust from construction can be carried by strong wind, and can impact air and water quality	Adverse	Contractors shall take reasonable and practical management measures to avoid dust moving beyond the boundaries of the site. Management measures will include dampening down of exposed soil and possible covering of stockpiles to prevent dust migration by wind.	Weekly inspections for visual evidence of dust fall out from works on adjacent vegetation. Enhance mitigation response if required.
	Noise	Noise from construction can affect wildlife, users of conservation land, and residents adjacent to the construction area.	Adverse	Contractors shall ensure that all works are undertaken in accordance with the noise limits set in any relevant conditions of consent, or within the noise limits specified in the QLDC District Plan for the relevant zone. A noise management plan may be required.	

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
	Waste Management	Waste from construction can cause adverse environmental effects to plants, wildlife, and enjoyment of conservation areas	Adverse	Contractors shall ensure that all waste materials are removed from site, no waste shall be burned on site. Bins for waste disposal shall be supplied at all times, bins shall be fitted with lids and serviced prior to being filled to capacity. At all times, the site will be maintained free of litter. Contractors will be responsible for ensuring that no litter leaves the boundary of the wors and that no litter enters any waterway.	
	Rock Breaking & Vibration	Environmental effects include ground vibration, air overpressure, fly rock, dust, fumes and noise. These effects are anticipated to be temporary and limited to the duration of the works. Risk to wildlife, pollution and noise pollution can affect navigation, finding food, mating, nesting and predator avoidance	Adverse	Vibration monitoring and noise reduction, implementation of specific vibration and noise management plan commensurate with the level required to appropriately mitigate adverse effects associated with noise and vibration. Care will need to be taken with any rock breaking to ensure shrapnel is not showered onto the road. Advice will be sought from a suitably qualified and experienced professional to fine tune methodology	To be monitored during construction and adjusted where necessary
	Vegetation disturbance	Construction work can pose a threat to indigenous vegetation and protected trees	Adverse	Clearing of, and impact on indigenous vegetation should be limited to the immediate vicinity of the new trail, contractors shall take reasonable and practical management measures to avoid disturbance to vegetation or ground surface beyond the limits of clearing and to minimise disturbance to vegetation or ground surface outside the limits of clearing. Identification markers should be installed at the permitter of the limits of clearing prior to any vegetation clearance and ground disturbance. Where works encroach on individual trees or vegetation to be protected/retained, ground	Arborist on site at critical times to monitor and instruct

	Effect	Assessment	Consequence	Mitigation Measures	Monitoring
				disturbance or other works including stock piling, shall not encroach within the dripline of the trees, suitably arborists shall be employed to identify and mark significant trees and indigenous vegetation prior to commencement of works.	
	Site restoration	Post works, the site is to be rehabilitated and restored to a state as close to or better than pre-works as possible	Positive	Planting, clean up, waste removal, exotics removal, wetland restoration	Visual inspection to ensure adequate restoration, before and after images
	Construction Vehicle Access	Excavator access to build footings for structures is difficult in some locations, potential damage to land form and vegetation to gain access	Negative	Determine effective and efficient methodology for construction vehicle access. Potential to utilise Heli-time to fly machinery in to hard to access locations.	
	Cumulative Impact	The proposed activity may result in significant cumulative impact on the physical, social or management environment of the conservation area	Negative Potentially significant	Investigate development plan for predicted growth and required subsequent growth management, work with DOC during the planning process to protect values.	Survey, visual inspection, trail count numbers, feedback from trail users

7.0 MONITORING PROGRAMME OUTLINE

Monitoring provides information about ecological values and enables informed decision making about improving conservation outcomes. Monitoring will aim to observe and measure the actual effects of the proposal on ecological values and conservation.

It is anticipated that a comprehensive monitoring protocol will be developed in conjunction with the Department of Conservation as part of the application process.

7.1 Monitoring Phases

Two phases of monitoring requirements have been identified in association with the proposed new trail – monitoring of environmental management protocols during construction, the ongoing monitoring of the effects of the trail once it is in situ and being used

7.1.1 Monitoring during construction

A specific environmental management plan (EMP) will be developed for the construction phase of the proposed trail. The EMP will address administrative requirements as well as operational requirements for each environmental element identified (e.g. erosion, sediment, dust, noise, pollution etc). Each contractor will be responsible for implementing and monitoring the EMP with respect to their contribution to trail construction, this will include monitoring of effects where necessary, as well as implementation of mitigation measures where appropriate.

A project manager will perform at least weekly site visits during which the compliance with EMP requirements, implementation of EMP mitigation measures, and the efficacy of monitoring will be assessed. Feedback will be provided to contractors to ensure that adjustments and improvements are made when necessary.

The EMP will be complied by a suitably qualified professional.

7.1.2 Ongoing monitoring

Once the trail is constructed, and is being used, ongoing monitoring will be required to assess effects of trail use on land values, aquatic and marine values, historic values, cultural values, recreation/enjoyment values and the cumulative impact of the trail and its use.

Various methods of monitoring will be employed depending on the effect being measured, and pre-determined levels and thresholds of unacceptable effects will be formulated in consultation with DOC to determine the effect of the trail and its use on the conservation values of the area.

Where levels of unacceptable effects are identified, management plans and mitigation measures will be implemented to reduce and remediate the unacceptable effects.

7.2 Types of monitoring

7.2.1 Trail Count Data

Trail counters will be installed at various locations along the trail, these will help to determine days, times of day and seasonal variations in trail use. Trail count data informs maintenance requirements for the trail and will help to determine if the trail and trail related facilities are overburdened. These factors will contribute to recreation and enjoyment values for trail users.

7.2.2 Survey

Two types of survey data related to the trail can be captured, survey of trail users and survey of plants, animals, insect and bird life present along the trail.

Surveying trail users can help to provide valuable feedback about the trail user experience, inform maintenance and upgrade requirements, and identify where improvements can be made.

Surveying wildlife and plants will help to determine what effects (positive and negative) that the trail and its use is having on terrestrial and aquatic values – numbers of native species vs predator/invasive species, effectiveness of existing mitigation measures, and information to assist in deciding what further measures may be required.

7.2.3 Surveillance

Visual inspection of the trail and surrounds will be used to ensure that water ways and culverts are being adequately maintained that historical sites and sensitive areas are not being damaged or degraded, and that rubbish/pollution is not becoming a factor.

Methods of surveillance include visual inspection and taking photos.

7.2.4 Ecological State of Ecosystems

Assessment of ecosystems and ecosystem health and how these are affected, negatively or positively by the proposed trail.

A combination of these monitoring methods will be utilised to assess the ongoing impact of the proposal.

8.0 TRAIL MAINTENANCE

Future maintenance of the trail and structures will be managed by Queenstown Mountain Bike Club (QMTBC) and Queenstown Lakes District Council (QLDC). QMTBC has indicated that they will be responsible for maintaining the trail surface. QLDC has indicated that they will take on the maintenance of structures. Email confirmation of QLDC's commitment to maintenance of structures in attached as **Appendix [D].**

9.0 CONCLUSION

This concession application is lodged with the Department of Conservation to ensure that the proposed trail is compatible with the aim of protecting natural and historic resources.

A comprehensive review of the nature and effects of the proposed trail, along with mitigation strategies for identified adverse effects, and an ongoing monitoring programme will help to ensure that the proposed trail has minimal impact on natural, historic, recreational and cultural values.

Should you have any queries, please contact the undersigned in the first instance.

Yours faithfully
Queenstown Trails

Mark Williams

[redacted]

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