MILFORD OPPORTUNITIES PROJECT

Walking and Cycling Experiences Report

April 2024

MILFORD OPPORTUNITIES

Looking up the Eglinton Valley from Countess Range Hut site

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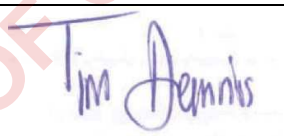
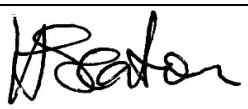
Document Quality Assurance

Bibliographic reference for citation: Southern Land Ltd 2023. *Milford Opportunities Project: Walking & Cycling Experiences Report Prepared by Southern Land Ltd for Milford Opportunities Project*		
Prepared by:	Tim Dennis Principal Trail Designer BE(hons), DipSurv, MS+SNZ NZCT Master Trail Builder Southern Land Ltd	
Reviewed by:	Hamish Seaton MEng, NZCT Master Trail Builder Active Systems Ltd	
Status: Final	Rev/version: v4 FINAL 22 April 2024	**FINAL**

File ref: A40032 Walking & Cycling Feasibility Reporet.docx

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Executive Summary

Southern Land Ltd has been engaged by the Milford Opportunities Project to prepare a technical feasibility report and Assessment of Recreation Values for a range of walking and cycling experiences that arose from the Milford Opportunities Project (MOP) Masterplan Stage 2.

In our opinion the Te Anau Downs to Cascade Creek cycle trail will be a valuable addition to the cycle trail network offering opportunities for New Zealand residents and international visitors to the region to get an outstanding experience on the margins of the Fiordland National Park. The 55km ride could be built to meet NZCT Grade 2 (easy) riding and be suitable for a wide cross section of cyclists and includes remote wilderness type experiences while being on the fringes of the National Park or within the accessible Upokororo Eglinton Valley. Combined with the 35km long Te Anau to Te Anau Downs Trail being developed by the Fiordland Trails Trust and existing 28.5km Lake to Lake Trail, this will create a 120km 2-3 day ride. It is estimated that $24.3M will be required to develop the trail with annual operating costs of $623,800.

Construction of a 20-40 bed hut and easy tramping track to provide an overnight stay at the southern end of the Countess Range in our opinion would be a desirable outcome with its use anticipated to meet or exceed that of similar huts like the Brewster, French Ridge and Mt Brown overnight offerings. The hut location at 1,260m on a small ridge with 270-degree views (see front cover) will be a memorable visitor experience. A larger 40-bed hut may be visually dominant and compromise the overnight experience compared to the smaller capacity hut. Building an easy tramping track in preference to an advanced tramping track is believed to offer longer term resilience as the soft in situ materials are likely to wear quickly causing erosion.

There is the option of creating additional accessible track options in the Eglinton, Hollyford and Cleddau Valleys. Together with minor upgrades to the Lake Gunn Nature Walk this could mean up to 6 accessible tracks along the Milford Road corridor.

The creation of the Key Summit to Cascade Creek Track would provide an outstanding but long 17.2km day hike including 1,250m of climbing and descent and will suit only the fittest visitors. In our opinion its length is likely to hamper its success and could lead to downsides like parties being caught out in poor weather, camping on the tops or diverting to McKellar Hut in the Greenstone Valley. If developed to an easy tramping track standard this will require a fully benched track in the Cascade Creek including two bridges and considerable wayfinding, benching and boardwalks on the open tops. A lower standard advanced tramping track will require little or no benching or bridges.

As an alternative to the Key Summit to Cascade Creek Track a shorter 8.5km loop with 550m of climb is considered a viable option. This shorter loop track would take visitors to a rocky summit with views across Lakes Gunn, Fergus and McKellar as well as directly into Hinepipiwai Lake Marian. The out journey being along the existing Routeburn and Key Summit Tracks with a new descent track to The Divide creating the loop.

The upgraded or new tracks at Hinepipiwai Lake Marian including the Covered Nature Trail aim to address visitor congestion as well as offering another accessible option. Of these the upgrading of the Hinepipiwai Lake Marian Track to an easy tramping track is believed to offer the best return on

investment improving the visitor experience without the cost of building and maintaining the additional 3km true left track. Upgrades to the Marian Creek Falls Track and viewing platforms would complement this. As an alternative to address congestion and the flow of visitors around the falls, bridges could be constructed above and below the falls with a short track connecting these on the true left.

The proposed Gertrude Valley Loop Track creates a high-quality short walk taking under 1hr to a sub-alpine viewpoint above bush line which is unique within the project area. The track passes through massive boulders and mountain beech forest with views of remnant glaciers, cirque walls and the likely call of the kea. The development of the associated Gertrude node is considered to provide benefits for Homer Hut by delivering better parking, wayfinding, toileting and visitor management.

The Chasm to Cleddau Horse Bridge Track and Milford Sound Lodge to Tutoko Bridge Track will provide additional day walks that cater to day visitors as well as guests and residents staying in Milford Sound Piopiotahi. Both will be easy day walks which could be completed in 1-2hrs and offer either increased levels of service or new opportunities with numerous scenic viewpoints.

The upgrading of existing or creation of new tracks in the Cleddau Delta will in our opinion deliver a high-quality short walk experience including a real sense of remoteness in a rare intact delta forest habitat. This walk would complement the other short walks in and around Milford Sound Piopiotahi. The reinstatement of access to the lower Hine-te-awa Bowen Falls using a floating pontoon or bluff bridge with rock shelter will remove the need for a short boat ride and this could be delivered as an accessible standard track adding a significant viewing opportunity within easy reach of every visitor. The proposed tracks at the top of the Hine-te-awa Bowen Falls are technically feasible but the elevation change from the top of the cable car to the falls of between 70m and 90m is in our opinion inconsistent with the short walk visitor groups expectations. This may better suit a day walk. The view from the top of the falls of the fiord is worth the effort.

In our opinion a better value option that does not require access via a cable-car or similar could be a walkway from the lower falls up the cliff face climbing to 50m above sea level to gain a rock ledge where the water is bursting out of the falls in a dramatic way.

If all the proposals were to be delivered, we estimate that they would cost a total of $104M to develop and have an annual operating cost of $3.9M

In developing the range of track, trail and hut options the owner(s) and operator(s) will need to be especially mindful of existing and predicted weather in a changing climate. In particular, changes in rainfall patterns and frequency of extreme events needs to be carefully considered in the detailed design. Facilities should be built and positioned in anticipation of climate change and constructed to the highest standards to reduce ongoing operational costs. Bridge sites will need to be carefully considered to take into account the impact of flood flows, and in particular debris clearance.

Based on recent evaluation of the operation of the Paparoa Great Walk it is anticipated that the overnight hut offerings can achieve similar cost recovery and sustainability, provided that they are built to a high quality and are accessible for the majority of the year. Generating revenue for the cycle trail is currently not proven although it is anticipated by the *Te Anau Downs to Cascade Creek Trail, Impact Assessment, 26 July 2023*, that the wider economic benefits will easily justify the development and operating costs. Options to cover the operational costs could be trail memberships, donations attached

to cycle trail products and services and advertising or concession fees together with the proposed Milford Road access fee.

Figure 1: World class views from upper Bowen Falls

1. Project Background

1.1 Purpose and scope of report

Southern Land Ltd has been engaged to determine the technical feasibility of the walking and cycling concepts proposed in the Masterplan and shown in Figure 13 Page 35 of the Master plan (Copy below)

Figure 2: Milford Corridor, hubs and nodes plan from MOP Master Plan

This report assesses a range of visitor opportunities including cycle trails, walking and tramping tracks and backcountry huts. The full detail of all opportunities is contained in **Section 2: The Opportunities**

Additionally, we have assessed the existing recreation values across the project area and the potential impact of the proposed walking and cycling opportunities on those values. The full detail of this assessment and methodology is contained in Section 5.

This report builds on the technical assessments carried out in the Masterplan Stage 2 (used to develop the concepts articulated in the Masterplan) and aims to establish the technical feasibility of the proposed concepts. In the context of the Transport and Infrastructure stream 'feasibility' is intended to

mean the technical feasibility (from a constructability, sustainability, operating and maintenance, and capital and operating cost requirements perspective) of:

a. The Recommended Options, and
b. The Next Best Alternatives.

In the context of the Walking & Cycling Experiences workstream, feasibility assessment means the identification of alignments and supporting infrastructure that will achieve the level of service for the intended user group (including for safety), provide the requisite high-quality experience for visitors intended by the Masterplan, and are sustainable from an environmental, capital and operating cost perspective.

1.2 Assessment Methodology

This report has been completed with the following stepping stones:

- Review of the existing reporting contained in the Masterplan and from external agencies including Waka Kotahi NZTA and DOC
- Desktop assessment of the walking and cycling concepts using GIS mapping software
- Onsite assessment for each walking and cycling concept including identification of supporting infrastructure
- Preparation of high-level construction and operational cost budgets for each concept

Review of existing information including:

- MOP Masterplan Stage 2 including Tourism, Land Analysis and Infrastructure Assessment reports
- MRA avalanche information and DOC avalanche forecasting
- NIWA and DOC rainfall and climate data
- DOC reporting and data on existing use of recreational facilities including the Paparoa Great Walk and Pike29 track
- DOC Experience Design Plans for The Divide and Key Summit area and for Hinepipiwai Lake Marian area

Desktop Assessments including:

- GIS analysis of detailed terrain models to identify the best terrain and track alignments for ground truthing
- Analysis of major terrain constraints and structures required including sites for ground truthing

Onsite assessment including:

- Walking the proposed track alignments to identify vegetation and ground conditions, terrain constraints and solutions together with significant structures and their siting
- Assessing the user experience on the proposed alignment
- Where a better option(s) exists, investigating these & assessing against the above assessment methodology
- Logging of results using handheld GIS systems

High level construction & operational costs including:

- Sourcing local rates for key raw materials like gravel, rock and machinery
- Reviewing the most similar relevant recent projects from the South Island including from DOC and private sources and comparing construction rates
- Testing construction estimates using reputable contractors specialising in track and bridge construction
- Sourcing operational costs across a range of different track owners

1.3 Site Overview

The walking and cycling experiences proposed in the MOP master plan span a diverse range of terrain, climate, ground conditions and vegetation. From the gently rolling moraine outwash of the Te Anau Downs area, the meandering braided Upokororo Eglinton valley with its steep sided glacial carved walls cloaked in thick mature red beech forest on the lower slopes transitioning to mountain beech higher up to The Divide and Key Summit's exposed tussock tops.

The terrain is best described as either gently sloping or moderately steep with little in between. Flat areas are prone to collecting water and being swampy with steep areas being either solid rock or composed of rock fall debris (colluvium) and/or prone to tree fall. Some of the steeper slopes produce shingle fans such as Kiosk Creek.

The margins of the braided Upokororo Eglinton River are very mobile with flooding in 21-22 September 2023 showing significant movement in riverbanks when compared against the most recent LiDAR survey (early 2023). This shows the power and rate of river movement. Much of the Upokororo Eglinton Valley river flats are wet, swampy, prone to overland flow and poorly suited to cycle trail construction. The adjoining red beech forest is mostly open with well-spaced mature trees and little understory making for both relatively easy construction but also a nice walking and riding experience.

The Key Summit ridge is a glacial scoured gently sloping rock ridge offering possibly the most accessible off-track tops travel in Fiordland. Connected to either McKellar Hut or Ōtāpara Cascade Creek this is a popular tramp for fit parties. The ridge is typical of the Fiordland tops with low to medium height alpine scrub, tussocks and exposed rock and numerous small lakes or tarns in the many depressions.

In the winter the alpine slopes gather large volumes of snow which feed the rivers and streams in the spring. High winds are also a feature across much of the project site with this focused around the Divide, Key Summit and Ōtāpara Lake Gunn area in the Upokororo Eglinton Valley.

For purpose-built cycle trails the local environmental conditions can have a big impact on success and the user experience. Climate, combined with outstanding scenic viewpoints, a sense of quietness and solitude all within a short distance of civilisation are keys to making a memorable experience for most users. Trampers on the other hand are more resilient to inclement weather and wish to escape the hustle and bustle.

1.4 Climate & Rainfall

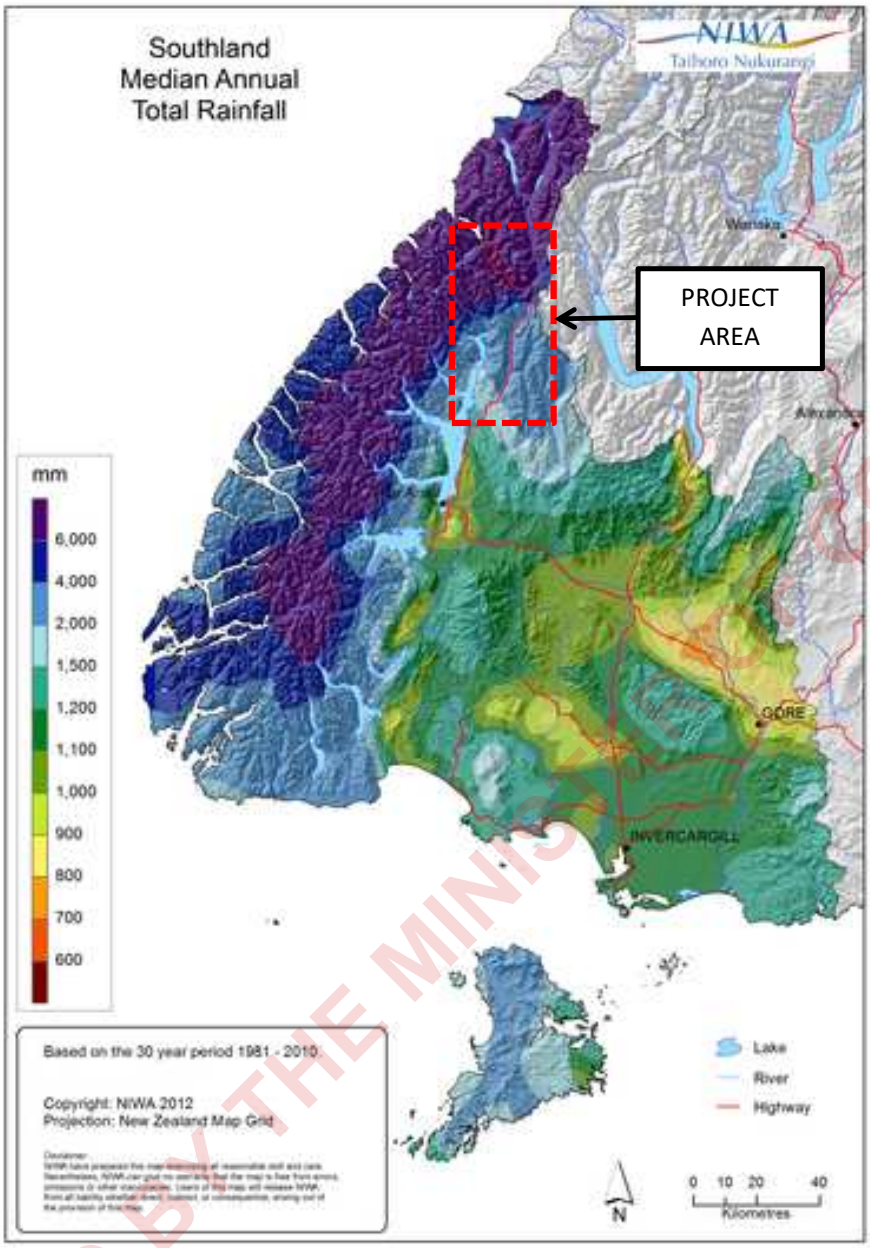

Figure 3: NIWA Rainfall Map

Rainfall patterns can have a considerable impact on the visitor experience, particularly for cyclists. NIWA data above gives an indication of the changes in rainfall across the 55km cycle trail and the wider project area and this is tabulated below in Table 1 below. Additionally, it should be noted that on average it rains 182 days per year at Milford Sound Piopiotahi.

Table 1; Annual rainfall bands

Rain Band	Annual rainfall (m)
Te Anau Downs to Retford Creek	1.2-1.5m
Retford Creek to Boyd Creek	1.5-2m
Boyd Creek to Ōtāpara Lake Gunn	2-4m
Ōtāpara Lake Gunn to The Divide/Lake Marian	4-6m
Lake Marian to Milford	6+m

Data sourced from NIWA

Associated with rainfall is a change in temperature, sunshine and vegetation. Across the project area the greatest rainfall and lowest temperature is associated with the upper Hollyford Valley to the Tutoko River. Wind, which is particularly relevant on a bicycle is fairly constant across the cycle trail location with the greatest and most consistent winds between Ōtāpara Cascade Creek and The Divide which forms a wind tunnel with the Whakatipu-ka-tuku Hollyford Valley running north-south. A common feature is an afternoon zephyr from the north at Ōtāpara Lake Gunn.

1.5 Stakeholders

MOP have engaged with a 'Track & Hut Engagement Group' comprised of the following businesses and recreation groups:

1. Trips and Tramps
2. Fiordland Tramping & Outdoor Recreation Club
3. Fiordland Trails Trust
4. Bike Fiordland
5. New Zealand Alpine Club, Southland Section
6. New Zealand Deerstalkers Association
7. Milford Sound lodge
8. Fiordland Outdoors
9. Federated Mountain Clubs
10. Fish & Game

The stakeholders group met on 2 March 2023 to consider the Masterplan Stage 2 opportunities (Refer Figure 2). Feedback from that meeting is summarised below and has been used to inform our assessments of potential impacts. Note not all opportunities assessed in this report were discussed during the meeting on 2 March 2023.

Table 2: Stakeholders feedback 2 March 2023

Opportunity	Feedback/comments
Eglinton River Track	Comments about linking the reveal trail to the Upokororo Eglinton Valley Cycle trail
Knobs Flat short walks	Noted existing similar options like Ōtāpara Lake Gunn Nature Walk, good for people with wheelchair or push chairs, comments that it would not be very unique as similar things exist so what value does it add, good sunny campsite (Kiosk Creek), felt the existing walks are not

	very appealing for a day walk but overnight stays would find walks ok, noted short waterfall track, consider accessible tracks
Countess Range Track & Hut	Agree demand for alpine hut similar to Brewster, Luxmore, Mt Brown, would need management, 80 bed hut would be very large, environmental impact of large hut an issue, possible link to East Eglinton from hut site, NZAC support high alpine hut in more easterly location like this, Great Walks survey showing erosion of hut etiquette and behaviour, increased user expectations (phone chargers, no snoring), unsure if any effect on hunters, new hut not about alleviating demand
Te Anau Downs to The Divide Cycle Trail	Support for what would be popular track if consistent with FTT trail, similar to the Wilderness Trail being grade 2 with some challenging bits is considered the sweet spot, general support for trail up the valley as road is already there, benefits of multiuse trail noted, consideration for disability access
Lake Marian Falls Track	Noted congestion and need to take pressure off this Short Walk section to the cascades, would loop do this?
Lake Marian Track - Upgrade	No comments specific to this proposal
Lake Marian Loop - True left	While new track doubles costs it would take visitors to something new over a there and back track as it is now, loop track could reduce congestion pressure on the waterfall track (possibly), possible avalanche or geotech issues on true left of creek, loop supported as offering better visitor experience
Covered Nature Trail (accessible)	Strong disagreement with covered trail idea, suggests you will not have covered trail from car park to start on true left of Hollyford River so what is the point, visual impact of covered trail
Pass Creek connection	Could work when The Divide access was questionable, considered too long for half day loop
Key Summit to Ōtāpara Cascade Creek Track	Not discussed
Key Summit Ridge Loop	Strongly advocated for a loop track to Key Summit to improve the visitor experience, year-round availability, loop back to The Divide, comments about sustainable track design and resilience
Divide Creek link to Marian Car Park	No comments specific to this proposal
Gertrude Loop	Feedback very supportive for a short loop, alpine views and flowers, no other easy short stop in the alpine areas, no support for going up valley into the hazards, environmental impact of structures on current setting and place, pressure on Homer hut which would need to be resolved, creek aggrading an issue, suggest separation to avoid conflicts, risk for inexperienced visitors
The Chasm to Cleddau Horse Bridge	Not discussed
Milford Sound Lodge to Tutoko River Bridge Track	Strongly advocated for by Milford Sound Lodge, will suit their visitors perfectly, also access for Milford residents as limited walks for them to do, track mostly in place (trapping line)

Barren Peak Spur walk (Piopiotahi Viewing Deck Walkway PHub16)	Concerns raised about people being seen from the water when on the structures or the structures themselves being visible, would-be nice start or end of day activity for people staying in Milford, visitor safety with viewing platforms, possibly too many options
Hine-te-awa Bowen Falls – - Lower, upper & Bowen River	Feedback does not see value in Bowen Valley walk, cable car and visual impacts considered a main issue, what about a track up the old pipeline, people at the top of the falls will impact views form below and on the fiord, possible duplication with Barren Peak Spur
Hine-te-awa Bowen Falls – Lower Walk	Geotechnical concerns raised
Cleddau Delta walks (accessible)	No comments specific to the proposal but some general comments about length of time people have in Milford and how many options do they need unless staying overnight

Figure 4: View up lower Chasm, Cleddau River

During the course of preparing this feasibility assessment there has been additional engagement with stakeholders and this is summarised below.

Table 3: Stakeholder engagement & feedback Oct-Nov 2023 & Dec 2023

Fish & Game	Initial feedback concerned the impact on fishing in the Eglinton River. During and following fieldwork the trail has been positioned as far off the existing riverbanks as possible to ensure the impact on fishers is minimised along this renowned trout fishing river. A finalised concept plan was supplied for feedback in Nov 2023. Feedback on the draft report received Feb 2024 highlights the potential adverse impacts of a cycle trail on the western shore of Lake Gunn, impacts on the Melita Stream and beach, adverse landscape impacts and reduction of natural quiet, all of which would diminish the angling experience and the feedback is unequivocal in its opposition. F&G consider there is little or no benefit to anglers in a track

	along the Eglinton River margins. No commentary was provided on other opportunities
NZAC-SS	NZAC-SS promoted the Countess Range hut and track. They also expressed a strong desire to participate in the fieldwork related to this proposal and the Key Summit ridge and Ōtāpara Cascade Creek. Kerry Clapham accompanied the writer on both trips ensuring the NZAC-SS position on each proposal was fully understood. Stakeholder feedback during the field work informed better consideration of the Countess Range northern approach track as well as The Divide short loop proposal as an alternative to the much longer Key Summit-Cascade Route. Feedback received Feb 2024 covered the following areas: **Gertrude Node;** Issues of overcrowding and user conflict, integration of bus stop, toilets, water supply & parking into a tight space, supportive of separate loop track proposed, recommend second walk at Monkey Creek & waterfalls be explored to reduce crowding at Gertrude, request a risk assessment around Gertrude Valley route be completed **Countess Range;** Support report findings **Key Summit to Cascade;** Do not support proposal, Disagree the route would be suitable for advanced trampers due to length, navigation & exposure, would impact an already stunning advanced tramping tops trip. Alternatives would perhaps be more appropriate, such as: **(1)** support shorter loop back to The Divide; or **(2)** they promote a new opportunity 2km south of Cascade creek, a short walk with great views (see Figure 6) **Recreation Values;** Believe Countess Range would also meet criteria for walking & sightseeing/nature in Table 11, Disagree that Key Summit to Cascade Creek fits criteria for walking & sightseeing/nature, Strongly agree the visitor experience is affected by aircraft but strongly disagree that trampers are only sometimes bothered and question the scientific basis for this underlying survey result, they highlight differences in facilities & experiences for campervans vs tents, Gertrude Node visitor impacts; They consider effects more than minor of increased people at this node using Homer Hut for day base (toilet, water), They highlight possible intensification of helicopter noise thru closure of the Milford airport and this change may warrant further mention in conclusion
FMC	FMC provided detailed responses on most proposals. Particular mention was made of the Upokororo Eglinton Valley Cycle Trail (proximity to Limestone Gorge), Countess Range and Mistake Creek Proposals. Following additional engagement with FMC vice-president Allan Brent and fieldwork the cycle trail has been moved as far as possible away from the Limestone Gorge. The Mistake Creek proposal has been discontinued and additional consideration of the Countess Range Track & hut has been made. The Masterplan recommended 80 bunks. Based on adverse feedback received about this proposal we are not testing 80 bunks and are testing 1) NZAC's proposed 20 bunks and 2) a hut size more consistent with Great Walk hut/Serviced Hut standards i.e. 40 bunks Feedback received Feb 24 highlights the following points: Likely to publicly & strongly support Countess Range Hut & advanced tramping track option, Unlikely to support Key Summit to Cascade Creek Track due to conflict with existing easy tops tramping, Likely to oppose original options for Bowen falls (cable car), May support (or at least not strongly oppose) Chasm to Horse Bridge & Cleddau Delta walks

	Have significant concerns that the numbers of visitors will increase at Gertrude Valley even under mixed access model & potential for large lumps of visitors arriving by bus and adverse impact of this, Suggest alternatives to Gertrude loop is Upper Cleddau cirque outside the avalanche season and Monkey Creek & waterfall, both would be better value and would not lead to increased congestion or user conflict at Gertude Valley
Peter Chartres, Te Anau Downs Station	Peter Chartres farms all the land adjoining the lower Eglinton River. The cycle trail proposed along SH94 would require his full support to be a success as it is not possible to construct the trail without crossing sections of his land. Initial feedback is that subject to the final alignment, arrangement for stock access and farming practices, this may gain his support. Additionally, the construction of the trail on the true right would ideally require access across his river paddocks.
Representatives of Ngai Tahu ki Murihiku	Feedback during the project indicates general support for the proposed tracks and trails. The area of most interest is Ōtāpara Cascade Creek (site of a former lodge operated by Iwi) and the Whakatipu Node. It will be important to progress any detailed design work in conjunction with mana whenua due to the cultural value of these two sites.

2. The Opportunities

2.1 Defining levels of Service and Experiences

In consultation with MOP's Senior Project Manager Infrastructure Engineering and MOP's Visitor Experience team, we have defined the Level of Service and associated 'experience' for each walking and cycling concept and this is shown in Table 4 below.

Table 4: Levels of Service

Description	Length (m)	Type/Grade*	Brief Description	Experience Description
Eglinton River Track	500	Easy cycle trail or Short Walk	Easy walking track towards Eglinton River to connect with the cycle trail	Easy short walk with views up & down valley, overlook of small horseshoe wetland
Knobs Flat short walks	1,300	Short Walk	Short walks in and around Knobs Flat accommodation including to waterfall & across Kiosk Creek	Easy short walks in open mossy beech forest with harder track (Easy Tramping Track) to stunning waterfall
Countess Range Track & Hut (option 2)	12,000	Easy Tramping Track & 40 Bed Hut	Easy tramping track & Serviced 40 bed hut	Significant climb through beech forest to gentle open tops with stunning 250° views & hut, loop to create whole journey and add interesting & varied tops travel
Countess Range Track & Hut (option 1)	11,000	Advanced Tramping Track & 20 Bed Hut	Advanced Tramping track & Standard 20 bed hut	Significant climb through beech forest to gentle open tops with stunning 250° views & hut, loop to create whole journey and add interesting & varied tops travel
Option 1: True right of Eglinton River to Black Creek, true left from Black Creek to Cascade Creek				
Te Anau Downs to Black Creek cycle trail - True right of Eglinton River	37,000	Easy cycle trail	Cycle trail on True Right of Eglinton River to Black Creek	Easy riding through a combination of red beech forest, regenerating forest and open grasslands. Two large bridges required. Views over the lower Eglinton River
Black Creek to Smithy Creek cycle trail	11,100	Easy cycle trail	Cycle trail from Smithy Creek to Black Creek	Trail takes riders past Mirror Lakes & Deer Flat plus interesting landform on plain at Knobs Flat

Smithy creek to Mistake Creek cycle trail	8,200	Easy cycle trail	Cycle trail from Mistake Creek to Smithy Creek	Trail mostly in red beech forest between road and river. Very short sections next to the road to avoid erosion or swampy grasslands
Mistake Creek to Ōtāpara Cascade Creek cycle trail	6,000	Easy cycle trail	Cycle trail from Ōtāpara Cascade Creek to Mistake Creek	Trail on the true right of the Eglinton River to Lake Gunn south shore & Ōtāpara Cascade Creek node
Ōtāpara Cascade Creek to Lake Gunn (northern end)	5,000	Easy cycle trail	Cycle trail along western side of Ōtāpara Lake Gunn	Trail on the western shore including link to Melita Falls (previously tracked in 1970's), stunning lake and mountain views, exciting riding across cliff faces
Ōtāpara Lake Gunn to Lake Fergus and to The Divide	3,830	Easy cycle trail	Cycle trail along western side of Lake Fergus to Divide Car park/node	Connection to The Divide node, changing beech forest, lake views, completing the journey to/from The Divide
Option 2: True left of Eglinton River along SH94 from Te Anau Downs to Blacks Creek				
Te Anau Downs to Black Creek cycle trail following SH94	29,700	Easy cycle trail	Cycle trail following margins of SH94 to Blacks Creek then join Option 1 alignment	Trail along the road margins, potential to leave road 2km west of Boyd Creek and include lovely beech forest riding with views to the Eglinton River. Some nice beech forest sections between Totara Flat and Eglinton Reveal. Bridge over East Eglinton River required
HINEPIPIWAI LAKE MARIAN & WHAKATIPU NODE				
Lake Marian Falls Track	750	Short Walk	Upgrade of existing track to waterfalls to short walk or walking track standard	Minor upgrades to track surface & structure widths to cater for increasing number of visitors to improve flow and reduce congestion to this outstanding short walk to the loud crashing waterfalls in the boulder strewn Marian Creek.

Lake Marian Track - Upgrade	2,370	Easy Tramping Track	Upgrade of existing Lake Marian Track to either easy tramping track or walking track standard.	Upgrades to improve accessibility and reduce congestion on this popular day walk to Hinepipiwai Lake Marian which gives views up valley to hanging snow fields, rock faces and alpine scenery
Lake Marian Loop - True left	3,200	Easy Tramping Track	New track on the true left of Marian Creek to create loop with existing Lake Marian Track	New track to reduce congestion by creating a loop track which is favoured over 'there and back' type tracks. The bush on the true left offers similar experiences to the true right existing track
Covered Nature Trail (accessible)	500	Short Walk	New accessible and fully covered track accessed from Whakatipu node. Options include both sides of Hollyford River and lower sections of Marian Creek, Longitudinal Gradient max 5° as per HB8630.	Aiming for lovely mossy beech forest, views over the Hollyford River at designated viewpoints. Covered from weather and accessible.
Pass Creek Link	3,000	Easy Tramping Track	New track connecting Whakatipu Node to Pass Creek Track, Lake Howden, Key Summit & Divide (Divide to Howden currently Great Walk/Easy Tramping Track). Test whole loop at Easy Tramping Track standard for consistency	Creation of a day walking loop taking in Key Summit. Aimed at more active visitors wishing to have a relatively easy day walk
Key Summit to Ōtāpara Cascade Creek Track – Option 1	18,970	Easy Tramping Track	New tramping track from Key Summit along ridge to Ōtāpara Cascade Creek node.	Day walking track on the open and stunning Key Summit Ridge culminating in a descent down Cascade Creek to the Ōtāpara Cascade Creek node.

Key Summit To Ōtāpara Cascade Creek Track – Option 2	17,320	Advanced Tramping Track	New tramping track from Key Summit along ridge to Ōtāpara Cascade Creek node.	Day walking track on the open and stunning Key Summit Ridge culminating in a descent down Cascade Creek to the Ōtāpara Cascade Creek node.
Key Summit Ridge Loop - Alternative	8,500	Easy Tramping Track	New easy tramping track to Key Summit Ridge, Ōtāpara Lake Gunn viewpoint and return on new track to The Divide	Alternative option to full ridge providing a shorter day walk more achievable by more people but still capturing the outstanding ridge travel which is the feature of this opportunity
Divide Creek link to Marian Car Park	2,690	Easy Tramping track	New easy tramping track from the Divide to Hinepipiwai Lake Marian car park	This connects with the Pass Creek link forming a full day walking loop.

CLEDDAU VALLEY & MILFORD SOUND/PIOPIOTAHI

Gertrude Valley Loop Track	1,840	Short Walk	New 1,800m high quality short walk. Consider opportunities for getting a viewpoint (possibly true left of Gertrude Creek) as part of walk	Aim is to provide an easy alpine walk with views to the head of the valley & surrounds

The Chasm to Cleddau Horse Bridge	3,240	Day Walk	New day walk connecting these existing sites on the true left of the Cleddau River	Aiming for a short walk in the Cleddau Valley with views across the Cleddau River taking in the Chasm and Horse Bridge will provide a link at each end which are points of interest in their own right.
Milford Sound Lodge to Tutoko River Bridge Track	2,330	Day Walk	New day walk connecting Milford Sound Lodge to the historic Tutoko Bridge	Aiming for an easy forest walk for visitors wanting to explore the lower valley as part of their stay in Milford Sound Piopiotahi
Barren Peak Spur walk & Viewing Deck	470	Short Walk	Upgrade of the existing Barren Peak Spur walk, consider if loop option possible to reduce congestion, steps & platforms included	Aiming to provide a better viewing spot which cuts out the building in the foreground and only adds a few minutes to the experience for a significantly better viewpoint
Hine-te-awa Bowen Falls – Upper Walks	990	Short Walk & Easy Tramping Track	New short walk from top of cable car or similar, along ridge to view the top of falls from viewing platform + steps to manage grades, and new easy tramping track to the Bowen River	Aiming to capture the power and excitement of the upper falls as the water drops off the cliff face 250m above the fiord. Easy tramping track to connect with upper river valley

Hine-te-awa Bowen Falls – Lower Walks	450	Short Walk	Reinstate walk to lower falls viewing area - short walk	The lower falls route has been highly successful in the past and reinstatement will achieve this outcome again. There is an option of a lower falls viewing platform which could provide comparable views to the upper falls
Cleddau Delta Walks (accessible)	2,100	Short Walk	New short walk(s) within the mature forest of the delta. Test as accessible option. Length up to 3.5km considered	Aiming to create an easy walk(s) which could be added to a day in Milford Sound Piopiotahi. The Delta offers mature lowland forest and has numerous viewpoints across the fiord

** Refer to Section 2 for full details of the track types & descriptions*

2.2 Track, Trail & Hut standards

The walking and cycling opportunities cover a wide variety of locations, terrain and user groups with differing levels of service expectations. The levels of service referred to in this report are covered by the following standards.

- DOC Cycle Track Service Standards 2020
- DOC Hut Service Standards
- NZ Cycle Trail Design Guide 5th Ed 2019
- SNZ HB 8630:2004 Track & Outdoor Visitor Structures Handbook

2.2.1 Visitor Groups

For the purposes of designing backcountry tracks and structures its useful to define the users in broad groups. SNZ HB8630 and DOC's standards are summarised as follows:

Table 5: Visitor Groups

Visitor Group (used by DOC)	DOC TLA	MOP Visitor groups 2020	Track Description
Short Stop Travellers	SST	Short Stop Attraction Visitors	Short Walk
Day Visitors	DV	Day Experience Visitors	Day Walk
Backcountry Comfort Seekers	BCC	Front country Overnight Visitors	Easy Tramping Track
Backcountry Adventurers	BCA	Enabled Backcountry Visitors	Advanced Tramping Track
Remoteness Seekers	RS	Wilderness Remote Experience Visitors	Route

The Tourism Report summarises these 'groups' as follows:

> *Section 6.141*
> *It is acknowledged that these Visitor Groups are subjective and highly simplified constructions for summary purposes, and that in reality some components may overlap across different individuals and activities, and that individuals may be considered participants in one Visitor Group on one day and another Visitor group on another. It all varies depending on the contexts of the activity – what it is, where and how it is undertaken. While very diverse in interests, particular visitor types do gravitate towards particular setting and activity offers.*

2.2.2 Track, Trail & Hut Specifications

Cycle Trails have been a significant new development in New Zealand since around 2010 when the Government announced the New Zealand Cycle Trail Project (NZCT). An output from this project is the NZCT Design Guide 2019. DOC have also developed their own standard and the DOC Cycle Track Service Standards 2020 are generally closely aligned with NZCT. The relevant standards are shown below.

Table 6: NZCT Trail specifications

GRADE	2 - Easy
Width (m)	1.2 min (one way), 2.2m dual
Grade Max °	6
Grade up °	3.5
Grade Down °	5
Built Features	Roll all, step max 200mm
Turn Diameter (m)	8
Turn Camber °	20
Structures (m)	1.2 min
Surface Conditions	Compacted, firm, uniform, well drained, cambered

We have only shown Grade 2 as this is the target grade for the proposed cycle trail.

Table 16: Relationship of NZCT off-road Grades to HB 8630 track classes and visitor groups

NZCT Grade	Equivalent HB 8630 User Group and Track Classification	HB 8630 Visitor Group	Reasoning / comments
1. 	2. Short walk	SST	Easiest non-urban category in HB 8630. All watercourses bridged. NZCT route distances will be longer than those suggested in HB 8630.
2. 	3. Walking track	DV	Similar experience level. Similar steps between adjacent categories.
3. 	4. Great walk/ easy tramping track	BCC	Similar experience level. Moderate exertion levels Similar steps between adjacent categories.

Figure 5: NZCT Design Guide 2019 comparison of track standards

Figure 6: View of Ōtāpara Lake Gunn from the NZAC-SS proposed viewpoint, Key Summit Ridge at right – Image Kerry Clapham, NZAC-SS

Table 7: Walking track specifications

Cat	Type	Max grade	Steps	Width	Formation	Structures	Bridges	Accessible	Footwear
SST	Short Walk	1:5.7, 10°	Yes, 1:1.5, 190mm riser, 2.5m btw landings	0.75-2m	Well formed & mud free, max 10% mud <50mm deep	1.2m min width	All major & minor bridged	Yes, max 5°, no steps, 1.2m wide, compacted firm surface	Shoes
DV	Walking Track	1:3.7, 15°	Yes, 1:1.2, 4m btw landings	0.6m min if <5°, 0.75m min otherwise	Well formed, max 20% mud <100mm deep	0.75m min width	All major & >1m wide	Not stated	Light hiking boots
BCC	Easy Tramping Track	No max	Yes, as per Walking track	0.3-0.6m & Table 4 sec 2.6.2.1	Wet areas <50% total length, markers or poled if not formed	0.6m min width	All major, minor refer 2.6.3.3	No	Light hiking or tramping boots
BCA	Tramping Track	No max	Not typically used	No minimum	Markers or poled, natural surface	0.6m min width	All major if not easily crossed in normal flow	No	Tramping boots

Table 8: Hut Service Standards, June 2022

Type	User Group	Design Size	Cooking Facilities	Heating & fuel	Water supply	Sinks	Toilets	Lighting & charging	Wardens
Great Walk Huts	BCC	44 people max	Can be provided where risk of injury is high	Must be provided	Must be tank or piped all year	Must be provided	Toilets should be outside, must be <75m form the hut, unisex, have a door, toilet seat and a lid, Pit and Vault Toilets must be vented, Track to toilet must be even and not muddy (except BCA)	Solar powered lights & USB charge points provided	Required during peak season
Serviced & Serviced Alpine huts	BCC/BCA	20-36 people max	Only where strong visitor demand	May be provided	Must be tank or piped but maybe natural watercourse, snow, ice if <50m from hut, available all year				Required during peak season
Standard Huts	BCS/RS	20 people max	No	Only in huts near or below bush line with access to onsite wood	As above but maybe within 100m of hut	Not required	As above but track to toilet can be of any standard	Not required	No

2.3 Existing Walking Opportunities

The following is a comprehensive list of existing marked & maintained walking opportunities within the project area.

Table 9: Existing walking opportunities along the Milford Road corridor

Name	Length	Type	Difficulty	Accessible	Location
East Eglinton Valley Track	4-6hrs	Tramping track	Challenging		Eglinton valley
Mirror Lakes	10mins	Short walk	Easiest	Yes	Eglinton valley
Bowen Falls Walk	30	Short walk	Intermediate		Milford Piopiotahi
Boyd Creek Track	2.5-3.5hr	Tramping track	Advanced		Eglinton valley
Dore Pass Route	8hr	Tramping track	Challenging		Eglinton valley
Falls Creek Route	6-8hr	Tramping track	Challenging		Hollyford Valley
Gertrude Saddle Route	4-6hrs	Tramping track	Expert		Homer Tunnel
Hut Creek Track	3hr	Tramping track	Advanced		Eglinton valley
Lake Gunn Nature Walk	45min	Short walk	Easiest	Yes	Eglinton valley
Lake Marian Falls Track	20min	Short walk	Easy		Hollyford Valley
Lake Marian Track	1.5hr	Tramping track	Advanced		Hollyford Valley
Lake Mistletoe Track	45min	Short walk	Easy		Te Anau Downs
Milford Foreshore Walk	30m	Short walk	Easiest	Yes	Milford Piopiotahi
Milford Sound Lookout Track	20min	Short walk	Easy		Milford Piopiotahi
Mistake Creek Track	3hr	Tramping track	Advanced		Eglinton valley
Pass Creek Track	3hr	Tramping track	Difficult		The Divide
Routeburn Track	6hr +	Great Walk	Intermediate		The Divide
Key Summit Track	3hr	Walking track	Intermediate		The Divide
The Chasm	20min	Short walk	Easiest	Yes	Cleddau Valley
Tutoko Valley Route	5hr	Tramping track	Expert		Cleddau Valley
Tutoko Valley Route	4hr	Tramping track	Difficult		Tutoko Valley

Source: https://www.doc.govt.nz/parks-and-recreation/places-to-go/fiordland/places/fiordland-national-park/places-to-go/milford-road-milford-sound-area/?tab-id=50578

There are 11 tramping tracks, 8 short walks & 1 Great Walk. Of the total 4 are accessible. Most but not all of this list are shown on the DOC Day Walks brochure in Figure 7 below.

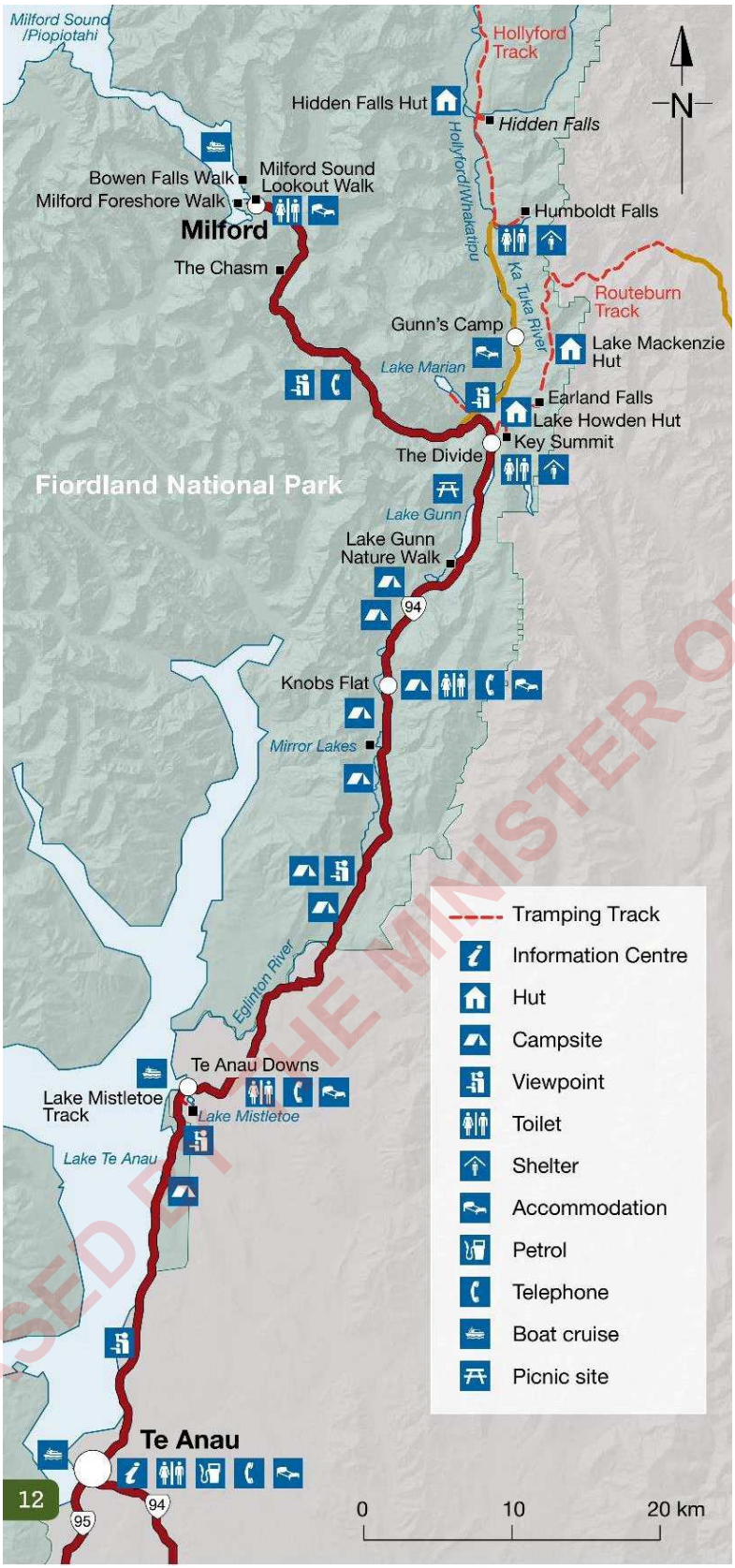

Figure 7: DOC's Fiordland Day Walks brochure Dec 2019

3. Track, Trail & Hut Assessments

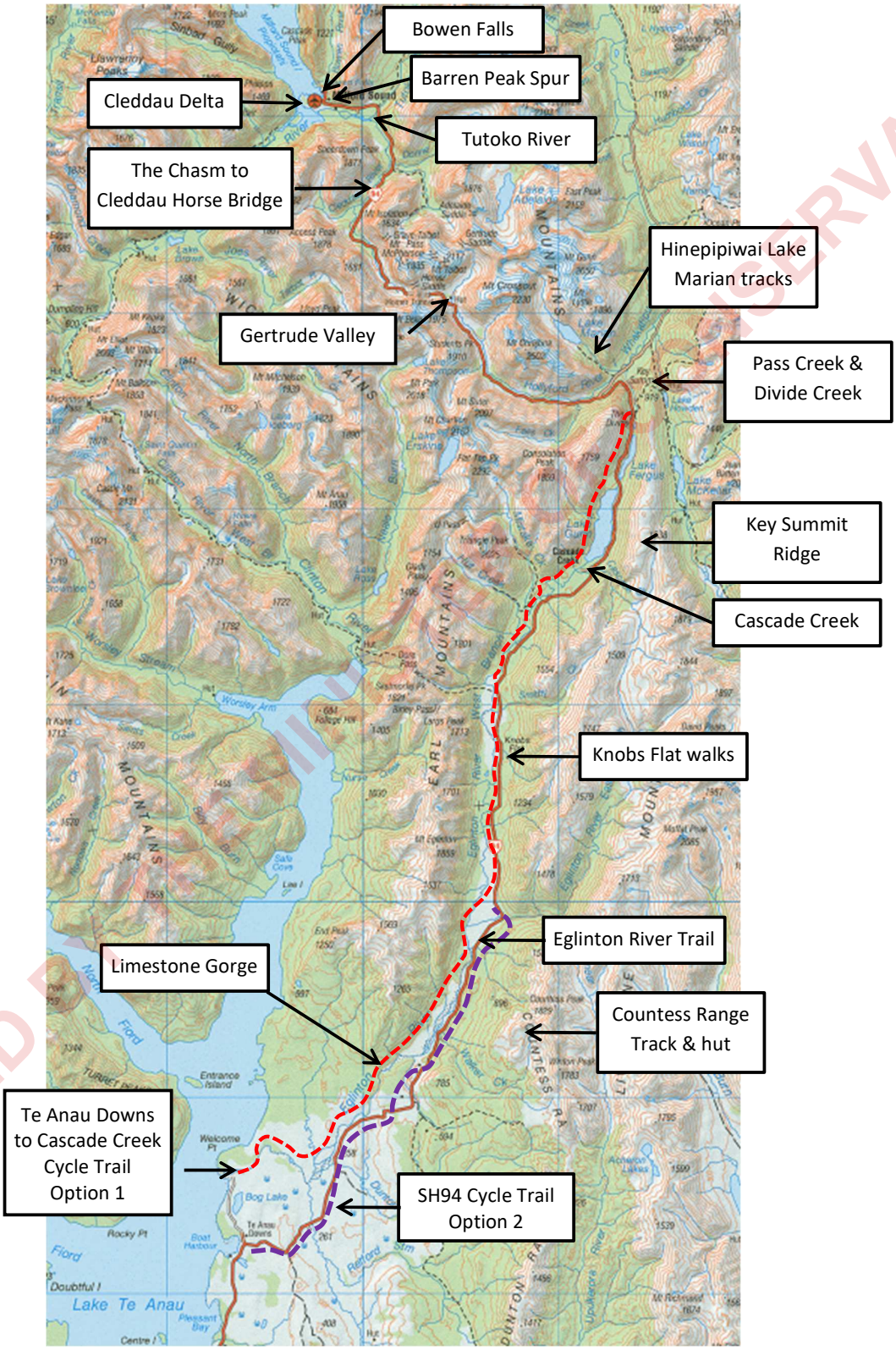

Figure 8: Overview map of project area & opportunities

The proposed tracks and trails are shown graphically in Figure 8 above and their standards and specifications in Table 4 Levels of Service. The track, trail & hut opportunities are assessed and listed in order from Te Anau Downs to Milford Sound Piopiotahi (south to north). Each track or trail is accompanied by a location map and tabulated assessment findings based on the assessment methodology detailed in Section 1.2

Assessment Method Commentary	
Length (m)	Total concept length in metres
Type	Description of track type e.g. day walk, cycle trail etc
Technically feasible	Yes or No with commentary provided to qualify decision
Technical Commentary	Summary of the major technical challenges to building or operating the proposed track
Key Risks	Risk Types including; Bridges, Structures, Landslides, Weather, People, Flooding, Avalanche, Budget, Maintenance. Estimated exposure level is assumed Low unless noted Medium or High
Risk commentary	Comments on scope of anticipated risk for medium & high
Visitor Experience met	Yes or No with commentary provided to qualify the assessment
Visitor Experience Commentary	Summary of the experience highlights and low lights related to the visitor experience, why it would be in our opinion successful or unsuccessful
Structures	What are the major critical structures necessary to deliver the track
Toilets	What is already onsite and what additional facilities are necessary to meet user expectations
Construction Cost	High level development cost estimate prepared November 2023
Operating Cost	Estimated maintenance and operational costs November 2023
Sustainability & Resilience	What are the risks with developing the opportunity, can it be sustained from revenue generated by the track, trail or hut, are there resilience issues to consider
Other Comments	Related commentary not otherwise covered above

3.1 Eglinton Valley Cycle Trail

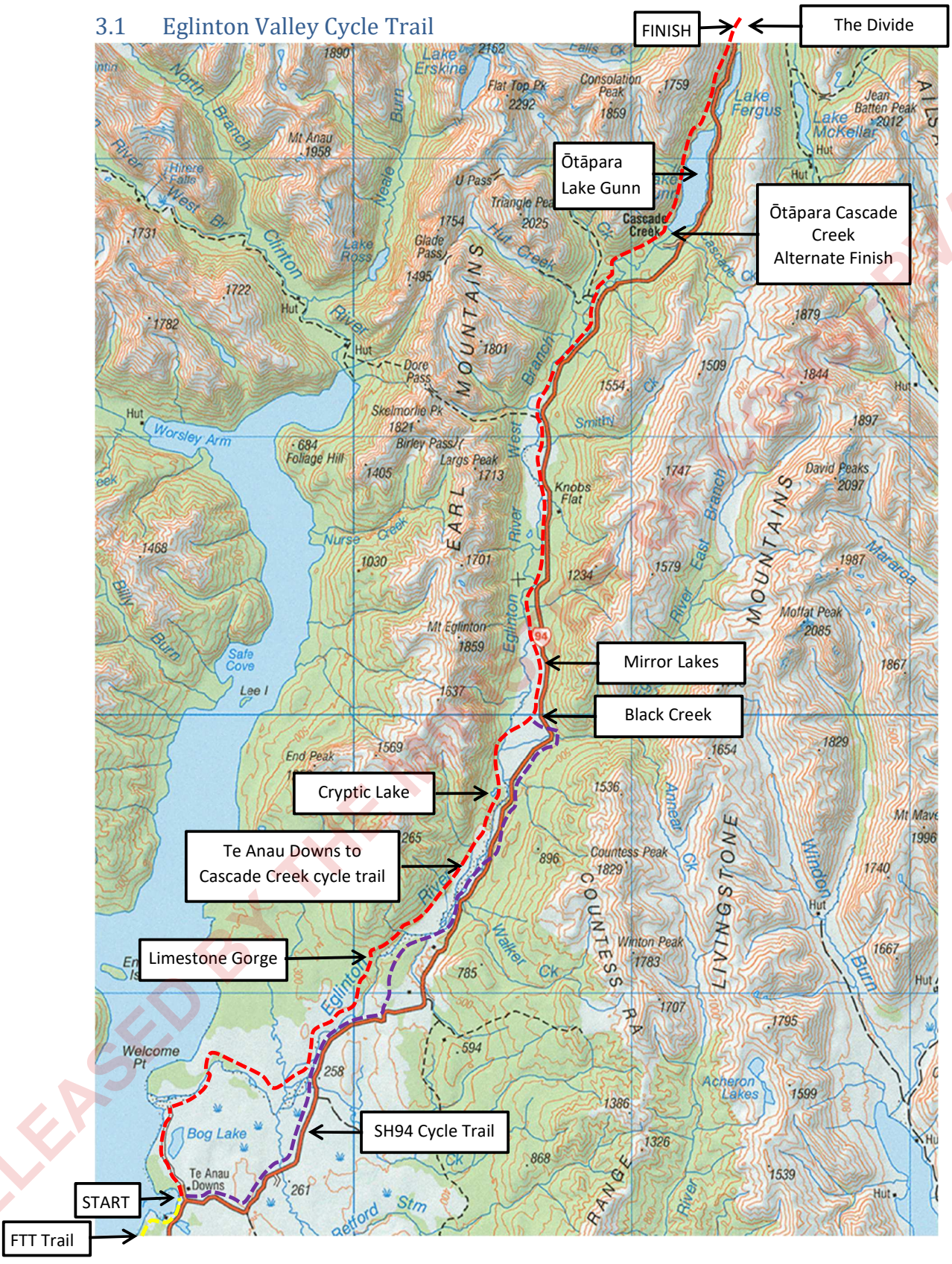

Figure 9: Cycle *Trail Maps, Source LINZ CC By 4.0*

Te Anau Downs to Ōtāpara Cascade Creek cycle trail	
Length (m)	55,450m – *Refer Figure 9*
Type	NZCT Grade 2 (easy) cycle trail, 1.5-2m wide, smooth compacted aggregate surface
Technically Feasible	Yes
Technical Commentary	Steep colluvium slopes on the true right at Limestone Gorge and Eglinton Confluence to bench across with potential for upslope batter creep, flood impacts at Eglinton East confluence, flat swampy ground in Upokororo Eglinton Valley and true right in lower valley, mature native forest & weed management, Limestone Gorge to river mouth is a remote construction site with longer supply lines requiring helicopter use
Key Risks	Bridges (High), Structures, Flooding & Maintenance (Medium)
Risk Commentary	Large bridges over Upokororo Eglinton River are integral to success, obvious flood hazard in Eglinton Valley and associated higher maintenance requirements and operational costs, landslides near steep valley walls, methods to generate maintenance revenue
Visitor Experience Met	Yes – easy riding in a mostly remote setting with good emersion in the environment. Peace and quiet, extensive mountain views.
Visitor Experience Commentary	Remote riding experience on true right of Upokororo Eglinton River between river mouth and Limestone Gorge through a mix of mature red beech forest and regenerating manuka scrub with short grassland sections, bridge over the lower river reach with views towards the Murchison Mountains, interesting glacial outwash terrain on southern end of the Earl Mountains with potential for story telling sites at interesting hillocks, gentle terrain and limited up hills making the riding easily achievable and consistent with FTT trails, Cryptic Lake is secluded remote lake similar to Mirror Lakes with potential for jetty or viewing platform and rest stop. Good staging area at Te Anau Downs and Ōtāpara Cascade Creek for start & finish. Ability for short rides/walks with multiple access points in the Eglinton Valley. Links with Mirror Lakes
Structures	Three large bridges over Upokororo Eglinton River; River mouth 125m, Mid Eglinton 60m & at Mistake Creek Track 72m, numerous minor bridges between 6-20m across side streams, numerous short boardwalks across low lying wet areas subject to sheet flow flooding between 6-100m in length, Viewing platform/jetty at Cryptic Lake & jetty at Ōtāpara Lake Gunn
Toilets	Toilets are available at Te Anau Downs, Deer Flat, Upper Eglinton Camp, Ōtāpara Cascade Creek camp (all vault type) & Knobs Flat (Flush). Toilets would be required at the Hillocks @ 10km, Limestone Gorge area @ 20km & Cryptic Lake (unofficial name) @ 30km
Construction Cost 2023	$24,513,990
Annual Operating Cost	$869,200
Sustainability & Resilience	Subject to tree fall, flooding within Upokororo Eglinton River margins and side streams, potential vegetation debris slide areas close to valley wall rock faces between Limestone Gorge and Eglinton East confluence. Estimation of likely return periods is covered in the Engineering Feasibility Assessment.

	The Upokororo Eglinton River is a braided river and subject to braid movement over time. As a precaution additional funds should be allowed for periodic trail relocation following larger flooding events as occurred in Sept 2023.
Other Comments	Ōtāpara Cascade Creek has a large flat staging area and has a nice ambience for start or finishing of the ride. Its distance from the main divide has a positive impact on weather with significantly reduced rainfall. By connecting the trail via Ōtāpara Lake Gunn and a bridge across the outlet riders will still get a stunning view along Ōtāpara Lake Gunn.

Further commentary

Perhaps the most significant of the proposals to come from the MOP Masterplan is the creation of an up to 64km (55km to Ōtāpara Cascade Creek + 8.8km to The Divide) cycle trail that will link to and extend the cycle trail network intended to be built by the Fiordland Trails Trust (FTT) from Manapouri to Te Anau Downs.

The site for the proposed trail is ideally suited to the Grade 2 cycle trail market and we can confirm that a Grade 2 trail specification can be achieved throughout which is supported by stakeholders and the economic impact assessment[1].

The terrain from Te Anau Downs to Ōtāpara Cascade Creek is gently sloping with the elevation ranging from 220m at Lake Te Anau to 500m at Ōtāpara Cascade Creek. There are a number of small hills but no significant climbs. The terrain is a mix of open grasslands in the Upokororo Eglinton Valley interspersed with mature beech forests which are a rare treat for cyclists in New Zealand. The only other Grade 2 cycle trail opportunities that take in mature native forest in the South Island are the West Coast Wilderness Trail and Kawatiri Trail. The Paparoa Great walk is a Grade 3-4 mtb track while the Old Ghost Road is a Grade 4 mtb track.

As such the chance to ride through native forests will in our opinion be a major drawcard for visitors. The trail will be complemented by 2 large bridges across the Eglinton River together with smaller structures over Wesney Creek and many other un-named creeks.

The trail will provide access to a ‘cryptic’ lake which was created by a historic landslide opposite MacKay Creek. The trail has the potential to gain superb views of the Upokororo Eglinton River gorge via a side track as well as being a conduit for fishers along the true right bank of the river.

[1] Te Anau Downs to Cascade Creek Trail, Impact Assessment, 26 July 2023, Angus & Associates for Milford Opportunities Project

Figure 10: Cryptic Lake (unofficial name) & trail route

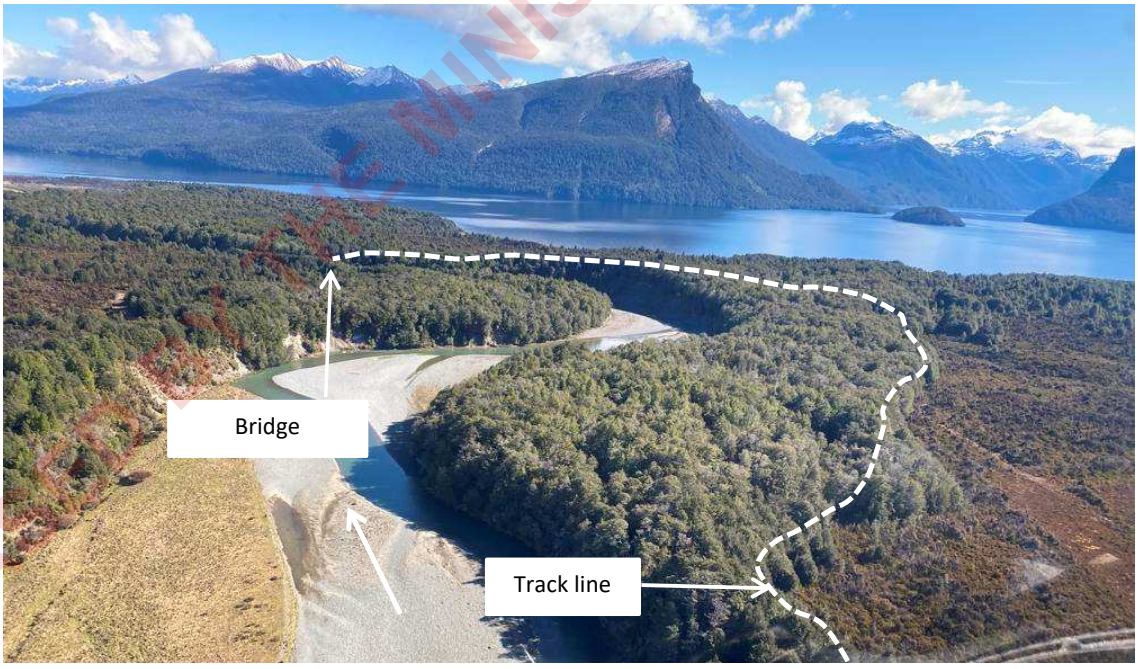

Figure 11: Near the mouth of the Upokororo *Eglinton River*

Figure 12: Looking downstream from below the Limestone Gorge, SH94 at left

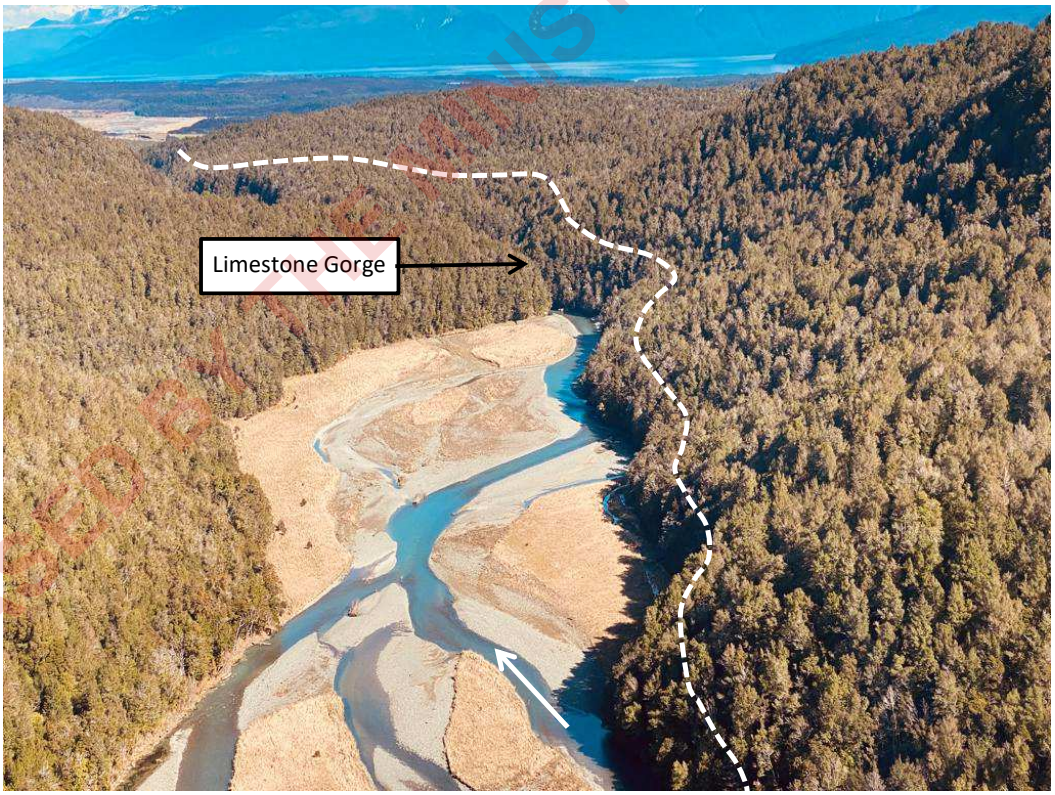

Figure 13: Looking towards Limestone Gorge

Figure 14: Trail opposite Walker Creek looking towards Limestone Gorge

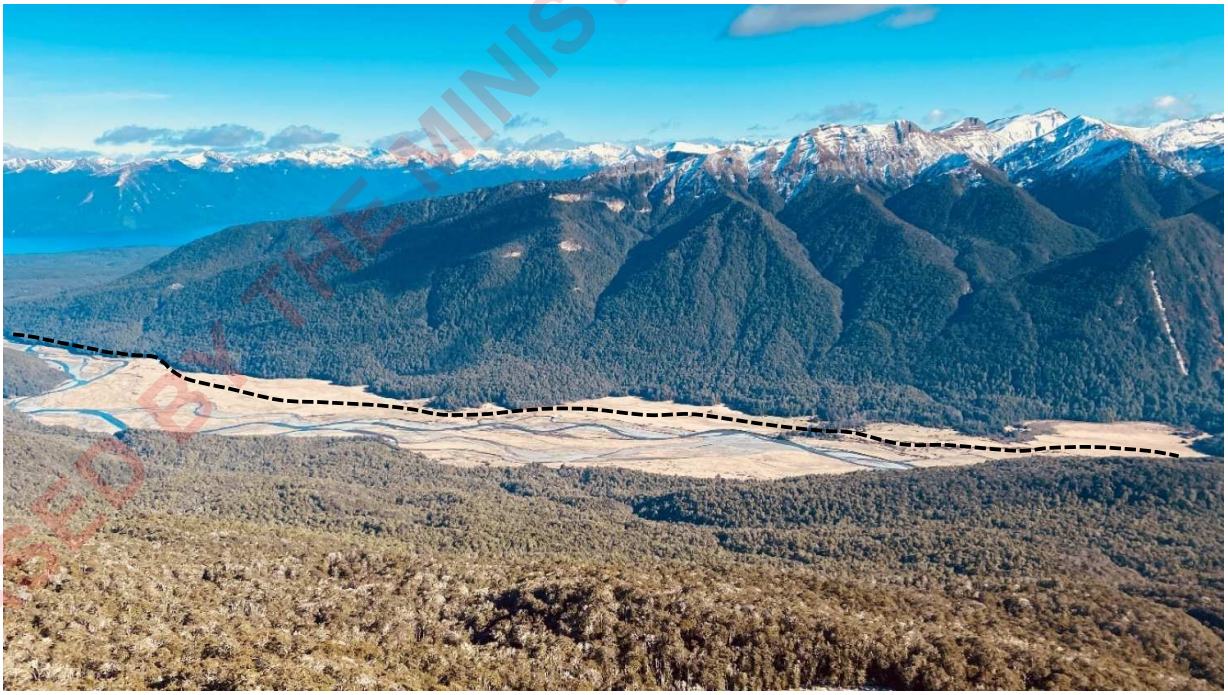

Figure 15: View of cycle trail from Countess Range

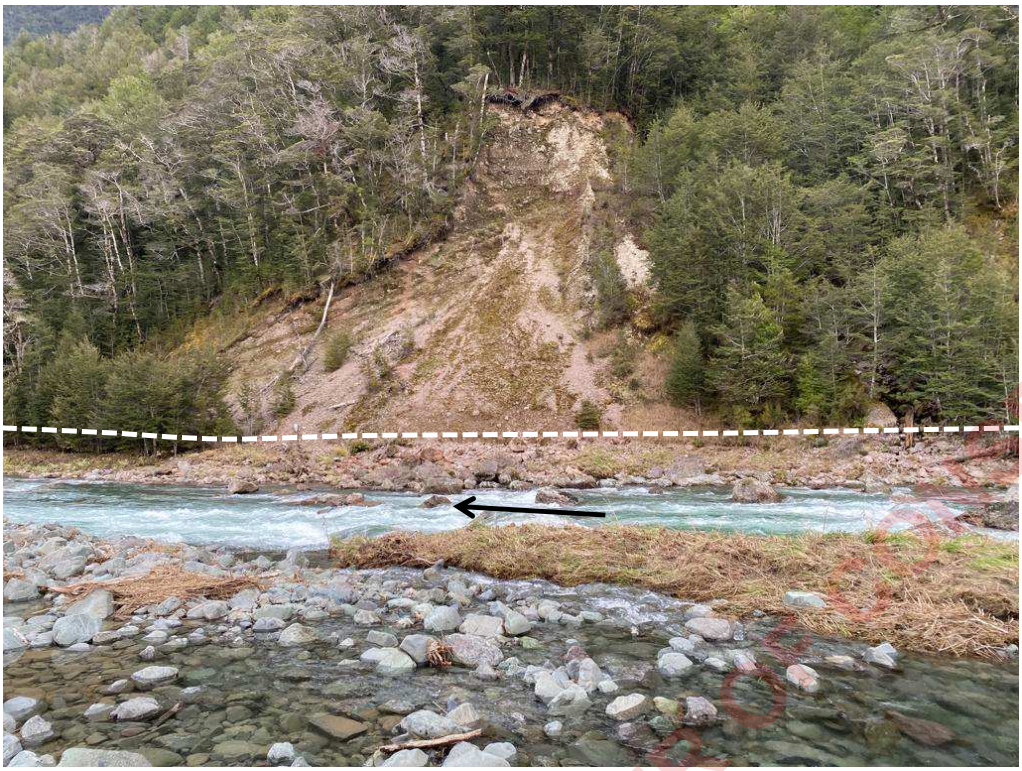

Figure 16: Scarp on true right of Upokororo Eglinton River at East Eglinton confluence

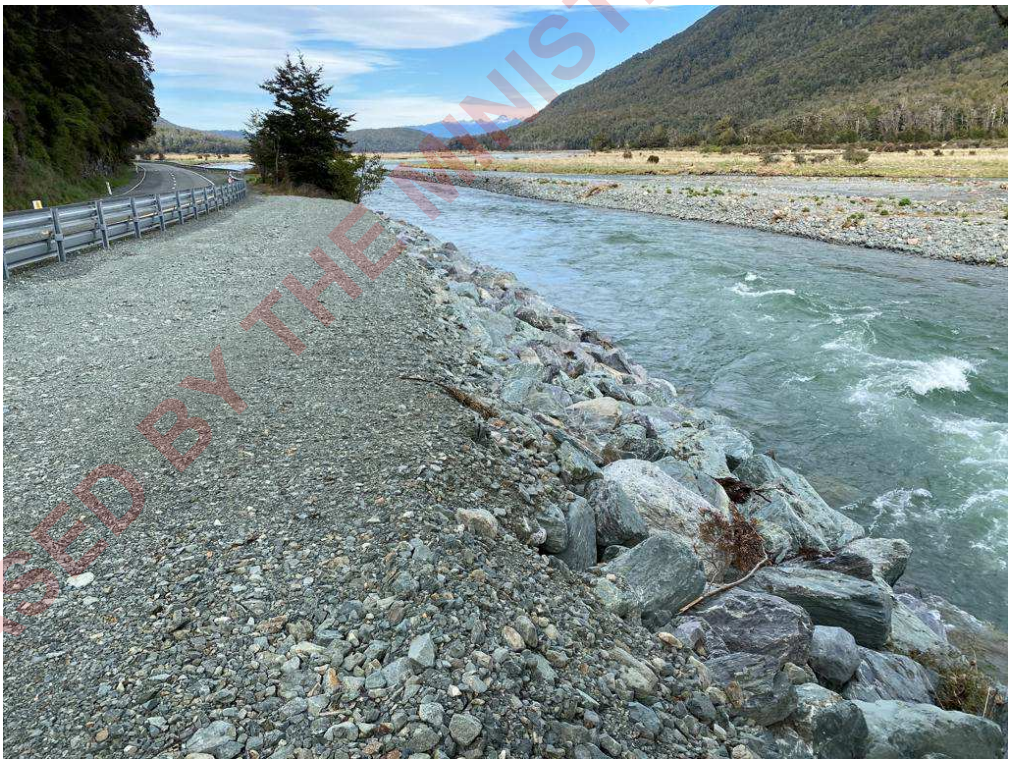

Figure 17: Rock armour on SH94 installed Oct 2023

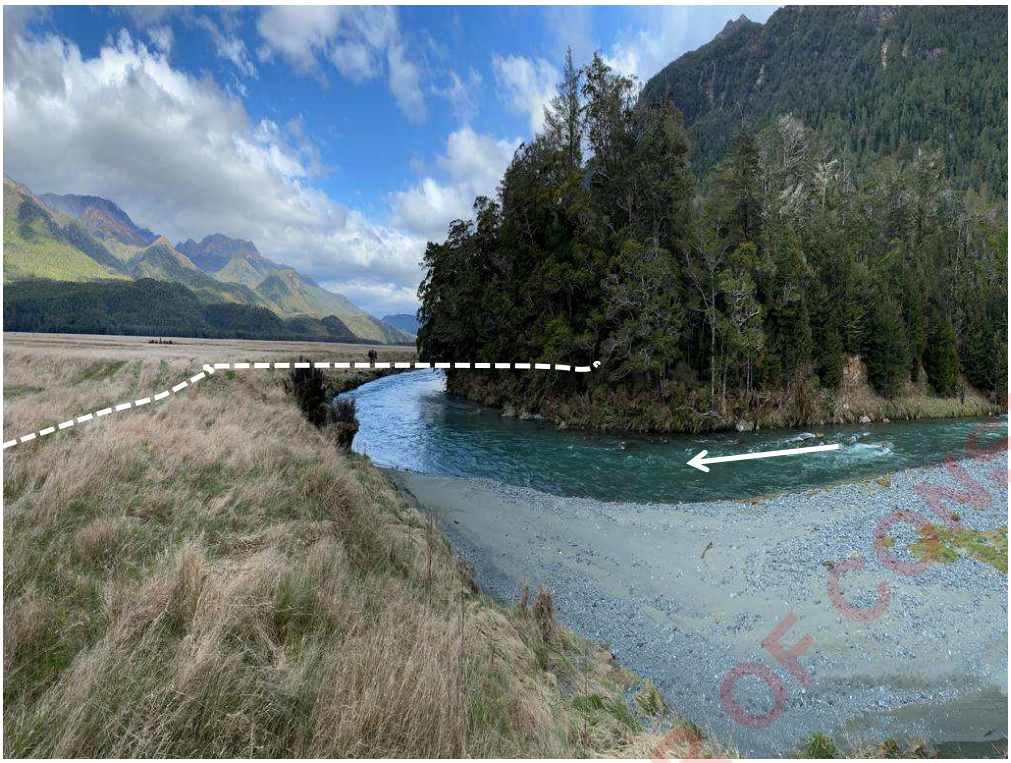

Figure 18: Upokororo Eglinton River upper bridge site

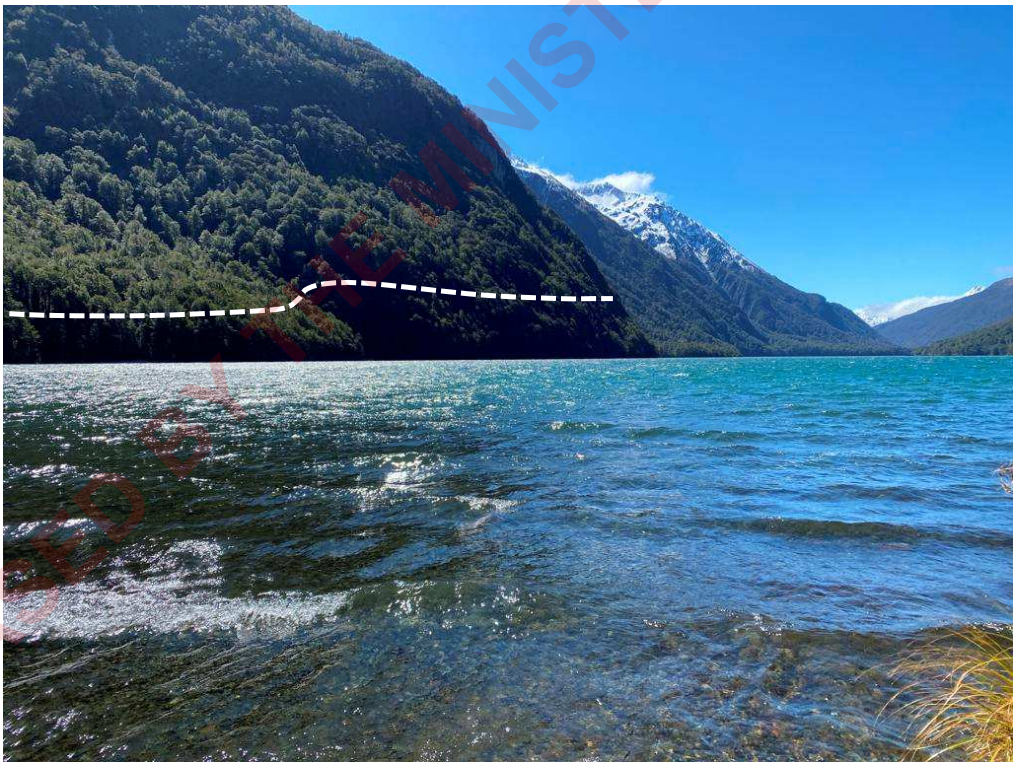

Figure 19: Looking north up Ōtāpara Lake Gunn

The cycle trail could be designed to be ridden in a preferred direction. Depending on the direction, it could take advantage of the downhill and downwind nature of the terrain. However, the best views are encountered riding towards the divide making decisions on direction less clear cut.

A single direction trail may be worth consideration during the planning stages. A directional trail would minimise conflict with oncoming riders and could reduce the trail footprint or width. As noted in Section 2.2, a single direction trail could be formed to as little as 1.2m with a desirable minimum of 1.5m. This contrasts with 2m minimum for a dual direction trail.

3.2 Te Anau Downs to Black Creek Cycle Trail – SH94

As an alternative to the Eglinton Valley Cycle Trail, a trail following the margins of SH94 has also been assessed and its general route is shown as a purple dashed line in Figure 7.

SH94 cycle trail; Te Anau Downs to Black Creek	
Length (m)	29,700m
Type	NZCT Grade 2 cycle trail, 1.8-2m wide, smooth compacted aggregate surface
Technically feasible	Yes
Technical Commentary	Trails formed along the margins of roads require considerable support from the adjoining landowners as the legal boundaries will not provide sufficient legal width to form the trail. Additionally, the proximity of the roadway provides challenges with respect to earthworks and drainage, often increasing construction costs. This route requires 3 road crossings. Technical challenges are all solvable with proven solutions available.
Key Risks	Structures, Flooding & Maintenance (Medium)
Risk Commentary	Flood & structures risk along SH94 margin in Eglinton valley (Walker Ck to Totara Flat), landowner support is critical to building along road margins as it requires use of adjoining private land, requires high levels of maintenance to retain Level of service adjoining roads as often road maintenance activities adversely impact trail drainage and surface quality.
Visitor Experience Met	No – in our opinion the experience is severely compromised by proximity of road and traffic noise/speed
Visitor Experience Commentary	Generally, the riding experience along highways does not meet expectations for the main user groups. This is reflected in usage statistics on a number of NZCT great rides where significant lengths are adjoining or use roads. Since 2013 all cycle trails have aimed to eliminate riding on or along road margins where possible. However, there is potential with landowner support to incorporate a section of red beech forest between the S bends west of Boyd Creek and Walker Creek. Also, there is nice forest riding between Totara Flat and MacKay Creek on the hillside above SH94. This route takes in Eglinton Reveal which is a plus & has a stunning bridge over Upokororo Eglinton East River, a feature before joining the preferred route at Black Creek.
Structures	Numerous small bridges and boardwalks over watercourses downstream of existing SH94 bridges or culverts. Sections of raised boardwalk where road batters are too steep. Bridges over Walker Creek, McKay creek & Eglinton East River (85m)
Toilets	Toilets are available at Te Anau Downs & Totara Flat. 2 Additional toilets will be required at 10km spacings to meet users' expectations

Construction Cost	$10,979,916
Annual Operating Cost	$356,393
Sustainability & Resilience	The trail is mostly protected from natural hazards by the existing road formation. However, the existing land erosion near Eglinton River west of Boyd Creek will be an ongoing issue but this is likely addressed by ongoing highway management.
Other Comments	The overall riding experience is likely to be below visitor expectations due to the speed and number of vehicles on the highway (current AADT 1,148 & 144 heavies (bus & trucks)). It is noted the intention of the Masterplan is to reduce traffic volumes and composition with fewer private vehicles and more buses/shuttles. High probability of riders getting a shuttle to Eglinton Reveal to bypass roadside sections of the cycle trail. The proposed MOP transport model should reduce private vehicle numbers as the park and ride will be based around Te Anau town which will improve the road riding experience to Eglinton Reveal. Ultimately, the riding will not offer much uniqueness or 'icon' moments as riding along the margin of roads is neither unique or iconic. It will also be inconsistent with the FTT trails connecting to Te Anau Downs so is unlikely to lead visitors to continue riding to Eglinton River Trail preferring to shuttle this section.

Figure 20: Typical view towards Franklin & Earl Mtns from SH94 near Retford Stream

3.3 Ōtāpara Cascade Creek to The Divide Cycle Trail

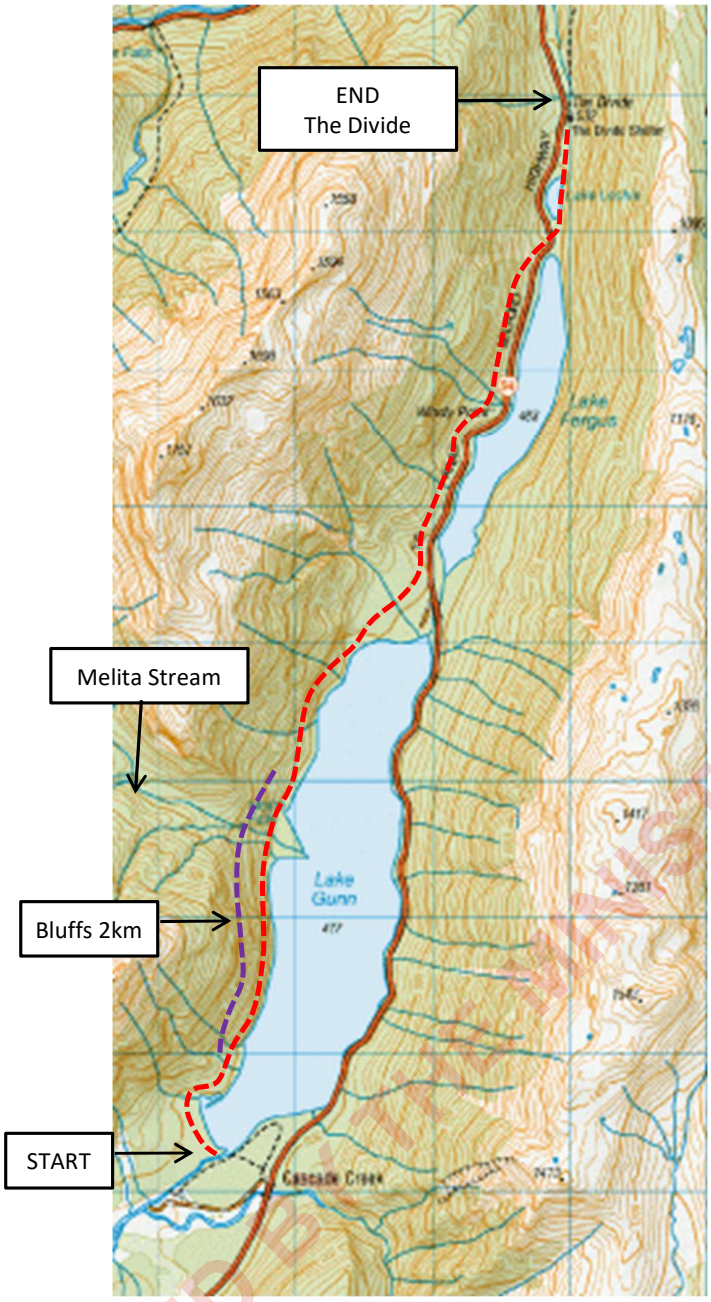

Figure 21: Ōtāpara Lake Gunn, Lake Fergus & The Divide route

Ōtāpara Cascade Creek to The Divide cycle trail	
Length (m)	8,830
Type	NZCT Grade 2 cycle trail, 1.8-2m wide, smooth compacted aggregate surface
Technically Feasible	Probably
Technical Commentary	Very steep rock faces along the western side of Ōtāpara Lake Gunn are considered technically feasible with similar solution to Lake Dunstan Trail (Rock face bridges – refer Lake Dunstan Trail type). However, these faces are potentially subject to vegetation debris slides which periodically wipe the rock face clean. A review of historic aerial imagery on Retrolens suggests these are infrequent and the ARI is >1 in 20yr events. Additionally, the interplay between track/bridge formation and debris slide is unknown. Under the Guidelines for Natural Hazard Risk Analysis on Public Conservation Lands and Waters (GNS 2020 p9) a landslide return interval of <1:20 years would be considered high risk and >1:20 would be considered medium risk. It is noted that most timber structures only have an effective average life of 25 years within the conservation estate. Steep rock colluvium slopes along Lake Fergus and above SH94 may be hard to form. Where there is solid rock, an alternative could be blasting a bench instead of using a bluff bridge.
Visitor Experience Met	Yes – In our opinion an outstanding riding/walking experience. Perception of bridges from a user perspective is they love them – Refer feedback from Lake Dunstan Trail
Key Risks	Bridges, Landslides, Weather, Flooding & Maintenance (Medium), Structures (High)
Risk Commentary	Large cliff face on the western side of Ōtāpara Lake Gunn will be technically demanding to build across although solutions have been proven on Lake Dunstan Trail. Faces have obvious vegetation landslide/debris flow paths which could destroy track structure making it impassable for long periods of time. Weather deteriorates significantly towards Divide with increasing wind and significant increase in rainfall which impacts user experience, maintenance costs could be high from windfall onto structures
Visitor Experience Commentary	Riding 1,400m across a rock face 30m above Ōtāpara Lake Gunn, through temperate rain forest with views of The Divide, Key Summit and lower Eglinton Valley, crossing the 30m high Melita Falls. This section would complete a ride to The Divide and bring in a distinct change in vegetation patterns between Ōtāpara Cascade Creek and The Divide as rainfall increases significantly on this section
Structures	Very long rock face bridges totalling 1.8km, suspension bridges over Melita Falls and other small water courses
Toilets	Toilets are available at Ōtāpara Cascade Creek camp, Ōtāpara Lake Gunn day use area and The Divide (all vault type). No additional toilets required
Construction Cost	$ 22,412,965
Annual Operating Cost	$793,585
Sustainability & Resilience	Subject to potential vegetation debris slide areas on steep rock faces along Ōtāpara Lake Gunn. Also subject to potential for alluvial fan (shingle fan) across at least three minor watercourses that can result in debris flows damaging track sections, steep terrain with potential for tree fall, higher rainfall likely to result in more trail surface erosion

Other Comments	Consideration was given to ending at Ōtāpara Lake Gunn day use area at the north end of the lake, but this area lacks parking space and is quite shadowy and not inspiring as a start or end. The Divide while already busy is well formed, has hard standing space and is a well-known start and end for various walks so could cater to this new activity. DOC's Experience Design Plan for this area anticipates enlarging the capacity. It also has more sense of arrival than Ōtāpara Lake Gunn north. From The Divide the riding is mostly downhill with a regular tail wind to Te Anau Downs

We have intentionally split the cycle trail assessments at Ōtāpara Cascade Creek due to the obvious technical challenges around Ōtāpara Lake Gunn and the suitability of Ōtāpara Cascade Creek as a staging area. This allows separate consideration of this section.

The photos and map following give a good overview of the major technical challenge that is the bluffs south of Melita Creek. In our opinion the bluff bridges pioneered on the Lake Dunstan Trail would be suitable to cross the rock faces. However, applying these designs and construction methods to vegetated cliffs may be a different proposition and without further onsite testing cannot be verified. But in theory they should be feasible.

Additionally, the Lake Dunstan Trail only installed 640m of bluff bridge. The section from Ōtāpara Cascade Creek to Melita Stream includes 1,850m of these bridges.

We have also considered a route along SH94 or eastern side of Lake Gunn. The highway is close to the lakeshore over this 3.5km section. For the most part the trail would be within 5-10m of the road edge down a steep bank. While technically simpler than the western shore, in our opinion the riding experience is going to be compromised by the closeness of the road. It will also suffer from similar construction and especially maintenance issues to the SH94 cycle trail between Walkers Creek and Totara Flat as works on the road above, particularly slip debris clearance, will inevitably end up on the trail below. For this reason, we have discounted this route due to its poor riding experience and difficulty of maintenance.

Figure 22: Pickaxe Bluff Bridge, Lake Dunstan Trail, 2020

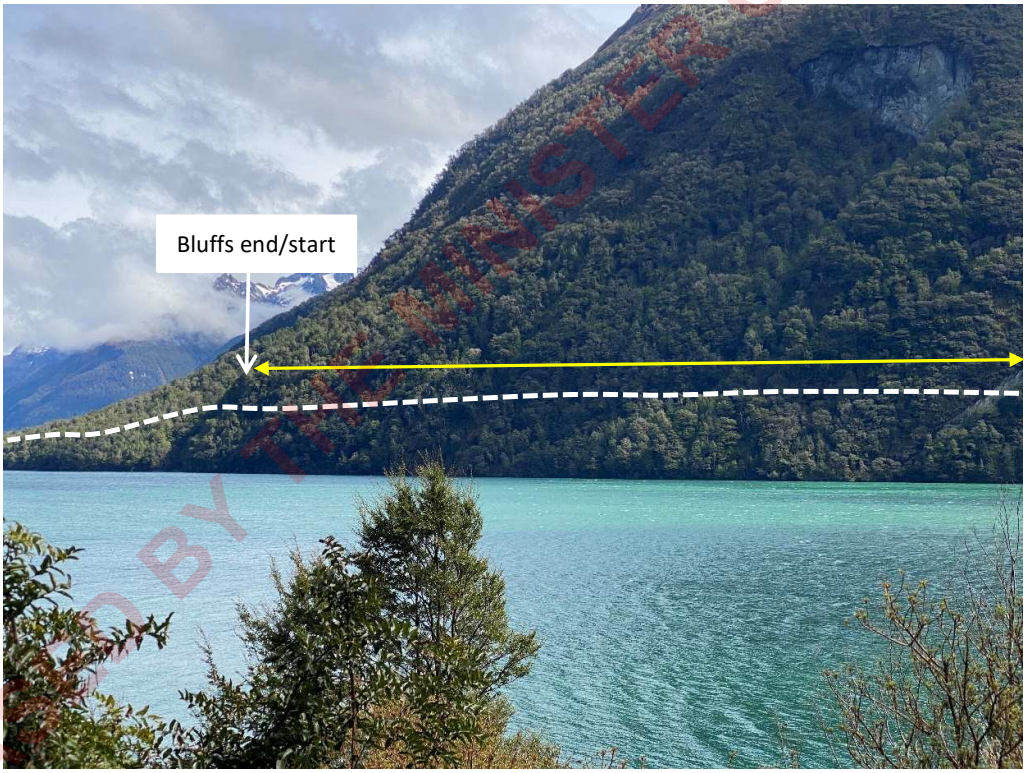

Figure 23: Ōtāpara Lake Gunn bluffs south end

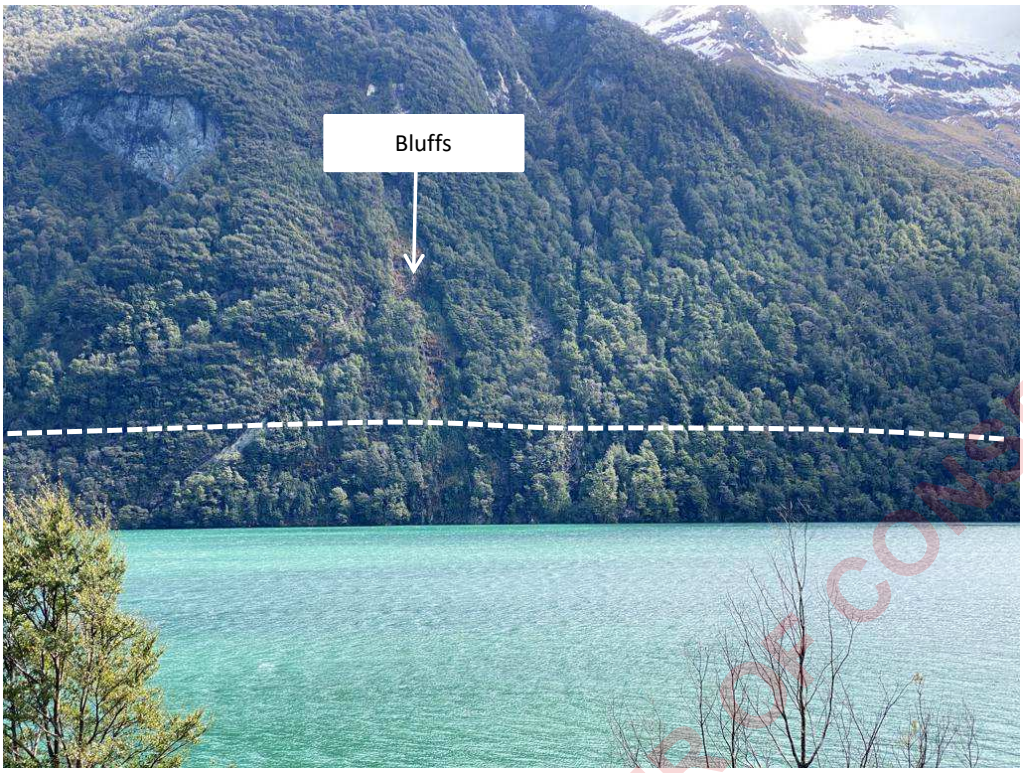

Figure 24: Ōtāpara Lake Gunn bluffs south of Melita Creek

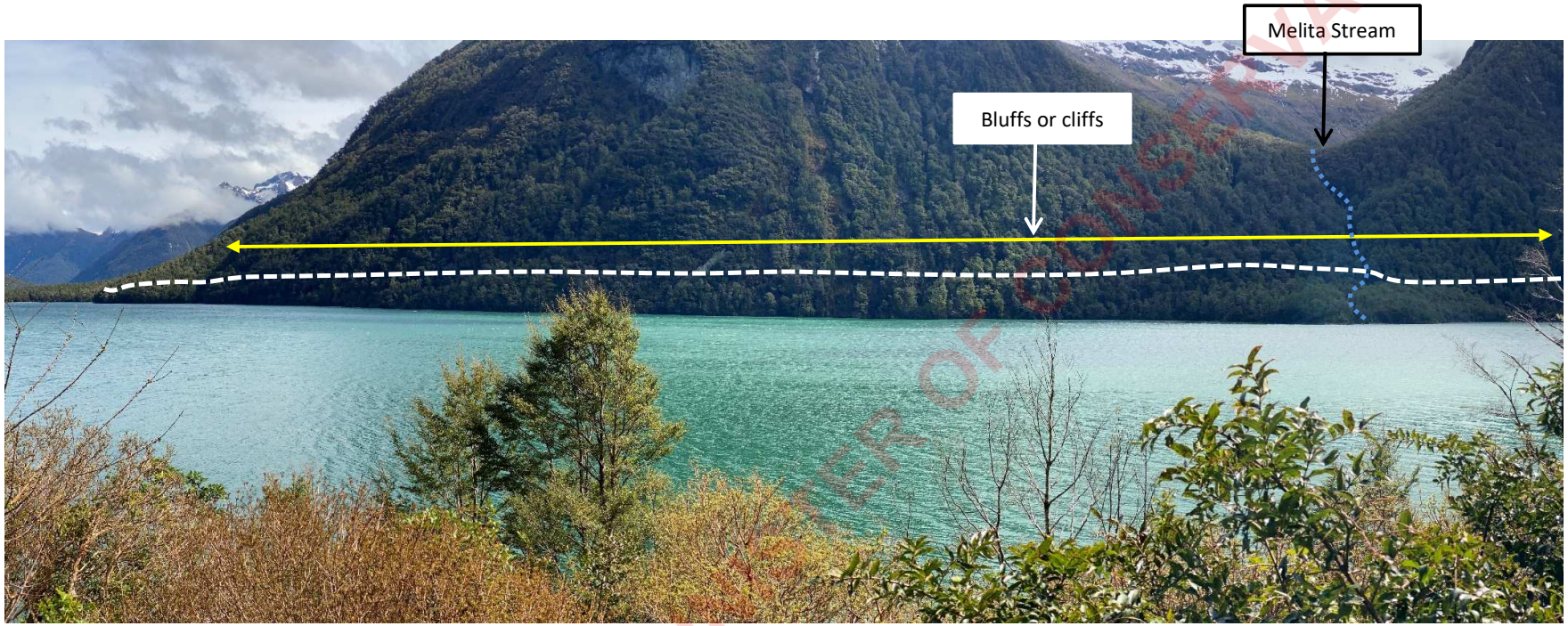

Figure 25: Ōtāpara Lake Gunn western shore panorama

3.4 Countess Range Track & Hut

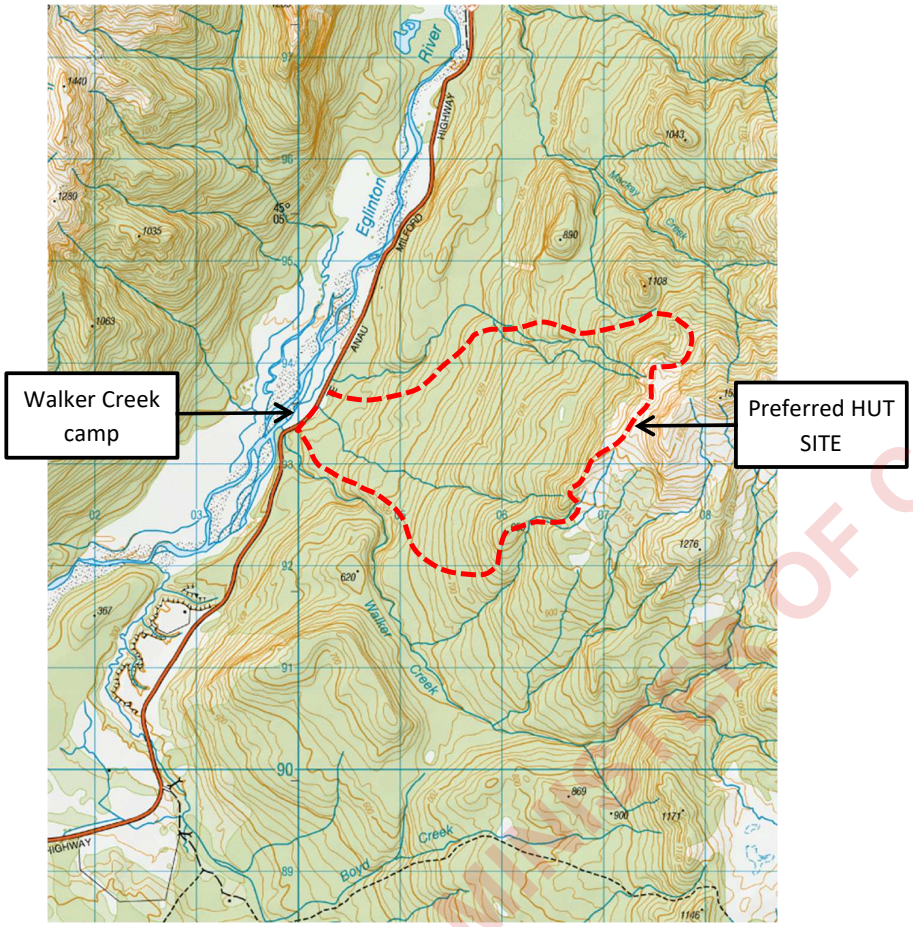

Figure 26: Map of Countess Range track & hut, Source LINZ CC By 4.0

This is the only proposal that includes a hut offering an overnight experience. The Masterplan proposes an easy overnight 'Great Walk' style experience in the Mistake Creek catchment, starting from and returning to Ōtāpara Cascade Creek campsite. The proposal included an 80-bunk hut. Due to adverse feedback on the location and scale of the proposal from a range of stakeholders the MOP team agreed to investigate an alternative proposal, located on the Countess Range near Te Rua-o-Te Moko Fiordland National Park boundary.

For the Countess Range proposal, two hut options have been considered - 20 beds similar in form to the Moonlight Tops Hut on the Paparoa Track, and a 40-bed hut similar in scale to Mintaro Hut on the Milford Track. The 80-bed hut identified in the Masterplan has not been considered as this exceeds the maximum capacity in the DOC Hut Service standards for an easy tramping/Great Walk type experience.

A 20-bed hut has a footprint of approximately 135m² (15x9m) plus ancillary areas including decking, toilets and water tanks. A 40-bed hut is likely to have a footprint of 220-240m² (20x12m) plus decking, toilets and water tanks.

Three sites have been identified in the alpine zone and all could potentially accommodate a hut. Considerations that require additional assessment are ground conditions and anchoring, rockfall

hazard, wind loading and avalanche hazard together with site specific ecology. Our initial assessment is that the sites are feasible and the hazards sufficiently distant from the hut sites to be of a low risk. More detailed assessments of natural hazards and structural requirements will be undertaken by the Engineering Feasibility Assessment workstream.

All hut sites would rely on roof water as there are no water sources available. All sites are near to sensitive environments and construction will require careful planning and site management to ensure effects are contained to the hut footprint.

Countess Range Track & Hut - Advanced Tramping Track & 20 Bed hut – Option 1	
Length (m)	11,000m
Track Type	Advanced tramping track, hand built e.g. cut/cleared & marked or poled, major creeks bridged
Hut Type	20 bed standard hut with water, solar, hut warden (peak season only)
Technically Feasible	Yes
Technical Commentary	There are no technical challenges with the track. The hut site(s) have been identified based on a similar footprint to Moonlight Tops Hut (15x9m = 135m²) and there are 3 possible options with the preferred site on a gentle spur or knoll with a stunning rock scarp backdrop.
Key Risks	Structures (High), Track Maintenance (Medium), Budget (Medium)
Risk Commentary	Very high wind zone, snow loading & weather tightness are all construction challenges, rock fall from scarp onto hut site appears low, potential for high wear of in situ material if the track is not benched and sustains high use
Visitor Experience Met	Yes
Visitor Experience Commentary	This track & hut will provide a similar level of experience to Brewster Hut and Mt Brown Hut which are both advanced tramping tracks with huts in the alpine zone within 3-5hrs of the road end. The track route offers a loop with red & silver beech forest transitioning into mountain beech higher up. This opens into alpine scrub with boulder fields and interesting wetlands. The loop offers up a range of different views over an out and back route. The hut site will set the benchmark for panoramic views, with scenery stretching 250 degrees from Mt Titiroa in the south to Consolation Peak in the north. Sunsets will be spectacular due to the north-west orientation and the height above surrounding hills.
Structures	There are two boardwalks required across wet areas on the track. A boardwalk to protect wetland values is also required on the alpine tops. Given the user group it is not considered necessary for shelters at the bush line as the visitor group is capable of managing their comfort and exposure levels.
Toilets	2x toilets will be required at the hut
Construction Cost	$3,759,670
Annual Operating Cost	$220,664
Sustainability & Resilience	The limited track formation means that annual operating costs are minimised to vegetation clearance and ensuring track markers are clear. 2yr and 6yr inspections of any structures is also required under DOC's current asset management strategies.

	It is anticipated that 2 containment toilets will be required including annual removal of waste and this has been allowed within the operating estimate. For the hut it will be essential to ensure weather tightness in design and construction. The site is in a very high wind zone and the combined effects of wind and rain need consideration during detailed design. The rock fall hazard from the scarp behind the hut is considered to be beyond the range of the hut sites but should be considered by other work streams. Track formation could be subject to high wear and erosion and formation to easy tramping track standards may be necessary to meet expected visitor demand.
Other Comments	This hut and loop track will in our opinion be an outstanding walk and overnight experience for active visitors. Offering a 3-5hr walk each day with a stunning overnight hut location we expect this hut to be at capacity all season. On this basis it is probable the track standard should be Easy Tramping Track and benched to mitigate erosion. The preferred hut site on the southern approach has the least visual impact and with the rock scarp backdrop is likely to be less intrusive.

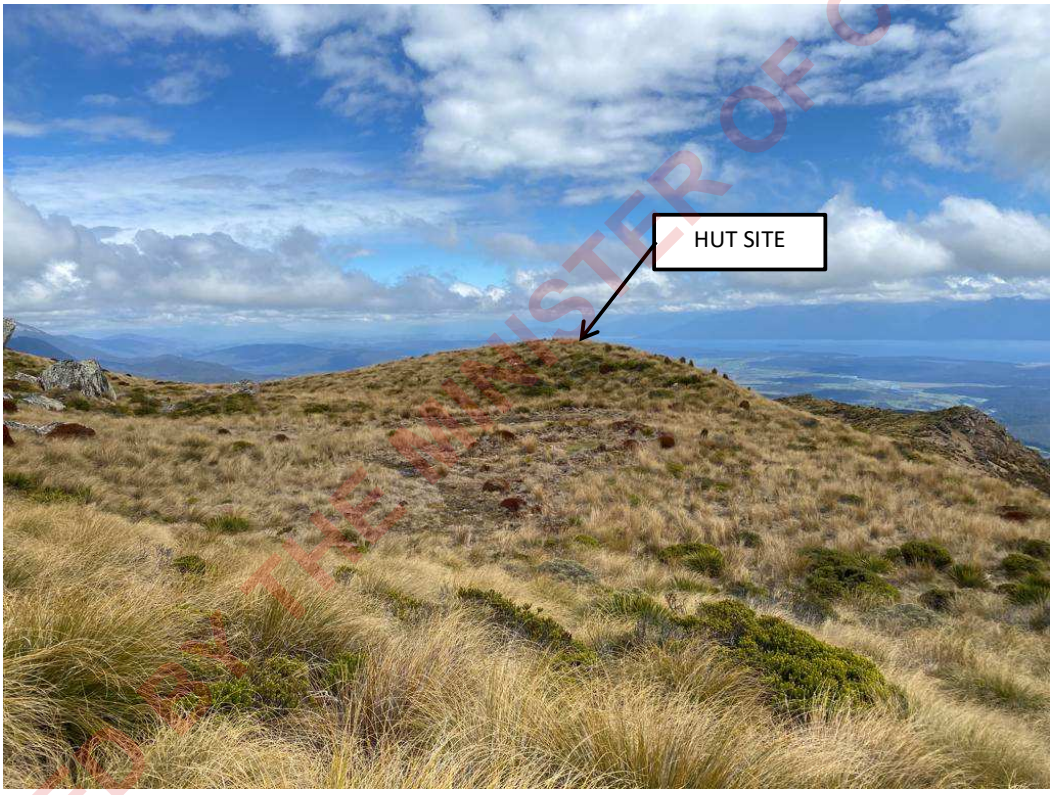

Figure 27: Hut site 1 from north

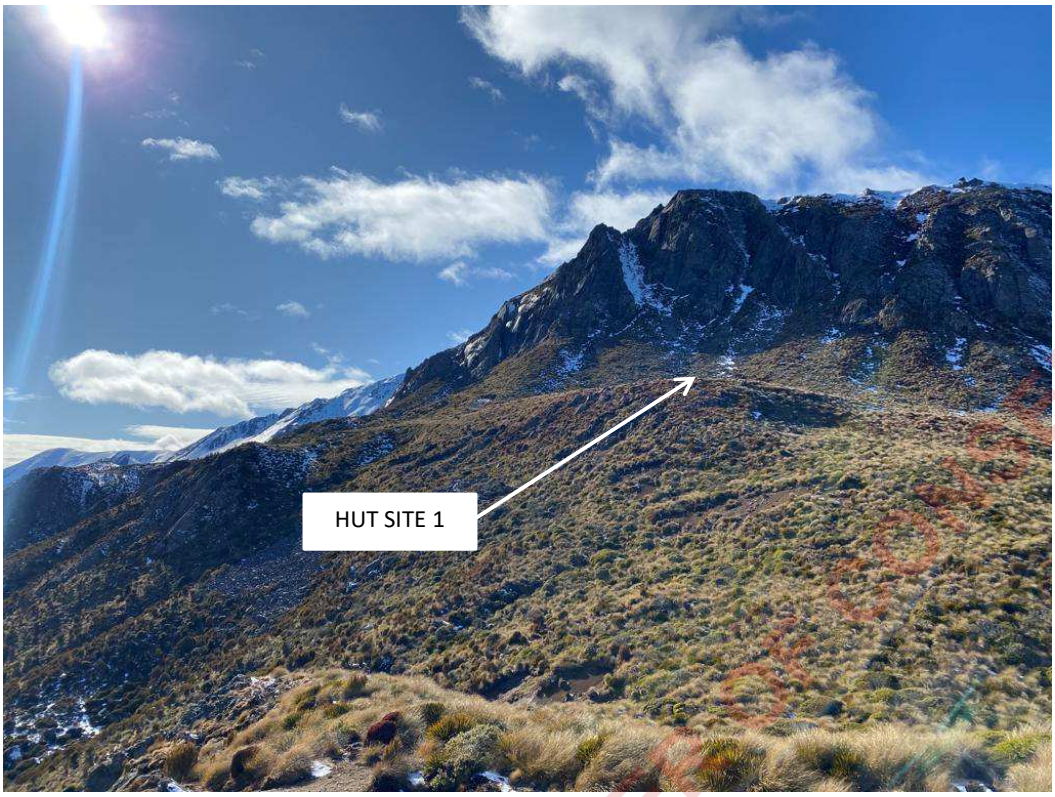

Figure 28: Looking north & up towards preferred hut site

Figure 29: Looking towards Lake Te Anau from hut site 1

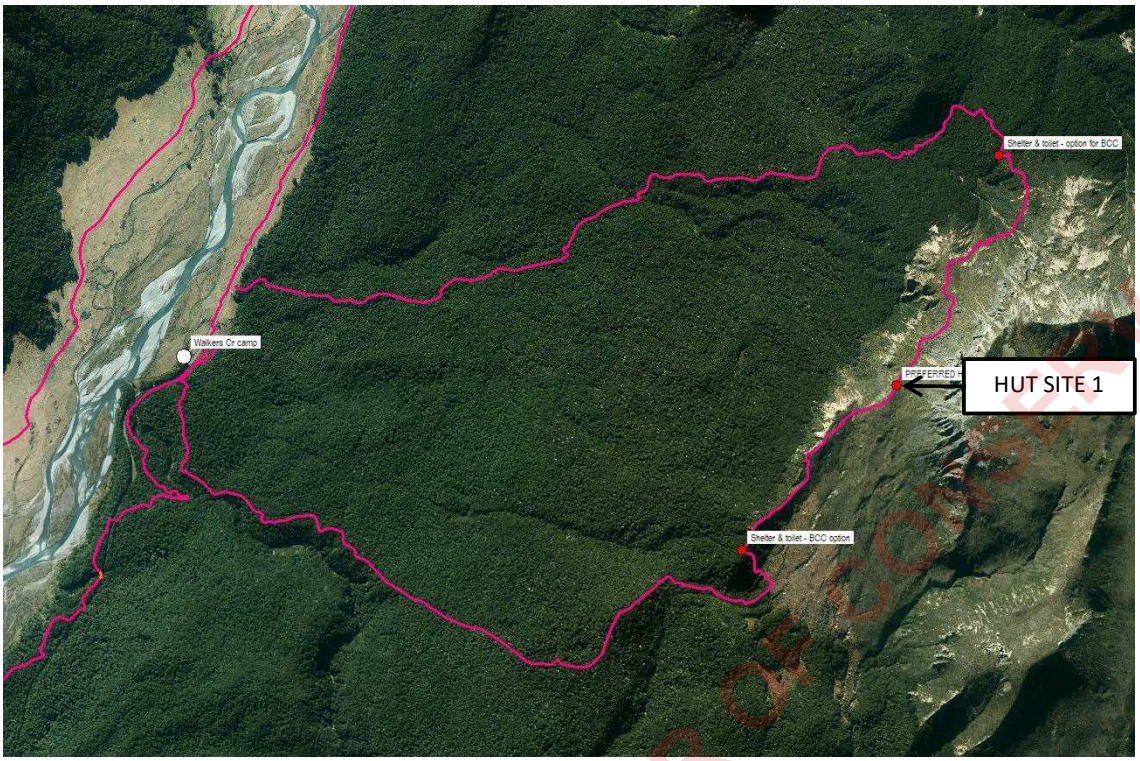

Figure 30: Aerial view of proposed track & hut site

Promoted by the NZAC Southland Section, this opportunity consists of an advanced tramping track loop track climbing from the valley floor at 280m to the ridge top at 1,260m with an alpine hut on a stunning site with 270 degree views from Titiroa in the south to the upper Eglinton Valley in the north.

We consider that this opportunity would be equivalent to, or even exceed experiences provided by other similar opportunities e.g. Brewster Hut, Mt Brown Hut and French Ridge Hut. The walk is up through red beech forest then mountain beech to sub-alpine scrubby tops. The route across the sub-alpine zone from the north crosses impressive boulder slopes below water scoured cliffs and across small wetlands to the hut site on a prominent shallow ridge. The southern approach up a prominent spur gives the visitor a view from the bush line of their hut for the night, with the rock scarp forming the skyline. To the east the large boulders standing atop Pt 1276 give the impression you could be on the Paparoa Range.

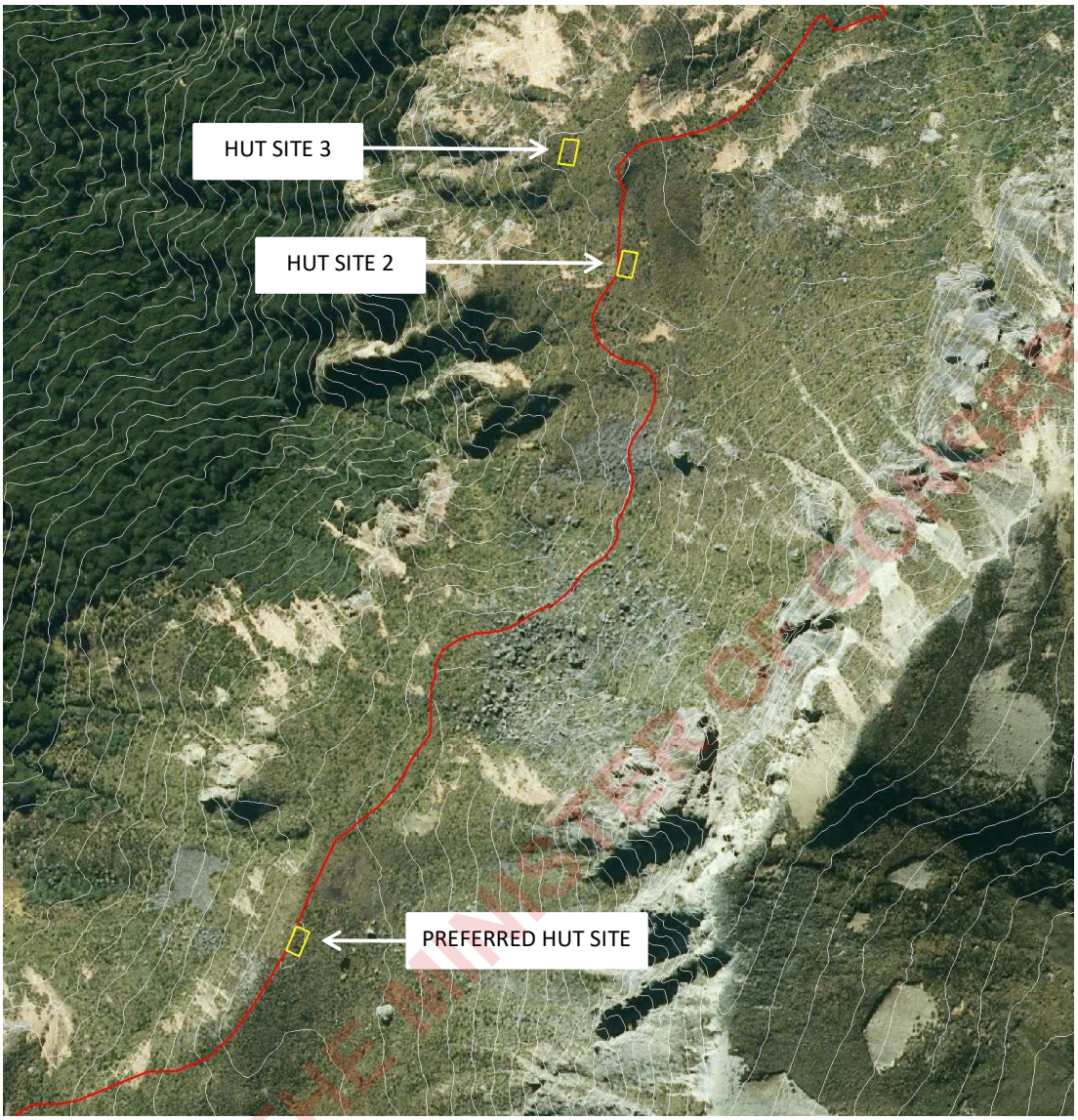

Figure 31: Proposed hut sites

As we have noted in the summary above, an Advanced Tramping Track could be formed very easily on the proposed alignment. Only a few steep sections would require cross slope alignments & (subject to ground conditions) benching to reduce difficulty. The beech forest has limited understorey and we do not expect the need to remove mature trees to create a clear walking line.

A relevant consideration in the track design is expected occupancy of the hut. Empirical evidence suggests that for over 700 bed nights per year the wear and tear on an in situ advanced tramping track in moderately steep terrain is considerable. In this case the track formation would need to be Easy Tramping Track type and mostly benched as is discussed in Option 2 below.

Countess Range Track & Hut - Easy Tramping Track & 40 Bed hut – Option 2	
Length (m)	12,000m
Track Type	Easy tramping track, benched formation min-0.6m wide on slopes >20 degrees, marked, mostly firm surface, all creeks bridged, gravelled above bush line
Hut Type	40 bed serviced hut with water, solar, hut warden (peak season only)
Technically Feasible	Yes
Technical Commentary	Forming a track will require approximately benching the entire route. Removal of some mature beech trees will be necessary as well as other understory. In the sub-alpine zone, much of the track length will need to be gravelled due to the erosion potential of the loamy soils. It is expected a 40-bed hut will require a footprint of 220-270m² based on current DOC standards. All the sites have sufficient area to accommodate a hut.
Key Risks	Structures & Budget (High), Weather, People and Maintenance (Medium)
Risk Commentary	Very high wind zone, snow loading & weather tightness are all construction challenges, visitor group more likely to suffer from exposure in poor weather, wayfinding in poor visibility between bush line & hut, rock fall from scarp onto hut site appears low, high-cost hut &/or track & operational costs
Visitor Experience Met	Yes
Visitor Experience Commentary	The track will be accessible to a greater range of visitors if it is built to an easier standard (benched and unform). Walking this loop track will be an achievable overnight experience. A 40 bed Hut may not meet some visitor expectations as it is more likely to dominate the landscape, be noisier and less 'cosy'. For comparison the Luxmore Hut (54 beds) receives reviews with common themes being: noise, lacks warmth (both personally and literally) and 'more like a poor hotel'. Care in the detailed design stage will be essential to achieve visitor expectations
Structures	There are nine small bridges/boardwalks required across small watercourses on the track. A boardwalk to protect wetland values is also required on the alpine tops. Consideration for a shelter at the bush edge on the northern approach + toilet is worth consideration as visitors often underestimate the change in exposure from bush to open tops.
Toilets	4x at hut plus 1 at shelter site
Construction Cost	$10,360,508
Annual Operating Cost	$445,394
Sustainability & Resilience	Maintenance of an easy tramping track requires much greater attention than an advanced tramping track, with regular clearance of any tree fall to ensure visitors can negotiate the track. The larger hut will require the same considerations during detailed design as the smaller hut. Benching much of the formation together with gravelling in the sub-alpine areas will mitigate potential for surface erosion which can be a common feature of very popular advanced tramping tracks like the Brewster Hut track.
Other Comments	The footprint of a 40-bed hut in an exposed environment presents a number of challenges including bulk in the landscape on an exposed feature where it will be more visible, and experiential where the number of people may

	detract from some visitors' experience (more noise, congestion etc). Additionally, to meet this user group's expectations it may be necessary to also have a shelter at the northern approach bush line as the weather and temperature can often be significantly harsher above the bush line. A valid response to the single large hut may be to construct multiple satellite huts like Old Ghost Road have done which delivers the level of experience of a small hut plus caters to higher occupancy. Small hut options are also more varied and can be added as demand dictates. The Mountain Turk Club (www.mountainturk.org.nz) has also demonstrated a small 4-6 bed hut option that in our opinion is viable.

Forming the trail as an Easy Tramping Track will require a considerable amount of benching to traverse slopes >30 degrees. This applies particularly from 750m to 1,200m elevation where the terrain is on slopes of 30-50 degrees for much of its length. In the forest we expect the ground conditions to be a mix of rock fall debris (colluvium) and solid rock on steeper aspects. The beech forest is quite open with significant amounts of tree fall. A benched alignment will require cutting of roots and the removal of some mature trees as well as smaller understory. We have calculated that this option would require up to 7km of small machine (0.8t digger) benching which adds considerably to the build cost while mitigating erosion of soft substrates by large numbers of visitors.

Having considered both options, in our opinion a combination of easy tramping track formation with a 20-bed hut is likely to achieve the best outcomes for visitor experience and mitigate track erosion. A pragmatic approach might be to start with a 20-bed hut, and as demand dictates expand capacity up to 40 beds with either a second 20-bed hut or sleepouts and modifications to the living and dining areas as appropriate.

Figure 32: Luxmore Hut, 54 beds, Kepler Track

Figure 33: Moonlight Tops Hut, 20 beds, Paparoa Track, image Lauren Kelley, DOC

Figure 34: Mintaro Hut, 40 beds, Milford Track, image courtesy DOC

Figure 35: Ghost Lake Hut summer sleepout

3.5 Eglinton Reveal

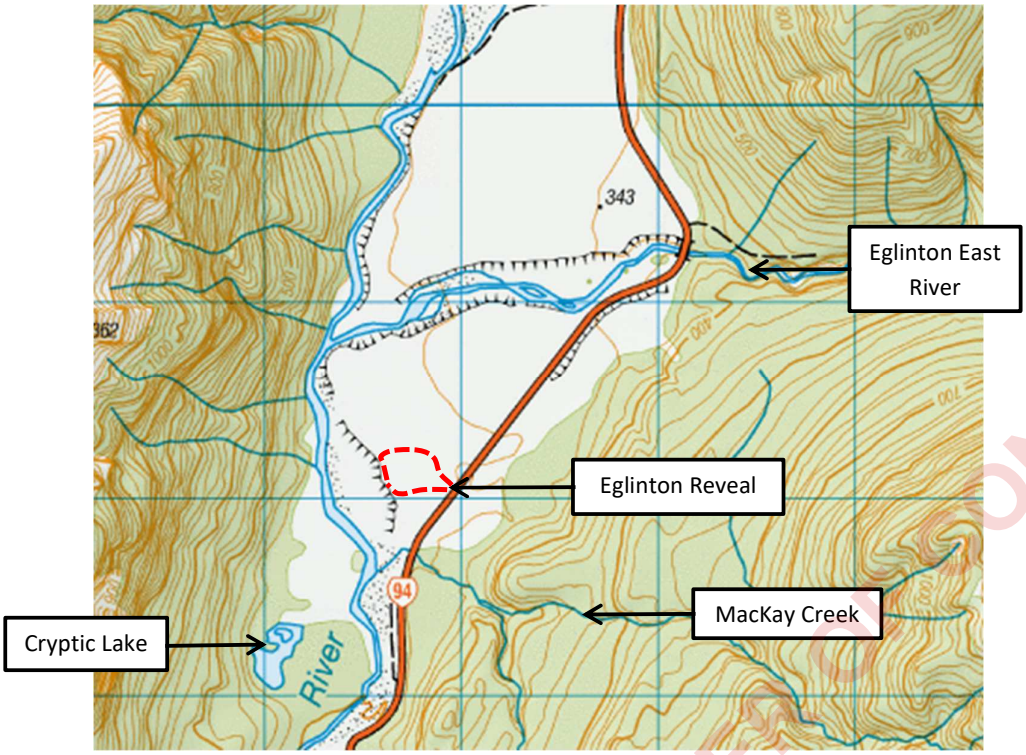

Figure 36: Map of Eglinton Reveal

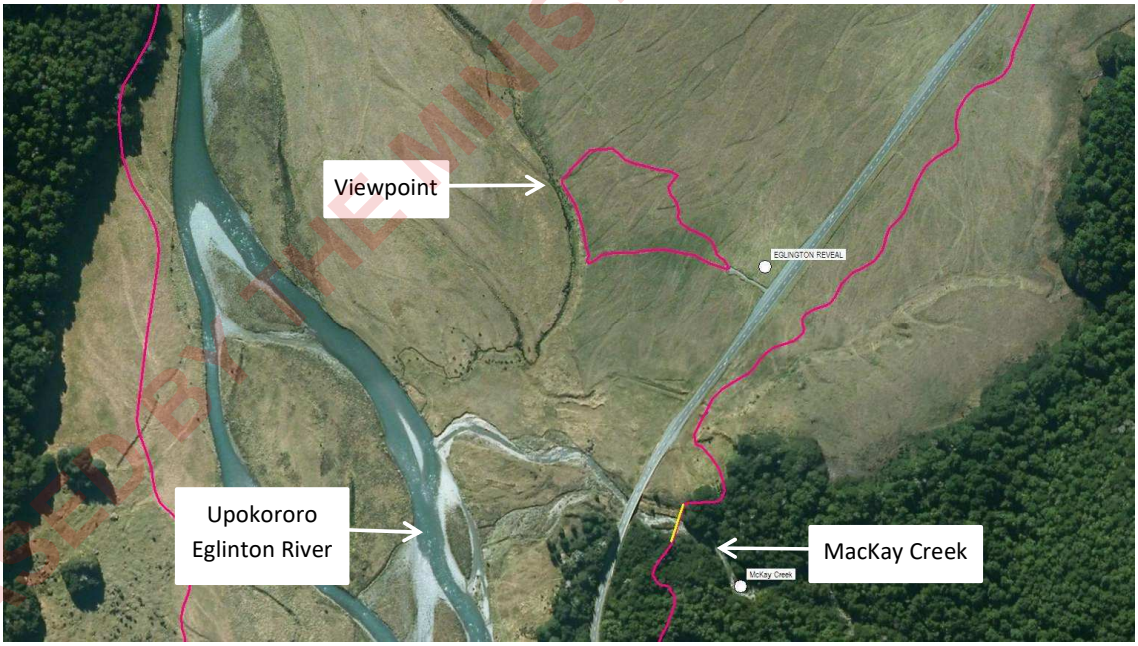

Figure 37: Aerial view of Eglinton Reveal

Eglinton River Trail	
Length (m)	500m
Track type	Short Walk
Technically feasible	Yes - very easy
Technical Commentary	None
Visitor Experience Met	Yes
Visitor Experience Commentary	This is the first stop for most visitors to the Eglinton Valley. This is where they can get out and stretch their legs and get their first glimpse of a big U-shaped valley, forested hills and snowy mountains. The short walk could take in a view over a small horseshoe lake and wetland and its length could easily be increased. Flat terrain making formation to accessible standards very easy.
Structures	None required
Toilets	Toilets are anticipated as part of the main Reveal visitor experience and will support the track
Construction Cost	$184,860
Operating Cost	$ 19,840
Sustainability & Resilience	The terrain is not considered to be impacted by any natural hazards that would affect long term sustainability. Maintenance will be easy and cost effective due to close proximity to the road, likely to get very high use due to its location at the Reveal node and entry gate
Other Comments	Perfect terrain for an easy track as visitors disembark from their vehicles and start the real Milford Piopiotahi experience. Easy to lengthen as required and provide interpretation along its length.

This short track is planned to start from the Eglinton Reveal car park located 1.6km south of the East Eglinton River bridge on SH94.

In addition, a gently graded trail could easily be constructed across the Upokororo Eglinton River flats. This track would take visitors northwest to the margins of the Upokororo Eglinton River and towards the confluence of the East Eglinton. It would be possible to construct an approximately 100m long suspension bridge across the Upokororo Eglinton River to gain access to the preferred cycle trail route which is on the true right of the Upokororo Eglinton River. Alternatively, this track could form a 2-2.5km loop by returning along the top of a river terrace and back to the starting point. If the track were a one-way style, then it could cater for large numbers of visitors without generating conflict for users. The cost of these options have not been estimated.

Given the gently sloping river flats and easy access to the highway for construction machinery, this track will be easy and cost effective to build. On the basis that no major overland flow paths cross the route this track will have a low operating cost (mainly vegetation control).

3.6 Huakaue Knobs Flat Short Walks

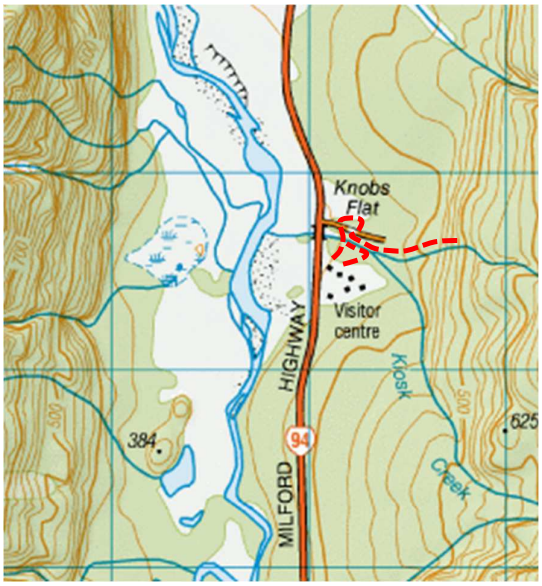

Figure 38: Map of Huakaue Knobs Flat & Kiosk Creek

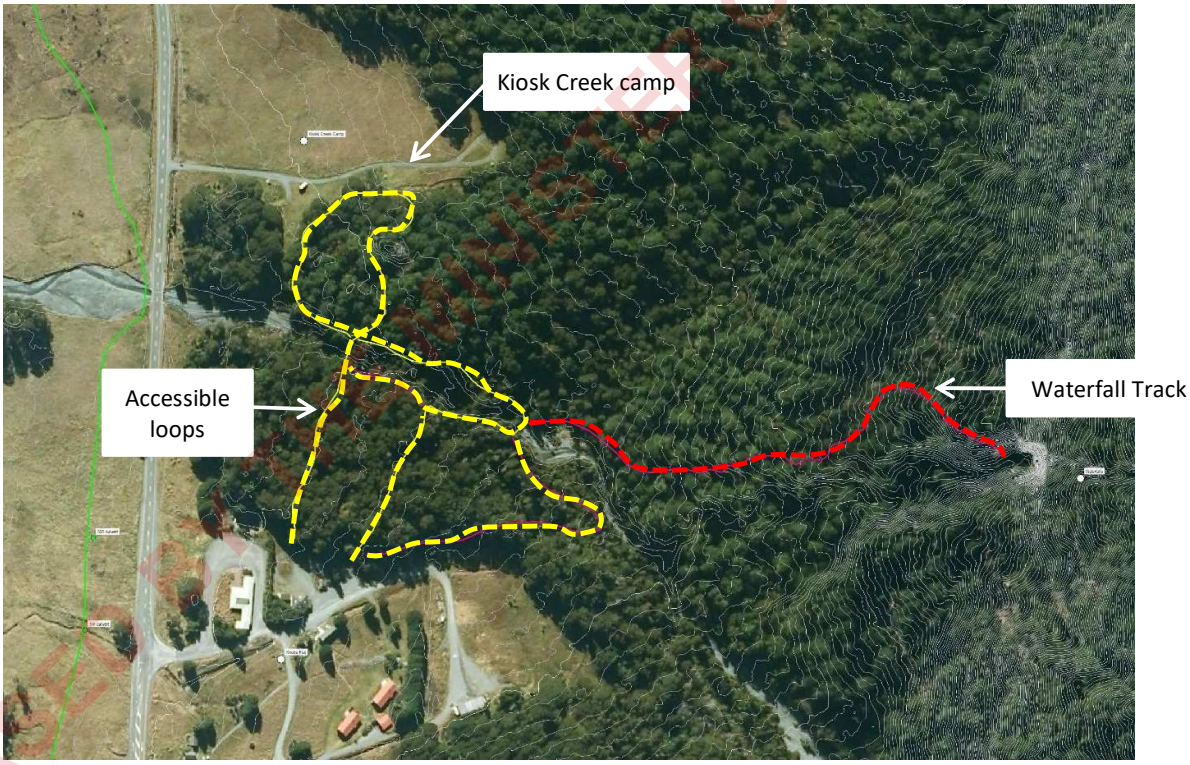

Figure 39: Huakaue Knobs Flat map

Huakaue Knobs Flat Short Walks	
Length (m)	1,300m
Track type	Accessible Short Walks plus Easy Tramping Track
Technically Feasible	Yes
Technical Commentary	Bridges across Kiosk Creek which is subject to bed aggrading (shingle build up). Viewing platform and stairs at waterfall
Key Risks	Flooding & Maintenance (Medium)
Risk Commentary	Active shingle fan hazard & associated flood risk to track and bridges, hard-to-place bridges which will be truly resilient due to gravel fan, consider lighter easily relocatable bridges e.g. Lake Howden outlet type.
Visitor Experience met	Yes
Visitor Experience Commentary	The beech forest is delightfully mossy and open between the Huakaue Knobs Flat accommodation and Kiosk Creek making a walk around this area very pleasant. The terrain is flat so ideally suited to accessible track construction. The track to the waterfall gets lovely afternoon sun and for a short climb users will get a stunning view of a plunging waterfall with access to the plunge pool. The forest upslope of Huakaue Knobs Flat is mostly dense understory & not particularly pleasing, so we have instead focused on the lower part of the site.
Structures	Bridges across Kiosk Creek and a viewing platform with stairs at the waterfall
Toilets	Existing flush toilets are available at Haukaue Knobs Flat and a vault toilet at Kiosk Creek
Construction Cost	$714,558
Operating Cost	$74,800
Sustainability & Resilience	Bridge sites on Kiosk Creek are all 'much of a muchness' in that the Kiosk Creek is an alluvial fan. It appears this fan is ‘active’ and the riverbed is aggrading with evidence of shingle being dug out at SH94. It will be important to ensure the bridges are secured using long posts as opposed to gabions, this will provide greater flood/debris flow capability. Ongoing work to clear gravel must be accepted with bridges over this creek.
Other Comments	The informal Waterfall Track is a hidden gem. This existing informal harder tramping track could be upgraded to easy tramping standard and would become part of the must do activities on the Milford Road. The tracks shown on the true left of Kiosk Creek are all existing single tracks.

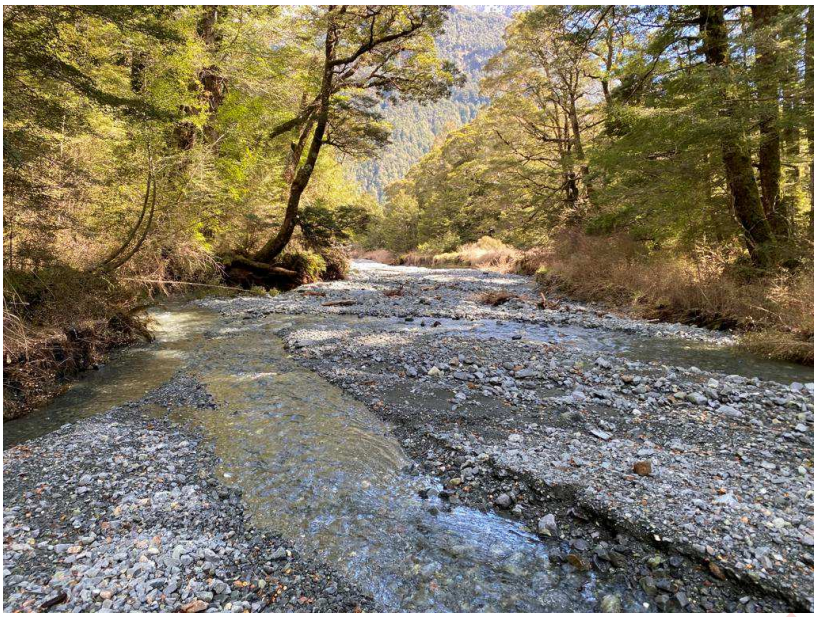

Figure 40: Kiosk Creek

Figure 41: Waterfall & plunge pool from viewpoint

Figure 42: Sunny mossy beech forest loop

3.7 Key Summit & The Divide

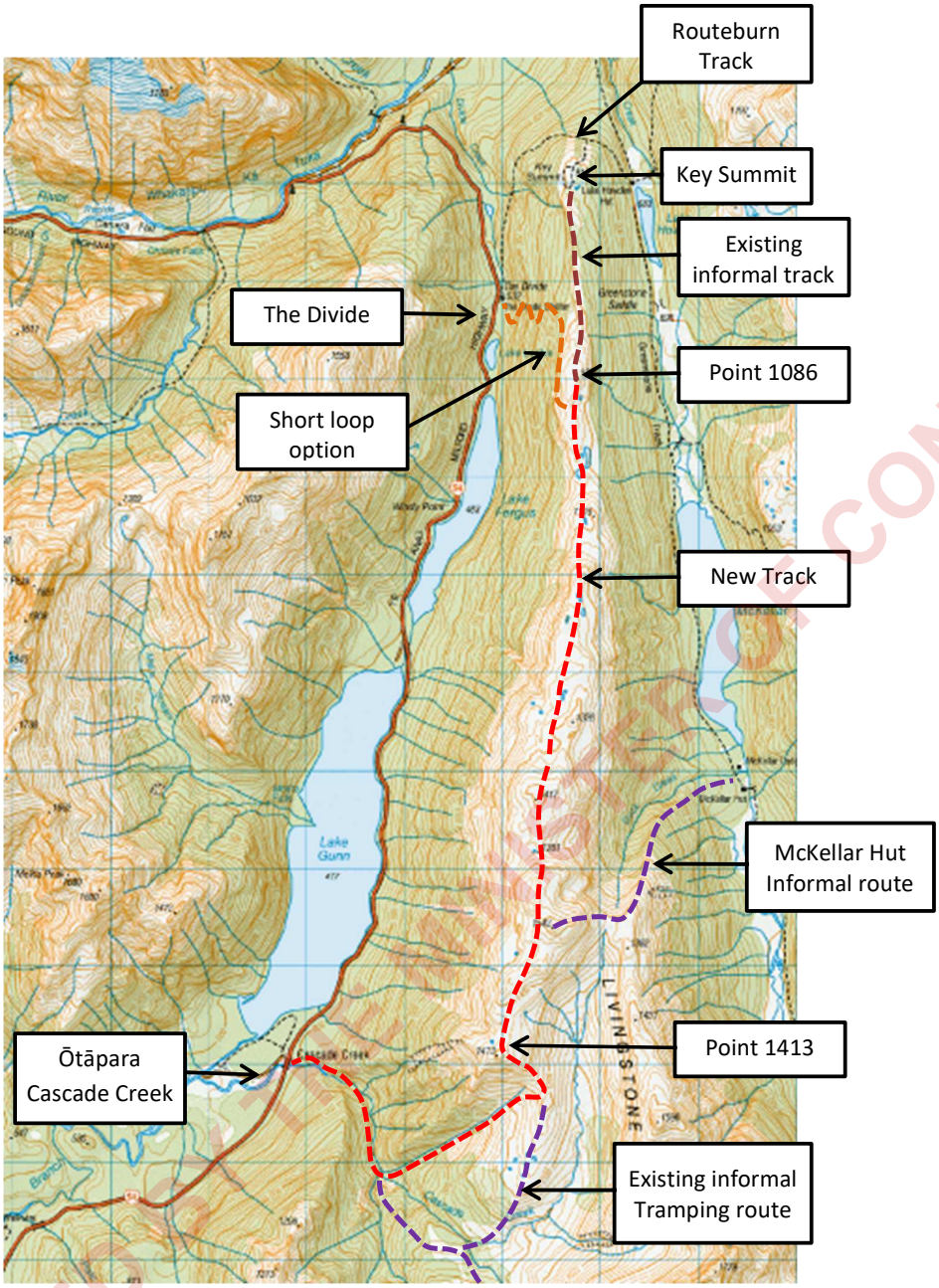

Figure 43: Map of Livingstone Range, Key Summit & Cascade Creek

3.7.1 DOC's Experience Design Plan (EDP)

DOC's EDP for The Divide & Key Summit area includes significant changes at The Divide car park and Key Summit, and these changes will support all tracks through this area. In particular the EDP aims to address The Divide car park amenity, interpretation, the summit destination and visitor behaviour issues at the Summit (waste, walking on sensitive habitats etc). Within the EDP *"The Current Experience"* provides a snapshot of what is contributing positively and negatively to the experience. Of particular interest for this feasibility assessment are any changes to The Divide car park amenity and safety, and any upgrades to tracks/facilities linking with Key Summit.

The Divide car park concept plans provided in the EDP detail a much-improved visitor experience at the car park as well as at Key Summit including improvements to the tracks, toileting and visitor management at the summit.

As at the time of writing, the funding available to DOC to implement the EDP only allows upgrading of the track at Key Summit. The track from the Routeburn Track intersection is in parts steep and rough and inconsistent with the Routeburn Track. Any track upgrades will improve the visitor experience and contribute positively to the track opportunities being considered by MOP (Pass Creek-Divide Creek loop, and Key Summit Ridge). The upgrades proposed by the EDP to The Divide car park will still be required to achieve the visitor experience anticipated by both the EDP and the Masterplan.

3.7.2 Key Summit to Ōtāpara Cascade Creek Track – Option 1

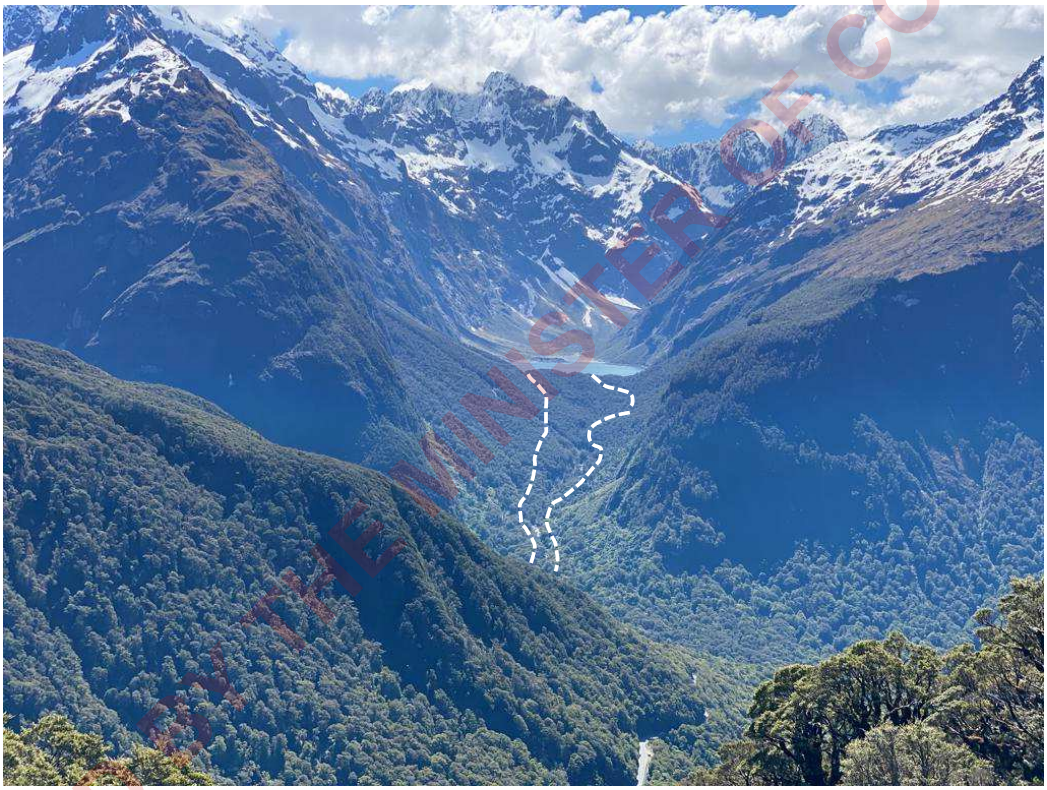

Figure 44: View of Hinepipiwai Lake Marian from Key Summit Ridge with Hinepipiwai Lake Marian tracks shown

Key Summit to Ōtāpara Cascade Creek - Advanced Tramping Track– Option 1	
Length (m)	17,320m (5,800m informal or existing track, 11,400m new marked track)
Track type	Advanced tramping track
Technically Feasible	Yes
Technical Commentary	Few challenges; Marking and clearing a line through vegetation to achieve an advanced tramping track is very achievable. Two 3 wire bridges across Ōtāpara Cascade Creek and route over lower bluff required for flood provision. Ōtāpara Cascade Creek easily crossable in normal flows. Potential for track to cross avalanche paths along Key Summit and into Ōtāpara Cascade Creek
Key Risks	Weather, People & Avalanches (Medium)
Risk Commentary	Exposed tops travel subject to high winds, poor visibility/bad weather and avalanche potential, people getting lost on tops or hypothermia from exposure in poor weather, day length quite long for visitor group could mean camping on tops becomes popular, route adversely impacted by high water in Ōtāpara Cascade Creek as river crossings are mandatory.
Visitor Experience Met	Yes
Visitor Experience Commentary	Gently contoured open tops with panoramic views across the Darren, Earl, Ailsa and Livingstone mountains. Easy tops travel which is rare in Fiordland, alpine tarns and lakes, boulder hopping in Cascade Creek adds a nice bit of variety to this long day walk. Potential for camping on the tops to make an overnight experience.
Visitor Experience Risks	The route is almost 18km and includes over 1,250m of vertical gain. This represents a long hard day for most trampers, and it is possible that the predominant user group will find this at the limit of their capability. This could reduce use significantly or encourage overnight camping on the tops or use of McKellar Hut as an alternative.
Structures	3 wire bridges over Ōtāpara Cascade Creek as no alternative flood route exists, track is marked with poles or orange triangles and the line cleared through vegetation in Ōtāpara Cascade Creek including over lower bluff (flood route)
Toilets	There is an existing toilet at Key Summit, and toilet facilities at The Divide car park and Ōtāpara Cascade Creek campsite. A toilet mid-way along the ridge is recommended
Construction Cost	$ 721,445
Operating Cost	$27,504
Sustainability & Resilience	As the track requires only marking and no benching this will require minimal maintenance and will have a low impact. Care is required to avoid sensitive areas on the tops including bogs, cushion fields etc.
Other Comments	DOC's Experience Design plan (EDP) following the 2020 floods anticipates upgrades to The Divide car park amenity space and the Key Summit tracks and destination. As at the time of writing the Key Summit tracks are planned to be upgraded. This work will support making the ridge top walk more appealing to more visitors.

Figure 45: Typical terrain in lower Ōtāpara Cascade Creek

Figure 46: Open gully makes for easy climb or descent to Ōtāpara Cascade Creek from Point 1413

Figure 47: Climbing to Point 1413 at south end of Key Summit Ridge

Figure 48: Looking south along Key Summit Ridge from Point 1086, Lake McKellar at left

Figure 49: Ōtāpara Lake Gunn from near Point 1086

3.7.3. Key Summit to Ōtāpara Cascade Creek Track – Option 2

Key Summit to Ōtāpara Cascade Creek - Easy Tramping Track – Option 2	
Length (m)	18,970m
Type	Easy tramping track
Technically Feasible	Yes
Technical Commentary	The option would require considerable benching and bridges in Ōtāpara Cascade Creek to achieve an Easy Tramping Track standard. Benching is considered necessary across the open ridge and erosion protection in the form of gravel and boardwalks across soft or wet areas is considered a minimum as existing tracks appear to wear into a gravelly substrate quite quickly. Benching will be required to descend into Cascade Creek as the descent is moderately steep.
Key Risks	Weather & people (High), Bridges & Avalanche (Medium)

Risk Commentary	Exposed tops travel subject to high winds, poor visibility/bad weather and avalanche potential, hypothermia from exposure in poor weather, day length too long for visitor group resulting in getting 'caught out', bridges over Ōtāpara Cascade Creek critical to achieve track standard
Visitor Experience Met	**Maybe:** This visitor group is more sensitive to the length and climbing required to complete as a day walk. Based on similar day walks, this will be at the very long & hard end of an easy tramping experience, and we believe will not meet most of this user groups expectations. This could be solved by either making it an overnight experience (building a hut) or by shortening the length of the track
Visitor Experience Commentary	The same highlights as for advanced tramping track apply except a benched track on some of the tops and in Ōtāpara Cascade Creek with bridges is required for this user group
Structures	Two bridges are required in Ōtāpara Cascade Creek to ensure all weather travel as there is no way around these and boulder hopping is not within the Comfort zone of most easy tramping track users. Fully benched track in Cascade Creek for 2.5km plus some benching on short steep sections will be required
Toilets	As with the advanced tramping option, a new toilet is likely required part way along the ridge where people naturally gather & stop
Construction Cost	$6,709,347
Annual Operating Cost	$109,200
Sustainability & Resilience	There are good locations for two bridges in Ōtāpara Cascade Creek. The majority of the tops travel will require easy formation plus numerous short boardwalks across soft ground to reduce impact on fauna and flora, and minimal vegetation maintenance will be required above bush line
Other Comments	An alternative shorter loop from Point 1086 above Lake Lochie back to The Divide could provide a 4-5hr day walk over 8.5km which may better suit the visitor experience

3.8 Whakatipu Trails Head Node (Hinepipiwai Lake Marian)

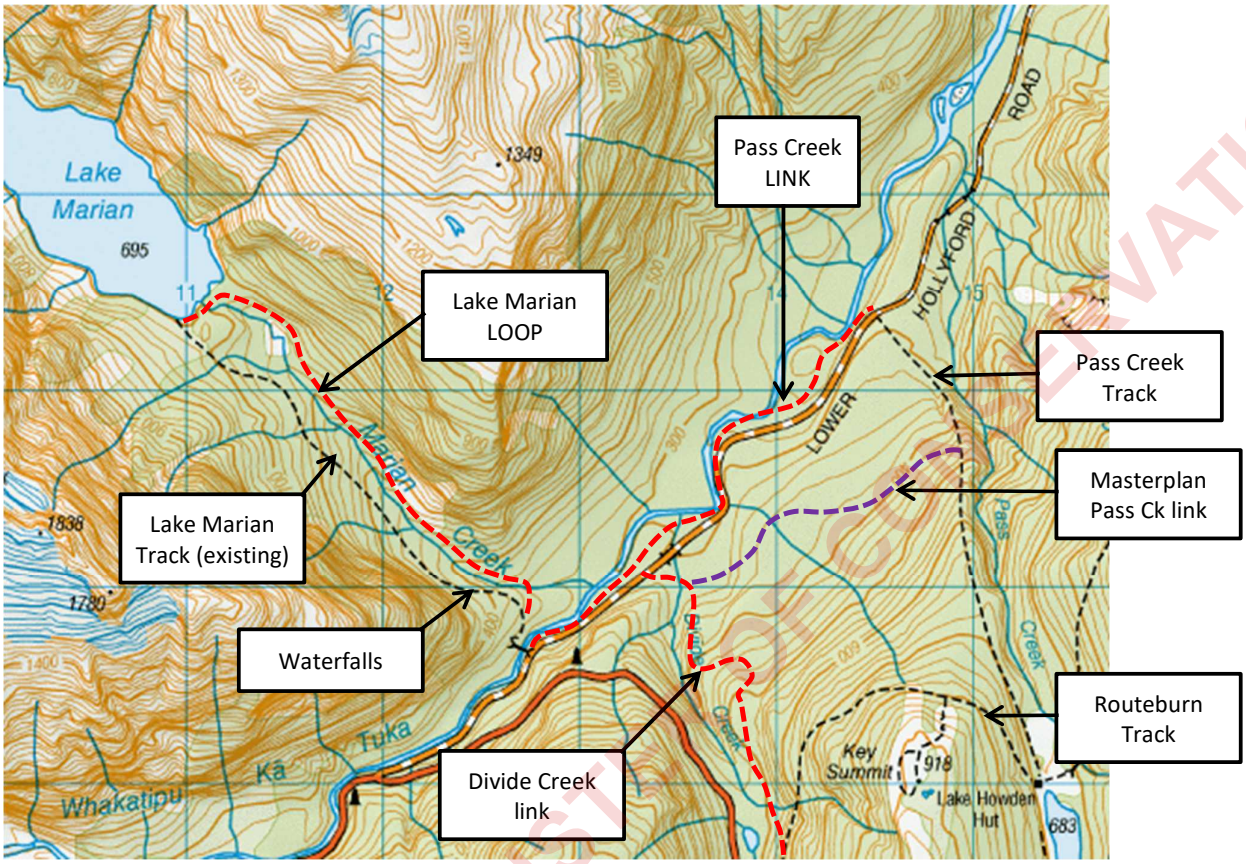

Figure 50: Map of the Whakatipu Trails Head Node and associated tracks

3.8.1 DOC's Experience Design Plan (EDP)

DOC's EDP for the Hinepipiwai Lake Marian area aims to address a range of negative visitor experiences. These include poor signage, poor information about the walk(s), lack of interpretation and engagement, tracks being rough or too challenging, lack of amenity at the car park, poor track wayfinding and issues with the toilet and wayfinding at the lake.

As at the time of writing the funding available to implement the EDP has been earmarked to install a new viewing platform near the upper waterfalls. The waterfalls are a key visitor attraction, and the MOP Stage 2 Tourism Report findings demonstrate this is one of the most popular short walks on the Milford Road. However as noted in the EDP the gantries and in particular the poor track between the gantries and lack of good signage is hampering the experience. A new viewing platform will enhance the experience and will integrate into the upgrades to the waterfall track and the lake track. It will have no impact on the proposed new true left loop track.

3.8.2 Marian Creek Falls Track upgrade

Hinepipiwai Lake Marian falls Track; Upgrade	
Length (m)	750m
track type	Upgrade existing to Walking Track or Short Walk standard
Technically Feasible	Yes
Technical Commentary	Straight forward upgrade to achieve consistent track standards from Hollyford Road to the falls
Visitor Experience Met	Yes
Visitor Experience Commentary	Easier more accessible track from the trail head to the waterfall including the upper gantry viewing platform. Wider trail will improve flow and reduce congestion especially at the pinch points at small bridges and corner structures. New viewing platform proposed in EDP compliments proposed track upgrades
Structures	Widen existing structures to 1.5m
Toilets	Existing toilet at Hinepipiwai Lake Marian car park
Construction Cost	$572,341
Annual Operating Cost	$36,898
Sustainability & Resilience	The track has been successfully operating for decades and issues like resilience and storm damage have been mostly resolved. The gantry viewing platforms are sufficiently clear of the creek and the track is stable with good vegetation protecting the envelopes
Other Comments	As one of the most popular short walks the upgrades will serve to reduce congestion and enhance the visitor experience with few downsides

3.8.3 Hinepipiwai Lake Marian Track Upgrade

Hinepipiwai Lake Marian Track; upgrade	
Length (m)	2,370m
Track type	Upgrade Advanced Tramping Track to Easy Tramping Track
Technically Feasible	Yes
Technical Commentary	Potential avalanche management and damage. The existing route crosses obvious avalanche paths and periodic damage can be expected. We do not have any data on return periods. Signage and potentially closure may be required if the track is upgraded.
Visitor Experience Met	Yes
Visitor Experience Commentary	Improved flow with less congestion at pinch points like the two obvious 'scramble' sections, and easier more uniform walking surface which will suit more visitors
Structures	None required
Toilets	Toilet at Hinepipiwai Lake Marian – The current pit toilet is located 100m from the bush edge. We recommend relocation closer to lake just inside the bush edge as stakeholder feedback highlights issue. Upgrading to a containment vault type may also be appropriate & is included in the cost estimate

Construction Cost	$ 1,178,300
Operating Cost	$40,112
Sustainability & Resilience	The track has seen a number of repairs and minor realignments during its life in response rock or vegetation debris slides. These will be intermittent events and cannot be fully mitigated as the entire valley floor is potentially subject to these events. High use track justifies improvements and would be money well spent.
Other Comments	The track is currently within the 'back country' setting the FNP management plan and the standard of the track reflects this. Consideration should be given for increasing numbers of visitors at Hinepipiwai Lake Marian and the impacts of this. The EDP for this track is consistent with our assessment

3.8.4 Hinepipiwai Lake Marian Loop Track – True left of Marian Creek

Hinepipiwai Lake Marian Loop Track; True left of Marian Creek	
Length (m)	3,200m
Track Type	Easy Tramping Track
Technically Feasible	Yes
Technical Commentary	The terrain is composed of large boulders generated by rock fall overlain by mature beech forest. Understorey is limited. This terrain will make for slow rock breaking or blasting type construction. It is hoped that this will generate sufficient small material to create a uniform surface suitable for the Easy Tramping Track standard. There are some short sections of steep rock face. The bridge site in the lower Marian Creek is critical to success and requires detailed assessment. An alternative could be a bridge over the Hollyford below the Marian creek confluence.
Key Risks	Landslides, Flooding & Maintenance (Medium), Bridges & Budget (High)
Risk Commentary	Bridge over lower Marian Creek critical to success, flood hazard from Marian Creek and side streams appears high based on the true right side, rock fall in steep sided U-shaped valley, avalanche risk from snowfields above, high build cost due to large bouldery terrain and need to form uniform surface in dense forest
Visitor Experience Met	Yes
Visitor Experience Commentary	Stakeholder engagement identified congestion as a real issue on the lake and waterfall tracks. By creating a loop, the pressure will be taken off the existing track on the true right. However, it does not appear feasible to take the pressure off the lower waterfall track with this proposal. An alternative proposal based around the waterfalls is discussed below.
Structures	Bridge over lower Marian Creek 35-40m is essential
Toilets	Existing toilets at Marian car park and Hinepipiwai Lake Marian, no additional toilets considered necessary
Construction Cost	$ 2,047,032
Operating Cost	$105,829

Sustainability & Resilience	While technically feasible, it is likely that this track will have similar challenges in operation to the existing true right from flooding and debris flows although the scale of impacts is beyond the scope of this report. The base of the valley is quite narrow and finding locations to avoid natural hazards is not straight forward so we expect higher costs for treefall, rock fall and debris flow as it may not be possible to fully mitigate these through location or design
Other Comments	DOC's Experience Design plan anticipates upgrades to the existing car park, potential for a short loop with viewing platform on the true right of the Hollyford and various upgrades to the Waterfalls and lake tracks aimed at improving the overall visitor experience. As at the time of writing DOC plans to install a viewing platform near the upper waterfalls only. This will integrate nicely with the proposed upgrades of the waterfall and lake tracks. Additionally, the suggested short loop near the car park is consistent with our suggested accessible loop

3.8.5 Alternatives

3.8.5.1 Loop based around the waterfalls

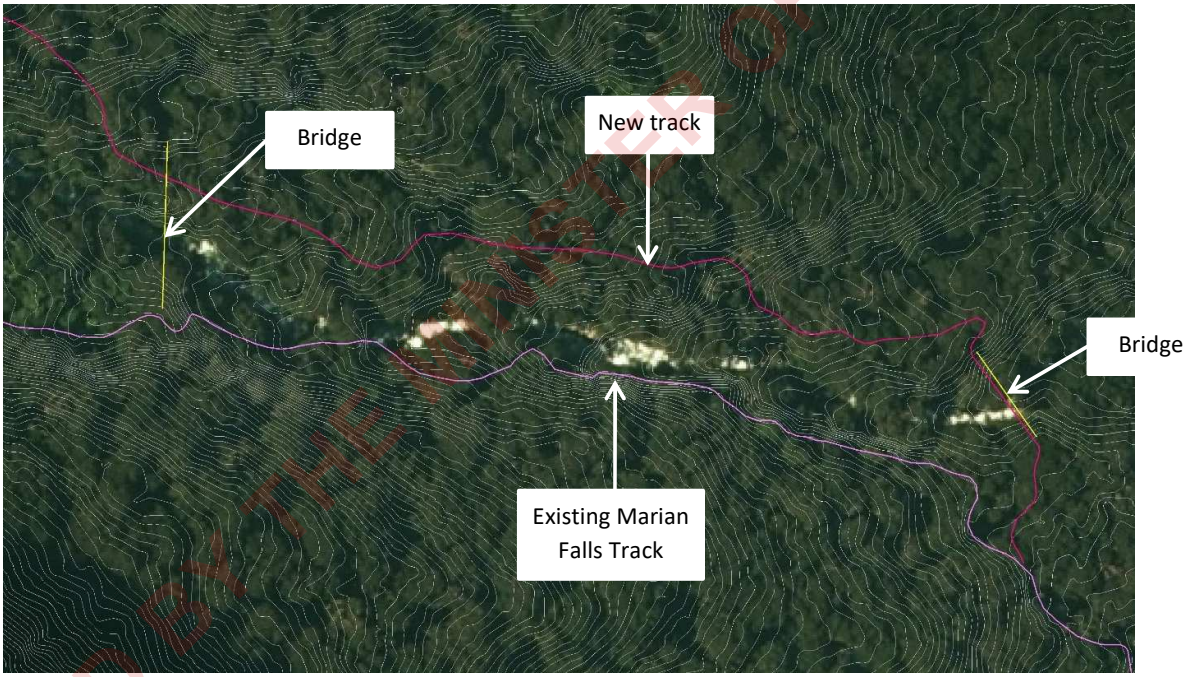

Figure 51: Aerial contour plan of Marian Waterfalls

Marian Falls Loop Track	
Length (m)	500m
Track Type	New short walk
Technically Feasible	Yes
Technical Commentary	Two critical bridges over Marian Creek of 60m (upper) and 50m (lower). Siting bridges requires greater assessment as the forest cover and bouldery terrain are difficult to assess stability and anchoring. Difficult track building as per true left loop track but terrain is only moderately steep
Key Risks	Debris flows in the creek or treefall affecting bridges
Risk Commentary	Bridges/structures (High), Budget & Maintenance (Medium)
Visitor Experience Met	Yes, provided the bridges can be sited out of view of the waterfalls
Visitor Experience Highlights	Improved flow with less congestion at the key scenic viewpoints, additional viewpoints created by new bridges and a different perspective to view the falls from the true left
Structures	Two bridges (60m and 40m)
Toilets	Existing toilet at Marian car park
Construction Cost	$ 1,453,526
Annual Operating Cost	$ 90,496
Sustainability & Resilience	Main concern will be bridge siting and ensuring this caters for debris flows in the creek and that potential for tree fall is mitigated during design and construction. Track can be built well clear of the river channel in rocky terrain
Other Comments	This is a better value option over the proposed Hinepipiwai Lake Marian Loop Track while reducing congestion on the scenic waterfalls sections where negative visitor feedback is primarily focused

As an alternative to the proposed full loop track to and from Hinepipiwai Lake Marian is the creation of a shorter loop around the waterfalls. This could be achieved by building an additional bridge above the waterfalls and a short section of track on the true left of the river with another bridge below the waterfalls. It would address the worst of the congestion as it is assumed that most users only walk up to the waterfalls.

It is our opinion that a considerable reduction in congestion and improved visitor flow could be achieved with this option. We understand the majority of people stop at the waterfalls and viewing gantries and by creating a one-way flow around the falls they avoid passing on the most scenic sections of the walk.

This would mean the Hinepipiwai Lake Marian Track remains an out and back, but with an upgrade to Easy Tramping Track standard can easily cater to the expected visitor numbers and desired experience. The main areas impacting the experience based on the EDP and our own assessment is the rough track standard including needing to climb or clamber up and down steep rooty sections. And if visitor numbers were to exceed the desired limit on a single lane track the loop along the true left could be constructed at a later date.

3.8.6 Covered Nature Trail

The Masterplan envisages the trail on the true left of the Hollyford River (see image below).

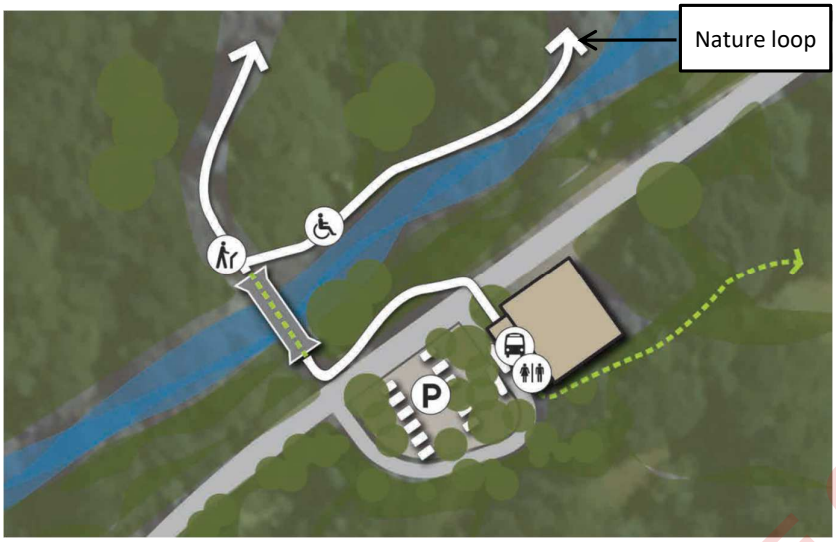

Figure 52: Masterplan Figure 32

It is unlikely that a fully covered trail can be achieved as the bridge across the Hollyford River will not be covered. As an alternative option we have assessed the true right of the river which is consistent with DOC's EDP (image below)

Figure 53: DOC's Hinepipiwai Lake Marian EDP, Area 2 detail

Hinepipiwai **Lake Marian - Accessible Covered Nature Trail**	
Length (m)	330m
Track Type	Accessible & Covered Short Walk
Technically Feasible	Yes
Technical Commentary	Finding a location which allows construction of a roofed walkway and avoiding tree fall while still taking in viewpoints across the river will be a detailed design challenge. The true left of the Hollyford River is quite undulating while the true right is long and thin.
Key Risks	Structures, Budget & Maintenance (High)
Risk Commentary	If crossing Hollyford River then a suspension bridge upgrade will be required, high initial cost for covered trail, high maintenance requirements to maintain level of service especially if tree falls onto structures
Visitor Experience Met	Maybe. Not very inspiring bush views, gloomy, river views not spectacular as no significant rapids/bluffs or pools
Visitor Experience Commentary	The current accessible walks along the Milford Rd are Mirror Lakes, Ōtāpara Lake Gunn, The Chasm and Milford Foreshore. It's hard to see this short accessible loop meeting the standard of experience of the existing four opportunities. But it does have river frontage which none of the others offer so a point of difference. For this reason, it could, if viewing spots out to the river can be built above the flood level, add a unique experience for less able visitors.
Structures	True left; This requires the existing suspension bridge to be upgraded to 1.5m clear width plus new viewing platforms over the Hollyford River and the covered pathway. True Right; This option makes the loop fully covered as the trail can start from the car park without the need for the Hollyford Bridge which is not expected to be covered.
Toilets	Existing toilets at Marian car park and new toilets anticipated as part of the EDP and Masterplan proposal for the Whakatipu Node. No additional toilets required
Construction Cost	$ 1,518,243
Annual Operating Cost	$ 108,843
Sustainability & Resilience	Tree fall is especially relevant to a covered walkway. Mitigation can be undertaken by removal of potentially rotten trees within the fall zone during construction and a programme to monitor trees every few years. Viewing platforms over the river will need careful consideration of flood levels and anchoring to mitigate the impacts from flooding
Other Comments	One of the difficulties of a covered walkway in a forest is the gloomy nature of the experience, exacerbated on a rainy or cloudy day. As noted, the experience of the river will need to be front of mind during the detailed design to ensure this element is showcased where possible, the location of the track on the true right makes it close to the car park and avoids the Hollyford River crossing. It would be possible to locate this short track on either side of the Hollyford River and on the true left above or below the current bridge. Detailed design should consider these options fully.

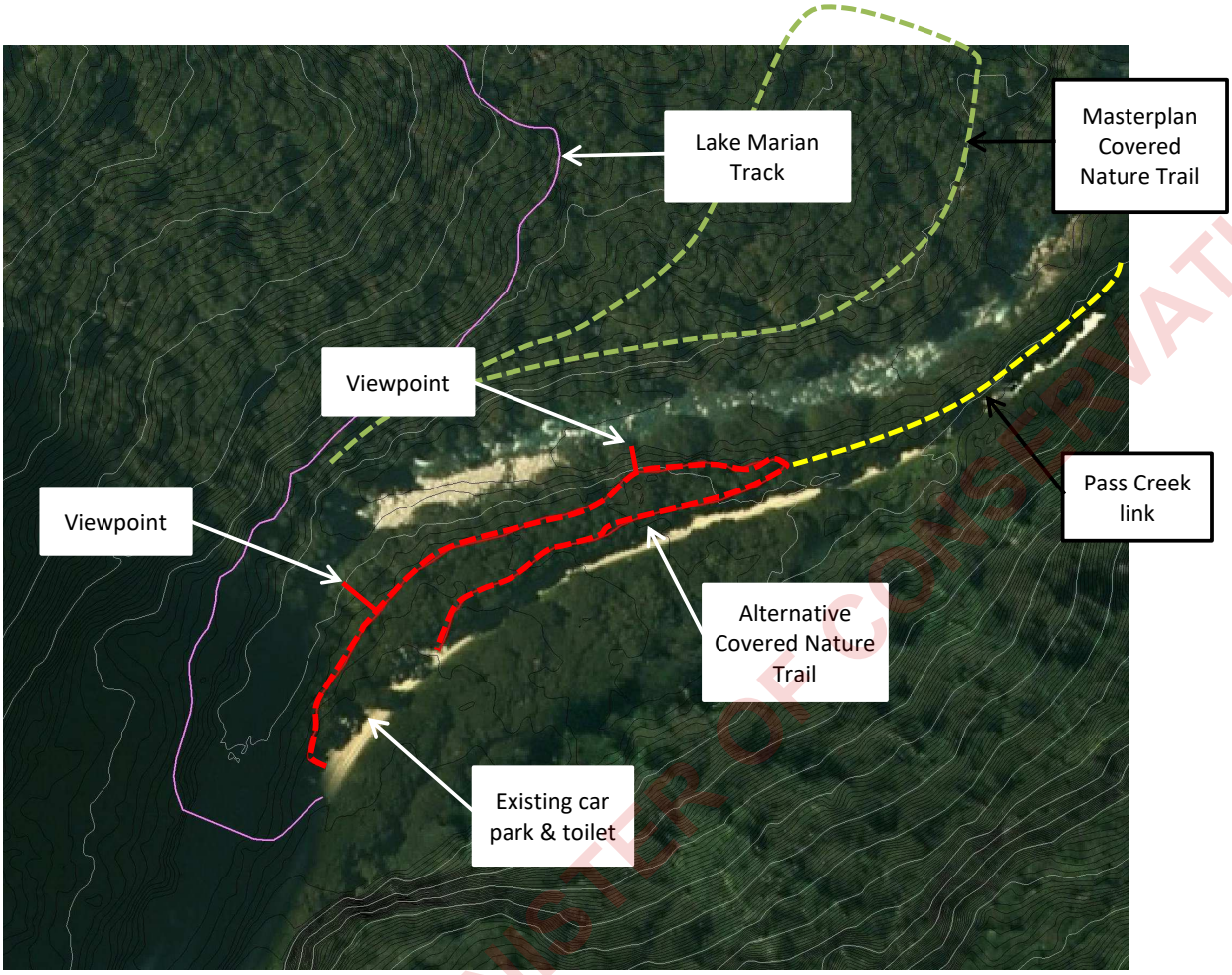

Figure 54: Covered Nature Trail alternative route

Figure 55: Covered track at Milford Sound Piopiotahi, Freshwater Basin

3.8.7 Pass Creek Link, Pass Creek, Key Summit & Divide Creek Loop

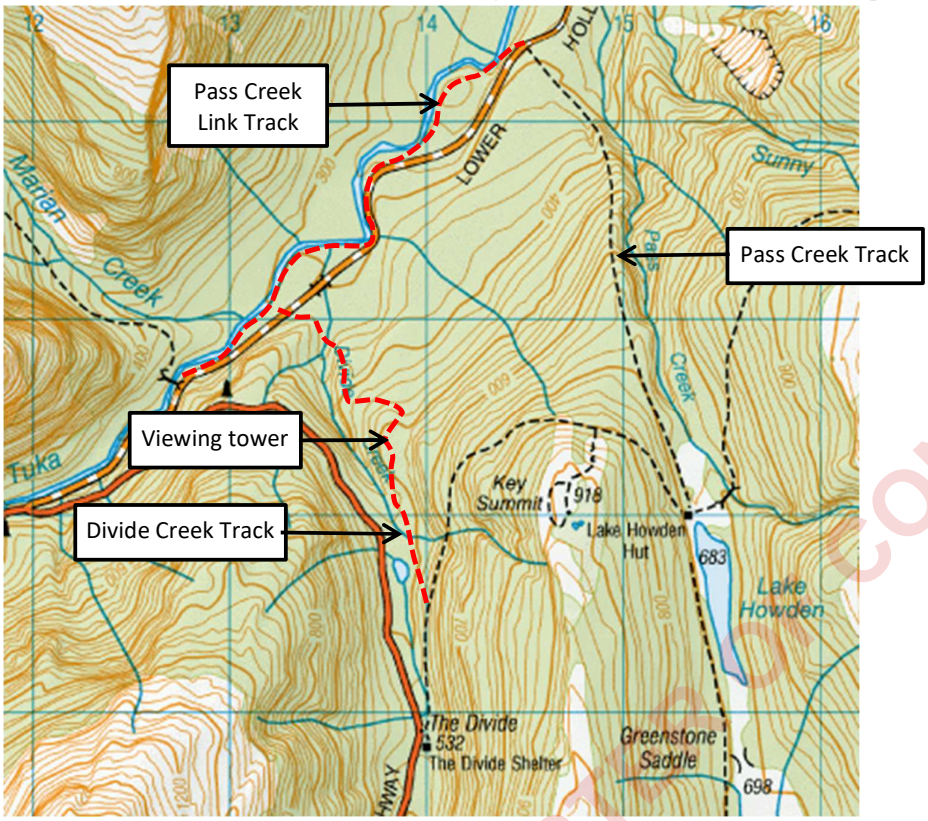

Figure 56: Map of loop tracks

Pass Creek Link Track	
Length (m)	3,000m
Track Type	Easy Tramping Track - 1 to 1.5hrs
Technically Feasible	Yes
Technical Commentary	17m Divide Creek bridge and a short section of steep road batter above the Hollyford River
Key Risks	Maintenance (Medium)
Risk Commentary	Track route across moderately steep terrain subject to windfall and landslides, higher ongoing maintenance requirements to meet track standards
Visitor Experience Met	Yes
Visitor Experience Commentary	The track follows the Hollyford River downstream to the Pass Creek track start. The river has a series of exciting rapids and pools which are considered much more interesting and desirable than a purely forest track as proposed by the Masterplan.
Structures	Bridge over Divide Creek and barrier along short section of road
Toilets	Existing toilets at Marian car park and Lake Howden. No new toilets required

Construction Cost	$ 1,456,931
Annual Operating Cost	$ 34,736
Sustainability & Resilience	No significant risks with the track line positioned well above the Hollyford River. Tree fall and minor landslides are a potential risk
Other Comments	In the Masterplan the link is shown across the hillside above the road. While this is technically feasible it offers little interest for walking. The riverside route is much more stunning as a walk in its own right and could easily be a one way or return journey making an easy short walk. The purpose of the track is to create a continuous Easy Tramping Track standard loop track of 12.4km and 650m of climbing.

3.8.8 Pass Creek Track Upgrade

Pass Creek Track upgrade	
Length (m)	3,200m
Track Type	Easy Tramping Track - 1.5-2hrs
Technically Feasible	Yes
Technical Commentary	No technical challenges. New sections of benching on moderate to steep slopes to ensure even footing for visitor group & small boardwalks on soft ground to mitigate erosion
Visitor Experience Met	Maybe
Visitor Experience Commentary	The track climbs through mature beech forest from 300m to 690m. Views are limited and there is nothing outstanding or unique to the experience. But, as part of a loop with Hunaiti Lake Howden and Key Summit this is a critical component
Structures	Some short boardwalks across swampy areas
Toilets	Existing toilets at Hinepipiwai Lake Marian car park, Hunaiti Lake Howden and Key Summit plus The Divide. No new toilets required
Construction Cost	$ 1,166,423
Annual Operating Cost	$ 51,152
Sustainability & Resilience	The track alignment with some small changes will mostly avoid any watercourses. The majority of the track alignment has been proven reliable over many decades of use. Tree fall or minor landslide will remain possible
Other Comments	The purpose of the upgrade is to create a continuous Easy Tramping Track standard loop track of 12.4km and 650m of climbing. The upgraded Pass Creek Track also provides an alternative route should the Routeburn Track become impassable as occurred in 2020. This track and the Divide Creek Link Track below also provide the opportunity to interpret ara tawhito - traditional trails - in the area (travel between Otako, Te Rua-o-Te Moko and Tai Poutini

3.8.9 Divide Creek Link Track

Divide Creek link track	
Length (m)	2,690m
Track Type	Easy Tramping Track - 1.5 hrs one way
Technically Feasible	Yes
Technical Commentary	Benching in steep terrain from Key Summit track
Key Risks	Structures, Budget & Maintenance (Medium)
Risk Commentary	Track route across moderately steep terrain subject to windfall and landslides, creek crossings subject to debris flows
Visitor Experience Met	Yes, as part of loop track with Pass Creek, Key Summit
Visitor Experience Commentary	There is a small rocky knoll on the true right of Divide Creek where a viewing tower could be built giving a panoramic view of the lower Hollyford valley.
Structures	Viewing tower, three short bridges
Toilets	New toilets not required. Existing toilets at The Divide, Key Summit, Lake Howden and Marian car park
Construction Cost	$ 2,103,754
Annual Operating Cost	$80,454
Sustainability & Resilience	Track alignment mostly avoids Divide Creek but will none the less be subject to small side stream flooding, tree fall and small landslide potential.
Other Comments	The purpose of the upgrade is to create a continuous Easy Tramping Track standard loop track of 12.4km and 650m of climbing.

The Masterplan anticipates an Easy Tramping Track standard loop as a response to inclement weather on the tops at Key Summit and the ability for a below bush line day walk that would remain operational all year.

The key to making this loop desirable is the consistency in track standards. To achieve this the Pass Creek Track would be upgraded from the rough advanced tramping track to an easy tramping track connection to the Routeburn Track at lake Howden, then back towards The Divide. A new track down the true right of Divide Creek would take visitors back to Hinepipiwai Lake Marian Car Park. The Pass Creek Link track along the Hollyford River would complete the loop.

3.9 Gertrude Valley Loop Track

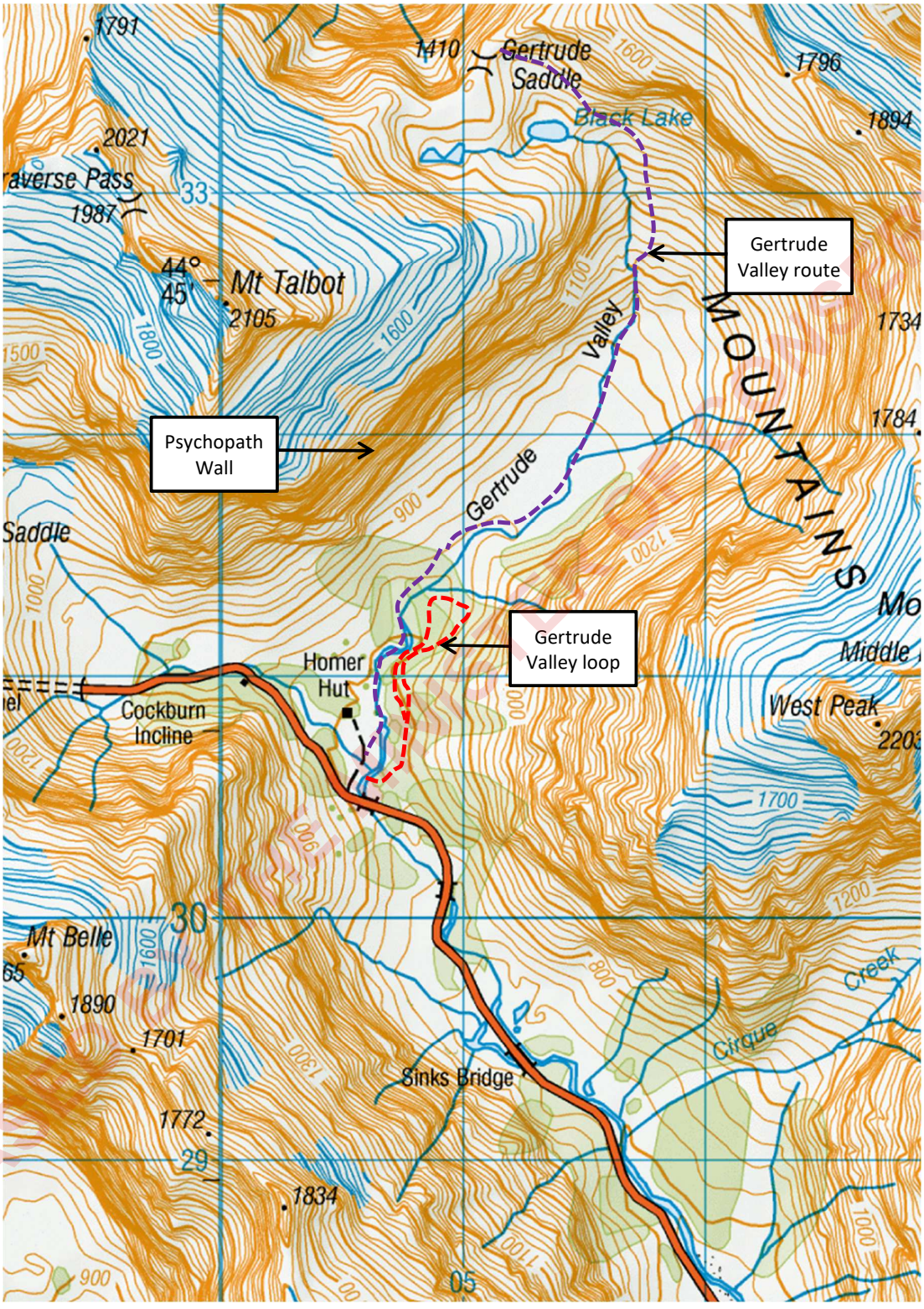

Figure 57: Gertrude Valley map

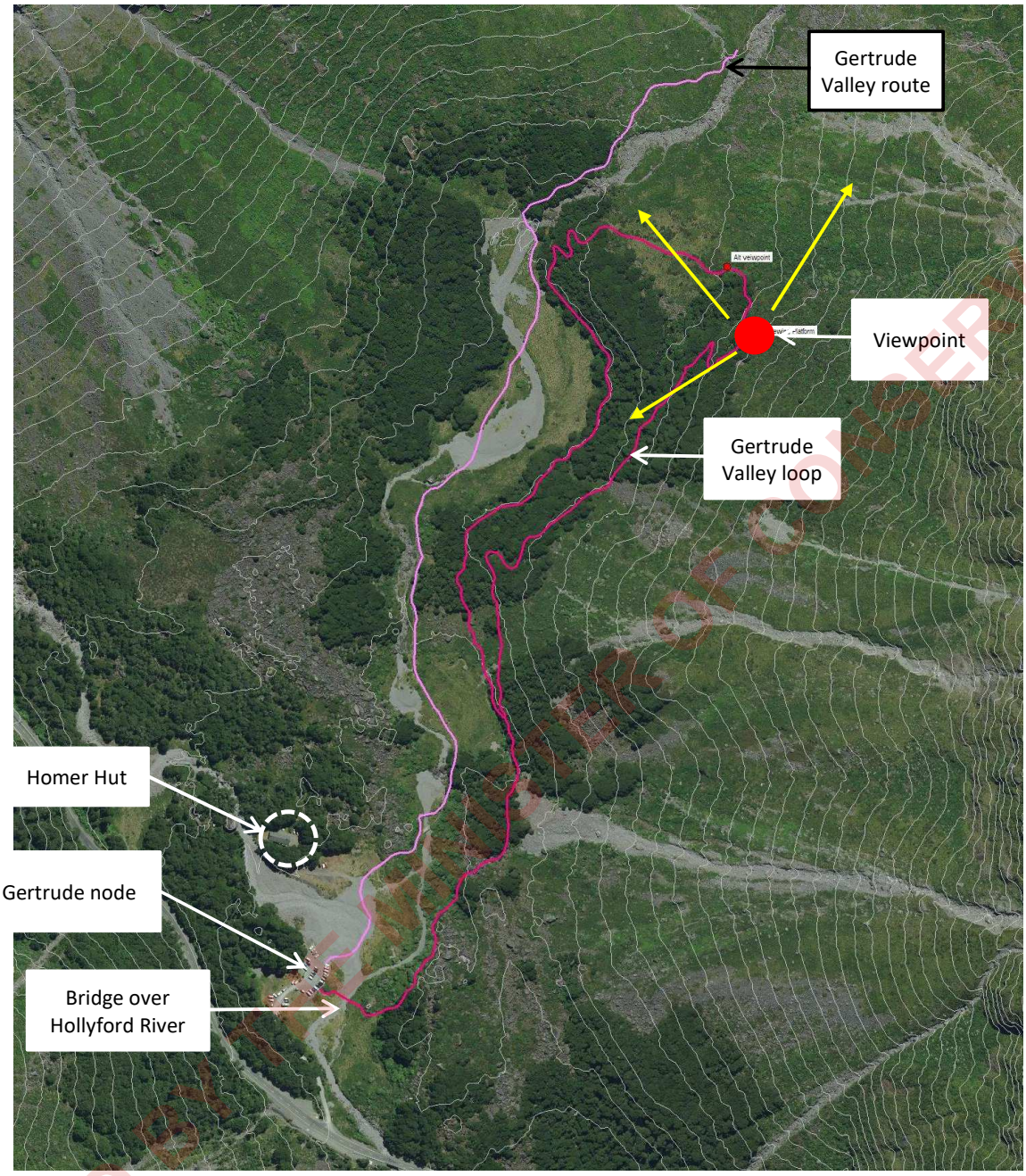

Figure 58: Gertrude Valley Loop Track contour map (10m intervals)

Gertrude Valley Loop Track	
Length (m)	1,840m
Track Type	Short walk – 30-40mins
Technically Feasible	Yes
Technical Commentary	Building a high-quality track across large boulders and through stunted mountain beech will present technical challenges. Additionally, the mostly unmodified nature of the area means that siting and design will need to be very careful to be recessive and low impact. A bridge across the Hollyford River is required to ensure visitors can negotiate this track in all weathers. The creek is subject to significant flood flows and the bed is aggrading. Avalanche hazard is also present as evidenced by non-forested slopes below Mt Crosscut and further assessment is required during detailed design.
Key Risks	Bridges, Flooding & Maintenance (High), Weather, Avalanche (Medium)
Risk Commentary	High cost for bridges, technical challenges to find site/design that is not easily compromised by flooding and creek aggrading, high maintenance requirements to maintain level of service for short walk in sub-alpine environment, potential for adverse weather, snow and flooding to impact the route and safety challenges with visitor group.
Visitor Experience Met	Yes
Visitor Experience Commentary	This is the only easily accessible alpine valley on the Milford Road. An easy short loop will take visitors across boulder fields, alpine meadows and give them views of the upper valley cirque wall, remnant glacier icefall on Mt Talbot above the Psychopath Wall as well as the stunted mountain beech forest. Plenty of photo opportunities & chances to tell the alpine habitat stories. Also, the potential to see the reclusive rock wren.
Structures	18m bridge over the Hollyford River and boardwalks where flooding over river flats. A viewing platform at the upper end of the beech forest is necessary to gain a great view and reduce impact on vegetation
Toilets	New toilets will be necessary at this node combined with a potable water supply
Construction Cost	$2,154,307
Annual Operating Cost	$83,184
Sustainability & Resilience	The bridge over the Hollyford is going to be the critical component in the loop track. Recent flooding in Sept 2023 indicates flood flows well over the existing riverbanks. At the Gertrude Valley bridge installed in 2022 by DOC flood waters have gone over the bridge which is 3.4m above the bed which is 7m wide. Avalanche activity appears limited on the route as evidenced by mature forest cover

Other Comments	The new node needs to ensure visitors are directed away from Homer hut and that adequate toilets and water are supplied to address existing issues identified by stakeholders. The short walk also needs to be managed such that visitors do not easily find their way up the Gertrude Valley which is of route standard and inappropriate for the intended user group for the short walk. The alignment proposed in the Masterplan would need to cross the Getrude Creek much higher up valley where bridging is very difficult and is considered to lead to greater confusion between the valley route and the short walk leading to potential visitor risk issues

Figure 59: Big boulders, a prominent feature of the landscape in the Gertrude Valley

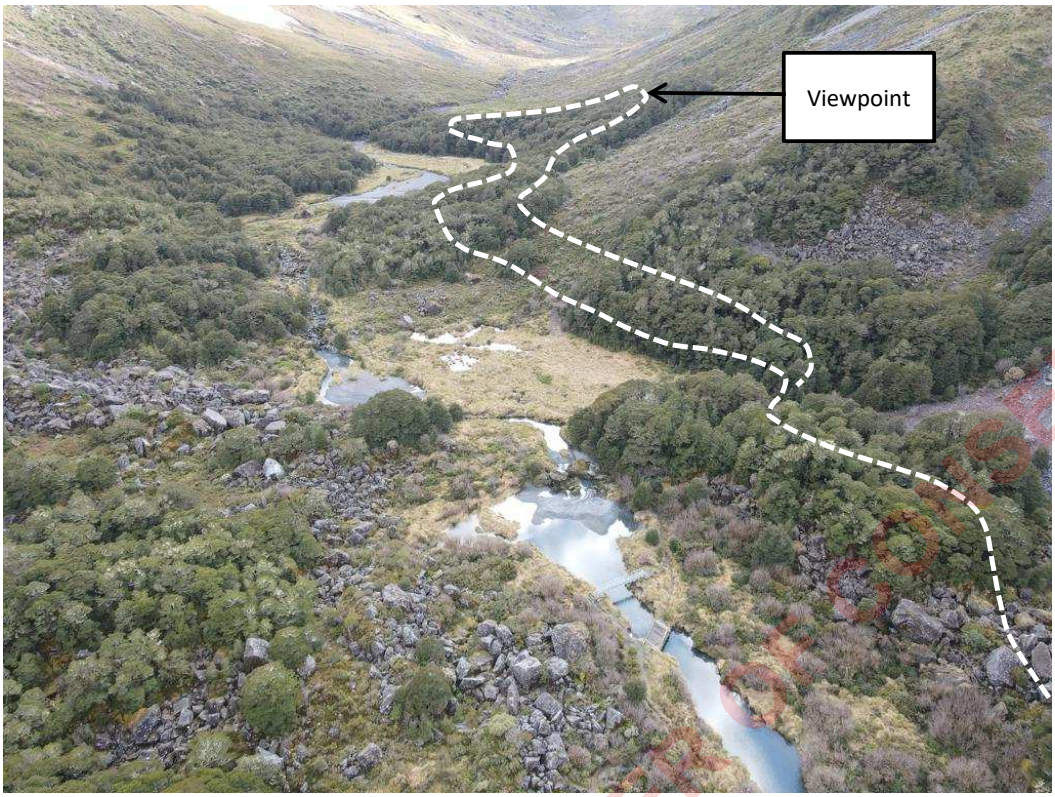

Figure 60: Aerial view of Gertrude Valley, image Boffa Miskell

Figure 61: Upper Gertrude Valley, Psychopath Wall (left) & Barrier Knob (right) from viewpoint

3.9.1 Alternatives

The upper Cleddau cirque near the Homer Tunnel is a stunning and very dramatic area which is already heavily modified by human development (SH94). It may be worth investigating the potential for a short walk in this area with operation outside of the avalanche season. The terrain is technically feasible between the tunnel portal and the second large right-hand bend before crossing the Cleddau River. Parking and rockfall risk are obvious limitations that would need assessment.

3.10 The Chasm to Cleddau Horse Bridge Walking Track

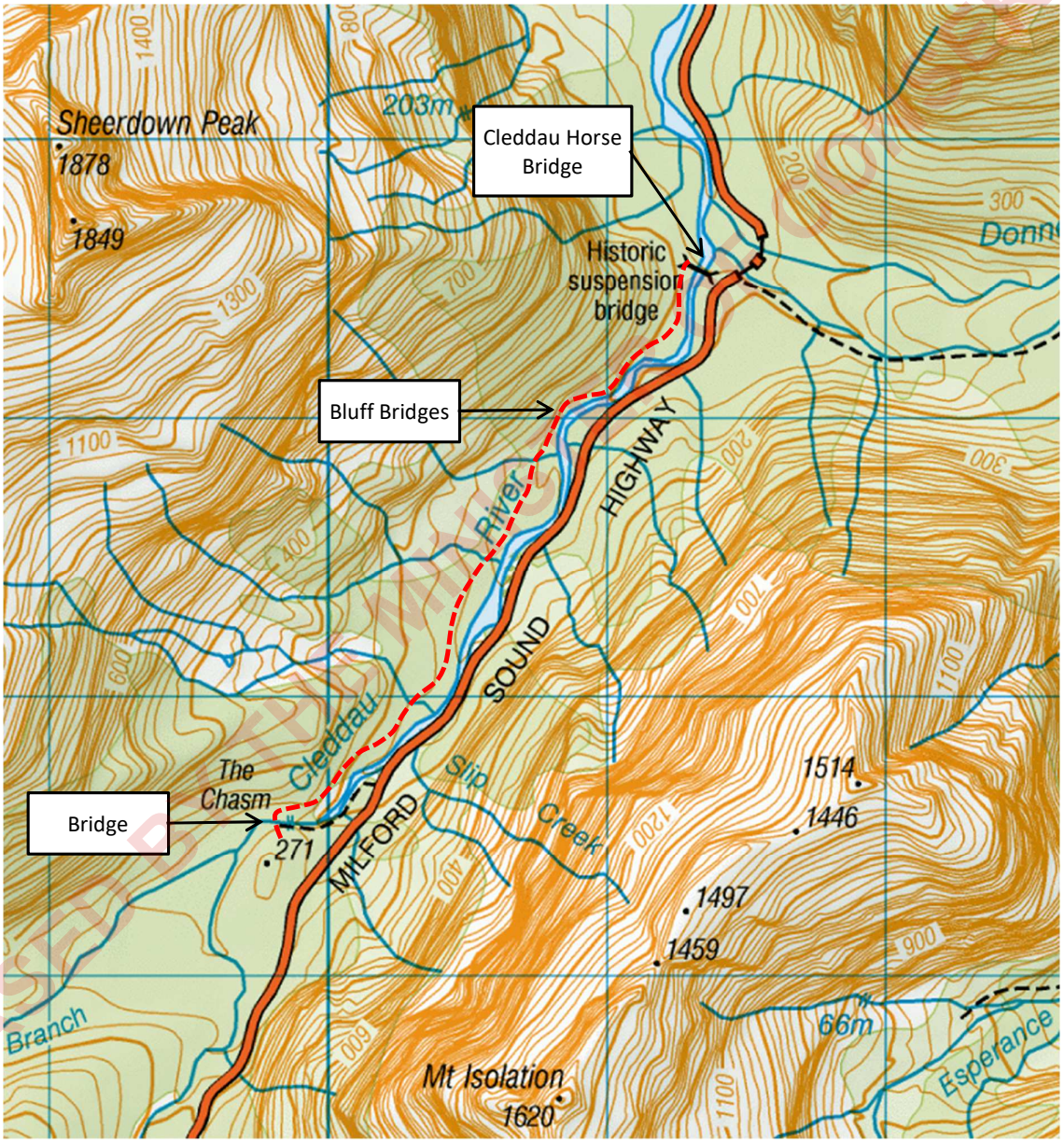

Figure 62: The Chasm to Cleddau Horse Bridge on the true left of Cleddau River

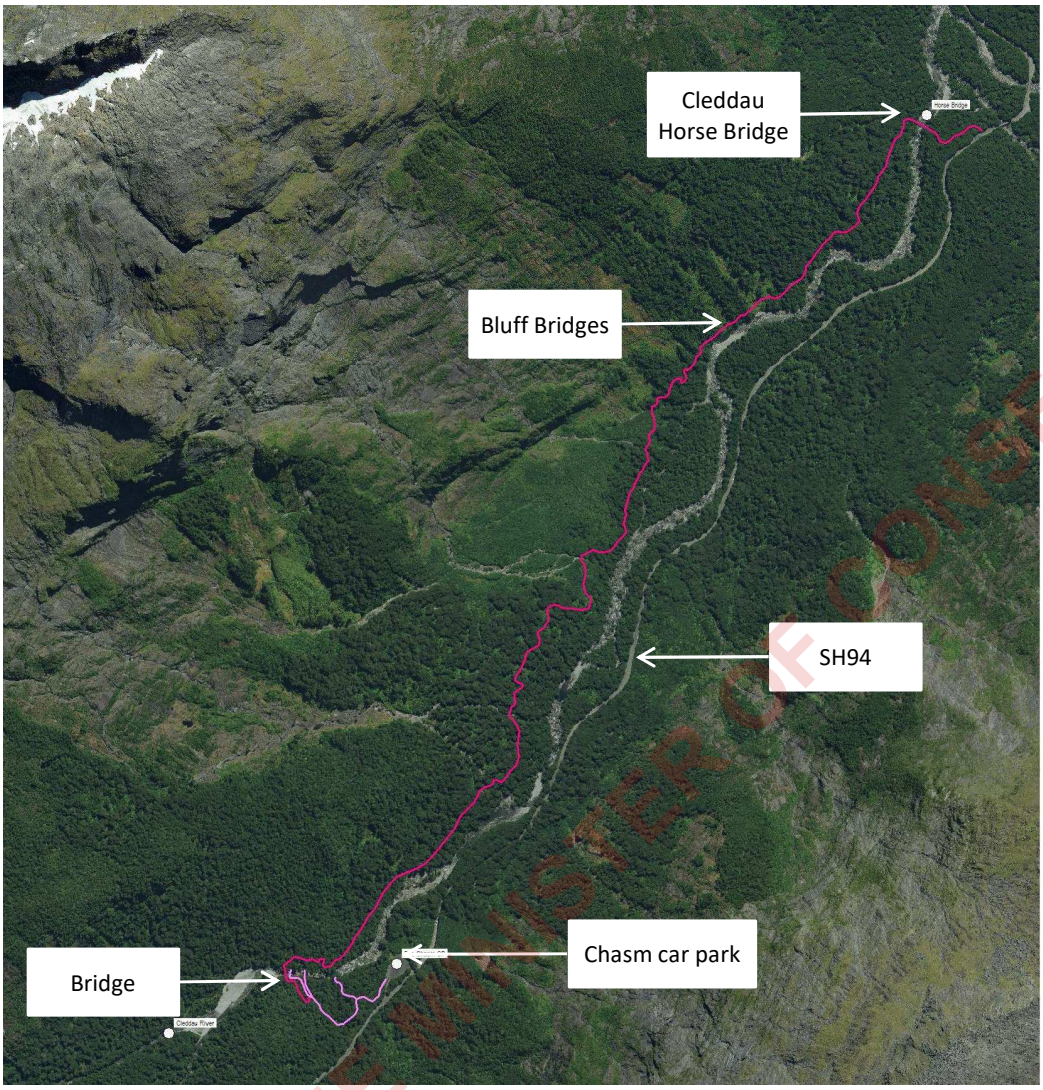

Figure 63: Aerial view of The Chasm to Cleddau Horse Bridge track

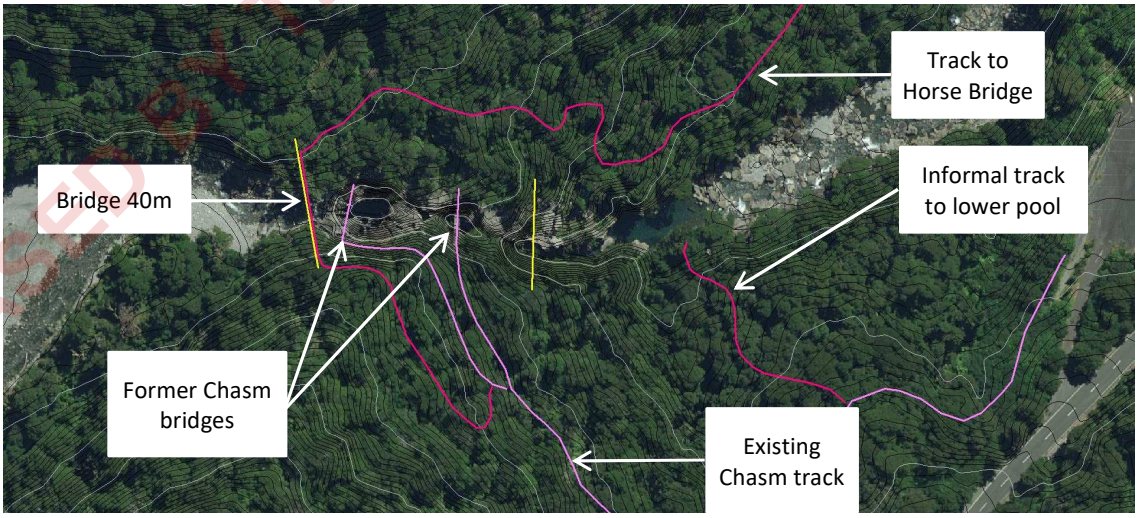

Figure 64: Existing & proposed track & bridges at The Chasm

The Chasm to Cleddau Horse Bridge Walking Track	
Length (m)	3,240m
Track Type	Day Walk - 1 to 1.5hrs
Technically Feasible	Yes
Technical Commentary	The Chasm Bridges were damaged in the Feb 2020 floods which are believed to be a 1:100yr event. DOC is currently establishing the technical feasibility of reinstating the bridges in the previous location. Achievability of the link track is based on having bridges at each end. We have scoped concept bridge locations that could replace the existing sites, track line crosses alluvial fans as well as very steep rock faces with a thin veneer of trees and scrub, rock face bridges are required and the interplay between vegetation and track may lead to vegetation instability, a review of aerial imagery on Retrolens indicates that once vegetation slide has occurred since c1938 that would impact the track line.
Key Risks	Bridges, Landslides & Maintenance (high), Flooding, Budget & Avalanches (Medium)
Risk Commentary	Heavy rain and flood related hazards could impact this route, steep rock faces more prone to debris flows that could destroy track structure and result in long repair times, critical to have bridges at both ends
Visitor Experience Met	Yes
Visitor Experience Commentary	Walking in the downstream & generally downhill direction the track is bookended by The Chasm (stunning sculpted rock gorge) and the Cleddau Horse Bridge which was the original pack track via the Grave Talbot Pass prior to c1938 when the Homer Tunnel opened. With some adaptive reuse of historic materials these two sites are worth a visit in themselves. The track alignment will include stunning sections across exposed rock faces looking down on deep blue pools in the Cleddau River plus lush temperate rain forest. Glimpses of Mt Tutoko are on hand as well.
Structures	The Chasm and Horse Bridge both require new bridges which are essential to the feasibility of this experience, also up to 175m of rock face bluff bridge to cross steep rock faces, at least 6 smaller bridges over side streams. The Cleddau Horse Bridge fabric should be incorporated as decoratively into a new bridge. Car parking at the Cleddau Horse Bridge appears limited with poor road sight lines.
Toilets	There are currently no toilets at either end. The walk is expected to take 1-1.5hrs and a toilet maybe necessary at the downstream end (Cleddau Horse Bridge).
Construction Cost	$4,980,460
Annual Operating Cost	$224,176
Sustainability & Resilience	The key components are the two bridges at each end and the rock face bridge between 2.2-2.7km. Detailed design needs to ensure resilience to flooding and mitigate through design the potential for vegetation debris slides form the steep rock faces.

Other Comments	The Chasm is already very popular with c.50,000 visitors per annum making the short walk. While many of these visitors will not wish to walk up to 1.5hrs, it is reasonable to expect plenty will make the gently downhill journey making this short walk very popular. There will be numerous opportunities to gain access to some beautiful pools in the Cleddau River as part of the walk. The historic Cleddau Horse Bridge is in poor condition and currently unsuitable for pedestrian use. Other MOP workstreams will consider the feasibility of replicating the structure, re-using existing heritage fabric where possible. Any changes should be consistent with the Cleddau Heritage Conservation Report July 2022. There is a well-used 'informal' track to the lower Chasm. This could be upgraded to Easy Tramping Track standard (See figure 4) and offer access to this bouldery riverbed.

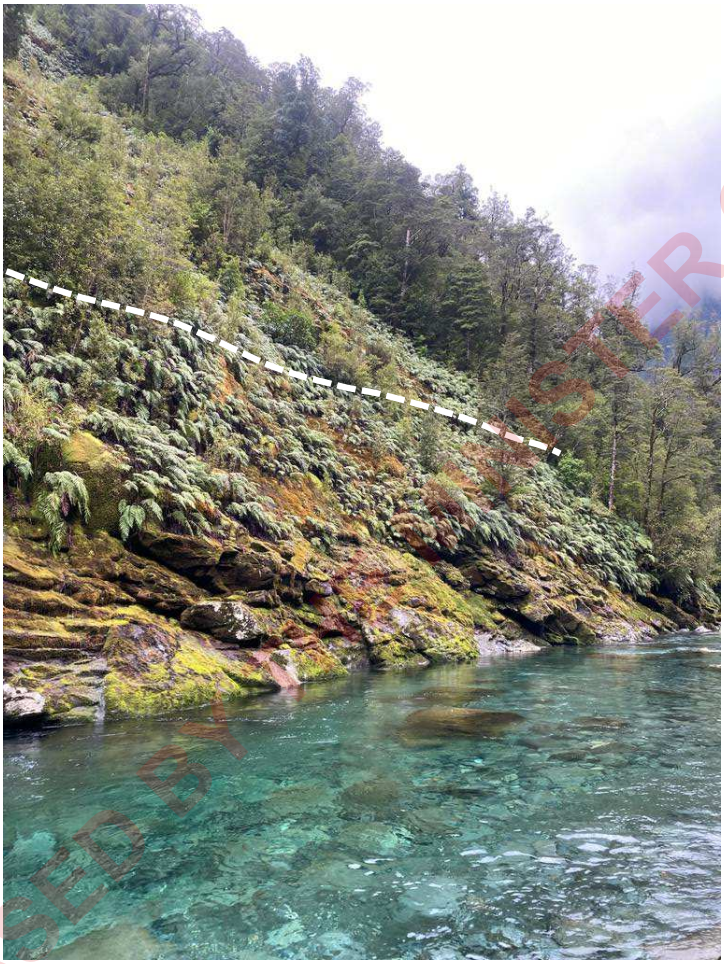

Figure 65: Rock face adjoining Cleddau River, site of Bluff Bridge

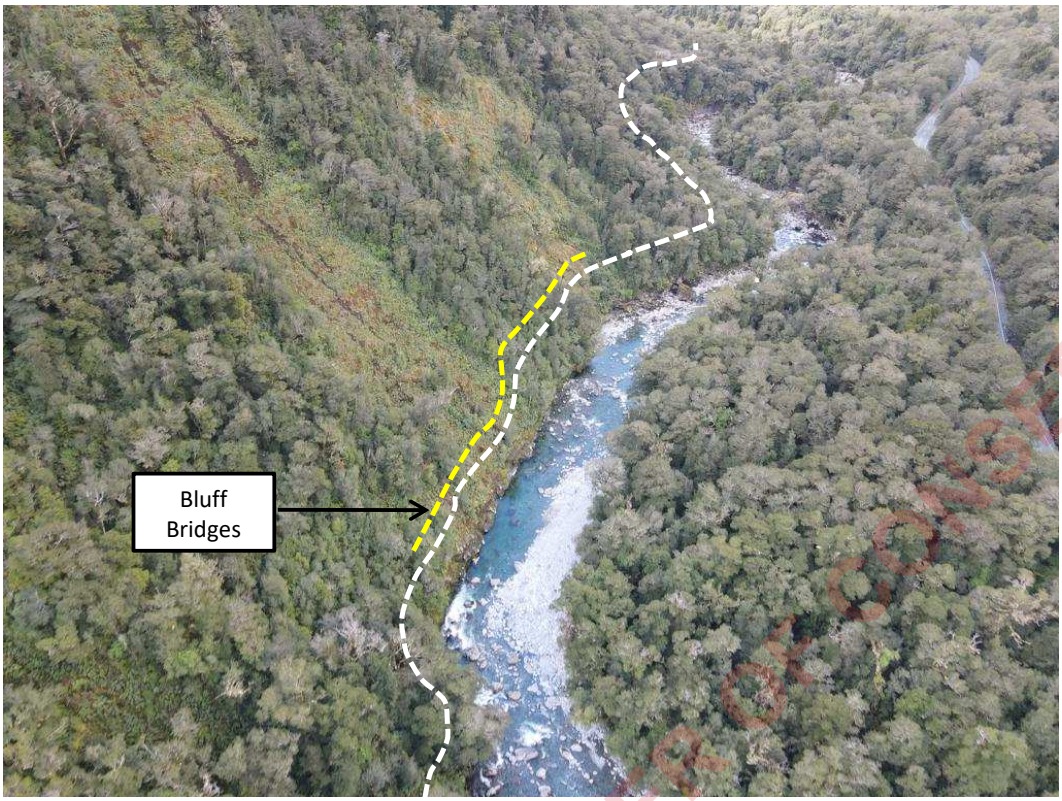

Figure 66: Aerial view of Bluff bridge sites, image Boffa Miskell

Figure 67: Historic Cleddau Horse Bridge

3.11 Milford Sound Lodge to Tutoko River Bridge Track

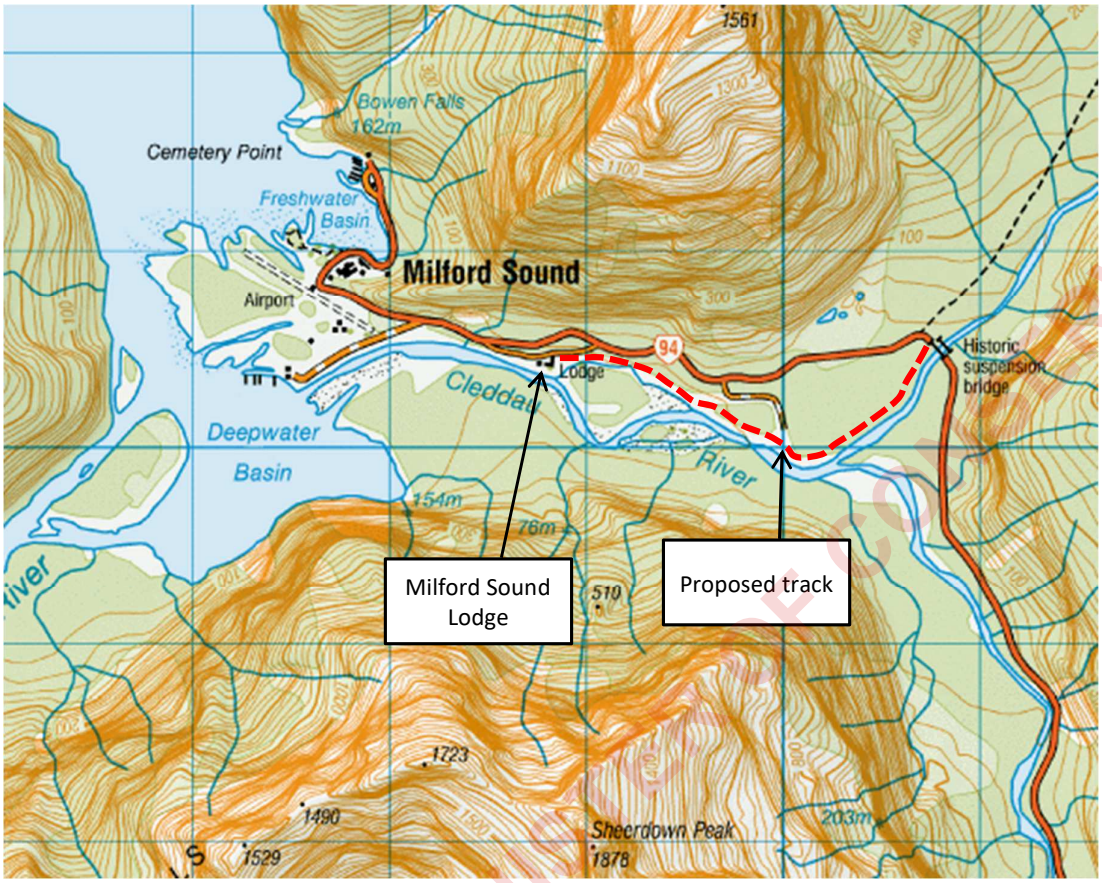

Figure 68: Map of Milford Sound Piopiotahi Tracks

Milford Sound Lodge to Tutoko River Bridge Walk	
Length (m)	2,330m
Track type	Day Walk - 1hr one way
Technically Feasible	Yes
Technical Commentary	Bridges at the Milford Sound Lodge end are necessary to ensure day visitors can easily negotiate the track in all weathers. The current vaguely marked line is in the riverbed near the lodge and this is subject to regular flooding. Forming the track under the road and across SH94 Creek 160 is difficult but appears feasible with a short bridge, some rock blasting and retaining in the loose alluvial gravels
Key Risks	Flooding (Medium)
Risk Commentary	Low risk of plunging avalanche path crosses the route (>15yr return interval advised by Milford Road Alliance), Cleddau River flooding is evident and ongoing especially near Milford Sound Lodge
Visitor Experience Met	Yes

Visitor Experience Commentary	An easily achievable 2 hour walk in lovely beech forest, lots of views of the lower Cleddau and Tutoko Rivers with numerous swimming options and some large pools, views of massive rock faces on Sheerdown Peak
Structures	Two small bridges are required to ensure day walk standards can be met
Toilets	Closest toilets are located in Milford Sound Piopiotahi. The Tutoko River Suspension Bridge built in 1940 is a very popular short stop and demand has as yet not necessitated a toilet. No toilets are recommended as part of this track proposal.
Construction Cost	$ 1,011,074
Annual Operating Cost	$ 48,816
Sustainability & Resilience	Provided the final track alignment take into consideration future flooding of the Cleddau and Tutoko River this track appears to be located on stable river flats with mature forest. Maintenance costs are existed to be low and consist of removal of windfall and vegetation control.
Other Comments	The walk has been promoted by Milford Sound Lodge and it would provide a brilliant short afternoon walk before dinner at the lodge. It will also appeal to people who have been dropped off at the Tutoko suspension bridge as they will be able to walk via the informal track between the lodge and Piopiotahi in 1.5hrs. The hop on and hop off transport proposed in the Masterplan will really drive popularity of this short walk. This day walk will also provide a safe place for residents of Piopiotahi to exercise by foot or bike.

3.12 Milford Sound Piopiotahi Tracks

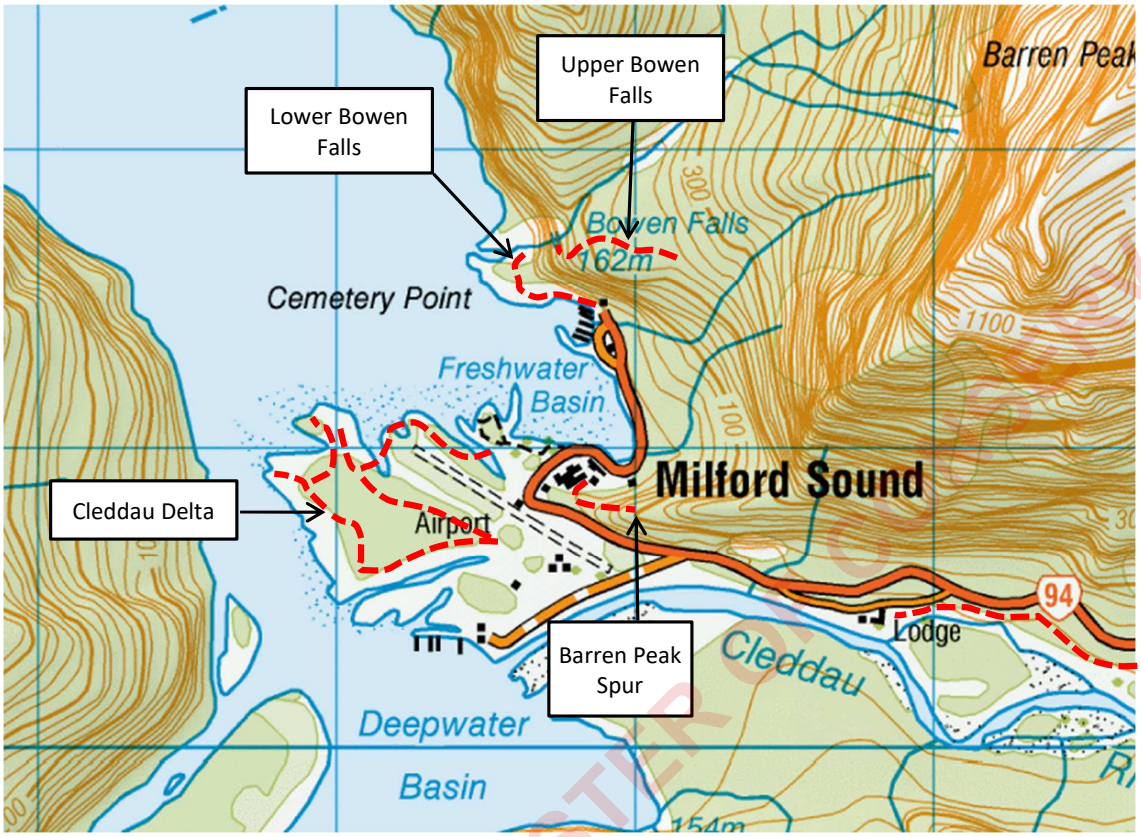

Figure 69: Overview of Milford Sound Piopiotahi tracks

3.12.1 Barren Peak Spur Walk

Barren Peak Spur Walk	
Length (m)	350m
Track Type	Short Walk - 15mins
Technically Feasible	Yes
Technical Commentary	Stairs/steps and a viewing platform at 80masl together with widened viewing platform and track at 30masl. Geological; Steps and stairs up rock boulders/faces and viewing platform on top of obvious small bluff/rock outcrop will need further geotechnical investigation
Key Risks	Structures (Medium)
Risk Commentary	Geotechnical considerations essential together with high cost to build, no obvious technical limitations
Visitor Experience Met	Yes, expect the experience to improve with a better track & a higher level viewing platform. Care will be required to disguise the water tanks & associated piping together with removal of rubbish

Visitor Experience Commentary	The current low level of the viewing deck adversely impacts the view as it includes the back of the tourist complex which detracts from the natural beauty. A higher-level viewing platform can be positioned so the buildings are screened. This in our opinion will provide a more stunning view for only a few minutes of extra effort.
Structures	New steps/stairs to upper viewing platform, widened existing steps and stairs
Toilets	Not required. Existing toilets in main tourist complex between buildings and foreshore car park
Construction Cost	$ 632,581
Annual Operating Cost	$ 46,160
Sustainability & Resilience	The track and structures are located on a spur so are naturally resilient to flooding. Main concerns are tree fall onto structures. The spur itself is unlikely to be subject to rock falls
Other Comments	A relatively technically simple project with great views up the fiord. Any viewing platform should be carefully clad with recessive natural looking materials so that the structure is not obvious in the landscape. Views from the fiord are equally important as people on the water will easily see a metallic reflection high on the hill. Through careful siting is may be possible to fully screen the bulk of the structure from the water

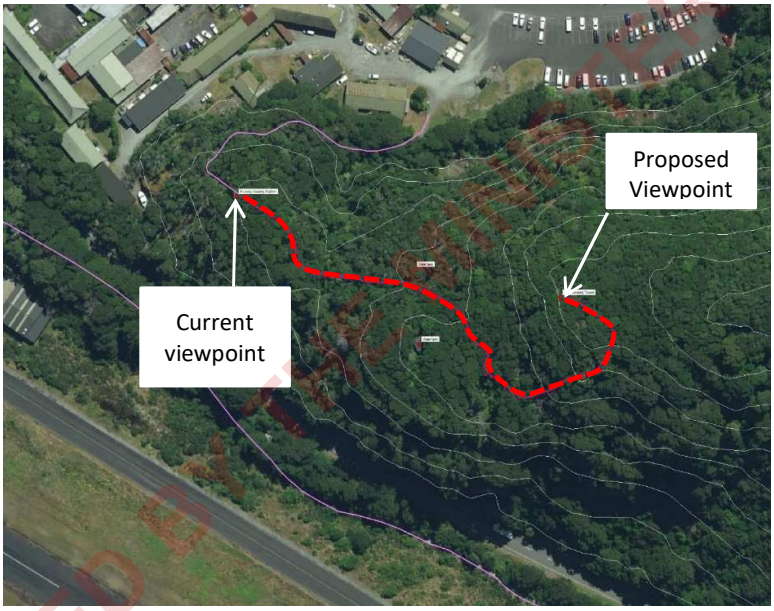

Figure 70: Aerial view of Barren Peak Spur tracks

Figure 71: View from the top of bluff at 80masl

3.12.2 Hine-te-awa Bowen Falls – Upper tracks & viewing platform

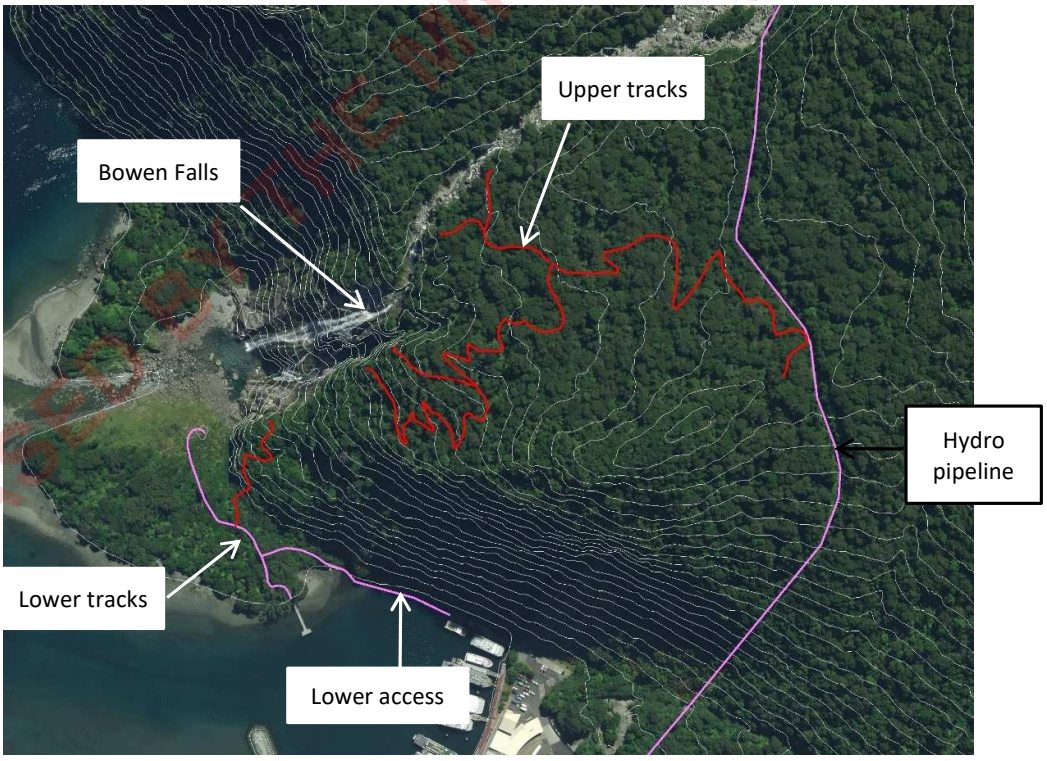

Figure 72: Aerial view of Hine-te-awa Bowen Falls options (Contour interval 10m)

Hine-te-awa Bowen Falls Upper – Short Walk	
Length (m)	870m
Track Type	Short Walk
Technically Feasible	Yes
Technical Commentary	Construction of approach track and viewing platform on the side of a cliff face together with the need to ensure vegetation debris slides do not occur will be the main technical challenge. The rock is believed to offer good anchors for structures
Key Risks	Structures, People and budgets (High), Landslides & Maintenance (Medium)
Risk Commentary	Is the access suited to short walk users with 70-90m of vertical drop from cable car top station, potential impact of debris landslides could be catastrophic on structures resulting in long periods of closure, views not as dynamic as below the falls as you miss the pressure waves and mist
Visitor Experience Met	Maybe. The proposed cable car appears to have a top station at 240masl. The top of the Bowen Falls is 160m and the best viewing spot is around 140masl. That is a vertical drop of between 80-100m which is a considerable climb/descent for a short walk. It is conceivable that this vertical drop is in excess of what the visitor group would typically 'endure' for a view
Visitor Experience Commentary	Besides the ride up the cable car, which is likely to be impressive, the track through the mature forest down to the viewing platform will be similar to other tracks discussed. The real wow will happen when you step out onto the cliff edge and see the waterfall blasting out of the rock face as it is diverted by a bulge in the rock. Power, drama and speed, plus a stunning view across to Mitre Peak and the fiord. It is likely that any structures would be visible from the water with consequent visual impact
Structures	Steps and stairs plus a viewing platform on the cliff edge are required to achieve the visitor experience
Toilets	Existing toilets in tourist complex. No new toilets required
Construction Cost	$ 1,013,007
Annual Operating Cost	$ 91,984
Sustainability & Resilience	The track is located on a gentle spur / ridge free from the majority of stormwater flows but tree fall remains possible. The structures and bluff bridge access are within very steep rock face covered in vegetation. Careful construction and removal of larger trees that could cause debris slide should be completed during detailed design & construction

Other Comments	Any viewing platform should be clad in recessive natural looking materials (e.g. burnt or stained timber), such that the structure itself is not easily obvious in the landscape. Views from the fiord are equally important as views from the falls and people on the water will easily see a metallic reflection or structure high on the hill. 3D modelling can assist with understanding the impact on visibility during detailed design. Two viewing deck locations have been assessed. The upper point is located with the water dropping off the top of the falls & includes a short 15m bridge to a knoll directly above the falls but missing the real action. The lower point is directly opposite where the water bursts out of the rock face and was considered superior in terms of experience. Further detailed site assessment including abseiling will be necessary to verify the sites suitability for a viewing platform and confirm it is clear of river flooding

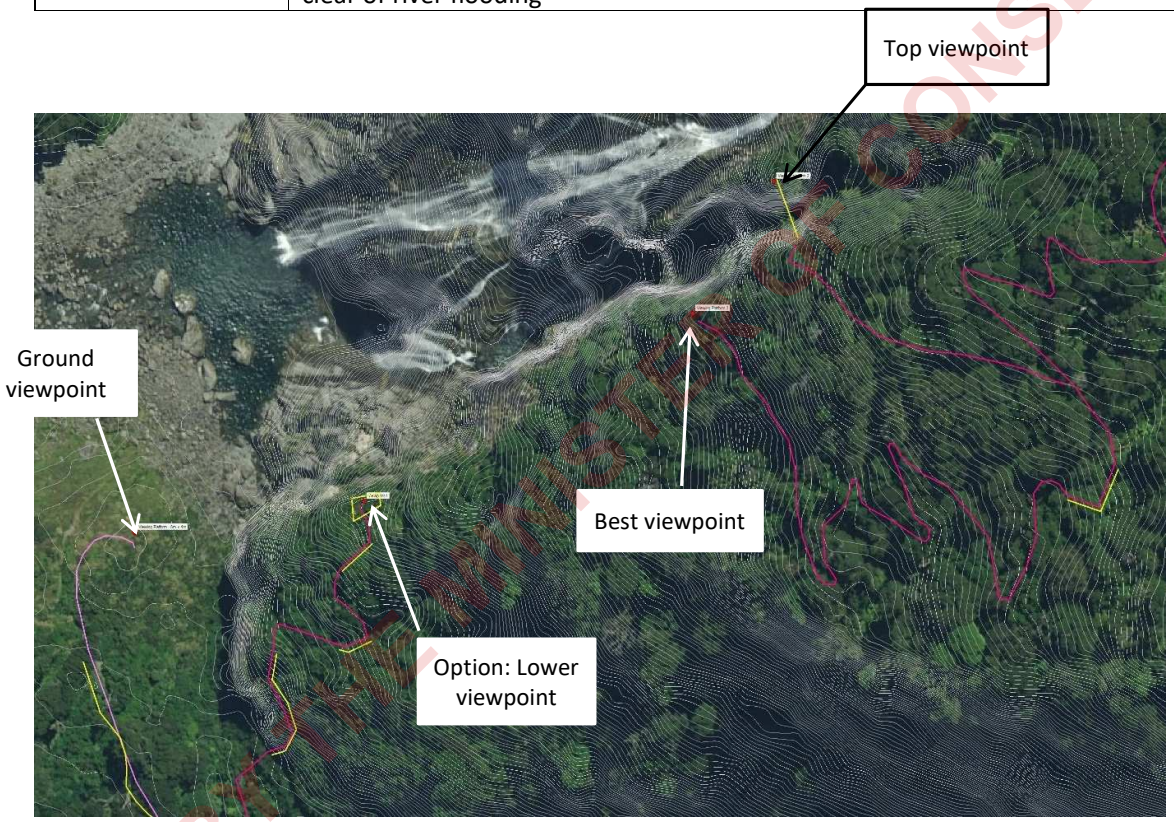

Figure 73: Hine-te-awa Bowen Falls Detail contour view of viewing platform and track options

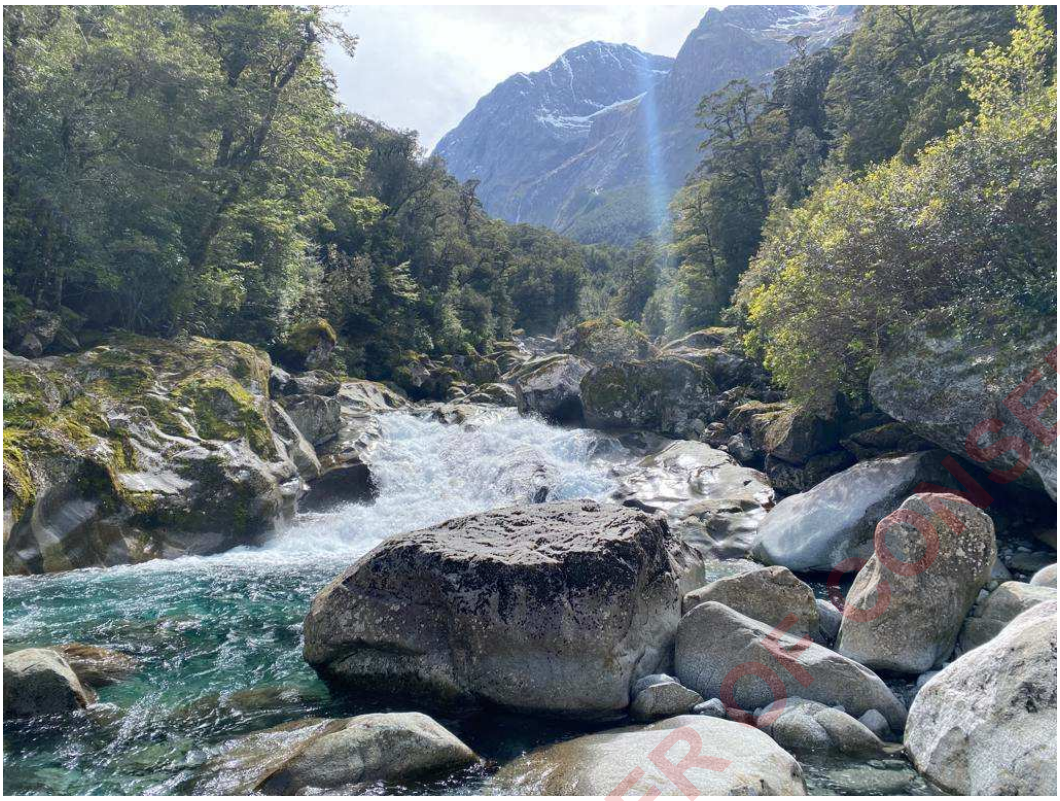

Figure 74: Bowen Creek near hydro scheme intake

3.12.3 Hine-te-awa Bowen Falls Upper – Easy Tramping Track

Bowen Falls Upper - Easy Tramping Track	
Length (m)	120m
Track Type	Easy Tramping Track
Technically Feasible	Yes
Technical Commentary	None. The proposed track alignment has been moved away from the existing hydro pipeline as the pipeline at the Bowen River is difficult to integrate and is likely to generate conflict with operation of the hydro scheme. Instead, a lower entry to the valley is recommended
Key Risks	Structures, People (Medium)
Risk Commentary	Management of access to Bowen River with viewing platform to manage safety
Visitor Experience Met	Yes
Visitor Experience Commentary	The track will give access to the Bowen River which is a stunning boulder strewn creek with excellent scenic values. Great photo opportunities and given the terrain from the cable car to the creek it would easily be of a higher standard.
Structures	None required
Toilets	Existing toilets in tourist complex. No new toilets required
Construction Cost	$ 31,755

Annual Operating Cost	Refer Bowen Falls upper Short Walks track
Sustainability & Resilience	Potential for treefall
Other Comments	This track uses part of the Short Walk with a short extension to the creek. Safety issues may arise if short walk visitors use the track and gain access to the river with its associated unmanaged hazards (flowing water, large boulders etc). It may be preferable to upgrade this track to a short walk with river viewing platform to mitigate this.

3.12.4 Hine-te-awa Bowen Falls Lower Short Walk

Bowen Falls Lower short walk	
Length (m)	450m
Track Type	Short Walk
Technically Feasible	Yes
Technical Commentary	The old gantry structure will need a replacement clear of rock fall hazard to make this opportunity viable. A continuation of the existing floating wharf appears technically feasible although consideration of sea levels, boat operations and wakes is required. The existing track (170m) requires upgrading to mitigate alluvial fan flooding. This could consist of boardwalks. As an alternative to the cable car to the top of the falls a gantry with stairs could be built rising 60m to a mid falls viewing platform. The technical feasibility of the pontoon or gantry will be addressed by the Engineering Feasibility workstream.
Key Risks	Structures, Landslides and budgets (High), Flooding & Maintenance (Medium)
Risk Commentary	Rock fall hazard on approach structures, flooding across lower delta, structure located clear of flood/rockfall being tested by others, high upfront costs, maintenance to meet short walk standard will be critical
Visitor Experience Met	Yes
Visitor Experience Commentary	The track to the lower falls is a winner. Reinstatement of the access from the resort complex is a must. This flat short walk gives all visitors the experience of the power of the falls. In normal flows the spray and air pressure showcase natures power. Given the flat terrain, this should be built as an accessible walk. The option of a climb to the mid-waterfall would provide a stunning experience of the falls plus a great view out across to Mitre Peak and out the fiord. Building a track and stairs would have much less visual impact compared to a cable car.
Structures	Critical new access structure across Freshwater Basin (refer Engineering Feasibility workstream & prior geotechnical assessments). New boardwalk in flood zone. Option of a gantry and stairs up the rock face to mid-level viewing platform. All access structures are included in the construction cost estimate.
Toilets	Existing toilets in tourist complex. No new toilets required
Construction Cost	$ 1,631,232
Annual Operating Cost	$ 106,020
Sustainability & Resilience	Mitigating the rock fall hazard on the access across Freshwater Basin remains the major constraint for sustainability and resilience. Additionally, the short track across the Bowen Creek outwash plain requires modification to mitigate flood damage and ensure longer term viability
Other Comments	We have considered a viewing platform at the base of the falls. However, one of the beauties of the falls is the absence of visible structures. If a viewing platform were necessary to address environmental concerns this should be very low without barriers or signs to minimise visual impact. We have not considered the feasibility of access structures in Freshwater Basin as these are addressed by the Engineering Feasibility workstream

3.12.5 Cleddau Delta Short Walks

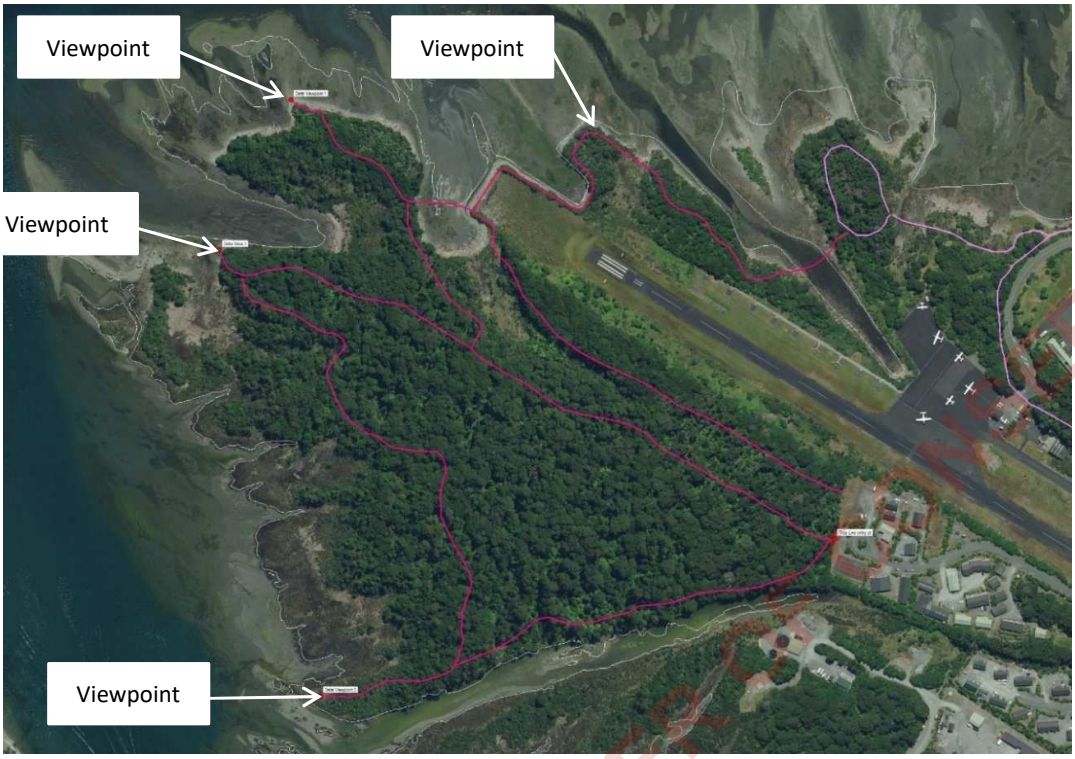

Figure 75: Aerial view of Cleddau Delta walks

Cleddau Delta Short Walks	
Length (m)	2,100m
Track Type	Short Walks
Technically Feasible	Yes
Technical Commentary	Boardwalks/bridges over low lying areas required across the planned tracks. Majority of the area is <2masl so subject to sea level rise and flooding
Key Risks	Flooding (High)
Risk Commentary	Tsunami risk in this low-lying delta, sea level rise also an impact with land all <2m above MSL
Visitor Experience Met	Yes
Visitor Experience Commentary	The current foreshore walk is a good introduction to what the Cleddau Delta has to offer. However, unlike the former, the delta offers greater remoteness, tranquillity and a sense of what it was like before human development. There are viewpoints where no built form is visible, stunning front on views of Bowen Falls and Piopiotahi and a mix of tracks to vary the length to suit the visitors available time and energy before they tuck into their lunch or dinner overlooking Piopiotahi
Structures	Numerous short boardwalks or bridges over low lying terrain.

Toilets	Existing toilets in tourist complex. No new toilets required
Construction Cost	$ 1,148,177
Annual Operating Cost	$ 66,690
Sustainability & Resilience	Sea level rise and tree fall are the main threats. This is balanced by relatively easy and short access to the site for maintenance
Other Comments	Mix of routes that combined could yield over 3km.

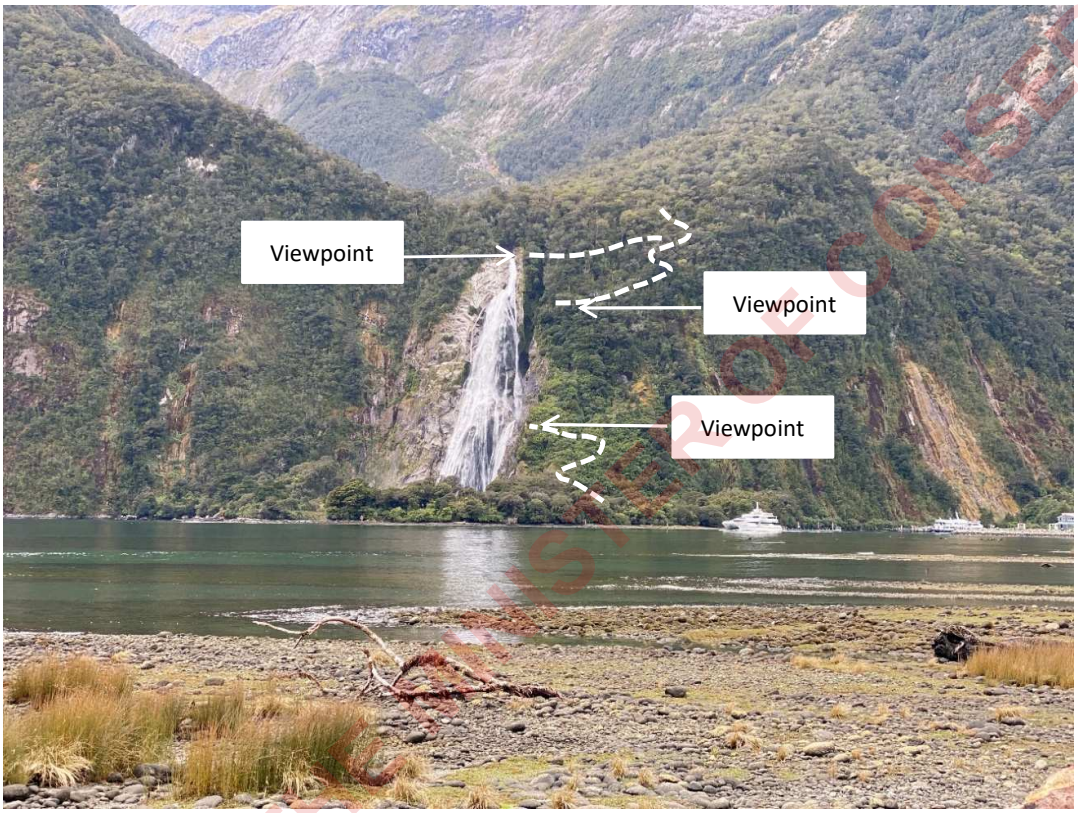

Figure 76: Delta view of Bowen Falls with tracks & viewpoints marked

4. Risks & Opportunities

4.1 Risk summary

Although covered for each assessment, the following is a snapshot of risks across the different proposals:

a. **Bridges;** This is the risk to the project that a proposed critical bridge cannot be built as proposed for reasons such as natural hazard, geotechnical (rock fall, foundations) or environmental reasons.

b. **Structures;** This overlaps with bridges, but relates specifically to other structures like shelters, huts or retaining walls and is the risk they cannot be built as proposed. For some projects these are critical.

c. **Landslides;** While this risk is a technical one to be assessed by others, we have identified potential areas where landslides may be critical to the success of the proposal.

d. **Weather;** This is the adverse impact of weather on the operation or success of the proposal. For example, adverse weather has a serious impact on tracks above the bush line which could limit success or meeting user experience expectations.

e. **People;** This is the impact the opportunity could have on the visitor group. The risks include the track being too hard or long or too close to a road and result in expectations not being met.

f. **Flood;** This is the potential impact of flooding on the proposal. Some tracks are very close to waterways and subject to more impact from flooding.

g. **Avalanche;** Is the proposal within a known or suspected avalanche path? Is there obvious evidence in surrounding vegetation?

h. **Budget;** What risk is there for the budgeted build cost? Is there a likelihood it will increase during detailed design or construction due to less well understood conditions?

i. **Maintenance;** Is there a risk the maintenance costs will be significant or are they consistent with similar tracks? Does the user group have an impact on maintenance costs?

4.3 Further Commentary on Track & Trail Risks

4.3.1 Bridges & Structures

Two large (80-100m) suspension bridges are integral to the preferred cycle trail route. Without the two bridges over the Eglinton River the true right route is not viable. The alternative route along SH94 avoids these bridges but requires sections of trail on the very steep and eroding sides of the road along the Eglinton River. NZTA are currently in the process of realigning a section of highway that will provide some resilience while the other erosion site requires a bridge.

There will be numerous small bridges and possibly retaining walls (stone, gabion or timber) that will be necessary to support the track or its batters. Until detailed design is completed this risk can only be estimated from ground contours and known solutions for similar tracks. Retaining walls are not considered to create viability risks, only maintenance risks.

4.3.2 Steep slopes

Only a small amount of the cycle trail crosses steep terrain, but construction of a bench in a high rainfall environment on steep terrain always presents difficulties and can result in track formation instability that can increase costs to build and more importantly, operate and maintain the tracks. The Paparoa Great Walk has had a number of these semi-active slumps. Typically, the track formation settles over time, but the risk remains during construction and particularly for the first 3-5 years after construction and repairs to maintain the bench should be expected.

4.3.3 Swamps

These are expensive to cross and much of the Eglinton Valley is gently sloping and swampy. The track alignments have been placed to avoid these where possible. Known solutions (boardwalk ideally) are available provided these can meet the required environmental requirements.

4.3.4 Sections next to the road

Short sections of the Eglinton Valley cycle trail will be in close proximity to SH94. This has the potential to impact the overall experience if the trail is not designed carefully to ensure the most pleasurable experience.

4.3.5 Congestion risks

Potential to increase vehicle movements at the key access points including:

Te Anau Downs, Smithy Creek and Black Creek and other existing pull overs, camping and parking areas along SH94 from Walker Creek to and including Ōtāpara Cascade Creek. Figures supplied by DOC and presented in the MOP Stage 2 Tourism Report indicate that Ōtāpara Cascade creek campsite has experienced a significant increase in use. It is highly likely that if the trail ends at Ōtāpara Cascade creek that a percentage of the riders and walkers will choose to stay at the camp and add to the existing capacity pressures.

4.3.6 Avalanche risks

We have reviewed data supplied by the Milford Road Alliance together with aerial photos that depict the impacts of avalanches on vegetation patterns e.g. absence of mature forest usually indicates avalanche activity. Further assessment at detailed design is recommended. The following are tracks considered to have a risk from avalanche hazard.

4.3.6.1 Key Summit to Cascade Creek Track

While most of the ridge is likely to be below the elevation and slope angle threshold for avalanche activity, the area can hold significant snow and the descent to Ōtāpara Cascade Creek is likely to cross avalanche terrain. The track standard assumes experienced trampers would use this route. To minimise the impacts of avalanches, clear hazard signage will be necessary at the start and end points

4.3.6.2 Milford Sound Lodge to Tutoko River Bridge Track

This track maybe subject to a plunging avalanche which could occur with a return interval assumed to be 15 years based on data supplied by Milford Road Alliance.

4.3.6.3 The Chasm to Cleddau Horse Bridge Track

Outside of the road corridor, the Chasm to Cleddau Horse Bridge Track is within what appears to be an avalanche runout zone and it would be prudent to confirm this likelihood before progressing this option further. Additionally this track may permit visitors to go around the Milford Road closure barrier located just north of The Chasm Car Park. Further engagement with Milford Road Alliance is recommended.

4.3.6.4 Gertrude Valley Loop Track

This track is at an elevation of 800m, and the surrounding valley walls rise to over 2,200m with large snow field catchments above the valley. Mature vegetation across most of the track line would suggest there have not been any recent avalanches across the proposed track alignment. However, it would be prudent to review the hazard for this track in greater detail.

4.3.6.5 Hinepipiwai Lake Marian Loop Track

This new track appears to be exposed to similar hazards to the existing track. Given the steep sided valley walls and large snowfield catchments above it would be prudent to review the hazard for this track from both avalanche, rock fall and vegetation debris flows.

4.3.7 Other Risks

As already noted for some opportunities, risks such as opportunity or activity day length, weather or exposure to the weather and terrain, especially the steepness or amount of climbing are all risks that can adversely impact the visitor experience. Key Summit to Cascade Creek and Bowen Falls viewpoint walks both have potential to push visitors outside their comfort zones and deliver less positive experiences and could lead to visitor risks.

4.4 Opportunities

Table 10: Key Opportunities

KEY:
X = Minor opportunity
XX = Moderate opportunity
XXX = Major opportunity

		OPPORTUNITIES						
#	Proposal Name/Type	Stunning Scenery	Unique place	Remote ness	Wilder ness	Habitat	Geology	Commentary
1	Te Anau Downs to Black Creek Cycle Trail	XX	XX	XX	X	X	X	True right of Eglinton River offers a remote wilderness experience, Cryptic Lake is unique to the trail, plenty of beautiful forest and swamps to showcase habitats, geology related to Limestone Gorge and glacial outwash mounds (Kime) can be showcased too. The two large bridges will be a highlight as well.
2	Te Anau Downs to Black Creek cycle trail via SH94	X			X	X	X	While much of the route is along the margins of the highway there are opportunities for stunning views across the glacial outwash plains, towards the Murchison Mtns and up the Eglinton Valley from west of Boyd Creek, plenty of ways to showcase the habitat or geology of the area as part of the trail
3	Black Creek to Cascade Creek Cycle Trail	XX	X	X		X	X	Eglinton Valley scenery and the forest habitat together with interesting glacial landforms hidden in the forest are obvious opportunities, close proximity to road erodes some remoteness, interesting & isolated upper river gorge currently inaccessible
4	Cascade Creek to The Divide Cycle Trail	XXX	XX	X			XX	Major cliffs are a feature of the western shore of Ōtāpara Lake Gunn together with Melita Falls & stunning views up to Key Summit, it's quite remote feeling with the lake separating users from the rest of the world, clear geology is part of the track story, and the rock face bridges will be a draw card unmatched in NZ
5	Countess Range Track & 40 bed Hut - Easy Tramping Track	XXX	X	X	XX	X	XX	The scenery and overnight experience only a few hours from the road are the major draw cards. There is also interesting and varied habitat on the alpine tops to explore and share with visitors
6	Countess Range Track & 20 bed Hut - Advanced Tramping Track	XXX	X	XX	XX	X	XX	As above but the smaller hut footprint reduces the visual impact on the alpine scenery. Lower standard track has a similar impact on the tops travel.
7	Eglinton River Trail	X						First taste of Fiordland scenery for most visitors getting access by road
8	Knobs Flat Short walks		X	X		X		Waterfall track is very pretty, feels remote for a 20 min walk, forest would provide opportunity for habitat to be showcased

9	Key Summit to Cascade Creek Track - Easy Tramping Track	XXX	XX	X	X	XX	X	Outstanding rocky ridge with 360-degree views, little lakes, herb fields and more. It's an environmental showcase with remoteness and wilderness all just 2 hrs from The Divide, unique easy Fiordland tops travel not offered anywhere else
10	Key Summit to Cascade Creek Track - Advanced Tramping Track	XXX	XX	X	X	XX	X	As above
11	Hinepipiwai Lake Marian Loop Track - Easy Tramping Track			X	X	X		The true left will offer some remoteness and wilderness similar to the Hinepipiwai Lake Marian Track above the waterfalls.
12	Covered Nature Trail	X						There are nice views of the Hollyford River, but none are stunning & the river is not exciting like Marian Creek waterfalls
13	Pass Creek Link Track - Easy Tramping Track			X	X	X		A sense of remoteness and wilderness is the main drawcard of this track
14	Gertrude Valley Loop	XX		X		X	X	A rare alpine track within easy reach getting the bulk of visitors to an alpine view within 15 minutes, chance to tell story of the mountains, glaciers, alpine forest and vegetation and the forces shaping it, chance to address longstanding issues with Homer Hut through dedicated node (water & toilets)
15	The Chasm to Cleddau Horse Bridge Track	X		XX	X		X	The Chasm and the Horse Bridge provide the bookends to this short walk, both start and end have a story to tell, the track linking includes some interesting regenerating forest, views of stunning deep blue pools plus exciting rock face bridges that speak to the glacial past
16	Milford Sound Lodge to Tutoko River Bridge Track			X				A pleasant walk to while away the afternoon before you sit down to dinner at the Milford Sounds Lodge
17	Barren Peak Spur Track	XX					XX	This is all about the view and the geology you can see from up high. Chance to boost use and experience by going higher and making the track better, also chance to improve interpretation of the geology

18	Cleddau Delta Walks	XX	X	X				Stunning scenic viewpoints from the northern tips plus a sense of quiet and remoteness within only a few minutes of the bustling heart of the place. Easily accessible option is realistic
19	Hine-te-awa Bowen Falls – Lower Walk	XXX	X				X	A stunning, dynamic waterfall experience within easy reach, add a stairway to the mid-level and the speed and fury of the waterfall is unleashed.
20	Hine-te-awa Bowen Falls – Upper Walks	XXX	X				X	The best view of the sound is from the top but the best view of the falls is from the bottom

5. Recreation Values Assessment

5.1 Introduction

5.1.1 Brief & Purpose

As part of assessing the technical feasibility of the opportunities contained in the Masterplan Southern Land has been engaged to establish existing recreation values along the Milford Corridor and at Milford Sound Piopiotahi, and at a high level determine the effects, both positive and negative of the proposals on existing recreation values and recreational users.

Detailed background information on existing recreational use is contained in the Masterplan Stage 2: Tourism Report (Tourism Report) prepared by Visitor Solutions Ltd & Fresh info Ltd, and readers are encouraged to consult this report should they seek greater background understanding.

This assessment does not examine the potential impact of the proposed managed access system on existing recreation values.

5.1.2 Scope

This assessment centres on existing recreation activities, i.e. things to do when recreating, and the recreation values i.e. those elements that make the different recreational activities of value or desirable for recreation.

Recreation values encompass things such as personal achievement and fulfilment, sense of place and personal progression or development and are enabled by such things as the thrill, challenge, tranquillity and camaraderie. Recreation activities occur in tandem with recreation facilities which includes access, facilities like tracks and structures as well as natural resources like trout, game animals, forests, lakes and mountains.

5.1.3 Methodology

Thie report is based on a number of site visits across the study area, review of Milford Opportunities Masterplan reports, review of past records of stakeholder engagement and any more recent engagement with key stakeholders by MOP, review of the recent Pike29 Memorial Track Recreation Assessment prepared by DOC, and observational surveys during site visits.

5.1.4 Management Plans

The relevant statutory management documents are:

- Fiordland National Park Management Plan 2007, and
- Southland Murihiku Conservation Management Strategy 2016

The Fiordland National Park Management Plan 2007 (Management plan) sets out the objectives for management of the national park. The Southland Murihiku Conservation Management Strategy (CMS) 2016 covers all Public Conservation Land within the Southland Conservancy. All of the opportunities are contained within the Southland Conservancy either in the National Park or within other public conservation land managed under the CMS. The Management Plan is the statutory document of relevance to the existing recreational opportunities within the majority of the project area and the types of users and their expectations. The Countess Range Hut and a portion of the

track is the only opportunity outside of the national park being located in the Mavora Lakes stewardship area.

The management plan includes detail around existing visitor use (as at 2007) including mapping and detailed text outlining the different visitor groups and settings within the park. Map 7 below shows this graphically and we summarise the project area as follows:

- Milford Road SH94 corridor, Hinepipiwai Lake Marian Falls Track and the Hollyford Road is within the 'front country' setting,
- Routeburn Track and northern section of Key Summit Ridge is within the High-use tracks setting
- The Eglinton Valley walks including the true right bank to Lake Te Anau and southern Earl Mountains, Hinepipiwai Lake Marian Track above the falls, Countess and Southern Livingstone Range and Gertrude Valley are all 'back country' setting
- The remainder of the project area is managed as a 'remote' setting including the Countess Range Hut.

The Management Plan was due for review in 2017 and the current plan reflects the recreation values at the time of writing in 2007. It is noted that recreation values change over time and particular examples are the boom in popularity of cycling and mountain bike use together with new sports such as canyoning and park rafting.

Some of the proposals in the Masterplan will be inconsistent with the current management settings and a response to this is being prepared by other MOP workstreams.

The proposals fall into front country, high-use tracks, back country and for the Countess Range hut, remote settings.

These are described with the following objectives:

- Back country; To provide opportunities for a variety of recreation experiences in a natural setting that may be challenging but can be accessed relatively easily
- High use tracks; 1. To manage high use track corridors for optimum levels of use while protecting natural values and recognising the specific attributes of each and their value to less experienced walkers; 2. To protect these tracks as overnight, multi-day walking opportunities and to minimise conflict with other competing uses / demands.
- Front country; To provide opportunities for predominantly passive to mildly active recreation activities with high vehicle accessibility
- Remote; To provide a true wilderness experience for self-reliant trampers, hunters and mountaineers with very few interactions with other visitors and no facilities.

MAP 7. VISITOR SETTING

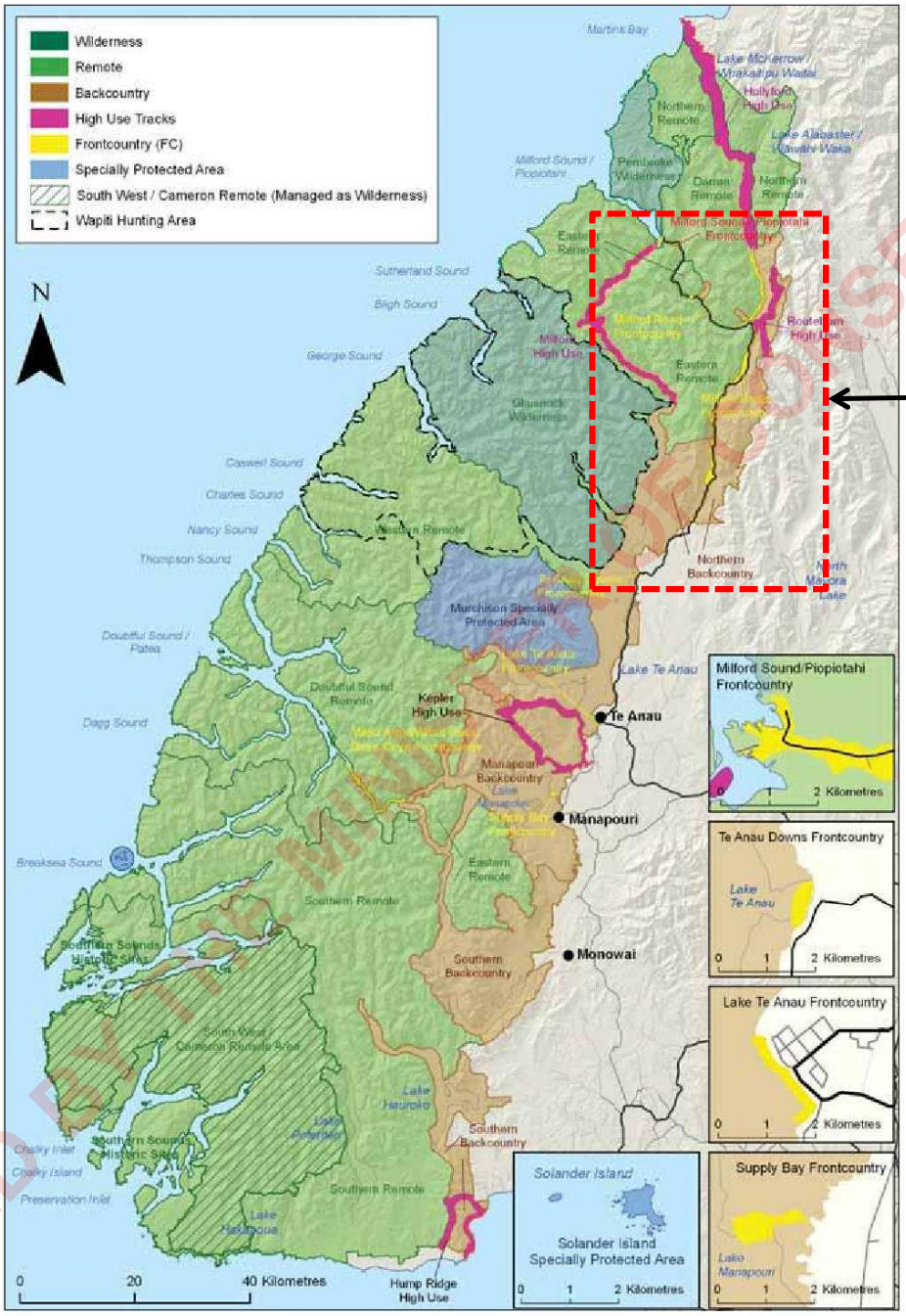

Figure 77: Fiordland National Park Management Plan visitor settings

5.2 Existing Recreation Use

5.2.1 User groups & descriptions

The following recreation activities occur across the project area:

- **Tramping:** multi-day walking into backcountry areas and track networks along marked tracks and unmarked routes, including along the higher use Great Walks.
- **Walking:** short to full day walks along marked tracks to a range of attractions including some very popular sites.
- **Climbing:** bouldering through to multi-day trips predominantly in the Darran Mountains along the Milford Road.
- **Nature / scenic observation:** either in front country or backcountry locations for passive enjoyment sometimes in association with activities such as photography.
- **Hunting:** Hunting for introduced game animals (such as deer, chamois, pigs & occasionally geese).
- **Fishing:** Fresh and saltwater fishing for a diversity of species using a range of fly fishing, spinning, surfcasting, boat and game fishing tackle.
- **Diving and snorkelling:** for both seafood gathering and nature observation purposes.
- **Sailing, boating, kayaking and jetboating:** on coastal and inland waterways for the activities themselves and for access to other activities.
- **Pack Rafting:** Tramping into remote areas with inflatable mini-rafts and then traveling down rivers/along lakes etc either for activity itself or for including water-links in longer walks. e.g. the Limestone Gorge on the Eglinton River.
- **Mountain biking and cycling:** on defined roads (not trails) in the National Park (e.g., Milford Highway, Hollyford Road) with trail options connecting Manapouri and Te Anau and planned to extend Te Anau Downs.
- **Camping:** Varying levels of overnight camping at defined campsites along the corridor and in backcountry areas.
- **Canyoning:** Various ravines and canyons explored using abseiling, swimming and climbing within the National park.

Of the users, the Tourism Report[2] highlights the following data:

> *4.16 There was a predominance of international visitors (typically around 90%), with exceptions of higher NZ % proportions among Private Boaties (82%, Booth 2010) and Homer Hut/Darran Mountains users (61%, Oyston 2010b), and to a lesser extent among Key Summit users (21%, DOC 2019b) and Deepwater Basin users (19%, DOC 2019a).*
>
> *4.17 Virtually all visitors were first timers (>90%), with the highest repeat visitor exceptions being among Private Boaties (80%, Booth 2010); Hunters, Climbers and Trampers (55%, Booth 2010); Homer Hut/Darran Mountain users (52%, Oyston 2010b) and Deepwater Basin users (32%, DOC 2019a)*

[2] Visitor Solutions Ltd & Fresh Info Ltd 2021. Milford Opportunities project*: Tourism Report*. Prepared by Visitor Solutions Ltd & Fresh Info Ltd for Milford Opportunities Project

5.2 Site Specific Recreation and users

For each proposal we have identified activities that are already occurring or are likely to occur either at the site or in the general vicinity and present these in the table below.

Table 11: Existing activities at each proposal site/vicinity

	Activity								
Proposal Name	**Walking**	**Tramping**	**Climbing**	**Pack rafting**	**Sightseeing & nature**	**Hunting**	**Fishing**	**Camping**	**Other**
Te Anau Downs to Black Creek Cycle Trail		X		X		X	X		
Te Anau Downs to Black Cr via SH94 Cycle Trail					X	X	X	X	Cycling along SH94
Countess Range Track & Hut		X				X			
Eglinton River Trail				X	X		X		
Knobs Flat/Kiosk Creek	X				X			X	
Black Creek to Cascade Creek Cycle Trail	X	X		X	X		X	X	Cycling along SH94, boating
Key Summit to Cascade Creek Track	X	X			X	X	X	X	
Hinepipiwai Lake Marian Loop Track	X				X				
Hinepipiwai Lake Marian Covered Nature Trail	X				X				
Gertrude Valley Loop Track	X	X	X		X				
Chasm to Cleddau Horse Bridge Track	X			X			X		
Milford Sound Lodge to Tutoko River Bridge				X	X		X		
Barren Peak Spur Track	X				X				
Cleddau Delta Tracks	X			X	X		X		
Bowen Falls lower	X			X	X				Kayaking, boating
Bowen Falls upper		X	X						

The above recreation activities are undertaken in a variety of ways from self-guided activity by remoteness seekers to fully catered, guided tours for short stop travellers.

5.4 Concessionaries activities within the Project Area

Data supplied by DOC indicates there are a large number of concessionaires operating along the Milford Road corridor and the proposals are likely to have impacts on their existing activities.

Table 12: Existing concessions within Project Area

Recreation Concessions	Concessions	Concession Numbers	Notes (Milford sites, many Corridor Sites, some beyond)
Guiding	176	216	23 multiple concession holders (larger companies have more individual activity concessions e.g., Real NZ, Fiordland Outdoors Company, Tourism Milford), and others for mostly short walks on tours/packages, some for specialist recreation activities – kayaking, packrafting, photography. Many can also include land transport services (as part of guided/led tours).
Vehicle	23	23	For short-stop sites used by coach/shuttle passengers- with some carpark-only uses, and a few other types (e.g., vehicle relocations).
Marine Mammal Watching	16	16	All mainly Boat Cruises, some kayak.
Filming/ Photography	5	5	Various photography tours/workshops.
Boating (non-tour/cruise)	5	5	Water taxis, charter services, private diving, barges
Events	1	1	Routeburn Classic
Total recreation concession holders	*259*	*319*	*(some holding multiple types and multiple concessions/type)*

(data from DOC permissions database)

The Tourism report notes:[3]

> *Larger visitor numbers appear to be associated with concessions to use The Chasm walk, and the short-stops at Mirror Lakes, Monkey Creek, Homer Tunnel*. Other sites are included in many concessions but are much less visited. The predominant Visitor Group represented here are 'Short Stop Attraction' Visitor*

** The Homer Tunnel nature walk has been closed since 2013*

Short stop activities usually form part of a longer journey to Milford Sound Piopiotahi. Concessionaries also operate extensively on day walks in particular Key Summit and Hinepipiwai Lake Marian walks with the numbers of concessionaires shown in the table below sourced from the Tourism Report[2].

In general, more opportunities for walking or cycling give concessionaries a greater range of offerings and options for their guests and therefore contribute positively to their use. However, for

[3] Visitor Solutions Ltd & Fresh Info Ltd 2021. Milford Opportunities project*: Tourism Report*. Prepared by Visitor Solutions Ltd & Fresh Info Ltd for Milford Opportunities Project

niche providers of nature tours where peace and tranquillity are inseparable for the experience there could be a reduction in visitor experience pushing these concessionaires to seek out new areas for their clients. The Tourism Report[4] does not contain specific data on this effect.

Table 13: Milford Sound Piopiotahi Recreation Concession Sites[4]

Milford Sound Area Sites	No. of Holders	Concession Purposes
Milford Foreshore Walk	70	Primarily for short walks at Milford Sound Piopiotahi
Milford Sound Lookout Walk	48	Primarily for short walks at Milford Sound Piopiotahi
Milford Airport	47	Aircraft landings for boat trip/scenic flight options, some private options
Tutoko Valley/Bridge	16	Primarily for short stops/breaks on trip to Milford (e.g., coach/shuttle/tour)
Milford Marine	14	Boat cruises – scenic, wildlife, overnights, diving
Milford Track	12	Doing the whole track, guiding services
Milford Track (Sandfly Point)	4	Day/short walking options from Milford Sound Piopiotahi
Bowen Falls	3	Primarily for short walks at Milford Sound Piopiotahi
Cleddau River	1	Short guided walks in area
Grave Talbot Track	1	Primarily for short walks into nearby valleys/alpine areas

Table 14: Milford Road Corridor Recreation Concession Sites[4]

Milford Road Corridor Sites	No. of Holders	Purposes
The Chasm	125	Short stops/breaks on trip to Milford (e.g., coach/shuttle/tour)
Mirror Lakes	113	Very short stops/breaks on trip to Milford (e.g., coach/shuttle/tour)
Ōtāpara Lake Gunn	70	A tour option for part-day walks, linked to Ōtāpara Cascade Creek camping, not short stop visits.
Hollyford Track/Valley	58	A tour option for day walks, some full walk longer options
Routeburn Track	53	A tour option for part day/day walks, some full walk longer options, linked to Key Summit day use. Not short-stop visits.
Hinepipiwai Lake Marian Track - Lower	48	A tour option for shorter stops/day walks (short/easy walk option)
Homer Tunnel Area	41	A tour option for part-day/day walks – shorter/easier and full track
Upokororo Eglinton Valley, Flats, River	31	Various guided walking, kayaking, fishing, packrafting options in Eglinton Valley (and East Eglinton), some short stop visits by coaches.
Key Summit	30	For guiding on day walks up to scenic ridgeline lookout
Monkey Creek	26	Primarily for short stops/breaks on trip to Milford (e.g., coach/shuttle/tour)
Gertrude Valley	24	Guiding on short/part day walks up valley / photography
Ōtāpara Cascade Creek	16	Camping and part day walks (Lake Gunn), not short stop.
Knobs Flat	16	Various guided walking, kayaking, packrafting options in Eglinton and around Knobs Flat, short stop visits by coaches.
Gertrude Saddle	16	Guiding on day walks up valley to scenic saddle / climbing / photography
Hinepipiwai Lake Marian Track - Upper	13	A tour option for longer/part day walks (full/harder walk option)
Dore Pass	12	Guided alpine trips to Pass or fully over it to Milford Track.

[4] Visitor Solutions Ltd & Fresh Info Ltd 2021. Milford Opportunities project*: Tourism Report*. Prepared by Visitor Solutions Ltd & Fresh Info Ltd for Milford Opportunities Project

Te Anau Downs	12	Access to Milford Track (full walk/day trips), areas across Lake Te Anau
Lake Mistletoe	12	Guided short walk option around lake
Pops View	10	Primarily for short stops/breaks on trip to Milford (e.g., coach/shuttle/tour)
Glade Wharf	7	For Milford track use or day/short walking options
Milford Track (Glade Wharf)	6	Day/short walking options
Deer Flat	6	Primarily campsite, some short walks
Falls Creek	4	Guided alpine day walks
Mistake Creek	4	Guided alpine tramping trip loop with Hut Creek
Hut Creek	4	Guided alpine tramping trip loop with Mistake Creek
Boyd Creek*	2	Guided short walks/day trips

** Boyd Creek is on the southern edge of the project area*

Table 15: Usage Stats for DOC Camp sites within the project area[5]

(YE May)	**2014**	**2018**	**2019**	***# Change over last 5 years 2014-19***	***# sites^***
Ōtāpara Cascade Creek	4,507	35,901	36,745	*32,238*	*120*
Deer Flat	211	3,421	2,940	*2,729*	*15*
Totara Flat	627	1,788	1,833	*1,206*	*20*
Mackay Creek	693	1,269	1,342	*649*	*20**
Kiosk Creek	361	1,412	1,323	*962*	*10*
Upper Eglinton	449	1,338	1,124	*675*	*3*
Walker Creek	187	512	429	*242*	*5*
Total DOC Campsites	10,837	55,873	55,907	*45,070*	*193 sites*

** Flooding in Sept 2023 has cut access to this campsite & this campsite is now closed.*

^ Data sourced from DOC website Jan 2024

5.5 Visitors to Existing Tracks

Table 16: DOC Visitor Activity Counter Records (10yr)[5]

Track Name	**2016**	**2017**	**2018**	**2019**	**# Change over last 10 years**	**% change**
Hinepipiwai Lake Marian Track - Waterfalls	13,206	37,418	40,918	78,531	***52,784***	***205***
Hinepipiwai Lake Marian Track - Upper	912	4,695	17,240	54,542	***40,945***	***301***
Key Summit Track/Nature Walk	48,416	50,653	52,351	44,854	***7,480***	***20***
Routeburn, Harris Saddle	23,236	13,252	14,224	17,778	***6,584***	***59***
Gertrude Valley Track	7,252	8,598	8,933	11,805	***8,490***	***256***
Hollyford track (road end)	5,619	6,052	5,662	5,713	***1,431***	***33***
Greenstone Track, McKellar Hut	1,664	1,768	2,363	2,256	***-1,321***	***-37***
Key Summit (ridge route)	1,736	2,325	2,194	2,076	***-574***	***-22***

[5] Table 12: Visitor Solutions Ltd & Fresh Info Ltd 2021. Milford Opportunities project*: Tourism Report*. Prepared by Visitor Solutions Ltd & Fresh Info Ltd for Milford Opportunities Project

5.6 Self-guided Recreationists

The Tourism Report summarises[6]:

> *'Recreationists' were typically engaged in activities other than visiting Milford Sound Piopiotahi to make a boat trip (usually New Zealand Residents/new Zealanders/private activities). They were instead largely focused on independent recreation activity and/or using sites and areas more associated with access via the Milford Road Corridor than from Milford Sound Piopiotahi itself.*

The predominant activities self-guided recreationists undertake are tramping, walking, camping, climbing, mountaineering and hunting. Most New Zealand residents undertake self-guided activities.

These recreation activities occur across the project area and often (but not always) utilise existing parking and access points as these often offer faster access to their chosen activity in the back country.

5.7 Effects on Existing Recreation Users

This section describes the general benefits and impacts across the proposals and project area and is followed by proposal specific assessments.

Methodology

- Identification of the recreational activities and settings potentially affected
- Site visits by the author
- Key stakeholder feedback
- Review of existing similar projects and their effects on existing recreation values
- Alternative options

5.7.1 Positive & negative impacts

The proposals will create new opportunities for all visitors to access the front country along the road corridor and give experiences across the spectrum from easy short stop activity to overnight stays in the alpine zone. As the majority of visitors to the area are first timers, the creation of more tracks, a cycle trail and huts is considered to have a significant positive effect on people's enjoyment of the area and will encourage more people to stay longer.

Positive impacts include:

- Increased economic activity from longer stays in the Te Anau and Milford Sound Piopiotahi area [7]

[6] Visitor Solutions Ltd & Fresh Info Ltd 2021. Milford Opportunities project*: Tourism Report*. Prepared by Visitor Solutions Ltd & Fresh Info Ltd for Milford Opportunities Project

[7] Te Anau Downs to Cascade Creek Trail, Impact Assessment, 26 July 2023, Angus & Associates for Milford Opportunities Project

- Easy cycling experience in mature beech forest which is rare in NZ so would be a significant draw card for cyclists
- Cycle trail extension to existing network increasing the duration and variety of riding experiences on offer in the area
- Easy to challenging day walking experiences that complement existing short and day walks along the Milford Road corridor
- An overnight walk experience to a sub-alpine hut that is currently not available within the area and in our opinion would rival other similar experiences nationally
- Greater access to the front and back country for tramping and hunting (note this can also be a negative impact for those seeking a remote experience)
- Greater access to the margins of fishable rivers for fly fishing

Negative impacts include:

- A reduction in wildness and remoteness wherever a new track is built, particularly the cycle trail with a forecast 58,000 visitors in its first year of operation
- More people in more places reduces natural quiet and tranquillity that cannot be re-created especially within easy reach of the road
- Environmental impacts including to terrestrial ecology and landscapes resulting from implementing the proposals
- Displacement of existing users where a new proposal overlaps an existing use e.g. Key Summit to Cascade Creek overlaps with an existing tramping opportunity
- Increased congestion at existing access, parking and camping areas where new proposals interact e.g. Ōtāpara Cascade Creek camping with cycle trail and tramping tracks
- Increased congestion on existing tracks that form part of the proposals e.g. Marian Loop and Key Summit

Negative impacts from the proposal all result from more people gaining more access to the front country adjoining the road corridor and making inroads into existing back country or remote areas. If one looks at the current spread of tracks, they are spaced along the road corridor with large areas in-between with little or no formal access. In these latter areas people can easily gain access to a remote experience within a short distance/time of the road. With the increase in number of tracks, these areas of remoteness will be reduced.

The displacement of existing users is particularly difficult to mitigate. Over the past 20 years tracks have been developed in many parts of New Zealand that provide access to new recreation opportunities for more people. But for the people already using these areas it can be a bitter pill as the remote areas they choose to recreate in become harder to find or access. Once lost this is hard to regain. This type of impact has been raised by interest groups like Federated Mountain Clubs and individual tramping and mountaineering clubs.

5.8 Activity Specific Impacts

The following is an assessment of the impacts that are specific to the different recreation activities.

5.9.1 Walking

New walking opportunities provide positive effects by broadening the range of options for visitors. Upgrading existing walking tracks to higher standards may increase visitor numbers as it opens up the opportunity to a wider range of users. Conversely upgrades may reduce the experience for existing track users through reducing the interest in the walk (smoother, flatter, less challenging) and increasing user numbers which is often associated with more negative experiences. But given the overwhelming number of first-time visitors[8], it is likely that any upgrading of tracks will affect only a very small number of users, mostly New Zealand residents who have previously visited the area.

Existing walking opportunities in the project area can be found here:

> https://www.doc.govt.nz/parks-and-recreation/places-to-go/fiordland/places/fiordland-national-park/?tab-id=50578

5.8.2 Tramping

Tramping, that uniquely New Zealand activity, is about getting into the 'back country' away from most others. Trampers generally seek remote experiences, and their experiences are adversely impacted by noise (aircraft), other people especially where there are numerous encounters in any given day, vehicles and large huts catering to road end overnight users. The Milford Road corridor provides access to many tramps and some of the proposals will allow day visitors to proceed further into the hills meaning it could take longer to get to the 'true' tramping experience e.g. Key Summit to Cascade Creek. The Tourism Report articulates this as follows[9]:

> *6.119* ***Visit sensitivities / outcome desires:*** *Looking to avoid other visitors and crowds; prefer less developed facilities and sites; does not mind meeting occasional other trampers along the way; only occasionally bothered by aircraft (usually helicopters) as they avoid areas nearer the main flightpaths; aim to have mainly 'wilderness' types of trip experiences; usually incorporating social time with similar tramping friends.*

5.8.3 Climbing

Fiordland and in particular the Darran Mountains has been a mecca for climbers for generations. The biggest impacts on climbers and climbing is increased noise (aircraft especially) and more people in and around the approaches to climbs. For this project the biggest impacts could be expected at Homer Hut where Gertrude Saddle users start and finish their journeys. None of the other proposals are in close proximity to climbing routes. Additionally, climbing is a very weather and conditions dependent activity. Climbers need to be able to make a decision when the conditions are right and gain access to their chosen route with ease at all hours.

[9] Visitor Solutions Ltd & Fresh Info Ltd 2021. Milford Opportunities project*: Tourism Report*. Prepared by Visitor Solutions Ltd & Fresh Info Ltd for Milford Opportunities Project

The Tourism Report[10] articulates the desires of this user group as follows:

> *6.113* ***Visit sensitivities / outcome desires:*** *Does not mind other visitors if not getting in the way of desired experiences; in most cases prefers areas with lower numbers of other people and/or activities; would prefer fewer aircrafts around the tops and people wandering around near Homer Hut; meeting climbing challenges; sharing Homer Hut with friends and other climbers; freedom/flexibility of access.*

5.8.4 Packrafting

A relative newcomer to the outdoor adventure scene, packrafting allows participants to combine walking/tramping and rafting. The Packrafting NZ website lists numerous options in the Fiordland area including the Eglinton and Hollyford Valleys. Creating more tracks is likely to provide increased opportunities for pack rafters to gain access to rivers. However, it has the potential to impact the sense of quiet often enjoyed while on a river especially if the tracks are built in close proximity to the river margins. Overall, we consider the impacts to generally be positive due to the enhanced access to more rivers.

https://www.packraftingtrips.nz/eglinton-river-i-ii-mackay-creek-to-lake-te-anau/

5.8.5 Sightseeing and Nature

Overcrowding is a particular issue when trying to enjoy the scenic grandeur or appreciate the habitat and environment of our surroundings. Noise, congestion and movement all detract from the experience. Anything that directs more people to more places has the potential to reduce the value of the experience. Equally, providing more track options creates more opportunities to admire the natural world. This is expected to offset the potential adverse effects.

5.8.6 Hunting

Much like tramping, hunters prefer their own company and it can be safer that way. Any increase in the distribution of people by creating more tracks into the front country reduces the areas hunters can legitimately and safety hunt. Fortunately, almost all tracks are proposed in areas where hunting is currently limited or is not permitted as its too close to roads or existing tracks. On the positive side, tracks provide quicker access to back country terrain suitable for hunting. The Countess Range track may provide improved access for hunting as could the Te Anau Downs to Cascade Creek cycle trail.

The Tourism Report[10] articulates the desires of this user group as follows:

> *6.107* ***Visit sensitivities / outcome desires:*** *Doesn't mind other visitors if not getting in the way of desired experiences; in most cases prefers areas with lower numbers of other people and/or activities; opposes any significant constraints to access as a local/ New Zealander (such as strict managed vehicle access); dislike the plane noise when at Milford; overall highly values the ability to regularly access the back-country areas via front country access points without any constraints that undermine his freedom/flexibility of access.*

[10] Visitor Solutions Ltd & Fresh Info Ltd 2021. Milford Opportunities project*: Tourism Report*. Prepared by Visitor Solutions Ltd & Fresh Info Ltd for Milford Opportunities Project

https://www.doc.govt.nz/parks-and-recreation/things-to-do/hunting/where-to-hunt/fiordland/fiordland-hunting/what-to-hunt/

5.8.7 Fishing

Fishing, in particular fly fishing, is a huge industry in New Zealand and fishers regularly fish the Eglinton and Hollyford Rivers. Its easily accessible from the road and there is a significant length of river providing plenty of opportunities for fishers. Fishing access is administered by Fish and Game onsite via information boards that detail fishing reaches and etiquette. This is supported by online information https://fishandgame.org.nz/freshwater-fishing-in-new-zealand/

Increasing visitor numbers to near the margins of waterways has the potential to disturb fish and fishers and any structures (bridges, shelters) have the potential to create adverse visual impact. This was a key concern of Fish & Games Submission on the Upper Oreti Cycle Trail[11]. To avoid this the proposed tracks have been positioned well back from riverbanks where possible. It is anticipated that the tracks will improve access for fishers especially on the true right of the lower Eglinton River, which may balance out the potential for conflict with other users.

More tracks giving better access has the potential to increase competition for the best fishing reaches. As a reach can generally only be fished once a day this may lead to conflict within the fishing community. Given how easily accessible the Eglinton River is from SH94 between Walker Creek and Ōtāpara Cascade Creek these areas are already heavily fished. The cycle trail on the true right will provide better access to the true right bank and will extend the range of most fishers from the East Branch to the river mouth, opening up an additional 10km of easily accessible riverbank.

The Tourism report[12] articulates the desires of this user group as follows:

> *6.131* ***Visit sensitivities / outcome desires:*** *Enjoys the solitude of fly fishing the mountain rivers; does not mind a few encounters with others if not too many or too long; prefers more natural settings and the Eglinton is easy country to get around in.*
>
> https://www.fiordland.org.nz/community/blog/fishing-in-fiordland/

5.8.8 Camping

There are a numerous camping options in the Eglinton Valley managed by DOC. The main impacts for campers are increased occupancy and crowding. Ōtāpara Cascade Creek has seen a huge increase in numbers (refer data presented earlier) and with more track options in particular the cycle trail to Ōtāpara Cascade Creek it is highly probable that more people will choose to stay within the Eglinton Valley. To manage the camping experience (more crowded more of the time) some campsites in the valley are managed using the booking system. This may need to be extended to all campsites in the future. Additionally, self-supported cycle tourers (now referred to as bike packers)

[11] https://fishandgame.org.nz/news/oreti-river-valley-environment-court-decision/
[12] Visitor Solutions Ltd & Fresh Info Ltd 2021. Milford Opportunities project*: Tourism Report*. Prepared by Visitor Solutions Ltd & Fresh Info Ltd for Milford Opportunities Project

will require different facilities (tent sites, shelters, cooking areas) to camper vans who are the predominant users of camping areas.

5.9 Opportunity Specific Impacts

5.9.1 Eglinton Valley Cycle Trail

The cycle trail within the Eglinton Valley will give visitors easy access to the margins of the Eglinton River. Currently this is mostly the domain of fishers and hunters. While the proposed trail alignments have been located away from the river's edge to reduce the potential for cyclists and walkers to be within the zone of fishers, there remains the potential that people will wander off the trail to enjoy the river margins and this could adversely impact fishing.

On the positive side the trail will lead to fishers having vastly better access to a longer section of the lower Upokororo Eglinton River and this could lead to less freedom for more adventurous fishers who currently may have the less accessible areas to themselves. As a river reach can typically only be fished once per day this can lead to conflict for fishers. Existing systems as operate on the upper Oreti River can be implemented by Fish and Game to reduce fishing conflict should that need arise.

The trail from Te Anau Downs to Upokororo Eglinton River East Branch has the potential to negatively impact hunting on the true right bank of the Upokororo Eglinton River. While we do not have data on the number of people accessing this area for hunting, there is easy access from the mouth of the Eglinton River when the river is low, or with the landowner's approval from SH94 and from Walker Creek to the bush clad hills at the southern end of the Earl Mountains. However, in our opinion the negative impacts of the trail may be offset by vastly improved access to the Earl Mountains for hunters. The trail will create a much quicker, shorter and all-weather route to the hills avoiding the need to ford the Eglinton River or cross adjoining private farmland.

Signage and management controls may be necessary to ensure hunters are aware of their obligations and trail users should expect to see people with hunting equipment on the trail.

Hunting on Conservation Land requires a valid hunting permit obtainable from DOC offices. Standard conditions include:

> *No firearm shall be discharged:*
>
> - *In the vicinity of huts, tracks, campsites, road-ends or other public places.*
> - *Within 500 m of a Great Walk Hut or track. See Great Walks.*
> - *In a manner that endangers, frightens or annoys members of the public, or that endangers any property.*

It is predicted that the trail will generate approximately 58,000 visitors[10] in its first year rising to over 100,000 by 2040 ([13]). This would place the trail in the top 8 of NZCT trails nationally. This level of patronage equates to small groups (3-5 people) moving along the trail every few minutes between

[13] Te Anau Downs to Cascade Creek Trail, Impact Assessment, 26 July 2023, Angus & Associates for Milford Opportunities Project

10am and 4pm during the peak riding months of November to April. Feedback from stakeholders indicates a high level of support for a trail in the valley and the 'sweet spot' for the trail design is Grade 2 with a few challenges e.g. West Coast Wilderness Trail and Lake to Lake Trail. As such the concept design is consistent with this 'sweet spot' so should meet stakeholder desires.

The Limestone Gorge is a highly natural scenic gorge in the lower Eglinton below Boyd Creek confluence. Concern has been raised about the potential impact of a trail 'through' this location. In consideration of this natural feature the proposed trail alignment has been moved well away from the riverbank to eliminate adverse effects on this feature.

5.9.2 Countess Range Hut & Track

This proposal has been promoted by the New Zealand Alpine Club – Southland Section (NZAC – SS) in their report "*Proposal to establish an overnight tramping experience from the Milford Road onto the Countess Range".* The proposal is in response to negative feedback from their membership and that of Federated Mountain Clubs (FMC) in relation to the Mistake Creek hut proposed in the Masterplan.

Creation of an overnight tramping trip with a hut in the sub-alpine zone above the bush line is offered in other locations across the South Island such as Mt Brown near Lake Kaniere, Brewster Hut near Haast Pass and Liverpool and French Ridge Huts in the Matukituki Valley. The first two in particular are very popular with demand often exceeding supply.

The Countess Range in the vicinity of the hut and track is seldom visited according to NZAC-SS and the lack of good access has dissuaded climbing and tramping on the range. The proposed hut and track is therefore likely to displace only a very few existing hunters and trampers as the increased human presence pushes animals away and trampers will more easily spread out from the hut more frequently making hunting in the adjoining Countess Range more difficult. Given the limited existing use, and while the impact on those already recreating will be high the impact on recreation values overall is considered low.

A positive benefit of this proposal is access to a variety of easy climbing (Grades 1 and 2 – Refer "A Guide for Mountaineers" – NZAC 2018) and further tramping on the Countess Range enabled by a shorter approach. This will add to the recreation values for existing users of the area.

In relation to impacts on existing tramping opportunities we note the Boyd Creek Track ('advanced tramping track' standard) provides access to the southern Countess Range and Upukerora River for off-track tramping. We expect this opportunity to remain unchanged by this proposal. The new hut and track could also offer access to the Upukerora River.

There remain large areas of Conservation Land in and around the hut and track site to provide hunting and tramping areas relatively free from people, in particular the Livingstone Mountains.

Overall, there will be a small impact on existing activities from this proposal with the impacts in our opinion very localised.

As far as the proposed hut and its impact on recreation values, we conclude that given the low level of current use of the area for tramping or hunting, the creation of a hut will displace very few existing users. Additionally, given the relatively easy route of the walk and stunning hut location that this hut will become a must do for active travellers on a par with similar offerings noted earlier.

The Milford Opportunities Project is assessing the feasibility of this proposal under two scenarios: an 'Advanced Tramping Track' (cut, marked, hand benched where required) and 20 bunk Standard hut as proposed by NZAC-SS, and an 'Easy Tramping Track' (machine built) and 40 bunk Serviced hut, very close to the level of service envisaged by the Masterplan. We note NZAC-SS support ONLY the 20-bed hut and advanced tramping track option.

5.9.3 Knobs Flat Tracks

The proposed tracks at Knobs Flat/Kiosk Creek are expected to have a positive impact as they will create additional short walks and provide a new accessible option for visitors. Although on this we note there is an existing accessible loop at Ōtāpara Lake Gunn. This later track is planned for upgrading to be a better fit for its users.

The current visitor profile at Knobs Flat is mostly people staying at Knobs Flat or camping at Kiosk Creek, which according to existing users enjoys great afternoon sun and has nice grassy campsites.

Increasing the diversity of offerings is not likely to attract more short stop visitors according to stakeholder feedback as these existing walks are mostly used by people staying overnight. As a result, we believe the proposed trails will not displace or compromise any existing users.

By forming new tracks to connect existing informal ones, upgrading the Waterfall Track and signposting the different offerings it is likely that more self-guided visitors may stop and take advantage of these short walk opportunities.

It is expected that the additional short walk opportunities will attract more users to this node and reduce the perception of quiet currently experienced by the few visitors to the existing informal tracks.

It is noted that the Masterplan proposes a lodge and cabins be constructed in the Kiosk Creek camping area. This would reduce available camping at the node and change the user profile and would certainly create adverse effects for campers using the current site. This will displace existing campers in tents and vans to stay at other sites in the Eglinton Valley.

5.9.4 Key Summit to Cascade Creek Track

The proposed Key Summit to Cascade Creek track is likely to displace people seeking an accessible but remote 'tops tramping' experience. Key Summit ridge is arguably the easiest way to the open tops in Fiordland for intermediate trampers and is a popular trip for tramping clubs wanting to introduce people to the joys of the Fiordland tops and off-track travel. The ridge is gently contoured and offers enough challenge to be rewarding without being too high a bar to entry.

Once a track is formalised the numbers of people using the track is likely to increase significantly (54,000 people already go to Key summit & 2,500 to Hinepipiwai Lake Marian lookout) diminishing the remoteness of the tops for overnight trampers. There will remain plenty of areas on the tops for

remote camping away from the track line, but the sense of isolation will be reduced and the ability to test one's back country navigation skills will be lost.

Additionally, the Key Summit to Cascade Creek Track will increase the number of people arriving or departing from The Divide node leading to possible increased congestion. It may also increase use of McKellar Hut as an overnight option as this is easily accessed from the Key Summit ridge on an existing 'informal' track. McKellar Hut is part of the Greenstone Track which is an 'easy tramping track'. The hut has 24 bunks and currently has no booking system. Figures supplied by DOC from 2007-2019 show that occupancy over the 6 month walking season from November to April, the hut is at or over capacity on between 11-34 nights, but otherwise there is significant capacity with over 2,000 bed nights available. It is likely that people will combine a tops trip to McKellar Hut as a great 2-day one night trip. This could displace existing users or put pressure on the Greenstone-Caples Track and require a booking system. Both effects will impact Greenstone Track users.

DOC's Experience Design Plan for The Divide & Key Summit proposes significant changes at Key Summit and these may support the Key Summit to Cascade Creek Track proposal.

Alternatives:

When considering this full day walk, the Key Summit Ridge Track is 16km and includes just over 1,200m of climbing. This is a long day in the context of an 'easy tramping track' and is likely to be out of reach of most of the target user group. For comparison most easy tramping tracks are between 10-18km for a day and have less than 900m of climbing at the most (Kepler Track day 1: 13km,900m). This is likely to have two possible flow on effects.

1; people get caught out underestimating the length/time required, or

2; they decide to camp necessitating camping facilities (toilet, shelter or even a hut).

Alternatives: To address this a more achievable option would be a 3-4hr loop up onto and along the northern part of the Key Summit ridge coming back to The Divide via a new descent track for a 9km distance and 550m climb. This would also reduce the impact on the ridge 'backcountry' experience and on McKellar Hut as well as making it logistically simpler over a point-to-point track.

We consider this proposal has a moderate-high impact on existing recreation values as creation of a track will irreversibly change this accessible but 'off-track' tramp on the tops which cannot be easily replaced within Fiordland. The other 'similar' experience noted by NZAC-SS in Fiordland is between Green Lake Hut, Cleughearn Peak and Lake Monowai. For this reason and the significant length of the route we suggest that alternatives should be considered.

5.9.5 Hinepipiwai Lake Marian Loop Track

Upgrading the existing Hinepipiwai Lake Marian Track from an 'advanced tramping track' to an 'easy tramping track' is considered to have a low impact on existing users. As the majority of users are new to this experience, making the track more accessible (less roots, rocks and scrambling) will improve the walking experience for most people. There appear to be few repeat visitors to the area although there is a lovely overnight tramp to the head of the valley with views to the Lyttle Falls. The existing number of users to this track is already compromising trampers experience so it is unlikely

that an improvement in the track standard will have a noticeable difference in their experience as they aim to get to the lake and away from busier areas as soon as they can.

Hinepipiwai Lake Marian loop (new track on the true left of the creek) is considered to provide only positive effects to existing recreation values as it will reduce perceived conflict by making a one-way loop. With almost 54,000 people visiting Hinepipiwai Lake Marian annually there is a need to reduce conflict on a rough 'back country' track. This can be achieved with the loop track and other changes proposed in DOC's Experience Design Plan for the Whakatipu Trails Head node which includes this track. The accessible loop at the confluence of Marian Creek and Hollyford River (or true right of the Hollyford) will add another option for less able visitors and is considered to fit easily into the mix of offerings at this site without creating user conflict.

5.9.6 Covered Nature Trail Loop

This short accessible walk is proposed between the Marian Creek and Whakatipu-Ka-Tuku Hollyford River. An alternative option is to locate this on the true right bank of the Whakatipu-Ka-Tuku Hollyford River adjoining the Hinepipiwai Lake Marian car park. Neither site appears to contain any existing recreation opportunities and in our opinion creation of the track on either site would not create adverse impacts on existing users.

5.9.7 Pass Creek & Divide Creek Link Tracks

Pass Creek link is a proposed new track from the Hinepipiwai Lake Marian car park to the existing Pass Creek Track and does not appear to directly impact any existing users of this area. The area does not appear to offer tramping or hunting experiences. The track could provide another day walk opportunity and a link to Key Summit via the Pass Creek Track and Lake Howden for more active visitors. As with the Key Summit to Cascade Creek Track, this could feed more people to Key Summit and The Divide which could increase congestion at these already busy tracks and access points.

Divide Creek link is also a proposed new track from Hinepipiwai Lake Marian car park to The Divide and does not appear to directly impact any existing users. The creek is not considered a canyon for canyoning purposes. Similar comments as above are relevant.

5.9.8 Pass Creek Track upgrade

This existing 'advanced tramping track' caters to a small number of visitors seeking a true tramping track. It may also cater to hunters gaining access to the upper Greenstone Valley without having to carry firearms on the high use Routeburn Track. The track has historical and cultural connection as an ara tawhito traditional trail and upgrading it presents the opportunity to tell this story.

While no figures are available from DOC, the track standard and wear would indicate limited use. Additionally, it currently does not form a loop making it an out and back day walk or as part of a longer journey into the Greenstone Valley. It is also of a much lower standard than the Key Summit or Routeburn Tracks it adjoins and is therefore not appealing to these visitors.

Upgrading the track to easy tramping standard e.g. machine-built benching, is considered to have a low -moderate impact on existing recreation values as the current use is very low and upgrading will not significantly alter the trail alignment and overall experience. When linked with the Divide Creek Track this will form a loop that could be popular with visitors especially in poor weather as an alternative to Key Summit.

5.9.9 Gertrude Valley Loop Track

This proposed new 1.8km track together with associated parking and drop off area plus interpretation, signage, toilet and shelter is designed to create a node for visitors and draw them away from the current New Zealand Alpine Club (NZAC) Homer Hut access road and associated climbing activities. The current access leads visitors into a usually dry riverbed and past the NZAC Homer Hut before people find their way to the existing Gertrude Saddle Route.

The Homer Hut is a climbing institution and has been the proving ground for many of New Zealand's leading alpinists. The majority use the hut as a base for climbing including the Macpherson Talbot traverse, Barrier Knob and many other alpine routes and climbs. The use of the hut is predominantly by New Zealand residents.

Given the existing Homer Hut and its proximity to this proposal, considerable thought has been given to creating a more well-defined demarcation between Gertrude Valley day visitors and climbers using the hut. To achieve this the Masterplan envisages creating a node for day visitors which ensures these visitors do not meander towards or into Homer Hut (seeking water & using toilets) and adversely impact on the experience of hut users. The proposed new track alignment together with visitor facilities including drinking water and toilets will need to be carefully positioned to direct users away from Homer Hut. Based on the creation of this defined node and its associated drinking water, toilets and clearly marked/defined tracks we believe the impact of the proposal on the Homer Hut will be low as it is likely that the new facilities will lead to fewer people wandering into the huts. It is possible that if well designed and implemented, the effects on Homer Hut may result in an improvement to the current situation where visitors often seek drinking water and use the hut toilets.

The impacts from the proposed new loop track on existing users of the Gertrude Saddle Route has been carefully considered in the concept design together with issues around track management for less capable visitors and the potential for visitors to stray off the new track and inadvertently head further up valley into areas where they might put themselves at risk. As a result, a separate loop is proposed which has little or no connectivity to the existing tramping route. This proposal is likely to mean existing visitors to the Gertrude Valley Route will see little if any change in quality of experience. The Gertrude Valley Route is used extensively by climbers accessing climbing routes higher in the valley. We highlight however that the popularity of the Gertrude Valley Route has increased significantly in recent years creating adverse effects on climbers through increased congestion and visitor presence in the valley and in particular around Gertrude Saddle and easy slopes leading to the surrounding peaks.

5.9.10 The Chasm to Cleddau Horse Bridge Track

The Chasm is one of the most popular short stop activities on the road to Milford Sound Piopiotahi. The proposal anticipates a new walking track between the existing Chasm Bridges (currently closed due to 2020 storm damage) downstream to the historic remains of the Cleddau Horse Bridge. Given the existing significant car parking capacity and proposed upgrades to improve the look and feel of

the Chasm (see DOC Experience Design Plan)[14] adding a 1-2hr walking track is consistent with the current activity at the Chasm.

At the downstream end the track will require a car parking or pick up and drop off area. The Horse Bridge was significantly damaged in the February 2020 flood, and recent assessment indicates this would need to be replaced to make this proposal feasible. It is possible that some of the remains (cables, hangers, timbers) could be incorporated into a new suspension bridge and the opportunity to tell this unique story as part of this short walk (the Horse Bridge was part of the original Grave Talbot Route to Milford Sound Piopiotahi before creation of the Milford Road in 1938).

Existing activities may include tramping, fishing and kayaking/packrafting near this new track proposal.. The true left bank of the Cleddau River does not appear to support very desirable terrain for tramping with very steep rock faces or dense vegetation (large areas of thick regrowth). The river margins do offer good fishing spots and parts of the river are kayaked and packraft-able although little evidence exists for the later activity.

Having considered the above and considering the track would generally not be within a fishers' zone of interest, the proposed track is believed to have a low to no impact on existing recreation values and will enhance or provide new opportunities for fishing, packrafting and sightseeing.

5.9.11 Milford Sound Lodge to Tutoko River Bridge Walk

There are currently no 'formal' tracks in this area, however a well-marked trapping track runs for most of the route and is noted in the stakeholder engagement and having some level of existing value and potential for development for both Milford Sound Piopiotahi residents and guests at Milford Sound Lodge. The proposal would offer a very pleasant 1-2hr walk in mature beech forest along the Cleddau River with many scenic viewpoints. Upgrading the track could displace existing users. This is similar to impacts expected by upgrading the Cleddau Delta tracks.

Kayaking or fishing is the only activity known to be undertaken on this stretch of river with the proximity of the road making tramping undesirable. The track will be of benefit to both activities by improving access to the river margins. The majority of the track is in beech forest and avoids open shingle banks which are favoured by fishers. However, increased activity and access on this reach of river could increase conflict and reduce fishing opportunities and so we conclude the impact is low – moderate.

We consider that the proposed track is likely to lead to mostly positive impacts on existing recreation by providing both visitors and New Zealand residents with an easy valley walk with views across the river. The potential for minor impact on fishing activities is mitigated by positioning the track mostly within the forest.

5.9.12 Barren Peak Spur Track

This popular short walk of 5-10 minutes will be upgraded to include a higher viewing platform as well as a wider track surface (1.5m recommended as a minimum) to cater for more visitors. The

[14] The Chasm, Experience Design Plan, 10 September 2021, prepared by Department of Conservation

upgrades will enable two-way flow and more even track surface together with up to 3 options for viewing platforms higher up the spur.

As almost all visitors are first time users it is anticipated that only positive effects will result from upgrading the track. The start area signage will require upgrading to cater to larger numbers and maximise its use.

5.9.13 Cleddau Delta Tracks

There is a good network of trapping tracks across the delta and it is probable that for Milford Sound Piopiotahi residents that use the tracks for recreation purposes, any upgrade of the track network will result in a loss of peace, tranquillity and natural quiet as more visitors make use of a very easy and scenic track. Development of these tracks may displace residents and there are no alternative options available within such easy access of Milford Sound Piopiotahi. The impact on existing users is considered moderate to high as these users will be moderately impacted and there is little 'up-side' for them. However, the development of the Milford Sound Lodge to Tutoko River Bridge Track could provide a compensatory track for their use including access to Little Tahiti.

Any viewpoints or structures should be carefully designed and sited and use recessive materials to ensure the scenic quality of the area is maintained. It is currently possible to stand at the end of the delta and not see any human-built form. Just mountains. From an experience point of view, that's worth protecting.

The impact on existing recreation will be moderate but the impact is limited to a small number of current users.

5.9.14 Hine-te-awa Bowen Falls Tracks

The Upper Bowen Falls tracks are designed to give access to the upper falls and to Bowen River. There is an existing well used track to the hydro scheme intake which involves steep rope accessed rock slabs and creek crossings suitable for only advanced trampers with route finding skills. Therefore, existing users are all capable experienced outdoors people. These include trappers, people working on the hydro scheme and trampers/climbers gaining access to the upper Bowen River. We do not have any data on usage, but the track formation would suggest in the area of a few hundred per annum. As the route is used for monthly trapping and hydro scheme maintenance it's likely the number of recreation users could be small.

A cable car to the upper shoulder and associated tracks will change the dynamic of the place from peace and quiet to very busy with a large and wide range of visitors gaining easy access to the top of the falls and to Bowen River. This will push trampers and climbers to other areas or further up valley away from the easily accessed tracks and will result in a loss of peace and quiet around the upper falls. The impact on existing recreation will be moderate to high but the impact is limited to a small number of people.

Bowen River above the falls is a stunning and rugged bouldery creek and the proposal will result in large numbers of people walking to the river taking photos and admiring the scenery. Unless access to the riverbed in this vicinity is managed, the riverbed will become quite heavily trafficked. It is likely few people will cross Bowen River and proceed up valley. Appropriate management will be

required to mitigate potential for people to proceed towards the top of the Bowen Falls or attempt to cross this fast-flowing river.

This proposal will result in a significant loss in recreation values for the small number of users. It is possible that these recreationists could head to the Tutoko Valley or could continue further up the Bowen Valley but this stunning area so close to town will be lost for their purposes.

Overall, we conclude that the impact on the small number of recreationists using the Bowen Valley will be high.

5.10 Conclusions

Development of the new walking and cycling opportunities across the project area will lead to a range of positive outcomes as well as adverse impacts on existing recreation and can be summarised as follows:

Positive impacts include:

- Increased economic activity from longer stays in the Te Anau and Milford Sound Piopiotahi area
- Larger more varied network of cycling opportunities including riding through mature beech forest in Te Rua-O-Te Moko Fiordland National Park
- Easy to challenging day walking experiences together with a stunning overnight walk experience on the Countess Range, and
- Greater access to front and back country terrain for tramping, hunting and fly fishing

Adverse impacts include:

- A reduction in wildness and remoteness together with the potential for a reduction in natural quiet and tranquillity
- Environmental impacts including to terrestrial ecology and landscapes resulting from implementing the proposals
- Displacement of existing users where a new proposal overlaps an existing use together with the potential for increased congestion at existing access points and on existing tracks

As the vast majority of existing users are first timers these visitors are unlikely to recognise a change in experience and will therefore appreciate the increased range of tracks as a positive for recreation values.

However, New Zealand residents (estimated at 80,000 per annum[15]) and other visitors seeking access to back country or remote wilderness experiences (whether tramping, walking, climbing, packrafting, fishing or hunting) will perceive there are more people in more places including in some areas they have traditionally had to themselves. This will likely push them further away or adversely affect the experience they have (or both). For the Homer Hut area the location of the track has been

[15] Visitor Solutions Ltd & Fresh Info Ltd 2021. Milford Opportunities project*: Tourism Report*. Prepared by Visitor Solutions Ltd & Fresh Info Ltd for Milford Opportunities Project

carefully considered to guide people away from the huts. For the Key Summit to Cascade Creek Track proposal alternative options may be better to reduce adverse impacts.

To provide a counterbalance to this there will be improvements in access to other areas like the true right of the Upokororo Eglinton River, Countess Range and Bowen River. This will open additional areas for climbing and tramping that are currently hard to access and provide limited opportunities for recreation as a result.

Not all adverse impacts can be mitigated as remoteness cannot be replicated or replaced and easy access to remoteness is hard to find.

Overall, we believe the proposals will mostly result in positive effects, with negative effects confined to the Key Summit to Cascade Creek Tracks and Cleddau Delta/Bowen River areas where the addition of more visitors will displace existing users and the adverse effects cannot be counterbalanced. And for some recreation experiences there will be no comparable alternative in the area.

6.0 Construction & Operational Costs

6.1 Cost Estimate Methodology - Tracks

For tracks, cost estimates are based on the following (in descending order of priority)

a. Current contract rates (where available),
b. The most recent similar construction contract rates (where no current rates exist e.g., Moonlight Tops Hut)
c. Contractor estimates for local sourced materials where available e.g. aggregate, boulders
d. Inflation adjustment for rising costs applied using Stats NZ data where rates have been sourced from before the current financial year
e. Estimates for production rates for known construction methodologies

We have broken each proposal into common elements (earthworks, aggregate, cartage, structures) and types of work. For example, easy track, benched track, surface gravelling and so forth. We have identified and priced major structures including bridges, viewing platforms, stairs/steps and toilets.

Besides the obvious physical works, we have also estimated for all the pre-construction planning and detailed design costs. We have assumed the projects would all require some form of resource consent both district and regional (noting DOC has a statutory exemption if the projects are consistent with the management plan and undertaken by the department).

We have included all the construction contract preparation and supervision costs\together with sign off at completion.

6.2 Cost Estimate Methodology - Huts

DOC are the main provider of backcountry huts across New Zealand and their assistance and data underpins the estimate for the Countess Range Huts.

The most recent similar scale hut for which detailed data is available is:

- Moonlight Tops/Pororari Huts, 20 beds, Paparoa Great Walk, 2017-18
- Mintaro Hut, 40 beds, Milford Track Great Walk, 2020-21

We have estimated the hut footprints based on recent examples being the Heapy Hut (30 beds + 4 staff & 208m² = 6.1m²/bed) and the Moonlight Tops hut (20 beds + 4 staff, 135m² = 5.6m²/bed) and Pouakai Hut (36 beds, 200² = 5.5m²/bed). This indicates between 5.5-6m² per bed is the 'sweet spot'.

During the intervening 5 years since the Moonlight Tops Hut was completed, Stats NZ data indicates construction cost inflation has been as follows:

Table 17: Year & StatsNZ Construction Cost Inflation

Year	Inflation
17-18	4%
18-19	4%
19-20	4%
20-21	4%
21-22	5%
22-23	15%
23-24	10%*
TOTAL	**46%**

** Estimate only. Note below latest Corelogic data as at date of this report*

However, over the same period some construction items have increased far above the 'official rates' and some have soared and then fallen. For instance,

- Helicopters, $ 2,200/hr in 2017 vs $ 3,600/hr in 2023 – 64% increase
- Steel, $ 4,000/tonne in 2018, peaking at $ 6,000/tonne in late 2021 now back to $ 4,000/tonne in 2023
- Labour, $55/hr in 2017, $75/hr in 2023 – 36% increase

Based on detailed cost data supplied by DOC for the Moonlight Tops Hut, and separating out helicopter time and factoring in general construction cost increases from Stats NZ data we derive a construction cost of $ 1,135,480 or $ 8,410/m²

The most recently completed larger hut, the Mintaro Hut on the Milford Track with 40 beds was completed for c$3.4M in 2021 equating to $ 15,454/m². Timing of the construction coinciding with Covid-19 lockdowns and supply chain issues which drove up the costs of key materials. Additionally, the hut is much more remote than the Countess Range (Mintaro 22km from Milford or 25km from Eglinton Valley – compare Countess Range is 4km from Walker Creek camp) adding significant logistics costs for helicopters. Mintaro Hut is also located in the highest rainfall region, which had the effect of slowing construction work. All add to higher building costs. For the purposes of this cost estimate we consider the Moonlight Tops to be a better fit logistically than Mintaro. The average across these two huts is $10,400/m².

The only current large DOC hut in the planning phase is the Pouakai Hut located at 1,200m on Taranaki maunga which has an estimated cost of $ 2.2M for 36 beds giving an average cost of $ 11,000/m² with projected cost increases in the order of 30-40% taking the cost to 14,841/m² in 2024. Taranaki has similar environmental conditions to Mintaro (high rainfall) but is only 6km from the nearest road end. It's similar to the Countess Range in elevation and fly time.

As the reader will deduce there is considerable variance for larger (>20 bed) hut construction costs. For the purposes of setting conservative estimates and including the most up to date cost projections we have used Pouakai Hut plus cost escalation projections from DOC as the basis for estimating the Countess Range huts. The existing hut figures include warden quarters but not

ancillary buildings like a woodshed or tool storage. An allowance of 6m² additional area has been used to budget for these necessary extras.

Table 18: Hut cost comparison

Name	Status	Year	Area	Total cost	$/m²
Moonlight Tops Hut	Completed	2017	135	$ 722,154.00	$ 5,349
Mintaro Hut	Completed	2021	220	$ 3,400,000.00	$ 15,454.
Pouakai Hut	Planned - estimate only	2023	200	$ 2,200,000.00	$ 11,000
				Average cost per m²	$ 10,601
				Escalation 30-40%	$ 4,240
				Total cost per m²	$ 14,841
Countess Range	20 Bed estimate	2023	141*	$ 2,092,692.3	$ 14,841
Countess Range	40 Bed estimate	2023	226^	$ 3,354,244.40	$ 14,841

* 135m² hut plus 6m² woodshed & storage allowance
^ 220m² hut plus 6m² woodshed & storage allowance

Alternative hut options as suggested under the assessment could include satellite huts or 'turks' both of which are likely to be more cost efficient on a $$/beds basis. The Mountain Turk Club https://mountainturk.org.nz/ estimates the direct cost of materials for a 4-bed water tank-based hut is $ 15,000. Including labour and fly in costs these huts can be delivered and installed for between $50,000-75,000 each or around $ 12,500 per bed vs the Moonlight Tops at $30,000 per bed. The Mountain Turk Club have demonstrated their efficacy by installing 6 'turks' along the Mahu Whenua Traverse between Treble Cone and Coronet Peak. The standard Turk is flyable using AS350 helicopters weighing just under 1,000kg with its ballast is removed.

6.3 Cost Estimate Comparison

The projects have been estimated to cost a total of $ 104M allowing for all design, pre-construction planning, physical works and supervision. With current construction cost inflation tracking at up to 15% this gives a budget estimate of $ 120M in November 2024.

This compares favourably with the most recent review of Masterplan Stage 2 costs by WSP dated 28 November 2023 which forecasts a high-level estimate of up to $ 186M to complete all projects.

Lastly the total estimates include tracks/huts where two options have been considered. Only one option would be developed in each case.

Table 19: Opportunity Construction Cost Estimates

Project Name	Eglinton River Trail	Knobs Flat short walks	Countess Range Track & Hut (option 2)	Countess Range Track & Hut (option 1)	Lake Gunn Nature Walk	Key Summit to Cascade Creek Track	Key Summit to Cascade Creek Track	Divide Creek link Track
Level of Service	**Cycle Trail or Short Walk**	**Short Walk**	**Easy Tramping & 40 bed hut**	**Advanced Tramping & 20 bed hut**	**Short Walk**	**Easy Tramping Track**	**Advanced Tramping Track**	**Easy Tramping Track**
Track Construction (m)	500	1,300	12,000	11,000	1,400	18,970	17,320	2,690
Track Work	$23,667	$205,094	$3,374,264	$366,667	$46,667	$3,730,737	$298,300	$1,067,500
Structures	$108,000	$303,850	$794,114	$307,900	$70,000	$1,048,000	$215,550	$430,900
Huts			$3,354,244	$2,092,692	$0			
Sub Total	$131,667	$508,944	$7,522,623	$2,767,259	$116,667	$4,778,737	$513,850	$1,498,400
Contingency @ 20%	$26,333	$101,789	$1,504,525	$553,452	$23,333	$955,747	$102,770	$299,680
Total Construction	$158,000	$610,733	$9,027,148	$3,320,711	$140,000	$5,734,485	$616,620	$1,798,080
Planning, Design & Construction Management								
Trail Design @ 5%	$1,183	$10,255	$168,713	$18,333	$2,333	$186,537	$14,915	$53,375
Structure design @ 5%	$5,400	$15,193	$39,706	$15,395	$3,500	$52,400	$10,778	$21,545
Construction Management @ 10%	$15,800	$61,073	$902,715	$332,071	$14,000	$573,448	$61,662	$179,808
Sub Total	$22,383	$86,521	$1,111,134	$365,799	$19,833	$812,385	$87,355	$254,728
Contingency @ 20%	$4,477	$17,304	$222,227	$73,160	$3,967	$162,477	$17,471	$50,946
Total Planning, Design & Management	$26,860	$103,825	$1,333,360	$438,959	$23,800	$974,862	$104,825	$305,674
Total Nov 2023	$184,860	$714,558	$10,360,508	$3,759,670	$163,800	$6,709,347	$721,445	$2,103,754
Cost escalation factor - 15%	$27,729	$107,184	$1,554,076	$563,951	$24,570	$1,006,402	$108,217	$315,563
Total Nov 2024	**$212,589**	**$821,741**	**$11,914,584**	**$4,323,621**	**$188,370**	**$7,715,749**	**$829,662**	**$2,419,317**
Operating Costs	$19,840	$74,800	$445,394	$220,664	$32,370	$109,200	$27,504	$80,454

Project Name	Marian Falls Track	Lake Marian Track - Upgrade	Lake Marian Loop - True left	Marian Falls Loop Track	Covered Nature Trail (accessible)	Pass Creek Link Track	Pass Creek Track upgrade	Gertrude Loop	The Chasm to Cleddau horse Bridge Track
Level of Service	**Short Walk**	**Easy Tramping Track**	**Easy Tramping Track**	**Short Walk**	**Short Walk**	**Easy Tramping Track**	**Easy Tramping Track**	**Short Walk**	**Day Walk**
Track Construction (m)	750	2,370	3,200	500	330	3,000	3,200	1,840	3,240
Track Work	$240,150	$730,000	$1,140,000	$365,000	$107,870	$841,100	$494,286	$1,101,907	$1,872,336
Structures	$167,500	$109,245	$318,000	$670,275	$973,500	$196,600	$336,500	$432,500	$1,675,000
Huts									
Sub Total	$407,650	$839,245	$1,458,000	$1,035,275	$1,081,370	$1,037,700	$830,786	$1,534,407	$3,547,336
Contingency @ 20%	$81,530	$167,849	$291,600	$207,055	$216,274	$207,540	$166,157	$306,881	$709,467
Total Construction	$489,180	$1,007,094	$1,749,600	$1,242,330	$1,297,644	$1,245,240	$996,943	$1,841,288	$4,256,803
Planning, Design & Construction Management									
Trail Design @ 5%	$12,008	$36,500	$57,000	$18,250	$5,394	$42,055	$24,714	$55,095	$93,617
Structure design @ 5%	$8,375	$5,462	$15,900	$33,514	$48,675	$9,830	$16,825	$21,625	$83,750
Construction Management @ 10%	$48,918	$100,709	$174,960	$124,233	$129,764	$124,524	$99,694	$184,129	$425,680
Sub Total	$69,301	$142,672	$247,860	$175,997	$183,833	$176,409	$141,234	$260,849	$603,047
Contingency @ 20%	$13,860	$28,534	$49,572	$35,199	$36,767	$35,282	$28,247	$52,170	$120,609
Total Planning, Design & Management	$83,161	$171,206	$297,432	$211,196	$220,599	$211,691	$169,480	$313,019	$723,657
Total Nov 2023	$572,341	$1,178,300	$2,047,032	$1,453,526	$1,518,243	$1,456,931	$1,166,423	$2,154,307	$4,980,460
Cost escalation factor - 15%	$85,851	$176,745	$307,055	$218,029	$227,737	$218,540	$174,963	$323,146	$747,069
Total Nov 2024	**$658,192**	**$1,355,045**	**$2,354,087**	**$1,671,555**	**$1,745,980**	**$1,675,470**	**$1,341,387**	**$2,477,453**	**$5,727,529**
Operating Costs	$36,898	$40,112	$105,829	$90,496	$108,843	$34,736	$51,152	$83,184	$224,176

Project Name	Te Anau Downs to Cascade Creek (Preferred Option Total)	Te Anau Downs to Black Creek	Te Anau Downs to Black Creek following SH94	Black Creek to Cascade Creek	Cascade Creek to The Divide	Milford Sound Lodge to Tutoko River Bridge Track	Barren Peak Spur Walk	Hine-e Awa Bowen Falls – Upper Walks
Level of Service	**Cycle Trail**	**Cycle Trail**	**SH94 Cycle Trail**	**Cycle Trail**	**Cycle Trail**	**Day Walk**	**Short Walk**	**Short walk & Easy Tramping Track**
Track Construction (m)	55,450	37,000	29,700	18,450	8,830	2,330	470	990
Track Work	$11,385,392	$7,630,437	$4,766,153	$3,754,955	$2,335,850	$463,038	$245,556	$301,982
Structures	$6,074,714	$4,084,032	$3,054,300	$1,990,682	$13,627,800	$257,100	$205,000	$711,025
Huts								
Sub Total	$17,460,107	$11,714,469	$7,820,453	$5,745,637	$15,963,650	$720,138	$450,556	$1,013,007
Contingency @ 20%	$3,492,021	$2,342,894	$1,564,091	$1,149,127	$3,192,730	$144,028	$90,111	$202,601
Total Construction	$20,952,128	$14,057,363	$9,384,544	$6,894,765	$19,156,380	$864,166	$540,668	$1,215,609
Trail Design @ 5%	$569,270	$381,522	$238,308	$187,748	$116,793	$23,152	$12,278	$15,099
Structure design @ 5%	$303,736	$204,202	$152,715	$99,534	$681,390	$12,855	$10,250	$35,551
Construction Management @ 10%	$2,095,213	$1,405,736	$938,454	$689,476	$1,915,638	$86,417	$54,067	$121,561
Sub Total	$2,968,218	$1,991,460	$1,329,477	$976,758	$2,713,821	$122,423	$76,595	$172,211
Contingency @ 20%	$593,644	$398,292	$265,895	$195,352	$542,764	$24,485	$15,319	$34,442
Total Planning, Design & Management	$3,561,862	$2,389,752	$1,595,372	$1,172,110	$3,256,585	$146,908	$91,914	$206,653
Total Nov 2023	$24,513,990	$16,447,115	$10,979,916	$8,066,875	$22,412,965	$1,011,074	$632,581	$1,422,262
Cost escalation factor - 15%	$3,677,098	$2,467,067	$1,646,987	$1,210,031	$3,361,945	$151,661	$94,887	$213,339
Total Nov 2024	**$28,191,088**	**$18,914,182**	**$12,626,904**	**$9,276,906**	**$25,774,909**	**$1,162,735**	**$727,468**	**$1,635,602**
Operating Costs	$869,200	$608,440	$356,393	$260,760	$793,585	$48,816	$46,160	$91,984

6.4 Operation & Maintenance Costs Estimates

6.4.1 Methodology

Operational costs have been derived from numerous sources including the DOC Paparoa Great Walk[16] financial review, and Old Ghost Road and Clutha Gold Trail operating expenses. Operational costs are highly variable and very specific to the organisation that owns and operates the asset. For instance, volunteer trusts that operate a number of New Zealand's Great Rides do so for around $1,000/km while District Councils typically spend 2-5x this for similar trails. Additionally, some organisations depreciate their assets (capital charges) over the effective life and others do not.

The estimates shown in Table 20 should be read with the caveat that the choice of ownership model may significantly affect the operational costs. We have assumed a local or central government ownership model including depreciation on structures over a 30-year life. Depreciation does not apply to the cycle trail formation and surfacing as this is renewed progressively for 100% replacement within a 10-year window anticipated.

Estimates for each track assume no efficiencies or economies of scale. That is, each track is maintained independent including all inspections, back-office support, project management and supervision etc. It is likely that all tracks and trails will come under the same management and the ability to share resources and skills across the tracks will occur as it currently does with facilities managed by DOC.

6.4.2 Primary Operation & Maintenance Actions

Across the range of opportunities, the following are the main areas for operational focus:

1. Signage & Structures maintenance & repairs
2. Vegetation clearance – maintaining the trail surface and envelope (mechanical & chemical)
3. Tree fall (removal)
4. Track marking including signage
5. Surface repair especially on high Level of Service tracks
6. Structures inspections both visual & structural
7. Drainage clearance (water channels, culverts, structures)
8. Hut wardens & hut repairs
9. Effluent disposal including emptying containment toilets and greywater
10. Firewood & LPG for serviced huts
11. Project management to deliver operation and maintenance activities

For each project we have considered the above and tailored the level of maintenance accordingly.

While we have shown operating costs for each project and assumed they would be run independently, this scenario does not align with how back country facilities are currently managed in

[16] Paparoa Track Great Walk – Visitor Use Review. July 2023, Department of Conservation DOC-70304477

a coordinated way by DOC. It is expected that when combined, overlapping functions will result in efficiencies particularly in back-office roles. Additionally, having specialist support staff engaged in overseeing multiple tracks within a geographic area is more cost efficient than 20 different organisations maintaining 20 tracks independently.

6.4.3 Levels of Service

Cycle trails

The Level of Service for a Grade 2 cycle trail is directly related to the user skills and experience. Most grade 2 cycle trail visitors are not experienced riders, and they require a generally uniform surface free from ruts and roots. They do not have the ability to easily carry their bikes over tree fall or across wash outs (e-bikes are very heavy). For this reason, the maintenance level needs to be rigorous and regular. For instance, it would be expected that after every storm, an inspection is completed across the trail to ensure the trail is up to standard and if not, urgent maintenance is undertaken, or sections level of service and the relevant communications (social media, operators) is issued.

Experience across the New Zealand Cycle Trail's Ngā Haerenga Great Rides indicates that visitors expect up to date information about the status of trails will struggle if tracks are not serviced regularly as this interrupts visitors' itineraries. In considering the operating costs, this level of service is the main driver. For the cycle trails specifically, we have allowed in the operational budget for a 0.5-1 FTE employee 'trail champion'. The has been proven a winner in meeting visitor expectations across NZ's Great Rides including trails managed by DOC. As an example, the Mountains to Sea and Timber trail both employ trail managers who ensure the trail is operated to the high standards visitors expect.

Where damage occurs to a cycle trail the operator should focus attention on immediate repairs, or if a realignment is required (e.g. for a large tree fall that cannot be cleared quickly or a landslide) the new alignment needs to be easily walkable with a bike as a minimum. A poor example is the realignment of the Waiuta end of the Big River track. DOC realigned the track above a landslide, but the realignment is nearly impossible with a bike while the track is promoted for bikes. So, visitors continue to cross the active landslide (less than ideal).

For cycle trails an allowance for renewal of surface gravel at 5% per annum should be made. This anticipates a maximum 20yr design life for the surface. In reality, wear and erosion is inconsistent and is likely to be concentrated in certain areas with other areas undergoing limited wear. Additionally, the gravel matrix used is critical and part of the detailed design will require testing to ensure a hard setting well bound material can be achieved. Any reduced gravel quality should be reflected in a shorter design life of at most 10 years. A budget allowance of 5-10% per annum ensures ongoing renewal to maintain the high standard expected by riders.

All structures will require inspection in accordance with the industry best practice. In the absence of treefall or landslide the major bridges are expected to last 50 years. In reality we have seen significant changes in visitor expectations and volume in the past 20 years resulting in many bridges being replaced before the end of their design life. It is possible to design bridges to achieve a greater design life by using more durable products and this may be worth considering.

Short Walk tracks

These high-quality tracks are aimed at inexperienced visitors and offer an easily accessible short walk up to 1hr maximum. For this reason, visitors expect a high level of service and maintenance needs to be very timely or the track level of service cannot be maintained. These visitors have very similar needs to cycle trail users.

Walking tracks

The level of service for a walking track (day walk) is lower than a cycle trail or short walk. These visitors can tolerate tree fall (assuming an easy route around is marked) and the surface can deteriorate considerably before they start to feel the walk is 'substandard'. Operation will focus on vegetation clearance annually and periodic (3-5yr) surface repairs as the track wears or is eroded. Tree fall should be cleared within 14 days of notification based on DOC's current service standards.

Tramping Tracks

These tracks require the lowest Level of service and can tolerate tree fall, poor surface and muddy feet. As a result, annual or even bi-annual maintenance is focused on vegetation clearance, track marking (ensuring continuous intervisibility) and ongoing assessment of the surface to programme in upgrades on a 5-10 yr cycle. Treefalls do not need to be cleared immediately like they do for cycle trails or Short Walks. A delay or weeks or months can be accepted by users if a suitable alternative is obvious and marked.

The harder the track the more the users can tolerate track damage and limited maintenance.

Huts

Unlike tracks, huts require constant vigilance to ensure weather tightness. Water ingress can easily destroy a hut lining and result in very expensive repairs. While every effort is made in the design details and construction quality, ongoing annual maintenance is essential especially in a wet or alpine environment. The higher quality the hut and Level of Service the greater the level of care required. For this reason, the Countess Range Hut will require a high-level of attention.

For cost estimation purposes we have assumed a full week of maintenance annually using helicopter access @ $ 6,100 per day. Total $ 30,500 annually. If a weathertightness issue arises, the costs can easily be in the $ 100,000-200,000 to repair. We have assumed that DOC's design team have resolved general durability issues over the past 40 years and therefore the weathertightness risk is low.

For containment sewage systems we have allowed for annual removal costs including helicopter and staff time. We have also budgeted for a hut ranger to visit and clean the hut in accordance with DOC hut service standards being every 200 bed nights which equates to three time per month during the peak season.

We have also provided for aerial supply of fire wood and LPG to serviced huts.

6.4.4 Operation & Maintenance Estimates

The Operation & Maintenance estimates are shown in Table 19. These total $ 3.9M per annum for all projects and this total includes both options when more than 1 option has been assessed. The estimates cover the range of costs shown in Section 6.3.2.

7.0 Summary & Conclusions

Southern Land Ltd has been engaged by the Milford Opportunities Project to prepare a technical feasibility Report for a range of walking and cycling experiences that arose from the Milford Opportunities Project (MOP) Masterplan Stage 2.

The following opportunities are technically feasible and will achieve the desired experience:

a. Te Anau Downs to Ōtāpara Cascade Creek cycle trail
b. Countess Range hut & track (both options)
c. Eglinton River Trail
d. Knobs Flat short walks including the waterfall track
e. Pass Creek link, Pass Creek, Key Summit & Divide Creek loop tracks
f. Hinepipiwai Lake Marian Falls and Hinepipiwai Lake Marian Loop track
g. Gertrude Valley Loop Track
h. The Chasm to Cleddau Horse Bridge Walking Track
i. Milford Sound Lodge to Tutoko River Bridge Walking track
j. Barren Peak Spur short Walk upgrade
k. Upper Bowen Falls Easy Tramping Track
l. Lower Bowen Falls Track
m. Cleddau Delta Short Walks

The following opportunities are not considered to deliver the visitor experience sought in the Masterplan:

I. Te Anau Downs to Black Creek Cycle Trail along SH94
II. Key Summit to Ōtāpara Cascade Creek easy and advanced tramping tracks
III. Marian Creek Covered Nature Loop
IV. Upper Bowen Falls short walk

The following opportunities are considered technically marginal:

- Ōtāpara Cascade Creek to The Divide cycle trail via the western shore of Ōtāpara Lake Gunn

The following are alternative next best options where the original proposal is not considered fit for purpose:

- Mid Bowen Falls viewing platform
- Key Summit Ridge Loop day walk returning to The Divide
- Hinepipiwai Lake Marian Falls Loop track

All of the above projects have been estimated to cost $ 101M allowing for all design, pre-construction planning, physical works and supervision. With current construction cost inflation tracking up to 15% this gives a total cost estimate of $ 117M in November 2024. This compares favourably with the most recent review of costs by WSP dated 28 November 2023 which forecasts a high-level budget of up to $ 186M to complete all projects.

Operation and maintenance of the projects is estimated to cost $2,76M per annum.

The stand-out highlights of the 20 proposals are:

1. Te Anau Downs to Cascade Creek Cycle Trail – for its superb beech forest riding, remoteness, unique Cryptic Lake and a journey that will be seamless from Manapouri to Cascade creek.

2. Countess Range Easy Tramping Track & Hut – For its easy tramping, stunning 270° scenery, alpine tops, rocky crags and unmatched hut location.

3. Key Summit Ridge Loop Track alternative – for its outstanding 360-degree vistas, rocky sub alpine tops, and relatively easy day walk length.

4. Upgraded Hinepipiwai Marian Falls Track and Hinepipiwai Lake Marian Track – Combining the benefits of uniform standards as far as the waterfalls and easier tramping to the lake this combination is good value for money over the much longer loop track and bridges.

5. Gertrude Valley Loop Track – The only easily accessible alpine short walk from any of NZ's highways this short walk takes in the upper valley walls, ice cliffs and high peaks.

6. Mid Bowen Falls viewing platform and track – with a light footprint up the rock face and easy access from the tourist complex this will showcase the raw power of the falls and give stunning views to Mitre Peak and Milford Sound Piopiotahi

7. Cleddau Delta short walks – Despite being flat and close to the tourist complex this area is a hidden gem with secluded viewpoints clear of human modification and all within easy reach of most visitors.

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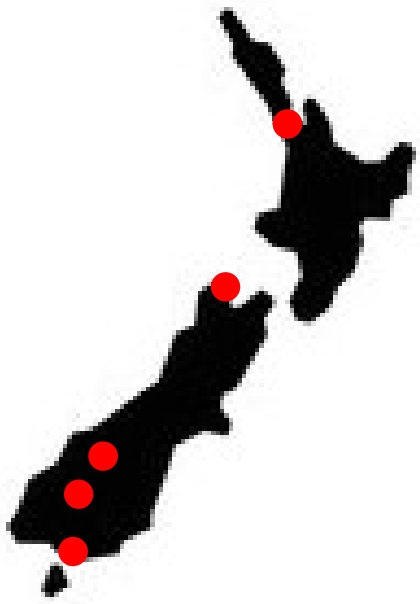

Southern Land Ltd is a leading New Zealand cycle trail, track & outdoor structures consultancy. Our recent projects encompass four Great Rides including most recently the Lake Dunstan Trail.

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