Glacier Country Trail Feasibility

September 2022

This Glacier Country Trail Feasibility Assessment report was prepared by TRC Tourism as the feasibility study and business case in the development of the Glacier Country Cycle and Walk Trail.

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ACKNOWLEDGEMENT

E ngā iwi, e ngā reo, e ngā karangaranga maha o tātou, tēnei te mihi atu ki a koutou katoa.
E tika ana hei poropororaki i a rātou mā. Me pēnei ake te kōrero, tukuna rātou kia okioki i runga te moenga roa. Āpiti hono, tātai hono, rātou ngā mate katoa ki a rātou, Āpiti hono tātou hono, tātou te hunga ora ki a tātou mā, Tēnā koutou katoa.
To the people, all voices, the many affiliations, greetings to you all.
It is appropriate that we acknowledge the past, those who have made things possible for us. We remember them as those who have been encompassed in the passage to the sleep of all sleeps.
May those who have passed on continue on that journey.
We who inherit the lands, bind together as one.
Greetings to you all.

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Executive Summary

This report provides the foundation upon which South Westland Region along with the potential partners can evaluate the feasibility of a proposed Glacier Country Trail and agree on further actions. The proposed trail will link the scenic and cultural features of the region with the potential to become an iconic experience, attracting visitors to the region, creating a visitor economy that is more resilient to environmental and visitation changes, and which has the potential to create new opportunities for local businesses and communities.

Market research shows that there is significant demand for day rides, rides of three days or less, and supported rides. Whilst traditional mountain bikes still outnumber e-bikes on trails, the percentage of riders using e-bikes is growing fast. This opens up a wider biking market for the hilly terrain found in the West Coast. There is also significant opportunity in the walking/tramping market amongst dedicated trampers, and by general holiday and nature/adventure seekers looking for shorter walks.

The ideal visitor for the West Coast Trail has been identified as the domestic and Australian Intrepid West Coast Nature Explorer.

This report outlines the factors that will make it a great trail, including a strong vision, effective planning and management, marketing and bookings, governance and resourcing, infrastructure and support services. Crucial to the success of this trail will be partnerships. Te Rūnanga o Makaawhio expresses a strong desire to partner in the proposed trail's development, management, and experience development. The extent of the partnership and with whom is yet to be determined until such time as the next phases of the proposal are pursued.

Based on consultation with the local community, the **vision** for the Glacier Country Trail has been identified as follows:

'The Glacier Trail – capturing the very best of the West Coast - will be recognised as one of the world's great trail experiences and considered a must do for New Zealanders and visitors.'

In assessing the proposed trail route, consideration was given to the inclusion of communities, hero views and experiences, and accessibility, along with the geography of the land.

The proposed walking trail: The proposed route and itinerary for the walking product allows for various combinations of days to suit different markets - day walks, weekend or overnight trips, and 3 days walks utilising huts. The multiple option itinerary is designed to attract as many market segments as possible, while still providing a 'Great Walk' style 6 day walk. Shuttle services are required in some stages – and optional in others. These help keep distances to the required length of the target markets and may not be required for people willing to walk or cycle longer days.

Accommodation for walkers/trampers would be either DOC style huts (with hut wardens and bookable), or in commercial accommodation in Franz Josef, Fox Glacier or Ōkārito (depending on availability and community aspirations).

An Easy Tramping Track standard would suit the profile of expected walkers and allow for a narrower less formed trail. However, as the trail is proposed as shared use the higher standard prescribed for a Grade 2 and 3 mountain bike trail would be more acceptable and is recommended.

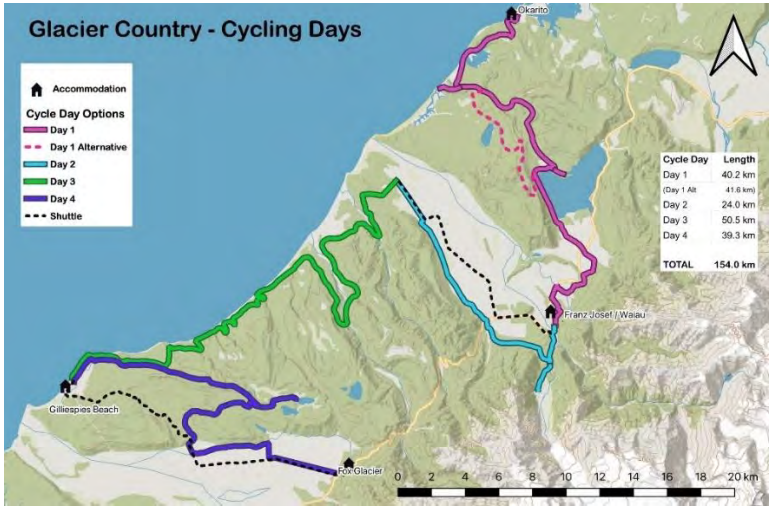
The proposed cycle trail: While the majority of the proposed trail will be a shared pathway, the cycling itinerary varies considerably from the tramping/walking itinerary. This is due to a number of factors including:

- longer distances traversed each day on a grade 2 cycling trail generally using an e-bike
- the main cycling markets are unlikely to be bike-packers and therefore will stay in commercial accommodation in the towns (Fox Glacier, Franz Josef and potentially Ōkārito) rather than cycling with their clothes and food etc, and
- a three to four day cycling experience is an optimal length for the non-bikepacking markets – with options for short trips.

Much like the design of the walking itineraries, the cycling itineraries allow for considerable flexibility including one day cycle trips (including shuttle options), or end to end riding of the proposed trail. A combination of Grade 2 and 3 mountain bike trail has been chosen to best suit the expectations of the market segment described previously, for both biking and walking.

Figure 1. Glacier Country Trail – Walking Itinerary and Trail Route

Figure 2. Map of the Proposed Glacier Country Cycle Trail



Statutory Considerations: The majority of the proposed trail route falls within the Westland *Tai Poutini* National Park. The proposed trail is currently not consistent with the West Coast Conservation Management Strategy nor the more operational Westland *Tai Poutini* National Park Management Plan. The proposal could therefor not be built under the current planning documents.

A review of the West Coast Conservation Management Strategy has recently been initiated however the full review that would consider the proposed trail may take between 3 and 5 years to complete.

DOC is however currently working through a partial review of all Conservation Management Strategies with a view to streamlining processes for considering biking opportunities on public land due to the increased interest and economic benefit of considering some trails. At the time of preparation of this feasibility assessment, timelines for this complex review had not been released although initial conversations with conservation board chairs has occurred and engagement with tangata whenua is planned. National Parks are excluded from the review so will have little impact on this proposal.

Environmental Considerations: The General Policy for National Parks provides that routes may be approved for use for non-powered vehicles where adverse effects on national park values can be minimised (among other matters). This feasibility identifies the high ecological values and the need for a comprehensive ecological assessment of environmental effects. Key areas where the cycle trail is proposed were added to the National Park to protect the unmodified nature of the area, and the values of the area that make it a world heritage area including being the largest and least modified area of New Zealand's natural ecosystems. The risk of environmental impacts and the need for a full Environmental Impact Assessment may mean that if and when detailed planning is undertaken, alternative routes for some sections may be required.

Costs: Based on the proposed route, accommodation (huts), bridges, trail construction costs and the other elements of the concept, the total estimated cost of trail concept is NZ$57.207million (incl 20% contingency, excluding maintenance and operating costs).

Visitors: It is estimated that if the proposed trail is fully established, it will attract about 18,060 cyclists growing to around 26,000 cyclists over the next 16 years, and 10,710 walkers per year growing to around 12,700 walkers over the next 16 years. It is expected that the majority of trail users will be visitors from out of the region using the proposed trail for multiple days.

Economic Assessment: Based on the activity estimates, the Glacier Country Trail will:

- support an average of 74 full time jobs each year of the five-year construction phase
- provide ongoing employment from additional visitor spending, expected to average about 140 full time jobs each year over the 25 years modelled (both direct and indirect employment impacts)
- generate a projected visitor spend of $161.4 million in the West Coast region (in present value terms) over the 25 years modelled (about $6.5 million each year)
- contribute about $50.4 million to the regional economy in net GDP (profits and wages after tax, in present value terms) or $2.0 million each year
- encourage increased activity that will improve health outcomes, reducing health costs by $17.7 million (at a national level), and about $360,000 at a regional level (over the 25-year timeframe)
- derive an estimated consumer surplus (recreational use and enjoyment) value of $26.4 million over 25 years (national), and $590,000 regionally.

Cost benefit analysis:

Over the 25-year time period modelled, total costs of the Glacier Country Trail outweigh total benefits at both the regional level and at the national level.

From the regional perspective, the costs of the Glacier Cycle Trail outweigh the benefits, resulting in a negative net present value (NPV) of -$16.8 million, that is, $51.3 million of benefits (including visitor spend, health, and consumer surplus) compared with total costs of $68.1 million. In the high trail use scenario (25% more users than the base case estimate), the project gets closer to breaking even, with an NPV of -$4.1 million.

From the national perspective, the costs of the Glacier Cycle Trail also outweigh the benefits, resulting in a NPV of -$11.2 million, but for the high-use trail scenario (25% more users than the base case), the NPV is $2.9 million.

This feasibility and initial business case is an important step in the development of the potential Glacier Country Trail into a world class natural and cultural experience. Whilst the economic assessment model might not show a net financial gain at the regional level (based on the assumptions and estimations made), this should be balanced with the non-economic benefits such as:

- adding to community pride,
- the sharing of important local history and stories,
- a desirable place to live that retains and attracts younger families,
- land and property value, and
- as a catalyst for further business development in the region.

There are also potential options for the client to consider which could include:

- a staged development using the priority identified in the report
- reducing the proposed trail length (i.e., taking out one or more sections of the proposed trail)
- focusing on either a dedicated walking or cycling trail (as the walking trail diverges from the cycle trail in some sections).

1. Introduction

1.1 The Brief

Glacier Country, on the West Coast of the South Island of New Zealand is a stunning location with the western fall of the Southern Alps dropping dramatically in a short distance to the West Coast of New Zealand where dark grey beaches and large rivers present outstanding wild nature. The West Coast is also famous for the glaciers that fall from the Southern Alps.

Over the past several decades, climate change has significantly impacted the glaciers, and increased storm events has led to flooding impacting infrastructure such as roads, bridges, and trails.

The economic impacts of the retreating glaciers and storm events has been magnified significantly by the COVID- 19 pandemic. As a consequence of the global pandemic, governments dramatically restricted the volume of international visitors arriving into New Zealand. That impact continues today both nationally and on the West Coast.

A cycling trail linking the scenic and cultural features of the region has the potential to become an iconic experience, attracting visitors to the region, creating a visitor economy that is more resilient to environmental and visitation changes, and which has the potential to create new opportunities for local businesses and communities.

This report provides the foundation upon which Development West Coast along with the potential partners in the proposed trail's development can evaluate the concepts likely feasibility and agree on actions.

1.2 Methodology

TRC Tourism has employed a five-phase methodology to complete the brief and the feasibility assessment as follows.

Phase 1

Project Mobilisation. TRC consultants met with the client and representatives including Department of Conservation representatives (DOC) to understand the project more deeply and plan the project's implementation in more detail.

Phase 2

Research Analysis and Product Definition. TRC consultants, together with our partners from Xyst undertook desktop research into markets, tourism performance, latest trends in cycling and walking from around the world, and environmental management. TRC then undertook consultation with stakeholders. Community based workshops were also held in each of Ōkārito, Franz Josef and Fox Glacier. This coincided with the field visits to assess the optimal trail routes.

Phase 3

Concept Design and Initial Draft Report. TRC and Xyst developed a series of maps and routes and discussed the options with Development West Coast, DOC and selected other stakeholders.

Phase 4

Feasibility and Economic Analysis. Martin Jenkins undertook the economic analysis of the proposed trail based on the estimated costs of constructing and running the proposed trail, and on assumed visitor numbers given the likely slow return of international markets.

Phase 5.

Development of the Report. TRC together with project partners developed a draft report before finalising the report.

2. The Location

2.1 South Island

Te Waipounamu, the South Island of New Zealand, is a popular and exciting visitor destination characterised by dramatic and rugged landscapes, vibrant culture and a sense of adventure. Already a bucket-list destination for many global travellers, the South Island was made even more famous in the popular films, The Lord of the Rings and Wolverine, driving visitation numbers further.

The South Island is also home to many of New Zealand's iconic tourism attractions and products including Milford Sound, Aoraki/Mount Cook, boutique produce, heritage architecture, art galleries and museums. It is known for unique and breathtaking adventure and nature tourism opportunities, such as mountain biking, snow sports, cruises, and hiking.

The South Island's spectacular landscapes and diverse terrains make it one of the best places in the world for cycling and it is home to many of the Great Rides of New Zealand, including the West Coast Wilderness Trail, Alps 2 Ocean, Queens Charlotte Track, Tasman's Great Taste Trail, Dun Mountain Trail, Otago Central Rail Trail, Roxburgh Gorge Trail, & Clutha Gold Trail.

2.2 West Coast

The West Coast is home to 34,608 people, including the districts of Buller, Grey and Westland. Te Wāhipounamu, Southwest New Zealand, is a UNESCO World Heritage Area of Outstanding Universal Value. The landscape has been shaped by glaciers and is home to unique flora and fauna including the southern beech, podocarps, the kea, and the white heron. In the Westland District Council, the Department of Conservation estate covers more than 85% of the total land area, managing a large proportion of the region's key visitor destinations.

Glacier Country, located in the West Coast region of New Zealand, is world-renowned for its natural beauty. Stretching from the coast to the mountains, it encompasses seaside villages, rainforests, mirror lakes and some of New Zealand's highest peaks. It is also home to the Franz Josef and Fox glaciers.

Glacier Country stretches from Whataroa and Ōkārito in the north, through Franz Josef Glacier and down to Fox Glacier in the south. Westland Tai Poutini National Park covers much of the region and is part of the UNESCO World Heritage Area. The Park offers some of the most scenic and spectacular adventures and sights in the world, taking in Aoraki / Mount Cook and travelling right down to the stunning coastline.

Figure 3. Map of Glacier Country

Credit: Glacier Country Tourism Group

2.3 Access

Access to Glacier Country, including Ōkārito, Franz Josef and Fox Glacier, is predominantly via road, either by car or bus.

2.3.1 Road

State Highway 6 is the main carriageway providing access to the towns of Franz Josef and Fox Glacier and the smaller settlement of Ōkārito. The State Highway runs from Nelson in the north of the South Island, to Invercargill near the southern most part of the South Island. The highway is in good condition and is reliant on several bridges that cross glacial melt rivers that when flooding, can cause damage to the infrastructure.

SH6 also provides an outstanding scenic drive, particularly on the sections from Hokitika to Queenstown passing through Glacier Country and then into the Central Otago region after crossing the mountains near Haast Pass.

Queenstown to Franz Josef takes around five hours driving time and features spectacular scenery. Several bus companies also operate regularly, taking approximately eight hours. Once in Franz Josef, there are private shuttle companies available for booking, but very limited public transport.

From Franz Josef north to Hokitika is approximately 134 km and takes approximately 1.5 to 2 hours. Ōkārito is approximately 27 km from Franz Josef township and takes approximately 25 minutes to drive.

Approximate travel times are shown below.

Travel times:

- Franz Josef to Hokitika is 1 hour 43 minutes driving (135km)
- Franz Josef to Queenstown is 4 hours 40 minutes driving (351km)
- Franz Josef to Greymouth is 2 hours 15 minutes driving (173km)
- Franz Josef to Christchurch is 5 hours driving (382km)
- Franz Josef to Wanaka is 3 hours 45 minutes driving (285km)
- Fox Glacier to Wanaka is 3 hours 15 minutes driving (262km)
- Fox Glacier to Franz Josef Glacier is 25 minutes driving (24km)

2.3.2 Train

Visitors can travel via train to Greymouth from Christchurch, and then meet a bus from Greymouth to Franz Josef. This total journey time is around 9 hours. The train trip over Arthurs Pass from the Canterbury Plains is one of New Zealand's premier tourism experiences. The Tranz Alpine train is operated by KiwiRail and operates daily through most of the year.

2.3.3 Air

The closest airports are Hokitika, Queenstown and Christchurch.

- Hokitika: Air New Zealand operates several flights a day between Hokitika and Christchurch
- Queenstown: International flights operate between Queenstown and four Australian destinations - Brisbane, Sydney, Melbourne, and the Gold Coast. In addition, the Queenstown airport is serviced domestically with either direct flights or connections to all of Air New Zealand's extensive network
- Christchurch: Christchurch International Airport receives flights from Australia, China, Singapore, and Fiji. It is also a large domestic hub operating direct flights or connections to all of Air New Zealand's extensive domestic network.

3. Governance Arrangements

The following table provides a snapshot of the predominant organisations likely to be involved in the development or assessment of the proposed Glacier Country Cycle and Walking Trail.

The emphasis for both this and the next stages of the proposed trail's development is one based on partnership. Makaawhio is the treaty partner with the Crown and expresses a strong desire to partner in the trail concept's development, management, and experience development, but the extent of the partnership and with whom is yet to be determined until such time as the next phases of the proposal are pursued.

Makaawhio have expressed a strong desire to tell a cultural story through the proposed trail's design – one that adds a layer of cultural discovery that enriches the experience and provides a commercial opportunity. This should form the underpinnings of future governance arrangements for the proposed trail's development.

Table 1. Organisations and Their Roles

Governance Body	Role
Department of Conservation (DOC)	DOC is a national government agency that manages conservation lands across New Zealand. DOC is also responsible for environmental management and operates many of New Zealand's Great Walks. DOC has moderate involvement in the Great Rides of New Zealand. The Department of Conservation (DOC) plays an important role within the West Coast both for the tourism industry and the broader community. DOC is a prominent landowner/manager through the South Island and manages significant reserves for both conservation values and for visitors to enjoy nature and culture.
Te Rūnanga o Makaawhio	Twenty years on from Kāi Tahu Settlement, DOC, Makaawhio, and Ngāi Tahu are looking to build on the Act's foundation and move the partnership towards one where there is greater engagement and involvement of Makaawhio and Kāi Tahu in future management of the National Park through which the majority of the proposed trail is routed. The legal mechanisms established through the Settlement in 1998 provide the mechanism for Ngāi Tahu rakatirataka and its expression through kaitiakitaka and are the basis for the enduring partnership between Ngāi Tahu and the Crown. Te Rūnanga o Makaawhio Inc is the legal body of Kāti Māhaki ki Makaawhio, the hapu holding mana whenua for the southern half of the Te Tai o Poutini (West Coast of the South Island). It is an important partner in the proposed trail's development and ongoing management.
Development West Coast	Regional economic development agency with aims to promote employment and generate sustainable economic benefits for the region. Development West Coast also act as the Regional Tourism Organisation – and are tasked with managing tourism and its opportunities and impacts for the benefit of their community and marketing the destination to build the visitation and the experiences available to visitors (and locals) in the region in a sustainable way. Other activities of the agency include industry (including tourism) research, strategy development and business support and training, amongst others.
Glacier Country Tourism Group	A group of approximately 90 regional businesses who collaboratively promote Glacier Country. The body operates the glaciercountry.co.nz marketing website and contributes to tourism strategic directions in the region.
Westland District Council	Territorial Local Authority covering much of the focus region with responsibility for planning and community services. Westland is one of the most sparsely populated parts of New Zealand, with an area of 1,186,272 hectares and a population of less than 10,000 people.
New Zealand Transport Agency	Waka Kotahi NZ Transport Agency is a New Zealand Crown entity tasked with promoting safe and functional transport by land, including the driver and vehicle licencing, and administering the New Zealand state highway network. NZTA manage State Highway 6 – of fundamental importance to the people of the West Coast and to this proposed trail, including access and bridges.

4. Tourism Context

4.1 Overview

Glacier Country Tourism Value Statement:

The freedom to explore New Zealand's most diverse, unaltered natural landscapes- from the mountains and glaciers to the sea – and to immerse yourself in pure nature.

Glacier Country could be described as one of the most beautiful places on earth. While blessed with outstanding features that people have flocked to see over the past century, there are several challenges that lay ahead.

While tourism has traditionally been an important industry for the region, there has been significant and protracted disruption to the industry as a result of COVID-19, including supply chain and labour market issues. By February 2021, 518 jobs had been reported as lost because of the pandemic (from 1,028 jobs in the Glacier Country prior to the pandemic), and 15.5% of businesses were no longer operating.[1] The West Coast also faces a number of enduring social and economic challenges. The region has an ageing workforce and a lack of young people staying to live and work. It is also very vulnerable to extreme weather events, sea-level rise and natural disasters.[2]

The region's key attraction, the glaciers, are rapidly retreating. The total volume of glacial ice in New Zealand decreased by 35 percent and the rate of annual loss increased between 1978 and 2020.[3] Changes to ice storage and melting can affect ecological and hydropower resources downstream, as well as important cultural values and tourism. There is an immediate need to diversify the region's tourism assets, increasing the resilience of the local tourism industry.

4.2 National Tourism Performance

International travel to New Zealand has been heavily restricted since March 2020 due to the Covid-19 pandemic. For the year ending March 2021, total tourism expenditure in New Zealand decreased 37.3% ($15.6 billion) from the previous year.[4] At the same time, international tourism expenditure decreased 91.5% ($16.2 billion) to $1.5 billion.

International inbound tourism is rebounding albeit slowly and off a very low base. In March 2022, international visitor arrival numbers were just 28,647.[5] This is an increase from the 4,641 in March 2021 but demonstrates the significant impact of the border closures on the industry from March 2019 (378,294) and 2020 (175,524).

New Zealand has opened its international borders for eligible travellers and key source markets are now able to enter New Zealand. Vaccinated tourists, cruise and student travellers are able to visit New Zealand from 31 July 2022. The reopening of the Australian tourism market provides a huge opportunity to continue to promote and develop cycle and walking tourism in New Zealand.

[1] Glacier Country COVID-19 Impact Survey, Development West Coast, Feb 2021.

[2] Te Tai Poutini West Coast Strategy 2050

[3] https://www.stats.govt.nz/indicators/annual-glacier-ice-volumes

[4] MBIE.GOVT.NZ

[5] International Visitor Arrivals since 2016. Stats.govt.nz

Figure 4. International Visitors, Monthly Arrivals trends

Source: Stats.govt.nz/international travel to March 2022.

Domestic tourism has been the mainstay of the New Zealand visitor economy since the beginning of the COVD pandemic. New Zealanders have been exploring their own back yard providing a lifeline to struggling operators. Some destinations anecdotally report their best performance for some time. Unfortunately, this has not translated to the West Coast and in particular Glacier Country. Domestic tourism expenditure increased 2.6 percent ($622 million) to $254.6 billion in the year to March 2021.[6]

[6] Tia.org.nz/about-the-industry/quick-facts-and-figures/

4.3 West Coast Tourism Performance

The West Coast Visitor Trends report provided by Development West Coast for May 2022[7] provides some industry snapshots:

- An average 4,806 visitors were in the West Coast Region in May 2022, a decrease of -6% from May 2020 (COVID restrictions implemented for international travel), but an increase of 3% over May 2021
- The reliance on domestic travel is evidenced in the fact that of the 4,806 visitors in May 2022, 4,664 of them were domestic visitors. Some rebound in international travel is beginning to be evidenced with an average 142 international visitors in the region in May 2022, up from 18 in May 2020 and 32 in May 2021
- Overall, Tourism West Coast received less spend in May 2022 than it did in May 2021 through an 11% decrease, putting it in the lower 5 Regional Tourism Organisations (RTOs) out of 37 RTOs in the country
- The Department of Conservation (DOC) manages a number of important visitor experiences nationally and on the West Coast. DOC reported a 72% decline in visitors undertaking the Hukatere Walk at Franz Josef Glacier between 2020/21 and the average of the previous three years[8]
- Pre COVID – the following travel patterns existed with substantial visitor numbers staying overnight in Queenstown only and undertaking daytrips to Glacier Country:
  - 16.1% of international visitors to the South Island only stay overnight in Queenstown, using this as a base for daytrips to key attractions such as Franz Josef Glacier.
  - 3% of overnight holiday visitors (international) will stay in Christchurch, Queenstown, and the West Coast.
  - 1.4% of overnight holiday visitors (international) will stay in Christchurch, Queenstown, the West Coast and Fiordland.[9]

4.4 Trends Likely To Affect Tourism And Recreation

The following trends in lifestyle, tourism and recreation have been experienced in many destinations throughout the world over the past several years, and in particular post pandemic. The points below are considered relevant to trail experience development and the associated services and infrastructure to support them.

- The Importance of health, wellbeing and safety - a growing international trend
- Shorter trips, closer to home, seamless travel (at least in the short to medium term) as people begin to feel more comfortable with travel in a COVID normal world
- Catching up with friends and family is more important than ever with the VFR markets likely to be strong for some time to come
- Accessing the outdoors, fresh air and open spaces after movement restrictions provides visitors with a sense of escape and refreshment
- Cycling and walking have emerged from the pandemic strongly with anecdotal evidence that bike stores cannot keep up with stock

[7] West Coast Visitor Trends May 2022. Development West Coast

[8] 2020/21 visitor insights report – Department of Conservation. September 2021.

[9] Te Waipounamu – South Island DMP

- Domestic visitors lower spend on average compared with international visitors
- Growth in experiences – meaningful, unique experiences. People are increasingly time poor and seeking personalised/ tailored tourism and recreation opportunities. Travelling off the beaten track to explore the less-known local gems of places to catch a glimpse of the day-to-day of the places they visit, and this may include interacting with locals, buying/ consuming local produce, hearing lesser-known stories – the DNA of a place
- Growth in peer-to-peer accommodation (e.g., Airbnb)
- Anecdotal growth in motor home and freedom camping which can put pressure on sustainable travel destinations
- Technology – mobile information on navigation, experiences and supporting information on the go, augmented reality providing further depth to experiences, fitness tracking technology and online forums/groups for posting feedback)
- The rise in sales and rentals of e-bikes – opening new markets, increased accessibility for more users
- Infrastructure that benefits both residents and visitors is important
- Sustainability as an integral part of tourism (host perceptions and benefits, balanced environmental/ socio-cultural/ economic benefits)
- Climate change implications (this is particularly important for Glacier Country both from a glacial retreat perspective and also an infrastructure resilience perspective)
- Accessibility (physically and socially)– for people of different abilities and mobilities, aging population, intergenerational (e.g., grandparents travelling with grandchildren), solo travellers, lesbian, gay, bisexual, and transgender (LGBT).

5. Market Analysis

5.1 Market Segmentation

In general, domestic visitors within New Zealand are most likely to look for a holiday destination with opportunities to relax and refresh (49%) and spectacular natural landscapes and scenery (46%). About 26% are also likely to be motivated by a good mix of outdoor and adventure activities.[10]

The figure below provides an example of the domestic market segmentation for New Zealand. Development West Coast has used that work to create a target market statement for the region.

Figure 5. New Zealand's domestic market segments[11]

[10] Tourism New Zealand Insights, Domestic Travel View Report, April 2022.

[11] Digit.NZ 2021

The most likely domestic traveller for the ***West Coast*** is:

Explore Nature + Intrepid Explorer = *Intrepid West Coast Nature Explorer*

The *West Coast Nature Explorer* is likely a couple with no kids, all ages, and 29% are from the Canterbury region.

They are motivated by walking and hiking in a wilderness area, sightseeing and epic viewpoints, the freedom to explore, **off-road cycling** and bathing in hot pools.

Their preferred accommodation is a motel or campground. [12]

The most likely international visitors would be from Australia, those with a specific interest in mountain biking, and holiday visitors with a similar profile to the domestic Intrepid West Coast Nature Explorer.

5.2 Visitor Numbers and Profiles

For cycling market analysis, the Cycle Tourism Insights Report published by MBIE provides the following points that are relevant to the West Coast trails:

- In the 12 months ending March 2020 (Pre COVID), 9.5% of international visitors participated in cycling activities, 76.5% visited a natural attraction and 32.2% a glacier[13]
- A 2021 study found that 27% of the New Zealand adult population have participated in a cycle tourism activity in the past year, with an estimated market of 1.8 million people. Of these, 41% are single/couples with no children, and 36% are single/couples with children living at home. Seven in ten of these visitors are between the ages of 18-49[14]
- The same study found that 21% of the Australian adult population have participated in a cycle tourism activity in the past year, with an estimated market of 6.9 million people. Of these, 38% are single/couples with no children, and 44% are single/couples with children living at home. Seven in ten of these visitors are between the ages of 18-49[15]
- These markets had an average total spend of $697, and an average daily spend of $228. Higher spends were more likely to be found amongst those who spent 5 or more days on a trail, Aucklanders, those aged 60+, and those purposefully travelling to ride trails
- In year ending June 2021:
  - 4% of New Zealanders and 5% of Australians who participated in the cycle tourism market completed a multiday cycle touring trip

[12] Target Audience Analysis, Draft, Development West Coast Sept 2021

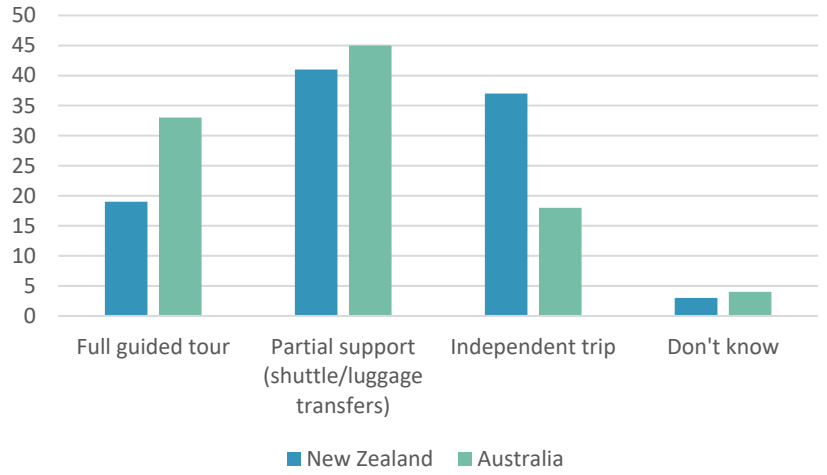
[13] International Visitor Survey, March 2020

[14] Cycle Tourism Insights, NZ and Australian Market Summary, September 2021. Ngā Haerenga New Zealand Cycle Trails.

[15] Cycle Tourism Insights, NZ and Australian Market Summary, September 2021. Ngā Haerenga New Zealand Cycle Trails.

  - 17% (both New Zealand and Australian) cycled on a mountain bike trail
  - 18% (New Zealand) and 25% (Australian) cycled in a national, regional or state park. [16]
- These figures increase significantly amongst *prospective* cycle tourism markets:
  - 12% of New Zealanders and 5% of Australians who represent the prospective market are interested in completing a multiday cycle touring trip
  - 40% (New Zealand) and 25% (Australian) are interesting in cycling on a mountain bike trail
  - 45% (New Zealand) and 55% (Australian) cycled in a national, regional or state park [17]
- The key reasons for taking part in a cycle tourism activity were
  - Fun and enjoyable experience
  - Opportunity to explore nature and scenery
  - Opportunity to improve fitness/physical activity
- The key barriers to participation included the weather being too unpredictable, not being fit enough, and not having a suitable bike
- ***The ideal trail experience for the New Zealand market would last less than a day, which highlights the need for multi-day trails to have well-considered and marketed day-rides or segments***
- The ideal trail experience for the Australian market would last less than three days and be supported in terms of logistics and a guide
- Both New Zealand and Australia have similar bike preferences: 69% would want to ride a traditional bike, and 25% an e-bike, although the percentage of people using e-bike's is increasing.

Figure 6. Preferred Level of Support - New Zealand and Australian Cycle Tourism Participants



Cycling and Mountain Biking is noted as a key product strength of the South Island, with these products making up just over 9% of all tourism products on the Island, most of which are offered by DOC. A significant number of the Great Rides of New Zealand are located on the South Island.

The current cycle trails on the West Coast include the West Coast Wilderness Trail (132km), Old Ghost Road (85km), Heaphy Track (78.4km), Paparoa Track (56.2km), and Kawatiri Coastal Trail (55km).

Participation trends captured by Sport NZ in 2019 shows that across NZ, about 10.2% of the population are interested in biking, with 6.2% participating in the previous year. This translates into an estimated available market of just under 500,000 kiwis interested in biking.

[16] Cycle Tourism Insights, NZ and Australian Market Summary, September 2021. Ngā Haerenga New Zealand Cycle Trails.

[17] Cycle Tourism Insights, NZ and Australian Market Summary, September 2021. Ngā Haerenga New Zealand Cycle Trails.

5.3 E-Bike Market

E-MTBs have been gaining serious traction in the biking world and have been credited with a second wave in popularity of mountain biking as riders are reinvigorated to get back on trails without worrying about fitness levels or their capacity for uphill efforts. E-MTBs encourage users who would otherwise not have considered cycling as a preferred recreation due to concerns about age or fitness. Further, it is significantly extending the upper age limit of riders while also increasing their overall average usage, leading to health and wellbeing gains.

One in three bikes sold in Europe is an 'e-bike'[18]and it is estimated that more than 40 million e-bikes are expected to be sold each year by 2023. It's estimated between 100,000 and 200,000 New Zealanders are already e-bike users and in 2021 more than 50,000 were imported. In the next two or three years, e-bikes are likely to overtake all new car sales[19]

E-MTB riders typically seek a recreational experience, more than a competitive one, valuing high-quality, accessible, nature-based experiences that offer some degree of support (via township and service integrations, and inclusive charging points for longer-distance journeys).

E-MTBs present significant opportunity for visitor engagement in mountain biking, give the hilly terrain found in the West Coast. The challenge here is to encourage a hire fleet of high-quality E-MTBs that services the market with enough availability at an affordable price. The barrier to this is the high-cost input for hire operators and ongoing intensive servicing and battery replacement costs.

5.4 Walking Tourism

According to the latest UN World Tourism Organisation (UNWTO) report on Walking Tourism[20], it is an activity usually perceived as a soft adventure, slow and/or special-interest tourism activity that is typically covered under the adventure tourism and/or nature-based tourism umbrella. Activities mainly take place in natural/rural environments. It is also closely connected with community-based tourism. Given the nature of the type of tourism, it may stimulate its users to positively impact the destination they visit, as a result of engaging actively and meaningfully with a range of its aspects. Walking tourism refers to trips in which walking in the natural environment forms a significant part of the trip. It includes specialist niche markets such as hiking, tramping, long-distance walking, specialist walking, hillwalking, rock climbing, alpinism, mountain walking, mountaineering, backpacking and gorge walking.

As a result of travellers' increasing search for escapism, meaningfulness, once-in-a-lifetime experiences, transformational and authentic experiences, active lifestyles and holidays and physical and health activities, adventure tourism is the fastest-growing tourism sector globally: from 2019 to 2026, 13.3% growth is expected. Walking tourism is regarded as a market with high potential (this applies pre and post COVID-19). Adventure seekers increasingly opt for walking activities in itineraries.

[18] www.abc.net.au/news/2019-07-06/electric-motors-might-change-congestion-cycle/11282384

[19] On Your Bike by Russell Brown, Listener article June 18, 2022

[20] https://polskiemarkiturystyczne.gov.pl/uploaded_files/1587722112_unwto-walking-tourism.pdf

Case Study: Old Ghost Road

The 85km Old Ghost Road attracts 12,500 users per year and is one of the Great Rides of New Zealand. On this IMBA recognised Epic Trail, riders travel 20-40km per day for 2-4 days, and hikers average 15-20km over five days. It is recognised as one of the world's premier backcountry mountain biking routes, with the longest stretch of unbroken singletrack in NZ. This is a highly challenging experience requiring a high degree of fitness and technical competency if riding. Two categories of accommodation cater for a wider range of user: bookable huts with high standard amenities, and non-bookable, basic facilities. The trail is managed and maintained by Not-for-Profit Mokihinui-Lyell Backcountry Trust.

Quality in situ interpretive and wayfinding infrastructure supports visitors and encourages positive interactions with the experience and place.

6. Developing a Great Trail

Developing a great trail puts the user at the centre of the experience. The experience the proposed trail offers should be based on a strong understanding of the vision for the trail, the target markets, and follow the Guiding Principles for trail development.

The user experience will inform the duration and length of sections of the concept, the type of access, materials, trail width, design, and grading. The overall trail experience needs to be carefully packaged with trail and user type including facilities, signage, products and services, and value-add activities.

The needs of each user group should be determined, with user capacity anticipated.

6.1 Types of Trails

Trails can be single-use (one activity or mode only e.g., walking) or shared use. Shared use trails require careful design to ensure safety and visitor enjoyment without creating conflict between users.

Different trail experiences include:

- Walking
- Running
- Cycling
- Mountain biking
- Horse riding
- Water-based trails.

6.2 Benefits of Trails Tourism

In 2021, despite the border restrictions, it is estimated that the direct economic contribution of the Ngā Haerenga Great Rides of New Zealand was $950 million.[21] On the West Coast, the annual spend for cycle trail tourism was $469.6 million.[22]

As well as economic benefits, the Great Rides of NZ and West Coast Trails contribute a wealth of economic, social and health benefits to local and visiting individuals and communities. These have included physical health benefits, mental health, social group connection, and increased engagement with the natural environment and local culture and heritage. The significant benefits to physical health of the Great Rides of New Zealand has been estimated to be $11 million, arising from trail use for cycling only.[23]

ENVIRONMENTAL BENEFITS

Improved access to nature, low-impact transport, support regenerative projects, inspiring behavioural change

ECONOMIC BENEFITS

Increased visitor spend, spend dispersal, economic development, support of local community

SOCIAL BENEFITS

Health and wellbeing, improved services and vibrancy, inspiration, improved connectivity and safety, civic pride, and social license

CULTURAL BENEFITS

Celebrate local biking culture, interaction of cultures, sharing of local history and culture.

Recognition of Iwi culture

[21] 2021 Evaluation of Ngā Haerenga Great Rides of New Zealand

[22] West Coast Cycle Trail Review, BECA

6.3 Characteristics of Great Trails

While a destination may have a world class trail, it is the combination of trails and overall visitor experience that creates a trail destination residents are proud of, and visitors seek out. The characteristics of what makes a great trail include:

- Clear point of difference for the trail experience that is well communicated through marketing
- High market profile within the destination
- Complementary nature/culture/historic based attractions, products, and infrastructure in the region
- Opportunities to stop and explore are key attractions offered by the trail
- Ability to cater to both independent and guided walkers / riders
- An experience that offers a level of exclusivity and avoids high volume nodes or trails
- A quality, seamless experience with ease of information, booking and accommodation
- Level of challenge and distance that is geared to consumer preferences

The influencing features when choosing and planning to ride a trail include:

- Spectacular landscapes and scenery
- Easy access to practical information converting general interest into actual participation
- Trail passes cafes/ restaurants / vineyards to stop at

[23] 2021 Evaluation of Ngā Haerenga Great Rides of New Zealand

- Passes through towns you can stop and explore
- Follows historic routes
- Offers trail features such as suspension bridges
- Itineraries that combine days of cycling with days doing other activities
- Preference for off-road routes.

6.4 Elements of a World Class Trails Destination

For the West Coast, and in particular South Westland to be deemed a walking trail destination of choice in New Zealand and globally, a number of elements must be pursued, not just creating well designed trails capitalising on the stunning alpine landscapes, rainforests and west coast beaches.

Figure 7 shows the elements that when combined and done well, provide outstanding visitor experiences.

Figure 7. Elements that Combine to Make a World Class Trails Destination

6.4.1 Management Governance and Resourcing

Trails that realise their potential and operate sustainably over time tend to have governance entities:

- with a clear mandate for trail development and provision of leadership and vision
- clear statements of roles and responsibilities of the various parties involved in management tasks including financial and budget responsibilities
- that incorporate personnel with the skills and experience relevant to leadership, effective decision-making related to the trail and governance tasks
- that include arrangements/agreements at a senior level with any agencies tasked with trail management and maintenance.

There are several possible governance models for the proposed trail's development and management, and Makaawhio have expressed a strong desire to be a foundation partner.

6.4.2 Effective Planning

Strategic planning by the trail governance entity for development and operation of the trail over time is important to provide a consistent direction, identify objectives, provide strategies to address issues and achieve objectives, identify investment needs and define roles and responsibilities. Where trails are developed in stages dependent on the availability of funds, a strategic plan, Master Plan or business plan will provide clarity on future funding needs.

6.4.3 Information and Booking

Understanding a trail's current and potential local and visitor markets is an important part of trail business – it assists promoting a trail to, and developing the right products and services, for the people most likely to be attracted to the trail.

Strong on-line and in-situ visitor information enhances the experience, provides a degree of comfort to walkers in the west coast terrain (particularly when the weather can change rapidly) and can be used to tell stories.

Simplified booking arrangements that can package support services such as accommodation, food and beverage and transport options are strongly encouraged.

6.4.4 Transport and Access

Many of the trails and trail heads recommended in this plan require vehicles to help people arrive and depart, often from one-way trails although loops have been designed as options.

The opportunity exists for transport services to the villages of Ōkārito, Franz Josef and Fox Glacier and shuttling riders and walkers between the various stages and elements of the walks, depending on their chosen itinerary.

6.4.5 Infrastructure and Accommodation

Supporting infrastructure and accommodation will be critical to the success of a trails-based destination aiming at capturing visitors for periods longer than a day. Franz Josef and Fox Glacier have significant infrastructure and accommodation stock on hand to fill this element of the visitor experience.

6.4.6 Marketing and Promotion

Marketing needs to be aimed at the target markets and create a sense of excitement setting the West Coast apart from other destinations. Development West Coast and Tourism West Coast are skilled and have the capability to market the trails.

7. The Vision for the Glacier Country Trail

7.1 The Vision

The previous sections of this feasibility assessment delve into the region, its people, its strengths, and the attributes of the trails market for New Zealand and specifically the West Coast.

Community consultation undertaken as part of this feasibility asked the communities of Fox Glacier, Franz Josef and Ōkārito what their vision for the proposed trail is. A range of ideas for the proposed trail concept were raised including:

- That the proposed trail should capture the history of the region including gold mining at 5-mile lagoon
- That the proposed trail should immerse people in nature to help them appreciate it
- That the scenery of the region is inspiring and should be captured by the proposed trail route
- That Makaawhio story lines and design would offer a fantastic visitor experience and provide opportunities commercially for Māori
- That the proposed trail will help the whole community
- That the proposed trail will provide significant opportunity for businesses
- That the proposed trail can be a connecting route between communities and for community use in addition to visitor use
- That the concept should provide flexible routes
- The proposed trail should respect community wishes such as at Ōkārito
- That the proposed trail would ideally become a Great Ride of New Zealand and potentially a Great Walk.

When the themes are combined – we arrive at a vision for the Glacier Country Trail:

'The Glacier Trail – capturing the very best of the West Coast - will be recognised as one of the world's great trail experiences and considered a must do for New Zealanders and visitors.'

7.2 The Design Principles

The following principles are designed to provide guidance in the development of the planned Glacier Country Cycle and Walk Trail. They are not exhaustive or ordered by priority but are a qualitative guide to aid in the determination of the most suitable route and experience development as part of this feasibility study.

7.2.1 Market Alignment

The proposed trail will align to the needs of current and as far as possible, future market trends.

We know that at present that the 'e-bike' touring market seeks a trip of between 30 and 50 km per day on a well-designed and well-maintained

Grade 2/3 cycling trail.[24] This allows for between 3 and 6 hours of cycling per day and will also be achievable on most modern e-bike battery systems prior to the battery running flat. It also suits the 'boomer' markets looking for outdoor adventure in a comfortable way.

Supported walks (such as the Great Walks of New Zealand) generally allow for between 10 and 20 kilometres of trail walked per day depending on the elevation gain and loss, the trail condition, the prevailing weather, and the type of accommodation and servicing support at the end of each day. Some longer days may be acceptable when the grade and track condition are suitable (i.e., flat and good surfaced trail).

7.2.2 Working with Iwi

The Makaawhio Rūnanga of Ngai Tāhu are proud custodians of the culture and lands of South Westland. Manaakitanga (hospitality) is one of the core values that drives the tourism industry arm of Ngai Tāhu.

Developing this trail in partnership with Makaawhio is fundamental to the success of all partners involved in this trail; from the Department of Conservation DOC, Westland District Council, Development West Coast, and the communities of Ōkārito, Franz Josef and Fox Glacier.

Respecting the desire of Makaawhio to tell their own stories, and develop businesses aligned to the proposed trail also supports the aspiration for the proposal to be a natural and cultural immersion into the region.

7.2.3 World Class

The national parks of the region are world class – with Westland National Park/Tai Poutini National Park, Aoraki/Mount Cook National Park and further south Mount Aspiring National Park being part of the collective Te Wāhipounamu World Heritage Area (WHA) listing. The broader WHA landscape is one of outstanding forests, fiords, glaciers, mountains, and valleys.

The proposed trail's infrastructure, design, interpretation, and other elements that go to creating the experience should all aim to be world class highlighting the natural and cultural values of the land and water.

7.2.4 Strong Governance

Strong governance of a trail is essential to the trail's ongoing management, maintenance, future planning, and community participation.

Several models are likely to be considered for this trail, with elements including simplicity, heads of power, revenue raising and maintenance, planning capability, and Iwi partnership models to be considered.

7.2.5 Marketing

Aligning the trail's experiences and services to the target markets has been covered in the earlier principle. Attracting visitors to the region to undertake the trail is critical and complex. DOC's Great Walks, and New Zealand's Great Rides are aspirational targets for this trail to achieve.

Further – the knowledge of the region through Development West Coast should be utilised as far as possible.

7.2.6 Partnerships

Partnerships are critical to success for any longer walk or cycle (or both) trail. Positioning the trail and region in a crowded marketplace is supported by working with similar products that aspire to deliver similar

[24] See Appendix A – DOC Cycle Track Service Standards.

high class products and experiences aligned to the positioning statement for the region.

Examples include the Paparoa Track, to the north of the proposed Glacier Cycle Trail, the West Coast Wilderness Trail, also to the north and the Old Ghost Road. While the trails may serve different markets, combined they provide scale and marketability of the region.

7.2.7 Community Support

The trail alignment, and servicing among other elements of the proposed trail need to be supported at a community level. In some ways called Social Licence, the community benefit from and support for the trail must be meaningful and measurable.

Community consultation and options for business development are vital and aligning those aspirations with iwi is also seen as critical.

7.2.8 Environmental and Cultural Value Management

The proposed trail sits within national park and conservation land. Establishing construction and maintenance guidelines that minimise the risk to the values of the area is vitally important. Kiwi and other important bird life is present in the vicinity of the trail.

Careful alignment planning that delivers the visitor experience while both minimising the impacts to values and maximising the opportunities for community conservation outcomes are important.

Avoiding iwi cultural sites is a given and trail planning must ensure that no damage is done to any sites of importance.

Careful consideration to the use of historic tracks such as the pack track to 3 Mile Beach to avoid damage is also important.

7.2.9 Connecting Sites of Significance

The trail should highlight not only the essence of the region, including the vantage points for views over the Southern Alps, the wild and windswept wilderness beaches of the west coast, the rain forest and native vegetation of the world heritage area and the history of the area, but also build on the existing visitor economy infrastructure.

Lake Matheson is one of DOC's most popular short walks, Fox Glacier and Franz Josef contain accommodation, water services, sewage etc and can be used predominantly as service centres for the trail, and the region's aircraft including established helicopter tours provide for package options that can be explored.

Ōkārito as the start or end point for the trail sits on an idyllic lagoon full of regional history and wildlife and is also accessible by road.

7.2.10 Resilience

The West Coast of the South Island is vulnerable to storm events and with increasing numbers of storms and rainfall events, coastal erosion and sea level rise – building in a resilient way is vital to the success of this trail. There is little point building trails on river flats that may be flooded every year or several years, or on areas subject to significant erosion likelihood.

8. Trail Design

8.1 General

The proposed trail descriptions that follow in this section all assume a one-way trail from north to south. This assumption is for the purposes of describing the route and itineraries only. While user experiences can be improved with one-way trails, this level of operational planning would be ideally undertaken in the next phase of assessment.

8.1.1 Trail Costs

Trail costs are provided based on industry knowledge, recent construction activity and are all in 2022 $NZD. Trail lengths have been extended 20% from those measured on the maps to allow for on ground gradients and twists and turns to fit into the landscape. Contingency amounts are added in the order of 20% to allow for unforeseen issues and potential cost escalation being seen across the construction and outdoor sectors globally and within New Zealand.

Costs have been broken down into the four sections described within this report.

Costs have been derived from a schedule of rates approach as shown in the table below.

Table 2. Schedule of Rates of Component Costs for the Glacier Country Trail

Item	Rate	Comments
Grade 2/3 trail	$280 per metre (average across the proposal)	The costs for Paparoa Track at Grade 3/4 ranged between $150 and $265 per metre. It is estimated the proposed trail would cost between $150 and $350 per metre with most construction in the national park being towards the higher end.
Improvements to existing trail (if required)	$100 per metre	
Swingbridge/Suspension bridge	$6,000 per metre	Taken from recent DOC bridge projects from the West Coast
Timber or steel truss bridge	$4,000 per metre	Taken from recent DOC bridge projects from the West Coast. Note steel truss is cheaper but less suitable in coastal environments.
Boardwalk	$1,000 per metre	Allowing for up to 2 metres wide.

Item	Rate	Comments
Road bridge clip-on for pedestrians and cyclists	$750,000 for 65m	Provisional sum as there are many variable factors such as strength of existing bridge.
20 bunk hut (includes toilets and hut warden's quarters)	$1.5 million	Obtained from the actual costs for the Paparoa Track huts with some contingency for inflation added in.
Shelter (simple two sided)	$100,000	Paparoa Track fully enclosed shelter in alpine area cost $220,000
Toilet (at other than hut sites and includes waste system)	$120,000	
Extra car parking	$150,000 per site	
Fencing	$15 per metre	Market rate
Signage	$20,000 per section	Supply and installed price
Consents	$50,000 per section	Nominal amount estimated includes time to prepare application and any expert advice required

Source: Xyst 2022 and Industry Knowledge

Note: The total cost does not include the cost of project management, supply of interpretation or depreciation of assets.

8.2 Trail Grade

A combination of Grade 2 and 3 mountain bike trail has been chosen to best suit the expectations of the market segment described previously, for both biking and walking. Under the DOC Visitor Group categories this would align with both the Day Visitor and Backcountry Comfort Seeker groups to cover the dual use aspect. To undertake a Grade 2 and 3 trail cyclists should have some off-road riding experience and be confident enough with their skills and fitness to venture away from a road end for a day's riding (typically 4-5 hours). The highest point on the proposed trail would be just over 300m, therefore hill climbing is more at the moderate end of the scale. It is expected that the proposed trail would be suitable for a wide age range.

The DOC Cycle Track Service Standards (2020) describe Grade 2 and 3 trails as being mostly well formed, with an even and firm surface allowing for gentle climbs although some steeper pinches and narrow sections are allowed at the Grade 3 level. The proposed trail would have a width between 0.9 to 2m and have a gradient of mostly 0-5 degrees but allow for up to 10 degrees at limited sustained distances. Further description of both Grade 2 and Grade 3 off-road mountain bike trails is provided in Appendix 1.

An Easy Tramping Track standard as described in SNZ HB 8630:2004 Tracks and Outdoor Visitor Structures would suit the profile of expected walkers and allow for a narrower less formed trail. However, as the trail is proposed as shared use the higher standard prescribed for a Grade 2 and 3 mountain bike trail would be more acceptable and is recommended.

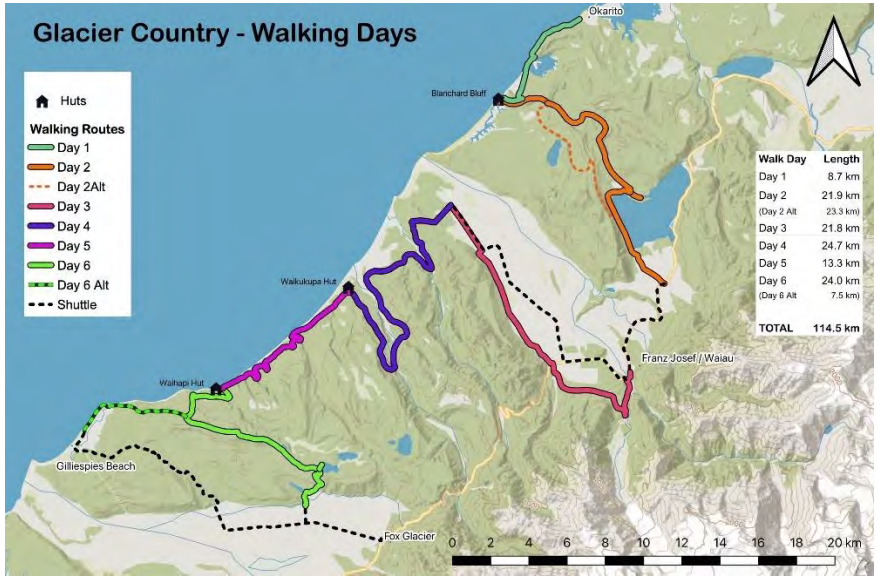
Figure 8. Example of Recommended Trail Standard

Source: Xyst Ltd.

8.3 Walking Trail Proposal and Itinerary

The figure below provides a map of the proposed route and suggested itineraries for trampers/walkers.

Figure 9. Glacier Country Trail – Walking Itinerary and Trail Route



The proposed route and itinerary for the walking product allows for various combinations of days to suit different markets. For example, a day walk could be undertaken from Ōkārito to the proposed Blanchard Bluff Hut and return – a DOC managed hut similar in style to the existing Great Walk Huts. Weekend or overnight trips could be undertaken between Ōkārito and Franz Josef, and 3 days walks could be undertaken between Franz Josef (Neil's Creek carpark via shuttle) and Fox Glacier via Lake Matheson or potentially Gillespies Beach.

The multiple option itinerary is designed to attract as many market segments as possible, while still providing a 'Great Walk' style 6 day walk.

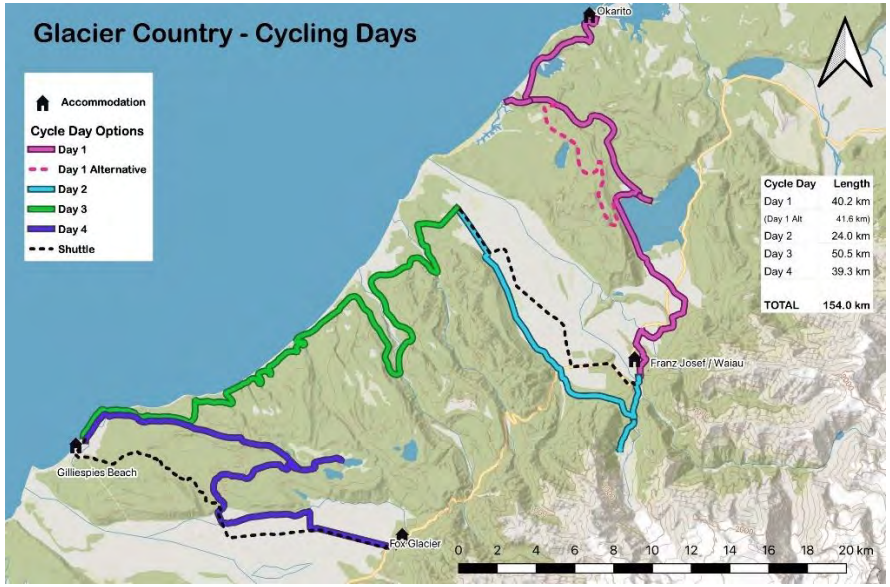
Shuttle services are required in some stages – and optional in others. Shuttle services would likely be operated by private operators and be bookable or run on a timetable over busy periods. Shuttles help keep distances to the required length of the target markets and may not be required for people willing to walk or cycle longer days.

Accommodation for walkers/trampers would be either DOC style huts (with hut wardens and bookable), or in commercial accommodation in Franz Josef, Fox Glacier or Ōkārito (depending on availability and community aspirations).

8.4 Cycle Trail Proposal and Itinerary

The following map provides the proposed route and itinerary for the cycling markets.

Figure 10. Map of the Proposed Glacier Country Cycle Trail



While the majority of the proposed trail will be a shared pathway, the cycling itinerary varies considerably from the tramping/walking itinerary. This is due to a number of factors including:

- Longer distances traversed each day on a grade 2 cycling trail generally using an e-bike
- The main cycling markets are unlikely to be bike-packers and therefore will stay in commercial accommodation in the towns (Fox Glacier, Franz Josef and potentially Ōkārito) rather than cycling with their clothes, food etc
- A three to four day cycling experience is an optimal length for the non-bikepacking markets – with options for short trips.

Much like the design of the walking itineraries, the cycling itineraries allow for considerable flexibility. One day cycle trips (including shuttle options) include the Ōkārito to Franz Josef section, and the Neil's Creek Car Park to Gillespies Beach (or Lake Matheson, Fox Glacier).

Cycling is expected to deliver anywhere between 60 and 80% of the volume of users on the proposed trail. This estimate is partly derived from the fact that accommodation is not limited as it is by the walkers huts bed numbers (DOC Great Walk style) rather the commercial accommodation in the towns can cater for significant numbers and can also grow if required. This also helps derive a greater economic return to the region through increased spending on shuttles, accommodation and food and beverage.

8.5 Ōkārito to Franz Josef Trail Section

8.5.1 Route Description

Figure 11. Ōkārito Lagoon – the start or end of the proposed Glacier Country Trail

Source. TRC Tourism 2022

A walking trail from Ōkārito to Franz Josef would utilise the historic Three Mile Pack Track giving access to the north end of the Three Mile Beach via an existing bridge. A separate trail for cyclists is required from the end of the Ōkārito Wetland walk which would take cyclists up and over a saddle to the south-east of the trig site and then wind its way to meet the existing bridge across the mouth of the lagoon. The Pack Track has sections with gradients steeper than desired for Grade 2 or 3 biking trail and any upgrade to this trail may affect the historic integrity of this actively managed site. The Three Mile Pack Track and the Trig Walk are also popular day walks for visitors and locals.

New trail is required to be constructed from the bridge as a shared use trail. A trail near the Three Mile Beach gives the greatest rewards of coastal and estuary views but is also a highly fragile area with significant natural values. Further investigation would be required into the environmental impacts of a formed trail along this section and as to the resilience from coastal surges and erosion. Walkers currently visit this area but use the beach for access south of the bridge rather than a formed trail. Leaving the vicinity of the beach the proposed trail would head inland sidling up and then head to where a new hut could be located behind Blanchard Bluff.

The hut proposed would be a 20 to 25 bunk serviced hut with gas cookers and a hut warden – Great Walk style. The majority of walkers would stay here the night while most cyclists would stop for a bite to eat before carrying on their journey. There are very few huts on the West Coast that are coastal so this would be a key part of the walking option attraction. A new bridge providing access to Five Mile Beach would also boost the popularity of this location. Parts of the old gold dredge are visible at the south end of Five Mile Lagoon, and interpretation of this area would give insight to the life of those who dredged and sluiced the black sands to seek gold.

Figure 12. Old Gold Mining Dredge – Five Mile Lagoon

Source: TRC Tourism 2022

Figure 13. Three Mile Lagoon and the Existing Bridge

Source: TRC Tourism 2022

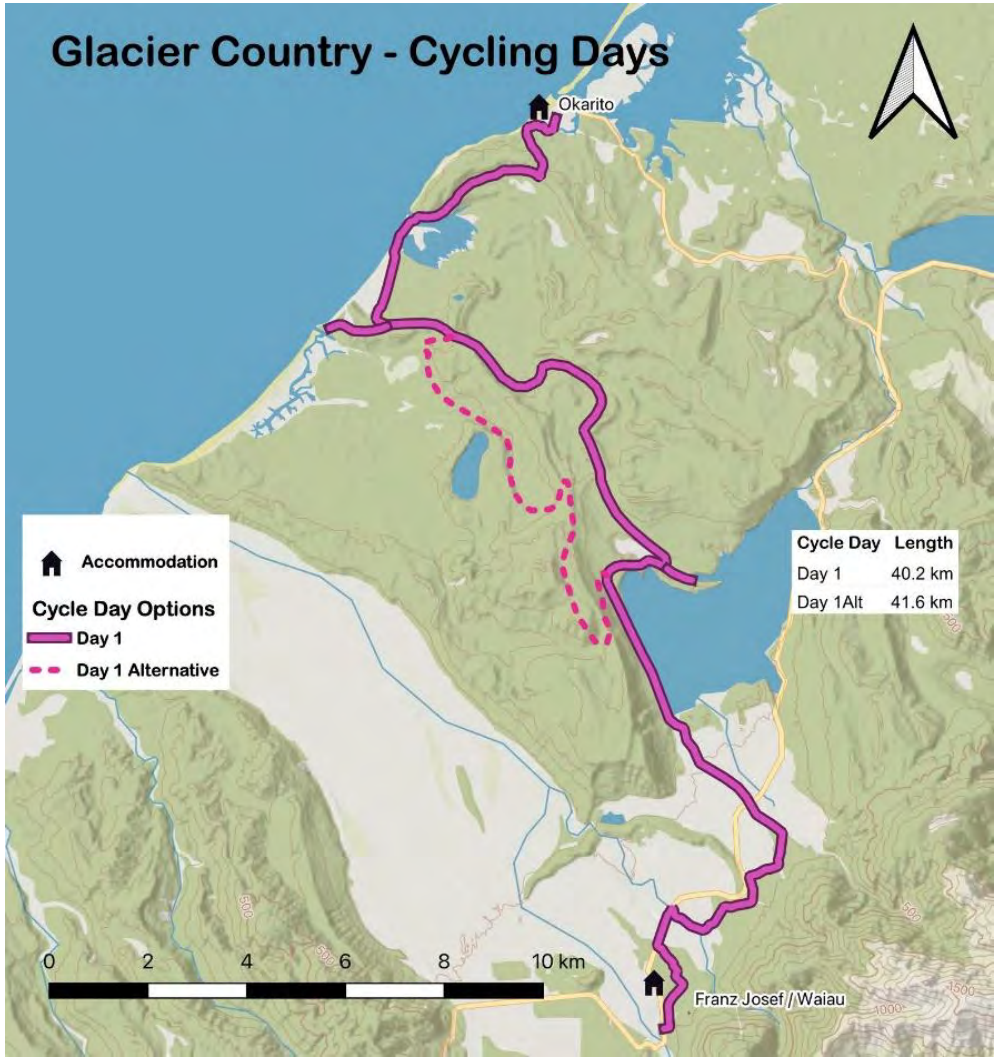
From the hut at Blanchards Bluff the new shared use trail would follow the old moraine mounds inland to reach Cockabulla Creek and then follow this creek's southern tributary to reach a low saddle above Lake Mapourika. The gradient is gentle as it drops to a terrace above the lake and a short detour would dip to the lake edge at a sheltered cove where the existing tour boat operator lands. The obvious terrace would be followed along the western edge of the lake until the southern end was reached at the national park boundary.

Note a more scenic, alternate route is shown on the map but would be challenging to keep within the gradient allowed for a Grade 2/3 trail and is possibly more suited to Grade 3/4.

From the southern end of Lake Mapourika, a number of road reserve parcels and public conservation land can be utilised to bring the concept back into Franz Josef linking separate residential areas along the highway and then finally into central Franz Josef via the Gibb Track. The proposed trail would need to cross the Tatare River on the highway bridge and an existing clip-on serves this purpose. A short section of roadside trail is required alongside the highway between Tartare bridge and the start of the Gibb Track. A highway crossing is required at Potters Creek, and a car park would need to be developed here where the walkers would complete their day and catch a shuttle into Franz Josef.

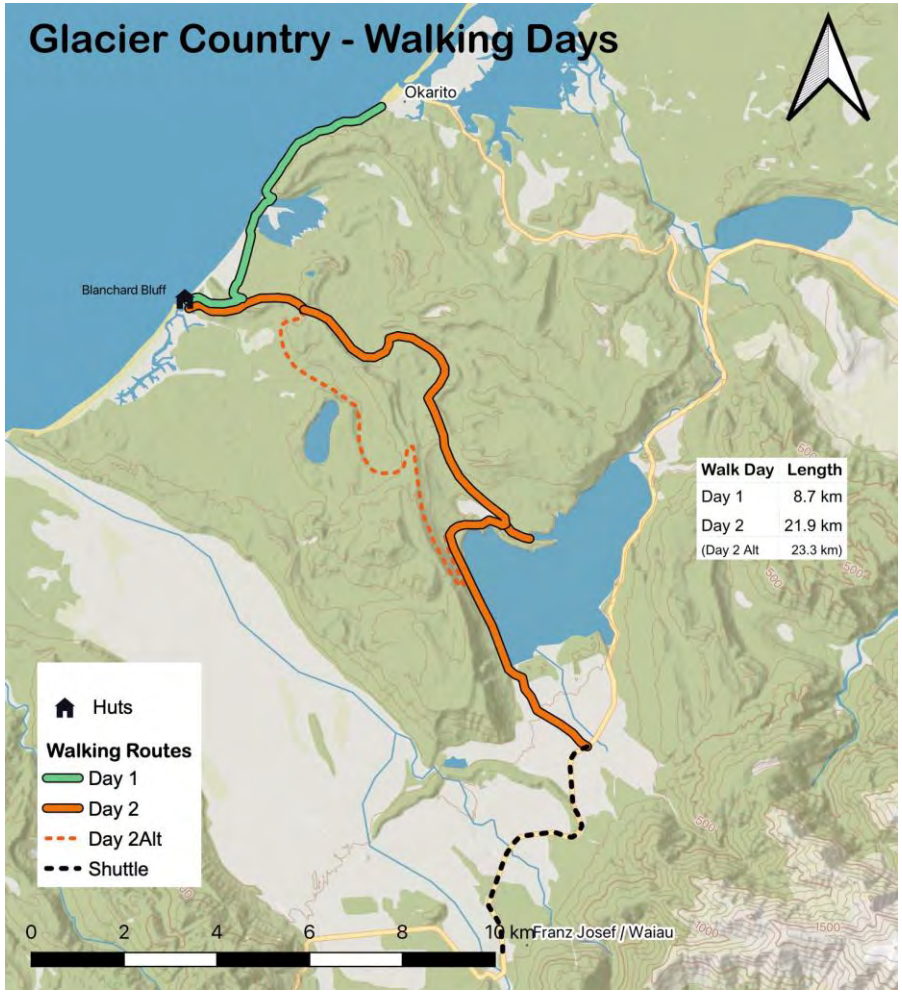
Two maps presented below show the proposed route for Section 1: for both walking and cycling options.

Figure 14. Section 1 Cycling Route Map



Source: Xyst 2022

Figure 15. Section 1 – Walking Map



Source: Xyst 2022

8.5.2 Highlights of this Section

A number of highlights can be experienced on this section of the proposed track including the following.

- Opportunity for tangata whenua to share their stories
- Historic Three Mile Pack Track
- Experiencing wild West Coast beaches and headlands
- Three Mile Lagoon
- Five Mile Lagoon
- A potential new hut at Blanchards Bluff
- Views from coast inland to lagoons, across forest and beyond to Southern Alps
- Variety of intact indigenous ecosystems from coastal, estuarine, lake, wetland to rainforest
- Being within the rowi sanctuary and understanding what is involved
- Telling the story of the gold recovery heyday.

Figure 16. Five Mile Lagoon

Source: Chad Cottle 2022.

8.5.3 Constraints on this Section

The following constraints may have to be overcome.

- Coastal and wetland areas in the vicinity of proposed alignment are vulnerable ecosystems and careful alignment would be required to avoid damage
- Impacts from coastal erosion, storm events and sea level rise may dictate route and final viability from a user experience perspective
- High ecological values more generally
- Preferred route which optimises the terrain most suited to required gradient does not make the most of scenic points.

Note, the section: Ōkārito to Lake Mapourika may be better suited to a walking only trail given the high natural values, use of Three Mile Pack Track for walking only and the ability to utilise the higher alternate route to take advantage of views from the ridge above Lake

8.5.4 Costs of this Section

The following is a high level costing for the section of proposed trail from Ōkārito to Franz Josef based on the schedule of rates described earlier in this report.

Table 3. Trail Costs for Ōkārito to Franz Josef.

Item	Cost
New trail construction (37.2km)	$10,416,000
Improve existing trail – Gibbs Track (0.8km)	$80,000
Bridges – 6 @ 20m (average width)	$480,000
Blanchard's Bluff hut	$1,500,000
Five Mile walk bridge (to access Five Mile Beach) 60m	$360,000
Shelter	$100,000
Toilet	$120,000
Fencing - 5km	$75,000
Extra car parking – Potters Ck/Mapourika area	$150,000
Signage	$20,000
Consents	$50,000
Sub TOTAL	$13,351,000
Contingency (20%)	$2,6702,200
Total	$16,021,200

Source Xyst 2022.

8.6 Franz Josef to Neil's Creek Track Car Park Section

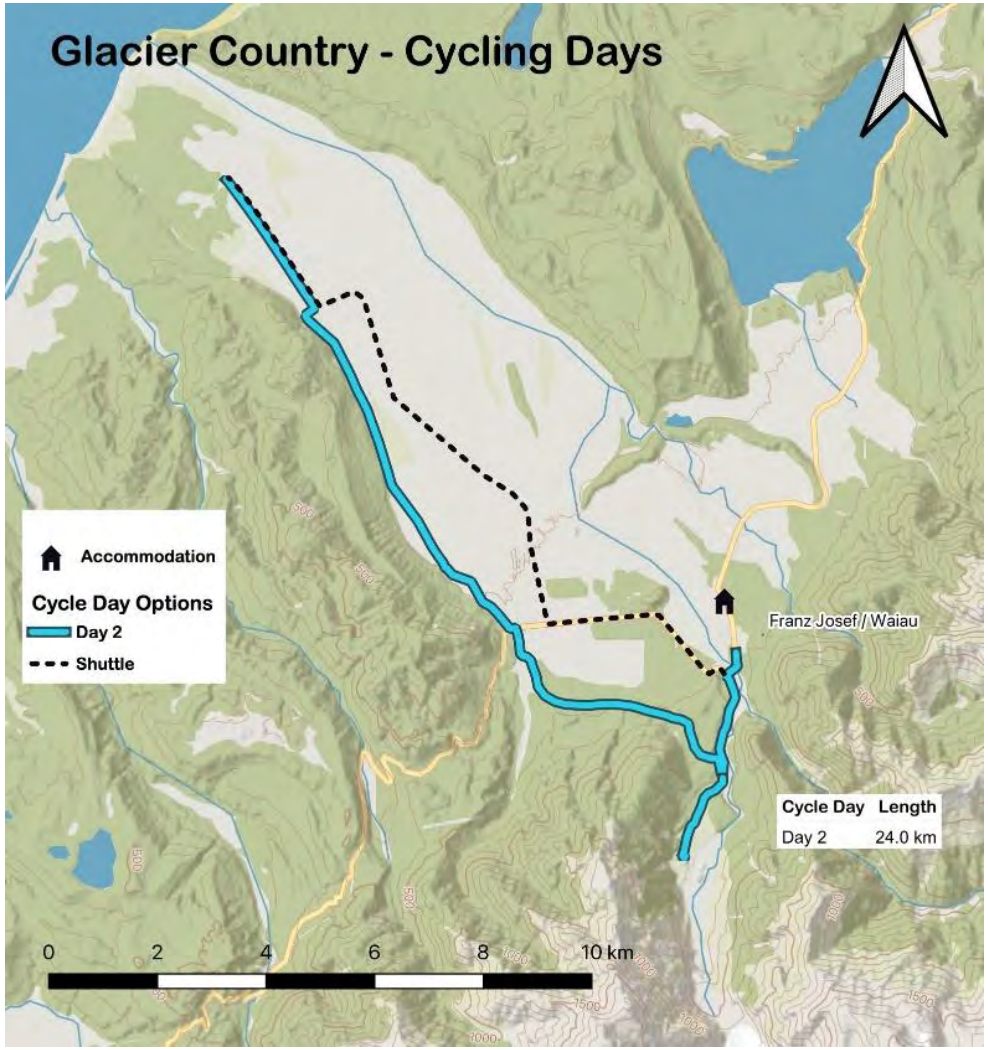
8.6.1 Route Description

From central Franz Josef a short roadside route would take walkers and cyclists to the main highway bridge across the Waiho River with a road crossing required either at a central township point or at the bridge to access the downstream pedestrian/cyclist clip-on. Trail users will also need to cross over at the true left end to then follow the existing Te Ara a Waiau cycling and walking trail heading up the valley. This would be followed until Lake Wombat turnoff where they would have an option to detour up to Sentinel Rock and a view of the glacier (mainly for cyclists). Returning to the turnoff a trail would follow the Lake Wombat track for the first easy gradient section and then divert on new trail to sidle across on the flatter forested terrain heading west to Docherty Creek. From here the proposed trail would follow the creek down to the highway, cross the creek using the highway bridge (this would need a clip-on for trail users) and then remain on the true left of the main Docherty Creek. Towards the coast the proposed trail would link to and follow the formed road to the 4WD car park and the start of Neils Creek Track.

The car park at the start of the existing Neil's Creek Track is where walkers and cyclists could be dropped off/picked up as a trailhead to separate both walking and cycling days. Note this vehicle access would be limited to 4WD only. Ideally a commercial shuttle with suitable 4WD/cycle transport ability would service this midway trailhead via the Waiho Flat Road. However severe flooding at the ford would limit access on occasions.

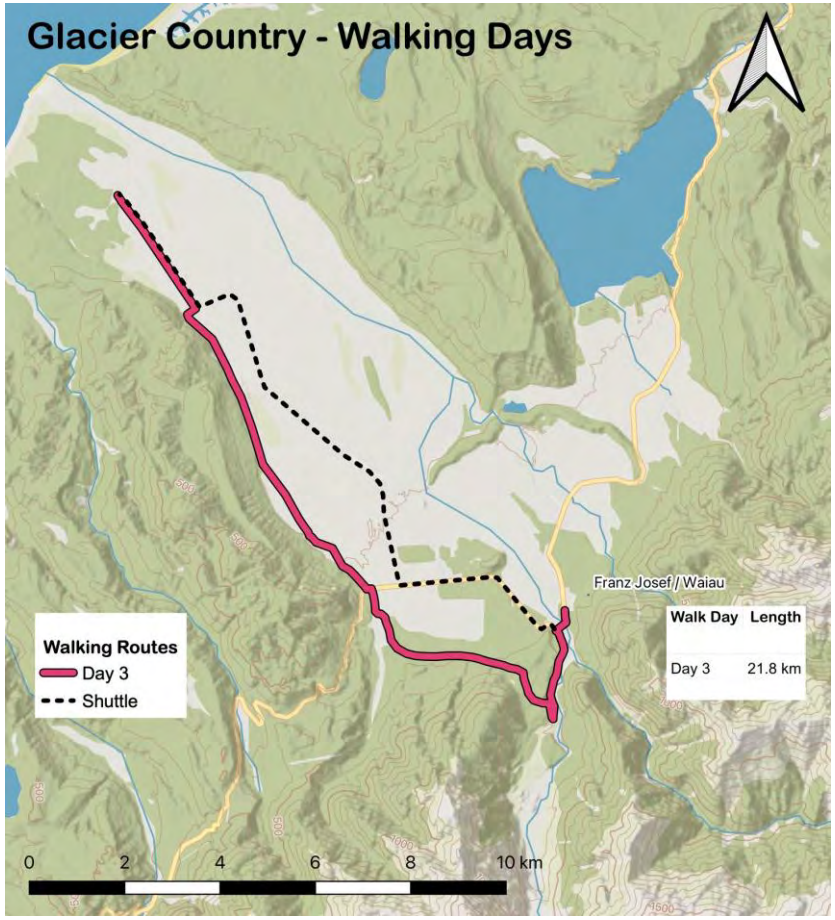
Two maps presented below show section 2 from a walking and cycling perspective.

Figure 17. Section 2 – Cycling Map



Source: Xyst. 2022

Figure 18. Section 2 Walking Map



Source: Xyst 2022.

Figure 19. Waiho River Bridge south of Franz Josef

Source: TRC Tourism 2022.

8.6.2 Highlights of this section

A number of highlights can be experienced on this section of the proposed track including the following.

- Stop off to view the Franz Josef Glacier and carved glacial valley
- Immersion in podocarp rainforest
- River views.

8.6.3 Constraints of this Section

The following constraints will need to be considered in detailed design.

- The State Highway may potentially shift between Waiho and Docherty rivers
- Access to Neil's Creek Track car park may be limited by flooding.

8.6.4 Costs of this Section

The following is a high level costing for the section of proposed trail from Franz Josef to Neil's Creek Carpark based on the schedule of rates described earlier in this report.

Table 4. Trail Costs for Franz Josef to Neil's Creek Car Park

Item	Cost
New trail construction (16.5km)	$4,620,000
Clip-on for Docherty's Creek SH6 bridge – 65m	$750,000
Bridges – 7 @ 20m (average width)	$560,000
Toilet x 2	$240,000
Fencing - 5km	$75,000
Signage	$20,000
Consents	$50,000
Sub Total	$6,315,000
Contingency (20%)	$1,263,000
TOTAL	$7,578,000

Source: Xyst 2022

8.7 Neil's Creek Car Park to Gillespies Beach Section

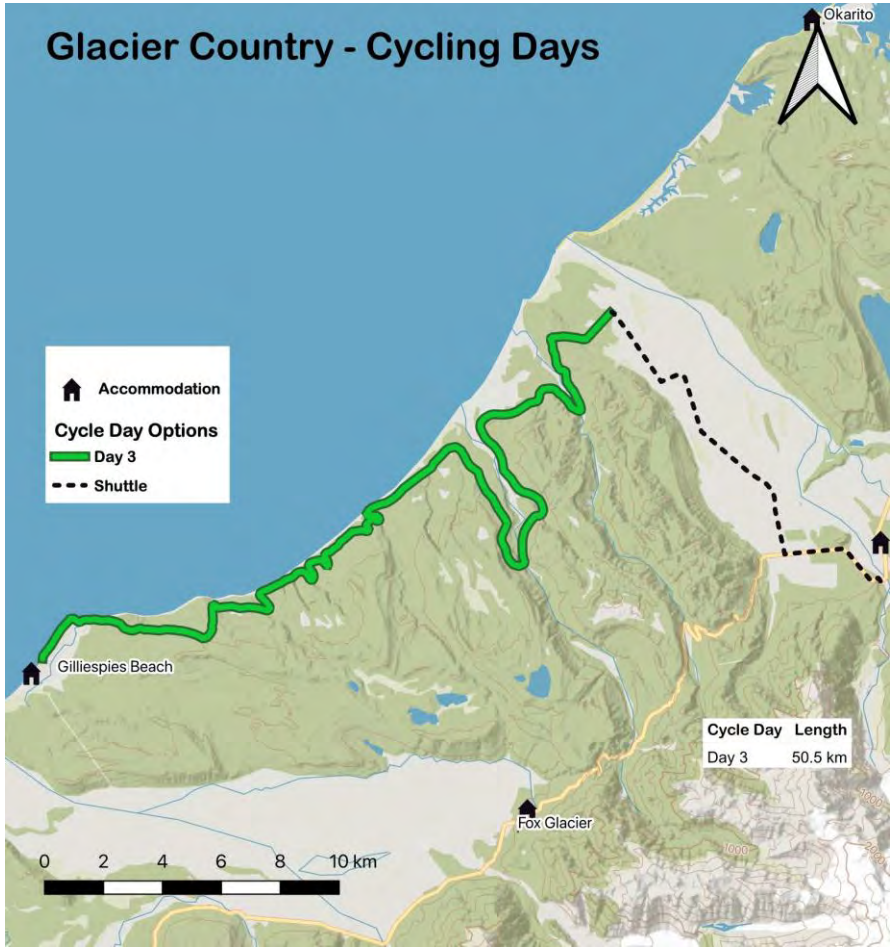
8.7.1 Route Description

At the 4WD car park trail users will follow Neil's Creek Track (an old forestry road) to Neil's Creek and then new trail would follow the contours around the base of the Omoeroa Range and inland to access a suitable location for a bridge across the Omoeroa River. The proposed trail would then need to find the optimal alignment between the large area of swampy country behind Sandfly Beach and where the terrain rises to hills. A large detour is required inland to find the best location for a bridge crossing on the Waikukupa River, the largest waterway to be crossed by the proposed trail with a catchment extending to the main divide.

Heading back towards the coast, a steep scarp will need to be negotiated and a built structure may be required to reach the flat terrain above and overlooking the Waikukupa river flats. It is proposed a hut (20 bunk, serviced, with hut warden) would be located back from the beach near the mouth of the Waikukupa River. This would be an overnight stop for walkers and bike packers carrying gear for a hut stay. From the hut the proposed trail would follow south-west along the coast to eventually meet with the existing Galway Track and a trailhead at the Gillespies Beach campsite. Any other exit point for cyclists would exceed the comfortable travel distance (up to 50km) undertaken in a day by a typical Grade 2/3 cyclist. Another hut is required in the vicinity of the mouth of the Waihapi Creek to cater mainly for walkers and allow for a comfortable day's walking.

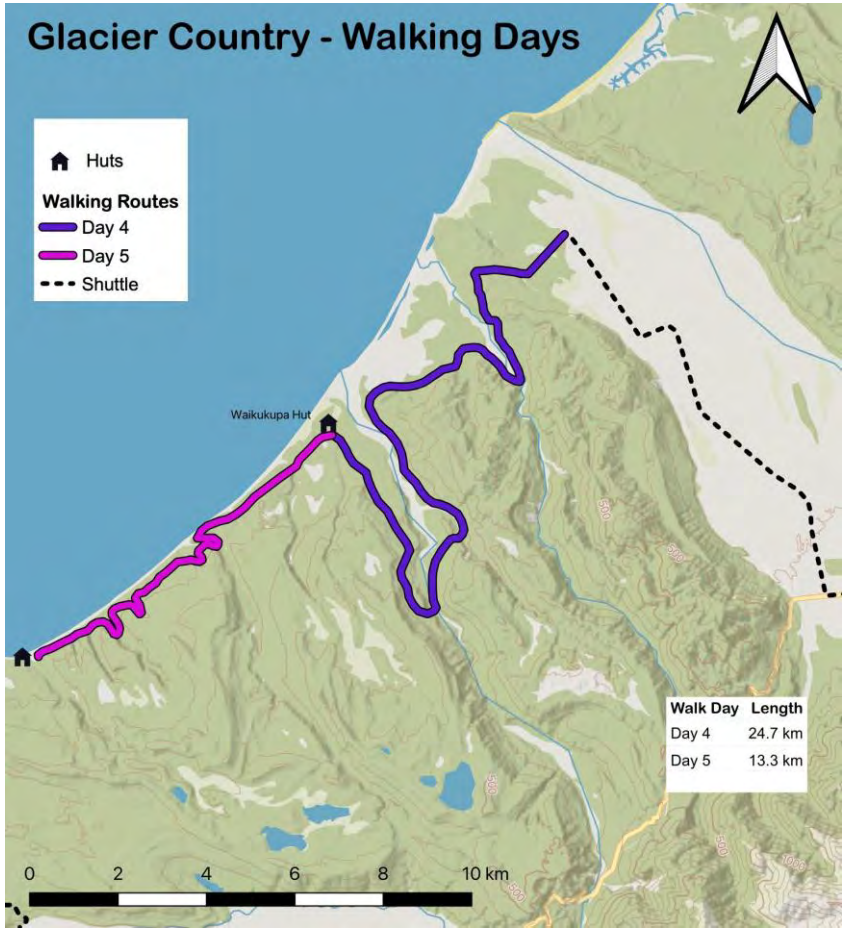
There may be an opportunity for a private party to construct a lodge in the Gillespies Beach area for the cyclists wanting to stay on the coast with the degree of comfort they would like. This would be possible as the Lodge would be at the end of the Gillespies Beach Road and could be serviced from Fox Glacier for laundry, food supplies and luggage transfer. Otherwise, cyclists and walkers would have the option to be picked up by a shuttle service to take them back to accommodation in Fox Glacier, potentially via Lake Matheson Café.

Figure 20. Section 3 Cycle Map



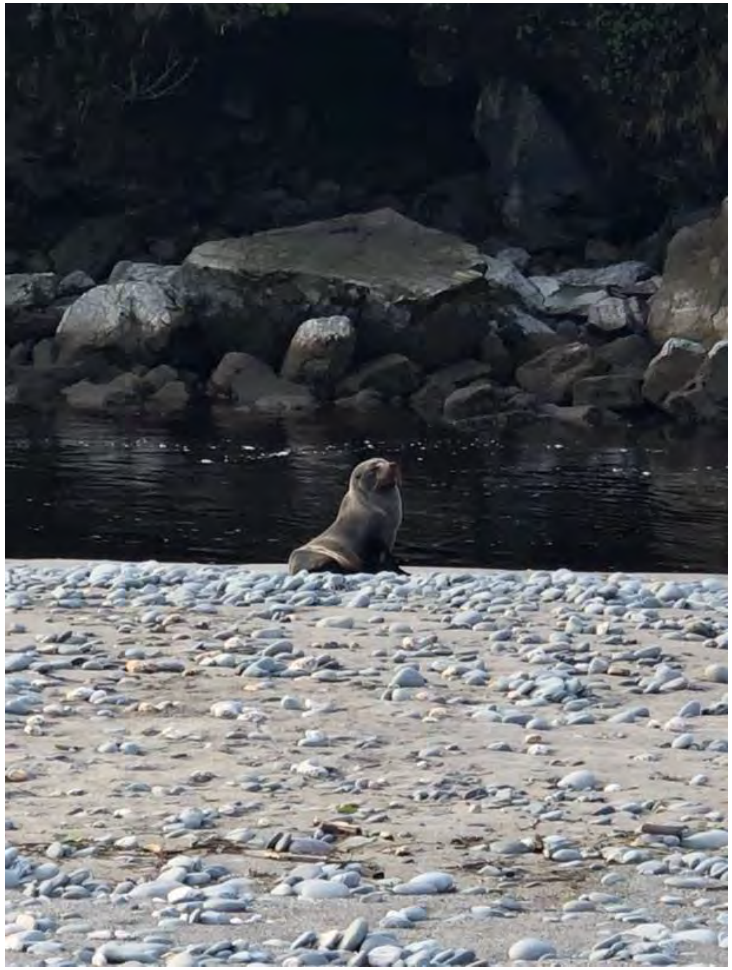
Source: Xyst 2022

Figure 21. Section 3 Walking Map



Source: Xyst 2022.

Figure 22. Kekeno/NZ Fur Seal as Found near Galway Beach



Source: Xyst 2022

8.7.2 Highlights of This Section

Some of the highlights of this section for trail users include those listed below.

- Immersion in podocarp rainforest
- River views
- Wild west coast
- Views back to Aoraki and the Southern Alps
- Large suspension bridges
- Wetland areas
- Fur seals at Galway Beach
- Goldmining history at Gillespies Beach.

Figure 23. Gillespies Beach Gold Diggings

Source: Xyst 2022

8.7.3 Constraints of This Section

A range of constraints present themselves for this section. Some of these are listed below.

- Bridge crossings for the Omoeroa and Waikukupa rivers
- Extra kms of trail to access best location for bridges
- Sections of trail along the coast at risk from coastal hazards
- Fragile wetland ecosystems
- Steep scarps for trail to traverse in Waikukupa valley
- Distance for this section requiring two huts for walkers.

8.7.4 Costs of This Section

The following is a high-level costing for the section of proposed trail from Neil's Creek Carpark to Gillespies Beach based on the schedule of rates described earlier in this report.

Table 5. Costs for the Neil's Creek Car Park to Gillespies Beach Section

Item	Cost
New trail construction (42.5km)	$11,900,000
Improve existing trail – Neil's Creek Track & Galway Beach Track (5.1km)	$510,000
Omoeroa bridge 80m	$480,000
Waikukupa bridges 100m & 60m	$960,000
Bridge site investigation for above – river modelling, Geotech, preparation	$150,000
Bridges – 28 @ 20m (average width)	$2,240,000
Two huts	$3,000,000
Shelter x 2	$200,000
Toilet x 2	$240,000
Signage	$20,000
Consents	$50,000
Sub Total	$19,750,000
Contingency (20%)	$3,950,000
Total	$23,700,000

Source: Xyst 2022

8.8 Gillespies Beach to Fox Glacier Section

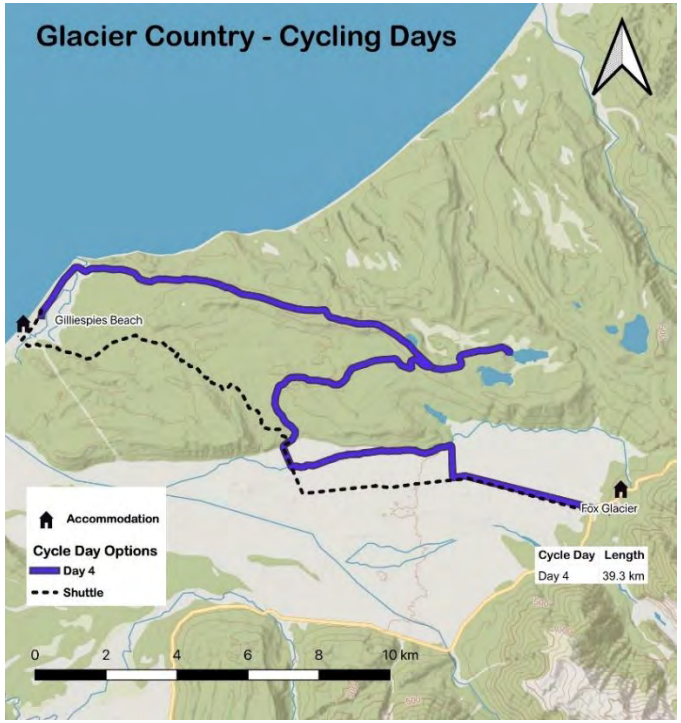
8.8.1 Route Description

To complete the proposed trail to Fox Glacier it is proposed a new trail would branch off the Galway Beach track. Heading inland the proposed trail follows a line of glacial moraine to the headwaters of Waihapi Creek and Lake Lyttle. Near the southern end of Plateau Swamp, the proposed trail would branch off and continue to a viewpoint at the western end of the unnamed lake north of Lake Gault. The lakes and open country would allow spectacular views of the Fox Glacier, Aoraki/Mt Cook and Southern Alps and is considered to be a scenic highlight for this section. From this area walkers and cyclists would separate with walkers using the Lake Gault track to drop down to Lake Matheson and the road end. Cyclists would head west on a trail that would sidle up and over the moraine wall

then across a low plateau dropping gently to exit the forest next to the Gillespies Beach Road onto the Cook River flats.

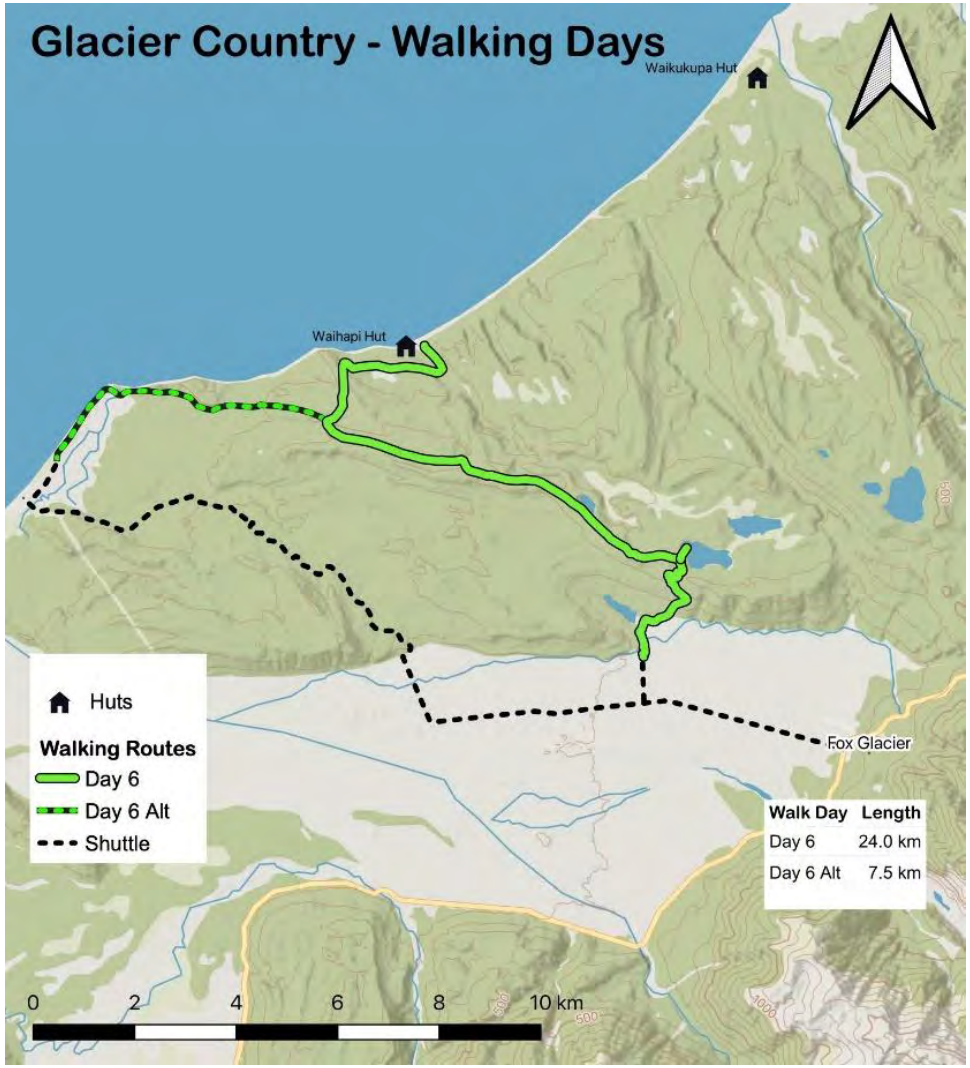
Out in the open a roadside trail is required adjacent to the Gillespies Beach Road for a short distance, including crossing the Clearwater River road bridge, to reach the Peak Viewpoint or Te Kopikopiko o Te Waka, currently being developed as an iconic visitor site. From the viewpoint a newly established trail on the true left bank of the Clearwater River would be followed until Lake Matheson café and then the existing roadside path is used to finish in central Fox Glacier.

Figure 24. Section 4 Cycling Map



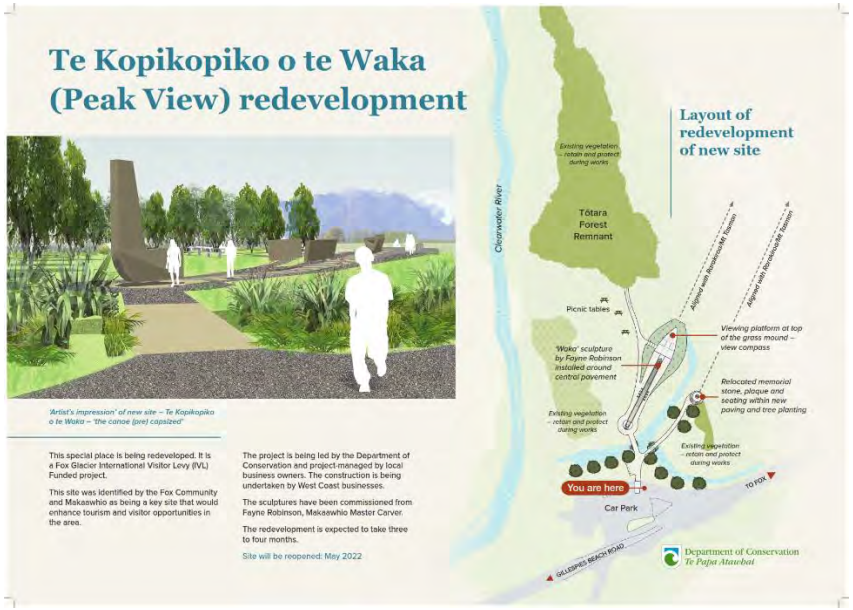
Source: Xyst 2022

Figure 25. Section 4 Walking Map



Source: Xyst 2022.

Figure 26. Te Kopikopiko o Te Waka Project Information Display



Source: Department of Conservation 2022

8.8.2 Highlights of This Section

A range of highlights present themselves on this section of trail. Some of those are listed below.

- Wild west coast
- Spectacular views from open areas higher up
- Wetland areas
- Diversity of ecosystems
- Te Kopikopiko o Te Waka - Peak Viewpoint
- Views from lower Cooks Flat
- Lake Matheson side trip option and café.

Figure 27. View From Lake Matheson Towards the Alps

Source: TRC Tourism. 2022

8.8.3 Constraints of This Section

This section contains some constraints and some of these are listed below.

- Landowner consent for the trail section on the Clearwater River would be required and would be voluntary. If not forthcoming, a cycleway trail on the road verge would need to be constructed.
- Fragile wetland ecosystems
- More exposed to the weather.

8.8.4 Costs of This Section

The following is a high-level costing for the section of proposed trail from Gillespies Beach to Fox Glacier based on the schedule of rates described earlier in this report.

Table 6. Costs for Construction of the Section of Trail from Gillespies Beach to Fox Glacier

Item	Cost
New trail construction (26.4km)	$7,392,000
Bridges – 5 @ 20m (average width)	$400,000
Boardwalk 100m	$100,000
Shelter x 1	$100,000
Toilet x 1	$120,000
Fencing - 5km	$75,000
Signage	$20,000
Consents	$50,000
Sub Total	$8,257,000
Contingency (20%)	$1,651,400
TOTAL	**$9,908,400**

Source: Xyst 2022.

Figure 28. Looking Back at Lake Matheson

Source: TRC Tourism 2022.

8.9 Total Proposed Trail Cost

Based on the proposed route, accommodation (huts), bridges, trail construction costs and the other elements of the concept covered in the sectional costs provided in the sub-sections of this report above, the table below provides a summary cost of the proposal.

Table 7. Total Proposed Trail Costs

Trail Section	Indicative Cost Including 20% Contingency ($million 2022NZD)
Ōkārito to Franz Josef	$16.021
Franz Josef to Neil's Creek Car Park	$7.578
Neil's Creek Car Park to Gillespies Beach	$23.700
Gillespies Beach to Fox Glacier	$9.908
TOTAL	**$57.207**

Note: - the above costs include a small amount for consent work. Considerable planning will be required to determine the exact route, undertake necessary surveys and appropriate project management. It also does not include depreciation or the provision of interpretation.

8.10 Project Sections Prioritisation

Investment in the total trail remains the priority to complete the proposed trail. Given the high overall project costs for this proposal, we apply some criteria to help determine the proposed trail section priorities for investment and construction should that be seen as necessary from a funding perspective. Assessment of the relative merits for the investment take into account the following:

- Connectivity of community and experiences
- Providing a hero experience for each section
- Commercial opportunity including the likelihood of potential visitors staying in the towns of Ōkārito, Franz Josef and Fox Glacier.

Through qualitative assessment, we provide the following priorities to the sections as listed in the table below.

Table 8. Trail Section Priority

Trail Section Priority	Trail Section	Indicative Cost Including 20% Contingency ($million 2022NZD)	Cumulative Investment ($million 2022 NZD)
1	Ōkārito to Franz Josef	$16.021	$16.021
1	Neil's Creek Car Park to Gillespies Beach	$23.700	$39.721
2	Gillespies Beach to Fox Glacier	$9.908	$49.629
2	Franz Josef to Neil's Creek Car Park	$7.578	$57.207
	TOTAL	**$57.207**	**$57.207**

Source: TRC/Xyst 2022

Ōkārito to Franz Josef and Neil's Creek Car Park to Gillespies Beach provide the core of the experience, and sections for which shuttle services cannot easily be applied without significantly diminishing the trail's experience. They also provide the core of the trail's strength linking towns.

8.11 Ongoing Maintenance and Management

Maintenance for such a long track will be highly dependent upon several factors including:

- Build quality
- Material selection
- Resilience in design and location
- Unforeseen issues.

Using the costs for maintaining the nearby Paparoa Track, an estimated $950,000 would be required annually for management and regular maintenance of the entire proposed trail. This would include at least two permanent positions and if required a part time staff person to manage hut bookings.

It is difficult to estimate maintenance costs for a project that may be constructed several years out and one that may also be constructed and operated in sections. This figure is considered a mid-figure and it is recognised that during the next phase of investigation, detailed assessments may see this figure increase.

A contingency fund to allow for timely repairs after major storm events would also be prudent.

9. Planning Alignment and Context

9.1 Strategic Alignment

A range of existing strategies exist that will influence the outcome of this feasibility study. It is desirable to have strong alignment with strategic plans to support the approvals pathway the proposed trail will need to go through to become a reality.

The table below provides a snapshot of some of the important existing strategic documents that will be important.

Table 9. Strategy and Alignment of the Proposed Trail

Strategy	Relevance	Alignment
TE TAI POUTINI WEST COAST 2050 Strategy	Vision to be recognised as leaders in the adoption of innovative, sustainable and regenerative economic, social, wellbeing and environmental solutions. A priority of the Strategy is to Strengthen and Diversify the Economy through realising our natural resources to unlock economic opportunities whilst protecting and enhancing the natural environment for future generations.	Strong alignment, thematically supportive
Te Wai Pounamu – South Island Destination Management Plan 2021-2030	The DMP recognises Cycling & Mountain Biking (trails and Tours) as a key product strength, as their visitors are looking for 'active holidays in nature's playgrounds'. Franz Josef cycle trail development is listed as a Tier Three priority project in support of Strategic Aim 4: to grow higher quality and commissionable experiences to support visitor dispersal.	Strong alignment, directly mentioned
Tourism 2025 and Beyond	This provides a clear pathway towards a sustainable tourism industry for Aotearoa, New Zealand. It has been created by industry for industry and places the value firmly on communities, individuals, the environment, the economy and visitors. The	Aligned strategic framework. Some careful design consideration will need to be included in the next phase of this trail's development to ensure

Strategy	Relevance	Alignment
	vision for the framework is "Growing a sustainable tourism industry that benefits New Zealanders." The Framework has four key goals: • Make sure our visitors are having great experiences • Make sure our communities are happy with and benefitting from tourism • Make sure our environment benefits from tourism • Bring economic success.	the environmental issues attached to constructing the proposed trail are both limited and offset where possible.
Department of Conservation Heritage and Visitor Strategy 2021	The three goals of the Strategy are: Protect – New Zealand's natural, cultural and historic resources are protected and restored to maintain biodiversity, cultural and historic values, ecosystem health, landscapes and natural quiet. Connect – Visitors are enriched and better connected to New Zealand's natural, cultural and historic heritage. Thrive – Tangata whenua, regions and communities benefit from protecting and connecting visitors with their natural, cultural and historic heritage.	Aligned strategic framework
Westland Tai Poutini National Park Management Plan	Originally published in 2001, and subsequently amended in June 2008 and April 2014, the plan of management contains detailed objectives and policies for the effective management of the park but does not override the provisions of primary legislation and general policy. The purpose of this plan is to express the Department's overall management intentions for Westland Tai Poutini National Park. The plan is currently due for renewal.	Alignment will need to be confirmed in the CMS development and review of the Management Plan.
Conservation Management Strategy	Prior to the renewal of the Management Plan, the Overarching Conservation Management Strategy (CMS) will need to be completed. The CMS is a 10-year document that will provide strategic directions for the completion of the management plan.	Alignment will need to be confirmed in the CMS development and review of the Management Plan.
National Adaptation Plan (NAP) for climate change	The NAP considers the impacts of climate change now and into the future and sets out how New Zealand will adapt, minimise risk and build resilience in relation to the natural environment, places, infrastructure, communities, and the economy	Considered in trail alignment feasibility planning

9.2 Planning Context

The proposed Glacier Country shared use trail is not compliant with current management plan documents that apply to Westland Tai Poutini National Park and therefore cannot be constructed at present.

The outstanding features within the national park are critical for creating an appealing trail. The pertinent planning documents, Tai o Poutini Conservation Management Strategy (CMS) and the Westland Tai Poutini National Park Management Plan (NPMP) are currently awaiting review therefore the opportunity to seek approval for this project is available.

A hierarchy of legislation and policy shown diagrammatically below is used to provide direction on conservation and use of conservation land in the development of these plans:

Figure 29. Hierarchy of Public Conservation Land Planning - Legislation and Policy

The National Parks Act 1980 allows for the preservation of our "national parks in perpetuity for their intrinsic worth and for the benefit, use and enjoyment of the public". Similarly, the Conservation Act 1987 supports the "conservation of New Zealand's natural and historic resources" while tasking the Department to "foster recreation and allow tourism on conservation land" if consistent with this conservation.

While walking is an accepted activity in both conservation areas and national parks, the use of bicycles (deemed a vehicle under the general policies) were expressly forbidden from national parks, except on formed roads, until relatively recently. With the improvement of mountain bikes and a vast upswing in cycling popularity there has been increased demand for cycle tracks and trails across New Zealand. The General Policy for National Parks has recognised this by an amendment to include:

"8.6 (g) Non-powered vehicles (non-motorised cycles and mountain bikes) should not be ridden or otherwise used in national parks except on roads formed and maintained for vehicle use, and on routes specifically approved for use by specified types of non-powered vehicle in a national park management plan.

Furthermore, approved cycle use on roads and routes is only where:

1. Adverse effects on national park values can be minimised
2. The track standard is suitable, and
3. The benefit, use and enjoyment of other people can be protected.

If cycling on a trail is approved the national park management plan will highlight any measures to be undertaken to minimise adverse effects on national park values, protect the experiences, and avoid creating hazards, for others. Conservation areas also may allow for cycle use if the relevant Conservation Management Strategy identifies these sites and "establishes any conditions for use" (Conservation General Policy).

Increasing electric bike (or e-bike) use has also fuelled the demand for cycle trails as cycling has become more accessible for a wider demographic. The Department of Conservation has developed a Guideline for Electric Bikes on Public Conservation Land to provide a consistent approach to effectively managing electric bike use on public conservation land across New Zealand.

DOC will consider allowing pedal assisted electric bikes (≤ 300 watts) on off-road biking tracks and cycle ways via a Conservation Management Strategy or National Park Management Plan, using the following principles:

1. Impacts on natural, historic or cultural heritage values can be managed
2. Demand is evident and likely to be sustained
3. No known conflicts occurs with other users or conflict is able to be mitigated or managed
4. There is enough capacity on the proposed trail
5. Where trails cross more than one land owner or manager, the approach for electric bikes is agreed by all owners/managers
6. Lower grade[25] biking trails and cycle ways.

DOC is also undertaking a nationwide Conservation Management Strategy partial review to improve the process for considering new bike tracks on public conservation land. This will allow for more biking opportunities, where suitable, however excludes national park land so will have little impact on this proposal.

According to the draft Westland Tai Poutini NPMP, any development of new recreation facilities should be consistent with the outcomes and policies for the relevant described Place where the activity is proposed to occur, and for the prescribed visitor management zones. A proposed Te Ara Pounamu, an earlier planned extension to the West Coast Wilderness Trail to Fox Glacier, is included in the draft Plan under Vehicle Access to allow mountain bike and e-bike use for this trail. Note this draft Plan is on hold and likely to be revisited once the West Coast Te Tai o Poutini Conservation Management Strategy has been updated and adopted.

The proposed alignment uses other public conservation land outside the national park boundaries. On review of the proposed recommendations from the recent Reclassification of Stewardship Land on the West Coast there are no changes to land classification (or disposal) pertinent to this proposal that may affect its feasibility.

The proposed Glacier Country shared use trail will need to primarily be included in the draft Te Tai o Poutini Conservation Management Strategy and if this is approved, submitted to the draft Westland Tai Poutini National Park Management Plan to allow it to progress beyond planning phase. The various policy, described above, to guide decisions on biking (including e-bikes) in conservation areas and national parks has opened the door for this use, providing prescribed conditions are met.

9.3 Building Act and Resource Management Act Permissions

Building consents will be required for all new huts, toilets, shelters and bridges. Shelters and small bridges may be exempt, but this is dependent on the size.

In 2018 the Local Government Commission proposed that a combined district plan covering the entire West Coast was developed instead of the existing three separate district plans. This would allow for consistency and efficiencies with the management of environmental protection, sustainable development, resource use, and natural hazard management. The proposed Te Tai o Poutini Plan was released for public consultation on the 14th of July 2022 and will be the relevant plan for district rules, once

[25] Typically grades one and two tracks

adopted. The Regional Land and Water Plan, administered by the West Coast Regional Council, also includes regional rules that would apply to this proposal.

A land use consent to comply with district rules may not be required for the proposed trail over public conservation land. Under Section 4 of the Resource Management Act 1991 whereby consent rules don't "apply to an activity of the Crown within the boundaries of any area of land held under the Conservation Act 1987 or any other Act specified in Schedule 1 of that Act (includes National Parks Act 1980) that:

(a) Is consistent with a conservation management strategy or management plan, and
(b) Does not have a significant adverse effect beyond the boundary of the area of land."

Advice from West Coast Regional Council consent planners has informed the following summary of likely resource management consent requirements.

Under the regional rules consents could be required for the following activities:

- a discharge consent will be required for the toilets along the proposed trail
- bridges with a pier in the bed of a river or stream will require a resource consent – note this is usually avoided where possible
- a water take consent for hut water supplies where more than 2 litres per second
- carrying out earthworks where slope is more than 12° or volume is > 5000 m^2 or if within 50m of the Coastal Marine Area
- carrying out vegetation clearance in the riparian margin (this ranges between 3 and 10m from waterway bed)
- activity in the vicinity of natural freshwater and saltwater wetlands
- installation of culverts where waterways are affected.

9.4 Environmental Considerations

The proposed trail development is largely within Westland Tai Poutini National Park which is also part of the Te Wāhipounamu World Heritage Area, one of three world heritage areas in Aotearoa. Te Wāhipounamu as stated on the UNESCO site is "overwhelmingly a mountainous wilderness" and attains this status from the "exceptional natural characteristics" that combine to make this the "largest and least modified area of New Zealand's natural ecosystems".

The forested areas to the west of State Highway 6 were added to Westland National Park in 1982 to recognise the importance of this unmodified lowland temperate rainforest ecosystem and to ensure protection of the sequence of geology and landforms with associated vegetation from the Tasman Sea to the Southern Alps/Kā Tiritiri o Te Moana. This sequence is an increasingly rare occurrence throughout the world.

The diverse ecosystems, such as coastal beaches and terraces, rich estuarine areas, lowland podocarp rainforest, lakes and wetland systems, for the most in a highly natural state would be a key attraction for visitors undertaking the proposed trail. On the flip side these ecosystems (and species) are vulnerable to adverse effects from the development of a trail, including huts, and frequent recreational use. In particular, the South Ōkārito block and the lower Waiho River has been identified as priority ecosystem units (PEU) due to the high natural values. The Waikukupa River, Sandfly Beach wetland system, Ōmoeroa Flats and Lake Gault/Skiffington Swamp within or near the proposed trail corridor are also recognised as having high ecological values. Additionally, the kekeno/fur seal haul out at Galway Beach, and Gillespies Beach/Waikōhai, one of the largest beach/dune systems in Westland are important ecological sites relevant to this project. The Predator Free South Westland project, one of the largest in New Zealand is planning to remove

opossums, stoats and rats from the area Whataroa River to Waiho/Waiau River and the mountains to the sea.

There are over 70 species of native wetland and coastal birds that visit the wetlands and coast of the lowlands of Westland Tai Poutini National Park. Within the South Ōkārito and the Waikukupa blocks there are a number of species that are identified as having a threatened conservation status. The following species have a nationally critical status, the highest subclass under the threatened conservation status:

- kotuku/White Heron
- matuku hūrepo/Australian bittern
- Ōkārito gecko
- terrestrial dytiscid beetle
- long-tailed bat

The gecko, beetle and rowi are notably endemic to this area. The rowi/Ōkārito Brown Kiwi is now considered nationally vulnerable after intensive management and a rowi sanctuary has been created at South Ōkārito to assist with the recovery of this rare species. New species of invertebrates and lizards have been discovered in this area in the last few years and there are likely more to be found.

There are concerns regarding potential adverse impacts from the development and regular use of a new trail in this area. These are (but not limited to):

- Introduction of weed species. There is existing gorse, broom and Himalayan honeysuckle in coastal areas, but the interior is relatively weed free
- The scale of vegetation removal required for trail construction
- Disturbance or fragmentation to fragile ecosystems, species nesting areas, burrows or territorial areas, foraging areas or roost trees such as for long tailed bats
- A 1 to 2m wide aggregate surfaced trail may present a barrier for some species, such as insects, mudfish and freshwater crayfish
- Very little is known about the biology of some species such as the several lizard species found in the area, so it is difficult to assess the impact
- Removal of mature trees which support a diversity of other species such as long-tailed bat, with a nationally critical threat status
- A new trail may increase ease of access for predators although this is mostly relevant for the Waikukupa block given the Predator Free South Westland intensive predator elimination work for the South Ōkārito forest and surrounds
- Loss of natural character and landscape values by adding built infrastructure
- There may be existing recreational users who value the unmodified backcountry experience they gain when they visit and do not want the intrusion of a walking and cycling trail.

Inclusion of this proposed trail in both the Te Tai o Poutini Conservation Management Strategy and the Westland Tai Poutini National Park Management Plan development processes would allow an opportunity for individuals or communities of interest to provide feedback on the merits vs impacts of such a trail.

Considered design and trail construction methodology would be important to minimise the environmental footprint of the proposed trail. Adequate width for cyclist use is important but not at the expense of creating a wide cleared corridor. To minimise this, it is recommended that where possible the surface is raised for the flat sections with a camber to shed water. Any slopes would ideally encompass frequent grade reversals to effectively shed water without creating more problems.

A traditional trail formation with accompanying deep ditch running alongside creating an overwide clearance should be avoided where

possible. Furthermore, careful route selection is required to avoid removal of mature trees and the proposed trail formation should be built up and over large tree roots rather than cutting. Use of local suitable gravels or crushing on-site for surface material is recommended to avoid importing gravel and the risk of spreading weed species.

There are a number of recorded archaeological sites in the vicinity of the proposed trail. They are situated along the coast at Three Mile and Five Mile lagoons south of Ōkārito, inland at Alpine Lake and further south at Gillespies Beach. An historic assessment will be required.

It is proposed that due to the high ecological values in the proposed trail area that a comprehensive assessment of environmental effects is prepared for this proposal in the early stages of project planning. Consultation with various Recovery Groups that exist for threatened species found within the vicinity of the proposed trail corridor would also be needed.

9.5 Climate Change

The West Coast is expected to continue to be impacted by predicted climate change. This includes increase in significant rainfall events, an 11% increase in rainfall generally by 2090 and partly as a consequence, an increase in both the intensity and duration of flood events.

Constructing a trail in this environment with the predicted climate change provides for a challenging environment and one in which resilient infrastructure must be planned for as far as possible. This implies increased capital up front to build the trail and associated facilities to a high standard and ensure they are well located.

10. Visitor Modelling[26]

10.1 The area

The populations of each of the villages on the proposed trail are small. Around 30 people live in Ōkārito, 480 people in Franz Josef, and 250 in Fox Glacier.[27]

However, prior to Covid border restrictions, over 1 million visitors passed through Franz Josef and Fox Glacier villages per year. Franz Josef alone accommodated over 3,000 tourists per night at peak season.[28] Ōkārito is less visited, but around 30,000 visitors and holiday homeowners stay each year.[29]

The total population of the West Coast is around 32,000.[30]

10.2 Approach to estimating trail user numbers

The total number of cyclists and walkers using the proposed trail have been estimated based on existing information and data for comparable cycle trails and Great Walks.

The number of cycling and walking users was estimated for a "fully-established" use scenario. For modelling purposes, we assume this is approximately four years after completion of the full trail, allowing time for use to ramp up. Proportions of this fully established use volume were then estimated for earlier years as sections of the proposed trail are completed. Appropriate annual growth rates have been applied to the out-years.

Data and calculations underpinning the user projections were based on:

- User volumes and user types on comparable trails – mainly the West Coast Wilderness Trail and the Paparoa Track
- Visitor demographics for the area, and for New Zealand cycle trails
- Available bed-nights for walkers/trampers and likely occupancy rates of hut accommodation that reflects the typical seasonality of tourism to the West Coast. The number of bed-nights estimated for the Glacier Country Trail was compared with other Great Rides to validate the estimate.

[26] The cost-benefit analysis has been carried out based on a model that was developed by MartinJenkins in conjunction with the Ministry of Business, Innovation and Employment (MBIE) for cost-benefit analyses of investment in Great Rides (Ngā Haerenga, New Zealand Cycle Trail).

The user estimates and other inputs to the analysis have been developed in conjunction with TRC. The trail user projections are sensitivity tested at ± 25% of the base user projections.

[27] Ōkārito population sourced from Westland District Council, accessed here Ōkārito | Westland District Council (westlanddc.govt.nz). Franz Josef and Fox Glacier population sourced from Census 2018 figures, Statistics NZ dataset fro census usually resident population counts, which notes 483 people in Franz Josef, and 249 people in Fox Glacier.

[28] Westland District Council. Accessed at: Franz Josef Glacier | Westland District Council (westlanddc.govt.nz)

[29] Westland District Council. Accessed at: Ōkārito | Westland District Council (westlanddc.govt.nz).

[30] Census 2018 figures note 31,500. Accessed at https://www.stats.govt.nz/tools/2018-census-place-summaries/west-coast-region

10.3 Trail user projections and length of stay

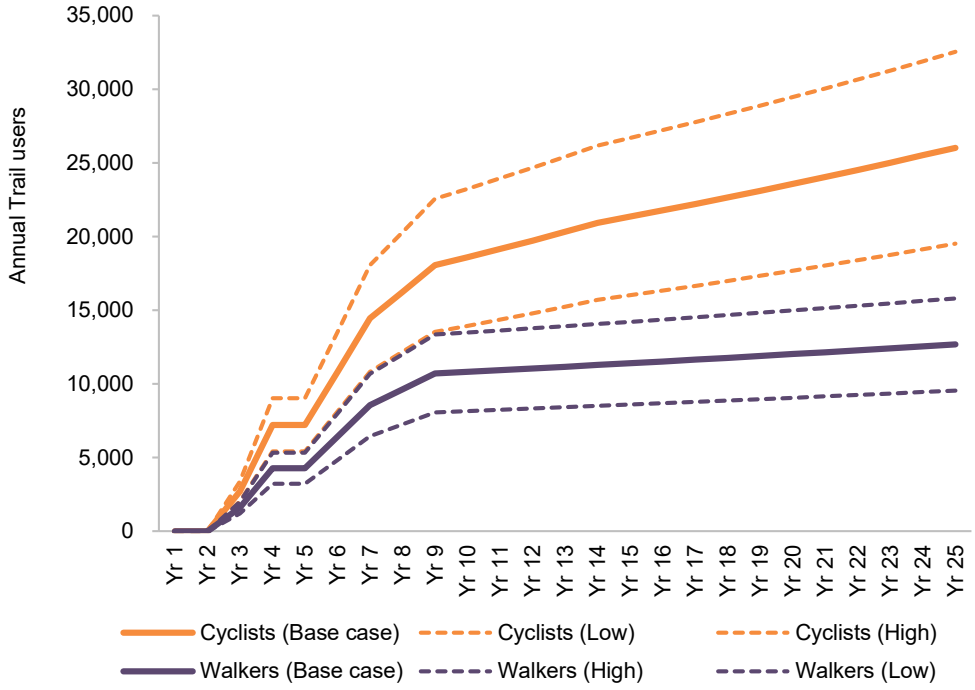
We estimate that when the proposed trail is fully established, it will attract about 18,060 cyclists and 10,710 walkers per year (we assume this is about 4 years after trail completion). We expect the majority of trail users will be visitors from out of the region using the proposed trail for multiple days. The expected breakdown of trail users by type is shown in Table 10 below. The type of users was estimated based on the proportion of different users on comparable trails.

Table 10. Trail use estimate – when trail is fully established (approx. 4 years after completion)

Trail users (annual)	Cyclists	Walkers
Local single (or part) day	1,010	600
Local multi day	250	150
Out of region single day	2,240	1,350
Out of region multi day	11,200	6,620
International single day	560	340
International multi day	2,800	1,650
Total	**18,060**	**10,710**

Note: "Local users" are those from within the West Coast region.

Figure 30. Glacier Country Trail user projections (Cyclists and Walkers)



10.3.1 Cyclists: trail user projections

When the proposed trail is fully established, we estimate there will be 18,060 cyclist users per year, growing to around 26,000 cyclists over the next 16 years (11).

Note that "Local users" are defined as those from the West Coast Region.

Table 11. Cyclist trail user projection

Trail users (Cyclists)	Fully established (Year 9)	Year 25
Local single (or part) day	1,010	1,460
Local multi day	250	360
Out of region single day	2,240	3,230
Out of region multi day	11,200	16,140
International single day	560	810
International multi day	2,800	4,040
Total trail users (cyclists)	**18,060**	**26,040**

Note: for modelling, we assume the proposed trail takes 5 years to build and is "fully established" after a further 4 years.

10.3.2 Walkers: trail user projections

When the proposed trail is fully established, we estimate there will be around 10,710 walker users per year, growing to around 12,700 walkers over the next 16 years (Table 12).

Table 12. Walker trail users' projection

Trail users (Walkers)	Fully established (Year 9)	Year 25
Local single (or part) day	600	825
Local multi day	150	175
Out of region single day	1,350	1,580
Out of region multi day	6,620	7,760
International single day	340	400
International multi day	1,650	1,940
Total trail users (walkers)	**10,710**	**12,680**

Note: for modelling, we assume the proposed trail takes 5 years to build and is "fully established" after a further 4 years.

10.3.3 Length of stay for multi-day visitors

For visitors that spend multiple days on the proposed trail, we have estimated the average length of stay based on the different types of likely itineraries cyclists and walkers will have.

As shown in Table 13, we estimate that multi-day cyclists will, on average, stay 2.8 nights (3.8 days) and that multi-day walkers will stay 3.7 nights (4.7 days) on average. For cyclists, the full trail can be ridden with a 4 night stay, and for walkers the full trail can be completed with a 6 night stay.

Table 13. Length of stay for multi-day cyclists and walkers

Number of nights on the trail	Cyclists	Walkers
1 nights	15%	30%
2 nights	30%	15%
3 nights	15%	5%
4 nights	40%	0%
5 nights	-	10%
6 nights	-	40%
Average length of stay	2.8 nights (3.8 days)	3.7 nights (4.7 days)

The assumptions underpinning the average length of stay estimates are outlined in the next section.

10.4 Data sources and assumptions underpinning user estimates

10.4.1 Cyclist user estimate data and assumptions

To estimate the volume of use by cyclists, the following information and assumptions have been used:

- When the proposed trail is full established (we assume to be 4 years after completion), we expect the concept to attract 14,000 multi-day cyclist visitors. This is based on current visitor numbers on the West Coast Wilderness Trail
- We assume 40% of multi day visitors to the proposed trail complete the full trail, equating to 5,600 riders. This is based on similar trails, particularly the West Coast Wilderness Trail
- Of the multi-day visitors not completing the full trail, we assume half stay 2 nights on the proposed trail, with the remaining quarters staying 1 night and 3 nights. This has been aligned with our understanding of trail sections, and the expected popularity of weekend trips
- 2,800 single day use by visitors (an additional 20% on top of the multi day visitors) has been estimated. Based on a 2019 survey from the West Coast Wilderness Trail which found that 20% of riders surveyed didn't come to the region specifically to ride the proposed trail. We assume this number would be similar for the Glacier Country Trail, and that these visitors are single or part day riders
- Of these multi and single day visitors, we assume 80% are domestic visitors, and 20% are international visitors. This is in line with other cycle trails including the Alps to Ocean trail. We note that pre-Covid, visitors to the Franz Josef region were predominantly international visitors. For comparison, booked bed-nights on the Paparoa track, just

prior to Covid had a domestic/international split of 87%/13%[31]. Pre-Covid numbers on the West Coast Wilderness Trail also had 87% domestic and 13% international

- Local users of the proposed trail are based on West Coast Wilderness Trail survey data, which found 7% of all trips on the trail are by people from the West Coast Region. This equates to 1,260 local users for the Glacier Country Trail
- We assume 80% of local use are single-day rides and 20% are multi-day
- Growth projection is based on 3% growth per year for five years after Year 9, then 2% per year thereafter.

10.4.2 Walker user estimate data and assumptions

To estimate the volume of use by walkers, we have used the following information and assumptions:

- We assume the number of overnight walkers on the proposed trail will be constrained by hut/overnight accommodation capacity
- We estimate the number of total hut bed nights on the proposed trail, noting 25 walkers can stay at the Blanchard Bluff hut, 20 at the Waikukupa hut, 20 at Waihapi hut, and a further 20 walkers at the Lodge. The total bed-night capacity of the three huts and Lodge is 31,025 per year. We assume there is also at least 60 beds available for walkers at Franz, Fox and Ōkārito townships. As shown in Table 14, this gives capacity of about 52,925 bed-nights
- To estimate the number of walkers, reflecting the seasonality of visitors to the area, we have applied occupancy rates across months and seasons based on guest night data for the West Coast region. These rates have been based on 2018/19 year (pre-Covid figures).[32]

Based on the occupancy assumptions, the total estimated bed-nights for walkers across the entire trail is 30,755

- From this, we estimate the share of multi day users staying 1, 2, 3, 4, 5 and 6 nights. In line with cyclist user assumptions, we assume 50% of multi day walkers complete the entire trail, staying 5 and 6 nights. (40% 6 nights and 10% 5 nights)
- Estimates for the remaining nights reflect our understanding of the proposed trail and likely use of key sections. 1 and 2 nights are assumed to be the next most popular options for walkers, at 30% 15% share of multi day use respectively
- There are limited options for walkers to stay 3 and 4 nights, unless extra nights are stayed in sections of the proposed trail or shuttle entry and exit to key parts of the trail is very popular. So we estimate only a very small share (5%) of multi day users stay 3 or 4 nights
- Using the constraint of total bed nights and assumptions about the share of multi day walkers staying a certain number of nights, 30,755 bed-nights corresponds to 8,420 individual walkers (inclusive of visitors and locals) (average length of stay of 3.7 nights)
- We estimate an additional 1,690 single day walk use by visitors (additional 20% on top of multi day visitors). This is based on the same assumption as for cyclists
- Of these multi and single day visitors, and walkers we assume 80% are domestic visitors, and 20% are international visitors. This is the same split as is assume for cyclists
- We assume 7% of total use is attributed to locals, those from the West Coast Region, equating to 750 local walkers. This is the same proportion as assumed for cyclists

[31] See original source in the Department of Conservation managed Great Walk bookings data 2018/19 to present: Great Walks booking numbers: Recreation management (doc.govt.nz)

[32] See specifically – MBIE (2019) Tourism West Coast Summary report, accessible here Tourism West Coast (mbie.govt.nz)

- We assume 80% of use by local walkers (from within the West Coast region) are single day walks and 20% are multi-day walks
- Growth projection is based on 1% growth per year from Year 9 (as number of walkers on the proposed trail is constrained by hut capacity).

The likely occupancy of on-trail accommodation by walkers (including bed-nights at Franz Josef, Fox and Ōkārito townships) is based on West Coast region accommodation occupancy rates in 31 (pre-Covid). The total bed-night estimate of 30,755 when the proposed trail is fully established is shown in table 14. Given the length of stay assumptions for walkers, 30,755 bed-nights corresponds to about 8,420 individual multi-day walkers.

Figure 31. Guest night seasonality, West Coast region 2018/19

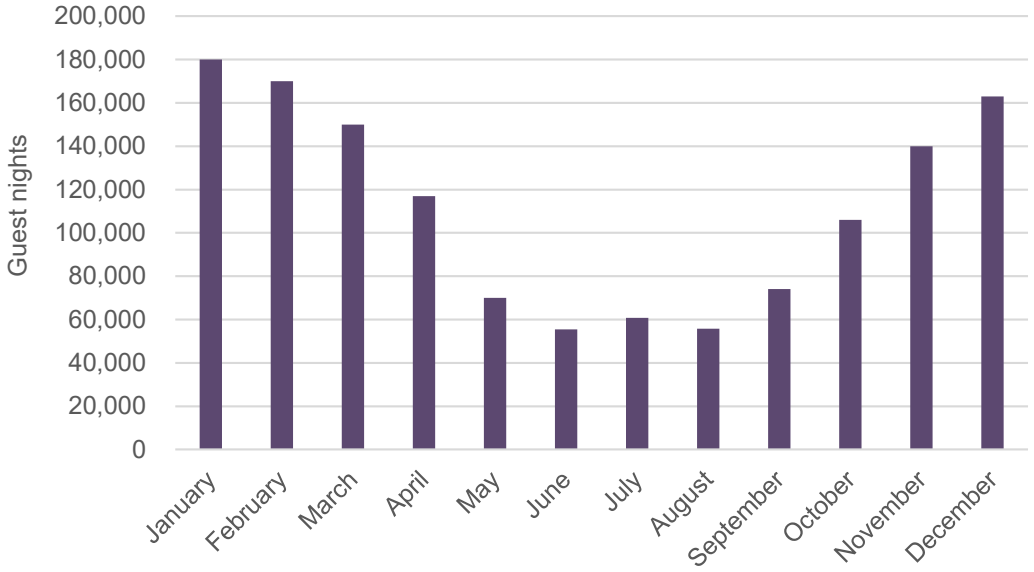


Table 14. Assumed occupancy of trail accommodation by walkers, by month

Walker benights based on occupancy

General base rate – no matter where on the track	Full year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Occupancy rate	**58%**	**95%**	**95%**	**80%**	**65%**	**35%**	**25%**	**25%**	**25%**	**35%**	**50%**	**80%**	**90%**
Full bed night capacity (3 trail huts and Lodge)	31,025	2,635	2,380	2,635	2,550	2,635	2,550	2,635	2,635	2,550	2,635	2,550	2,635
Plus equivalent bed nights assumed available at Fox, Franz and Ōkārito townships	21,900	1,860	1,680	1,860	1,800	1,860	1,800	1,860	1,860	1,800	1,860	1,800	1,860
Total bed nights capacity (including huts, lodge and townships)	52,925	4,495	4,060	4,495	4,350	4,495	4,350	4,495	4,495	4,350	4,495	4,350	4,495
Estimated bed nights occupied by walkers	**30,755**	**4,270**	**3,857**	**3,596**	**2,828**	**1,573**	**1,088**	**1,124**	**1,124**	**1,523**	**2,248**	**3,480**	**4,046**

As a sense check, projections were compared the Glacier Trail walker estimate to the number of bed-nights on other NZ Great Walks (pre-Covid), summarised in the table below. Total bed-nights estimated for the Glacier Country Cycle Trail appear comparable with other Great Walks, though it's noted that the full Glacier Country Trail is significantly longer than other Great Walks, and the impact of this is uncertain.

Table 15. Great Walk bed-nights – 2018/19 unless stated

Track	Kilometres	Bed-nights
Tongariro Northern Circuit	43	17,939
Whanganui Journey (river paddling)	87 or 145	7,967
Abel Tasman	60	78,418
Heaphy Track	78	24,363
Paparoa (2019/2020 figures as opened Dec 19)*	55	2,825
Routeburn Track	32	27,744
Kepler Track	60	30,690
Milford Track	54	21,300
Rakiura Track	32	12,948
Glacier Country Trail (Walkers only)	145	30,755

Note: This table excludes Lake Waikaremoana (46 km track) as bookings and bed-night figures aren't publicly available.

*For the 21/22 season, the Paparoa Track had 2,300 bookings and 11,000 bed-nights (some may be cyclist users).

11.Economic Impact Assessment

The economic assessment of the Glacier Country Trail applies a cost-benefit analysis (CBA) approach to determine the economic and social outcomes of the investment, as recommended by the Treasury[33] and developed for the Ngā Haerenga (Great Ride) Cycle Trail funding applications[34].

The cost-benefit analysis quantifies three types of benefit:

- Visitor spending (the GDP component of visitor expenditure)
- Health benefits, and
- Consumer surplus (a measure of the enjoyment or "utility" trail users gain over and above what they paid to experience the proposed trail).

The costs and benefits of the investment are assessed separately from a regional perspective (West Coast region) and from a national perspective (New Zealand). The treatment of additional benefit from visitor spending, for example, is different from a regional perspective compared to a national perspective.

11.1 Summary of the CBA assessment

Over the 25-year time period modelled, total costs of the Glacier Country Trail outweigh total benefits at both the regional level and at the national level.

Table 16 shows that, for the West Coast region, the present value of benefits generated by the Glacier County Trail are $51.3 million compared with total costs of $68.1 million. The benefits at the national level are slightly higher (because consumer surplus and health benefits are included for out of region New Zealanders in the national level model).

Table 16. Cost-benefit analysis summary

CBA result metrics	Regional perspective	National perspective
Total costs	$68.1 m	$68.1 m
Total benefits	$51.3 m	$56.6 m
Net economic benefits (NPV)	– $16.8 m	– $11.6 m
Benefit to Cost ratio (BCR)	0.8	0.8
Internal rate of return	1.2%	2.2%

These results are for the base case user projections. The CBA model has also been run at plus and minus 25% of these base projections – the results are provided later in the sensitivity analysis.

The benefits quantified in the economic model are summarised in Table 17.

[33] (The Treasury, 2015)

[34] (MartinJenkins, 2017)

Table 17. Summary of benefits

Outcome	Benefit
Visitor expenditure	New activity on the Glacier Country Trail is projected to contribute an additional $161.4 million in visitor expenditure to the West Coast region over the 25-year time period modelled (in present value terms). This corresponds to about $6.5 million each year. This would contribute about $50.4 million to the regional economy in net GDP (profits and wages after tax, in present value terms) or $2.0 million each year.
Construction and ongoing jobs	The construction of the Glacier Country Trail infrastructure, and ongoing operations from additional visitor expenditure is estimated to support a number of jobs in the West Coast region. Over the five-year construction phase, the projects will support an average of 74 jobs each year. From Year 6 to Year 25, the additional visitor expenditure from users riding and walking the Glacier Country Trail will support an average of 140 jobs each year. This estimate includes direct and indirect impacts of the visitor expenditure. Indirect impacts take into account the initial economic activity flowing through the economy as suppliers are employed and employees spend their incomes.
Health benefits	At a national level, the Glacier Country Trail will encourage increased activity that will improve health outcomes, reducing health costs by $17.7 million over 25 years. At a regional level, the improved health of local users will reduce health costs by about $360,000 over the 25-year timeframe.
Consumer surplus	Nationally, additional users attracted to the Glacier Country Trail are estimated to derive $26.4 million in consumer surplus value over 25 years. Regionally, the present value of the consumer surplus derived by local users (people from within the West Coast region) over 25 years (recreational use) is estimated at $590,000.

Source: Martin Jenkins CBA model

11.1.1 Regional-level cost-benefit analysis results

From the regional perspective, the costs of the Glacier Cycle Trail outweigh the benefits, resulting in a negative net present value of -$16.8 million (Table 18).

Table 18. CBA summary metrics – Regional level

Summary metrics - Regional	Base case
Total benefits (PV)	51,300,000
Total costs (PV)	68,140,000
Net economic benefits (NPV)	– $16,840,000
Benefit: Cost ratio	0.75
Internal rate of return (IRR)	1.2%

While the proposed trail is expected to generate an additional $50.35 million in GDP to the region from new visitor spending (in present value terms), this is not sufficient to offset the large capital costs of the proposed trail infrastructure, and the $950,000 maintenance and operating costs (Table 19)(noting that the trail maintenance costs are an estimate).

Table 19. Benefits summary – Regional level

Benefits summary - Regional	Base case
	NPV ($)
Cyclists:	
Visitors (PV)	35,310,000
Health (PV)	190,000
Consumer surplus (PV)	410,000
Total benefits from cyclists	35,910,000
Walkers:	
Visitors (PV)	15,040,000
Health (PV)	170,000
Consumer surplus (PV)	180,000
Total benefits from walkers	15,390,000
Total benefits:	
Visitors (PV)	50,350,000
Health (PV)	360,000
Consumer surplus (PV)	590,000
Total benefits	**51,300,000**

Figure 32 and Figure 33 show the cumulative Net Present Value of the project over time from the regional perspective. In the high trail use scenario (25% more users than the base case estimate), the project gets closer to breaking even, with an NPV of -$4.1 million.

Figure 32. NPV (base case, high use and low use case) – Regional level

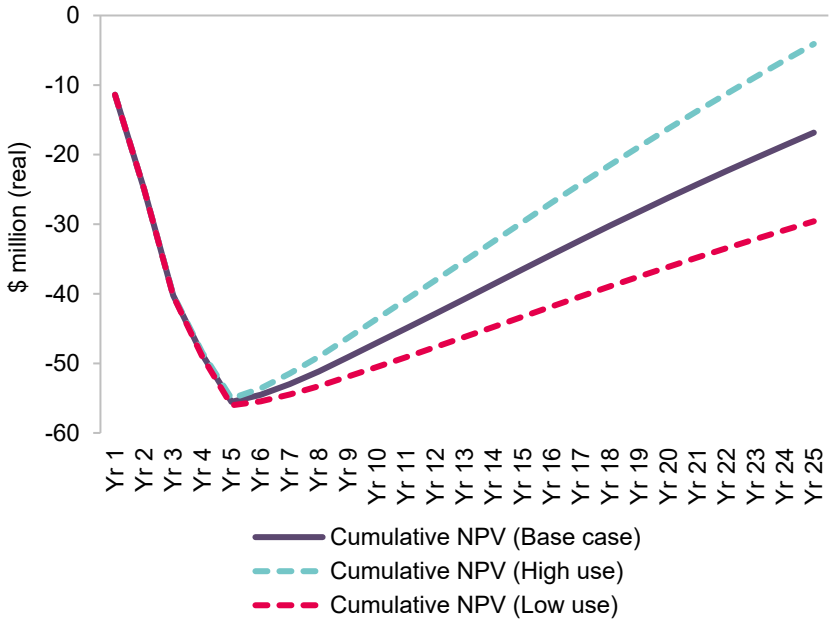
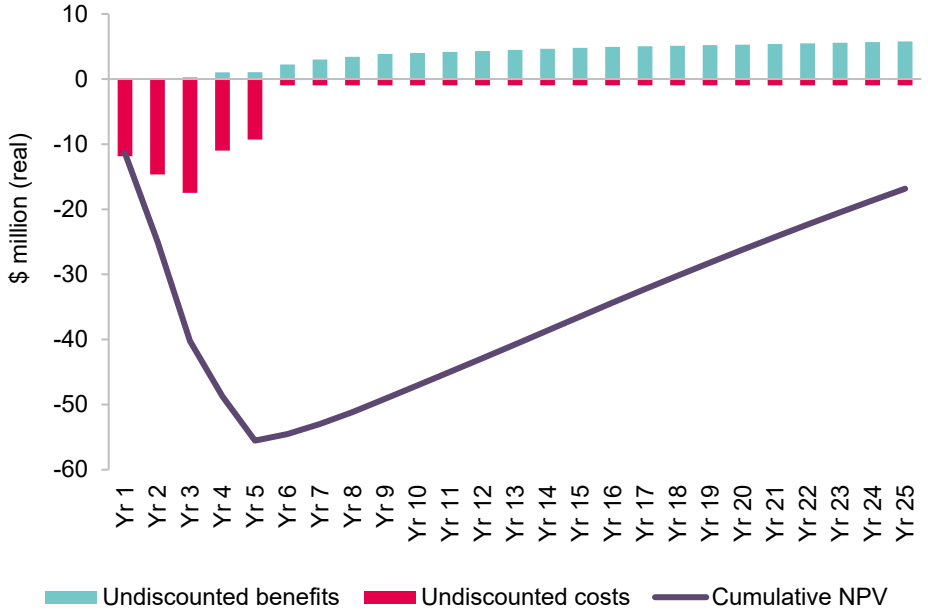


Figure 33. Costs, benefits and NPV – Regional level



11.1.2 National-level cost-benefit analysis results

From the national (New Zealand) perspective, the costs of the Glacier Cycle Trail outweigh the benefits, resulting in a negative net present value of -$11.2 million (Table 20).

Table 20. CBA summary metrics – National level

Summary metrics - National	Base case
Total benefits (PV)	56,900,000
Total costs (PV)	68,140,000
Net economic benefits (NPV)	($11,240,000)
Benefit: Cost ratio	0.84
Internal rate of return (IRR)	2.2%

At the national level, the benefits are predominantly from health cost savings and consumer surplus value to trail users, however, an additional $12.7 million in GDP is also expected to be created from additional visitor spending (Table 21). At the national level, total benefits of the project are slightly higher than from the regional perspective.

Table 21. Benefits summary – National level

Benefits summary - National	Base case
	NPV ($)
Cyclists:	
Visitors (PV)	8,940,000
Health (PV)	11,490,000
Consumer surplus (PV)	18,520,000
Total benefits from cyclists	**38,950,000**
Walkers:	
Visitors (PV)	3,800,000
Health (PV)	6,250,000
Consumer surplus (PV)	7,900,000
Total benefits from walkers	**17,950,000**
Total benefits:	
Visitors (PV)	12,740,000
Health (PV)	17,740,000
Consumer surplus (PV)	26,420,000
Total benefits	**56,900,000**

Figure 34 and figure 35 show the NPV for the project from the national perspective over time. For the high-use trail scenario (25% more users than the base case), the NPV is $2.9 million.

Figure 34. NPV (base case, high use and low use case) – National level

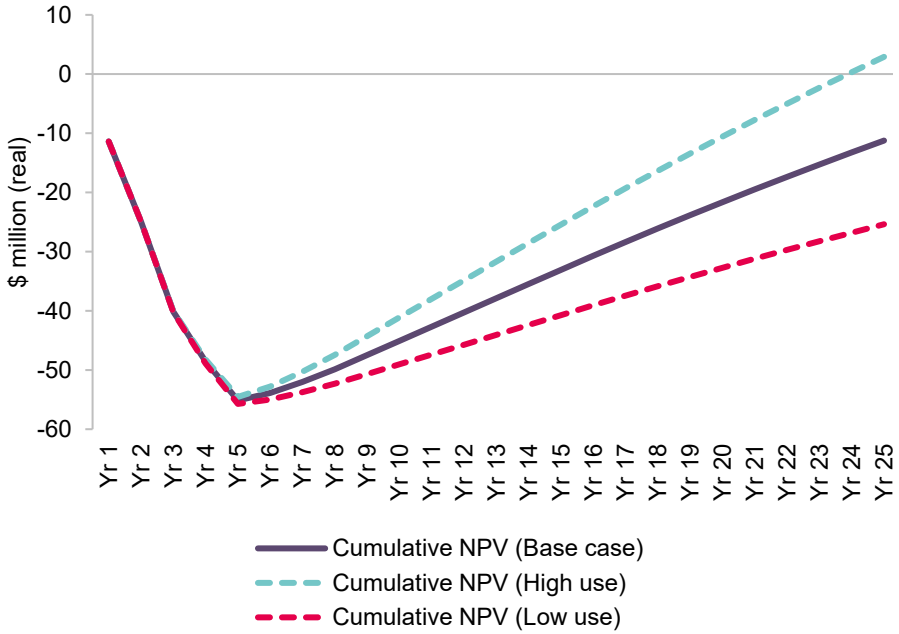
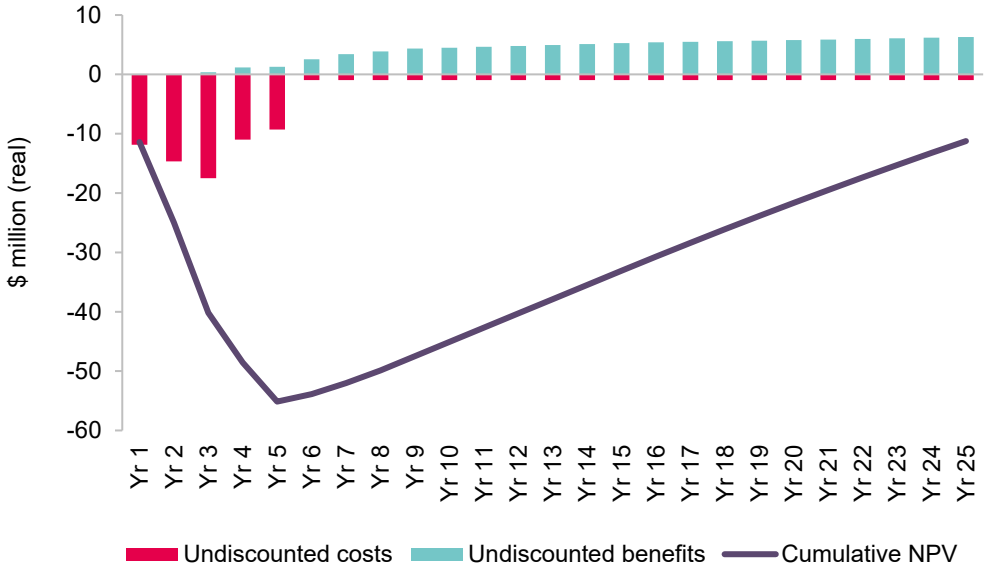


Figure 35. Costs, benefits and NPV – National level



11.1.3 Inputs to the CBA model

CBA parameters

The costs and benefits of the Glacier Country Trail have been modelled over a 25-year timeframe, using the Treasury recommended discount rate of 4% per year. The "present value" of costs and benefits is used in this report, which is the value when future costs and benefits are discounted.

Due to the uncertainty inherent in estimating user volumes, we have tested the results of the CBA at ± 25% of the base user estimate in the sensitivity analysis.

Costs

The costs applied in the model are summarised in Table 22. Construction costs are spread over 5 years.

Table 22. Costs

Trail Section	Capital cost ($m)	Maintenance and operations cost	Construction years
Ōkārito to Franz Josef	$16.021	-	Year 1-2
Neil's Creek car park to Gillespies Beach	$23.700	-	Year 2-3
Gillespies Beach to Fox Glacier	$9.908	-	Year 4
Franz Josef to Neil's Creek car park	$7.578	-	Year 5
Total trail cost	**$57.207**	**$950,000 per year**	

Source: TRC. Note: The above costs include 20% contingency.

In addition to the above costs, we have assumed $100,000 for a project manager over the 5-year trail construction period.

Users and average length of stay

The user projections and average length of stay used in the CBA model are outlined in the "Trail use and visitor modelling" section.

Visitor spend

The average daily visitor spend applied in the model is taken from the West Coast Wilderness Trail Economic Assessment Report (2019/20) [35] and inflated to 2022 dollars (Table 23).

We have assumed that for multi-day visitors, walkers spend 80% of what cyclists spend (this accounts for not having to hire bikes and pay for shuttles etc). We assume that single-day cyclists spend half of what multi-day cyclists spend. Finally, we assume that a single day walker spends half what a single day cyclist spends (again, they will not need to hire a bike etc).

Table 23. Average daily spend by user type

Users	Cyclists Daily spend ($)	Walkers Daily spend ($)
Domestic – single-day	$131	$66
Domestic – multi-day	$262	$210
International – single-day	$131	$66
International – multi-day	$262	$210

Source: Daily spend estimates are based on the West Coast Wilderness Trail.

[35] Gurden, J (2020) West Coast Wilderness Trail Economic Assessment Report

11.1.4 Breakdown of benefits calculated in the CBA model

Increased visitor spend

The increase in visitor spend is based on the Glacier Country Trail attracting visitors into the region, but also encouraging visitors already there to stay longer to cycle or walk the proposed trail. The third factor in increasing visitor spend is to encourage the availability and accessibility to amenities and activities that will increase visitors' daily spend. An analysis by Tourism New Zealand shows that, on average, a cycle visitor spends around 25 percent more on their visits than, and stays twice as long as, the average international visitor.[36]

The assessment of visitor numbers and the growth in visitor numbers is based on the user numbers and profiles of other trails on the West Coast and for similar trails around New Zealand. This is outlined in the "Trail use and visitor modelling" section.

Length of stay for cyclists is expected to be 2.8 nights (3.8 days) on average, and 3.7 nights (4.7 days) for walkers.

As noted earlier, daily spend is derived from a recent economic impact analysis of the West Coast Wilderness Trail. Our assumption is that the visitor type and therefore daily spend would be similar.

The analysis suggests that new visitors who ride or walk the Glacier Country Trail would spend $161.4 million in the West Coast region (in present value terms) over the 25 years modelled (Table 24).

In terms of the value added or GDP component (profits and wages net of tax) of that spend, the region would benefit by about $50.4 million over the 25 years - about $2.0 million each year.

Table 24. Visitor benefits (regional) (present value)

Visitor type	Regional (West Coast)	
	Visitor expenditure $m	GDP component $m
Cyclists		
Out-of-region – single-day	$2.4	$0.7
Out-of-region – multi-day	$88.2	$27.5
International – single-day	$0.6	$0.2
International – multi-day	$22.0	$6.9
Sub-total: Cyclists	$113.2	$35.3
Walkers		
Out-of-region – single-day	$0.5	$0.17
Out-of-region – multi-day	$38.0	$11.9
International – single-day	$0.1	$0.04
International – multi-day	$9.5	$3.0
Sub-total: Walkers	$48.2	$15.1
Total	$161.4	$50.4

Health benefits

The attribution of physical activity to health benefits is well established - there is good international evidence to show physical activity and reduction in mortality risk depending on levels of inactivity.

Health benefits resulting from increased physical activity are quantified on a per-kilometre basis in the CBA model. For commuters/recreational users, 6.2 kilometres is used per commute and 30 kilometres is used for local and out-of-region cyclists. Health benefits are based on a benefit

[36] Tourism New Zealand Special Interest Infographic. Data sourced from the Ministry of Business, Innovation & Employment International Visitor Survey.

value per kilometre of $1.30, which accrue to all New Zealand residents that ride the proposed trail.

The analysis also accounts for displacement, which is the likelihood that visitors would have done meaningful exercise anyway. A displacement factor of 75 percent is applied for local and out-of-region cyclists and walkers.

At the national level, all additional domestic users are counted, and, at the regional level, all additional local users (within West Coast region) are counted. At a national level, the health benefits accrue to all New Zealand residents. At a regional level, health benefits are for local users only.

The following table shows the additional distance attributable to the project, before and after the displacement of 75 percent. This distance is used to estimate health benefits.

Table 25. Health benefits (national level) derived from kilometres travelled

Health benefits	Km - Before displacement	Km - After displacement
Cyclists		
Local Rider – single-day	107,900	26,980
Local Rider – multi-day	246,700	61,700
Out-of-region – single-day	1.04 m	259,200
Out-of-region – multi-day	19.51 m	4.88 m
Walkers		
Local – single-day	30,820	7,700
Local – multi-day	123,370	30,840
Out-of-region – single-day	81,620	20,400
Out-of-region – multi-day	5.44 m	1.36 m
Total km	26.59 million	6.65 million

Based on these figures, the Glacier Country Cycle Trail will encourage New Zealanders to get on their bikes and ride an additional 5.2 million kilometres, and to walk an additional 1.4 million kilometres.

Consumer surplus

Consumer benefit, or surplus, is the value that an individual derives from being able to enjoy the experience of cycling the proposed trails, over and above what is paid for the experience. Similar to the health benefits discussed earlier, the benefits accrue to all New Zealand users. At a regional level, the consumer benefit is only from local users.

For single-day riders, the consumer surplus is calculated at 10 percent of the public holiday value of time (determined by the New Zealand Transport Agency) multiplied by the average length of activity.

For multi-day riders, the consumer surplus is calculated at 10 percent of the average daily spend multiplied by the average length of stay.

Table 26. Consumer surplus benefit (present value)

Consumer surplus	Regional	National
Cyclists		
Local Rider – single-day	$13,410	$13,410
Local Rider – multi-day	$400,680	$400,680
Out-of-region – single-day	N/a	$476,180
Out-of-region – multi-day	N/a	$17.6 m
Walkers		
Local – single-day	$7,660	$7,660
Local – multi-day	$172,390	$172,390
Out-of-region – single-day	N/a	$106,920
Out-of-region – multi-day	N/a	$7.6 m
Total	$594,000	$26.4 m

11.1.5 Other social outcomes

Increased employment (construction and operations)

In addition to the above benefits, the construction of the proposed trail and huts, and the visitor spending generated by the trail concept, will create new jobs in the West Coast region.

Based on the activity estimates, the Glacier Country Trail will support an average of 74 full time jobs each year of the five-year construction phase.

Ongoing employment from additional visitor spending is expected to average about 140 full time jobs each year over the 25 years modelled. The number of jobs resulting from the increased visitor spending includes both direct and indirect employment impacts.

Figure 36. Impact on regional employment

Note: The tourism jobs above include direct and indirect impacts of the visitor expenditure. Indirect impacts take into account the initial economic activity flowing through the economy as suppliers are employed and employees spend their incomes.

11.1.6 Sensitivity analysis

There is, of course, uncertainty inherent in making projections and forecasts of trail use volumes. To provide an idea of how sensitive the CBA results are to changes in the actual number of trail users, we have run the model at plus and minus 25% of the base case user projections.

Table 27 shows the CBA results for the low (-25%) and high (+25%) user scenarios compared to the base case estimate.

Table 27. Cost-benefit analysis – Sensitivity analysis (± 25% on user projections)

CBA result metrics	Low (-25%)	Base user estimate	High (+25%)
Regional-level CBA			
Total costs	$68.1 m	$68.1 m	$68.1 m
Total benefits	$38.6 m	$51.3 m	$64.0 m
Net economic benefits (NPV)	– $29.6 m	– $16.8 m	– $4.1 m
Benefit to Cost ratio (BCR)	0.57	0.75	0.94
Internal rate of return	N/a	1.2%	3.4%
National-level CBA			
Total costs	$68.1 m	$68.1 m	$68.1 m
Total benefits	$42.8 m	$56.9 m	$71.0 m
Net economic benefits (NPV)	– $25.4 m	– $11.2 m	$2.9 m
Benefit to Cost ratio (BCR)	0.63	0.84	1.04
Internal rate of return	N/a	2.2%	4.4%

12.Project Risks

The high-risk areas prone to damage once the proposed trail is constructed are the two main river crossings and the sections of trail near the coast. Therefore, it is considered well worth the extra cost to undertake more detailed planning for these high-risk areas and could even prove critical to the viability of the project.

Further detailed investigation is required for the bridge crossings at Omoeroa and Waikukupa rivers. This should involve specialist flood modelling and geotechnical work to understand where bridges could be placed, and design parameters required to withstand expected storm events.

An assessment of coastal hazards that may affect the coastal sections of the proposed trail, such as storm surges, coastal erosion and the effects of sea level rise is also considered necessary at a preliminary stage. This will help define the final alignment and any cost implications with a likely minimum above sea level baseline being established. The New Zealand Coastal Policy Statement (2010), Regional Coastal Plan (2000) and the DOC Guideline for Coastal Hazards and Climate Change Adaptation Planning for Recreational, Historic and Property Assets (2019) should be used initially for high level guidance.

A project of this scale and complexity comes embedded with a number of risks. The table below presents a number of these with possible control options to help alleviate adverse outcomes.

Table 28. Table of Risks and Responses/Treatments

RISK	RATING	RESPONSE / TREATMENT PROPOSED
Only Part Funding is Received	**High**	• Develop the proposed trail with the highest priority components first. This includes the highest two priority sections being Ōkārito to Franz Josef, and Neil's Creek Car Park to Gillespies Beach. • Further funding is applied for the development of the remaining two trail sections to ensure the proposed trail is completed. • Partial implementation could also include on road cycling as a temporary measure for the cycling components where the roads are quiet and contain smaller numbers of vehicle traffic • Trail and experience quality is vital to achieving the vision, in limited budgets, trail quality and environmental performance is more important than trail length as a general principle.
Approval for one or more sections is not forthcoming	**High**	• The environment through which the proposed trail traverses has high conservation values and are subject to a range of environmental and planning approvals. Detailed planning for new trail sections may rule out construction of the proposed trail. Alternative routes that still provide the intent of the proposed trail should be considered in less significant areas if this occurs. • One of the next phases of this trail's development following this feasibility would be further planning to define some of those routes and specify in engineering terms the proposed trail type etc. The principles of avoidance should be implemented where any conservation or cultural heritage implications exist.
Potential resilience measures add to the proposed trail build difficulty and expense	**High**	• Building the proposed trail and infrastructure to a standard and in a location that will see out climate change impacts including flooding, and landslips, in addition to coastal hazards and erosion may add to the initial cost of the proposed trail, but will pay dividends in the longer term, reducing potential trail closures and reducing maintenance costs in the longer term.
The trail concept is put in place, but visitor numbers are significantly below those forecast	**Moderate**	• Global trends are driving visitors to experiences that involve nature, and that deliver benefits locally and regionally. Additionally, global markets will open up over the course of the next several years bringing back higher yielding visitors that are seeking the best of New Zealand. Quality experiences combined with outstanding natural and cultural settings mean that this trail is likely to meet or exceed projections. • E-bike advances over the past decade are likely to continue making technology a driver in increasing market appeal for trails such as this.
Trail maintenance is not sufficient or effective and the trail experience deteriorates	**Moderate**	• Trail maintenance is a critical component of the experience remaining high quality and attracting people to use the destination. • DOC and any trail managers will need to take a broader economic benefit into account when considering maintenance expenses.

RISK	RATING	RESPONSE / TREATMENT PROPOSED
		• Professional design and construction through implementing this feasibility study and associated planning (to follow) may limit the annual maintenance costs due to the higher quality trail surface.
Business across the South Westland area does not respond to the opportunity	**Low to Moderate**	• Services such as bike hire, shuttles/transport and rider-friendly accommodation will be important to the success of this feasibility assessment. Business opportunities and response are critical to the provision of services. Partnering with Development West Coast, Territorial Authorities and business associations are critical to helping businesses understand the role and opportunity. • Other destinations have responded to the opportunity trail tourism has presented and this opportunity should be seen as no different.
Competitor pressure	**Low**	• A number of other trails (Great Walks and Great Rides) exist on the South Island. Further The West Coast Wilderness Trail is located approximately 110 km to the north. This feasibility assessment concludes that the trails will not compete against each other, rather they will complement each other further delivering the positioning of the region. • The design of the proposed Glacier Country Trail has been undertaken to include environments that are uncommon on other trails. This includes wild west coast beaches, temperate rainforest, alpine views and glaciers.

13. Next Steps

This feasibility and initial business case is an important step in the development of potential Glacier Country Trail into a world class Natural and Cultural experience for visitors.

Te Rūnanga o Makaawhio are an important partner in the development not only of the proposed trail, but the experiences on offer. DOC and Development West Coast along with other potential partners will ideally form a partnership group to work through the next steps, determine the potential business model and look at exciting entrepreneurial opportunities to bring this to life. Additionally, how to attract funding for the planning and construction of the proposal.

The community throughout the development of this report have by and large been very positive on the potential for the concept. If, where and how it is developed will be important to them and they will also need a voice in the future development of the proposed trail.

The business model for the proposed trail's operation will also be critical if it is to be constructed and operate effectively. Developing a range of options from DOC management through to a Trust model will provide partners with the options needed to both ensure the maintenance and funding of the proposed trail is considered, experiences are developed, and the conservation of the region is not only maintained but enhanced.

Appendices

APPENDIX A – DOC CYCLE GRADE CATEGORIES

Trail Grade Standards[37]

Cycle track grade	Description of cyclist/target user	Closest equivalent visitor group for walkers
	All ages and most fitness levels. Prefers 'social riding' two abreast most of the time	Urban resident (not used by DOC) Shorter traveller
	Riders of most ages, riding ability and fitness levels.	Short stop traveller
	Mountain bikers with skills to ride and maintain balance on a narrower surface, control braking on edge of traction and overcome obstacles.	Day visitor
	Advanced mountain bikers with skills to manage accurate line choice, control braking on edge of traction and overcome obstacles.	Backcountry comfort seeker
	Expert mountain bikers with high level of skills and fitness to manage technically challenging tracks with big hills and wide range of terrain.	Backcountry adventurer
	Highly experienced and technically advanced mountain bikers who have supreme bike and tyre placement accuracy.	Thrill seeker (not provided for by DOC)

[37] Cycle Track Service Standards – DOC.

APPENDIX B – NON POWERED VEHICLES POLICY IN NATIONAL PARKS [38]

Non-powered vehicles (including, but not limited to, all non-motorised cycles and mountain bikes):

8.6(g) Non-powered vehicles should not be ridden or otherwise used in national parks except on roads formed and maintained for vehicle use, and on routes specifically approved for use by specified types of non-powered vehicle in a national park management plan.

8.6(h) Roads and routes may be approved for the use of a specified type of non-powered vehicle only where: i) adverse effects on national park values can be minimised; ii) the track standard is suitable; and iii) the benefit, use and enjoyment of other people can be protected.

8.6(i) A national park management plan will identify measures to manage the approved use of specified types of non-powered vehicles that should be taken to: i) minimise any adverse effects (including cumulative effects) on national park values; and ii) protect the experiences of, and avoid creating hazards for, others.

8.6(j) Measures to manage the use of a specified type of non-powered vehicle approved for use in a national park may include, but are not limited to: i) trial periods; ii) restricted seasons; iii) limits on numbers; iv) one-way flow; and v) adherence to a nationally recognised user code.

8.6(k) A national park management plan should identify monitoring requirements for the use of specified types of non-powered vehicles and specify what actions should be taken if adverse effects arise, including the possibility of use no longer being allowed.

[38] General Policy for National Parks (doc.govt.nz)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