ALPS TO OCEAN
NEW ZEALAND'S #1 CYCLE TRAIL
Stage Two – Feasibility Study
(May 2010)

Contents

Acknowledgements

This study has been developed in consultation with a range of individuals and organisations including key stakeholders – all with an interest in progressing the Alps to Ocean Cycle Trail. We are extremely grateful for their assistance and knowledge in the development of this study.

Representative	**Organisation**
Philip Brownie Denis Callesen Mike Neilson Claire Le Grice	Mackenzie Tourism and Development Trust
Ian Guthrie Rob Young	Department of Conservation
Jane Matchett Annabel Gudsell Stephen Haliwell Tony Caldwell	Waitaki District Council
Jo Chang Peter Hall Peter Kortegast Peter van den Ende	Opus International Consultants

1 Executive Summary

1.1 Introduction

On February 11, 2010, thirteen proposed cycle trails were approved by the Ministry of Tourism (the 'Ministry') to receive funding from the New Zealand Cycle Trail Fund to undertake a feasibility assessment. The Alps to Ocean Cycle Trail was one of these.

This study outlines the feasibility study for the Alps to Ocean Cycle Trail, it has been prepared in accordance with the Feasibility Study and High Level Business Case Guidance notes issued by the Ministry dated February 2010. Trail design, construction and costing information has been contributed by Opus International Consultants Limited. The remainder of the study has been prepared by the Alps to Ocean Cycleway Establishment Committee (the 'Establishment Committee') comprised of representatives from the Mackenzie Tourism and Development Trust, the Waitaki Development Board, the Waitaki District Council, and the local Department of Conservation Area Offices. This study complements the high level business case submitted to the Ministry in conjunction with this study.

1.2 Summary of Findings

Overall this study concludes that the Alps to Ocean Cycle Trail is feasible and meets the assessment criteria to justify funding by the Ministry as one of New Zealand's "Great Rides". Specifically:

- Meets the NZ Cycle Trail Design Criteria – beginning in the Southern Alps at Aoraki/Mt Cook National Park, descending 780m through the Mackenzie basin down the Waitaki Valley to Oamaru and the Pacific Ocean.
- Compliant with funding levels allocated by the Ministry – the route can be constructed for a total cost of $3,250,000 requiring a contribution of $2,750.000 of funding from the National Cycle Trail Fund.
- The favourable geology and climate offer an ideal location for cycle track construction, which will be low maintenance and therefore less ongoing costs.
- Landowner Agreement in Principle – all affected land owners have provided their written support in relation to granting access across their property. The only "orange light" portion is the trail located within the Aoraki Mount Cook National Park which requires a statutory notification process to be followed before the necessary changes to the Management Plan allowing the cycling activity can be confirmed.
- Achieves the vision and objectives of the New Zealand Cycle Trail Project through economic and social benefits for both the Waitaki and Mackenzie regions; a world class cycling experience to attract visitors, community engagement and wider health, physical and social benefits.

.

1.3 Route Description and Trail Specification

The feasibility study is based on walk-over and drive-overs of some sections of the track by the project team. In addition a desk-top assessment was undertaken using topographical maps, google earth and engineering specialist knowledge.

The proposed Alps to Ocean cycle trail is 312km long beginning in the Southern Alps at Aoraki/Mt Cook National Park, descending 780m through the Mackenzie basin down the Waitaki Valley to Oamaru and the Pacific Ocean with multiple access points to begin or end the ride or to ride only local sections/loops. The route traverses a unique geological glacial moraine alpine plateaus and alluvial river gravels. The route has been carefully selected to avoid major river crossings and utilises existing dam and bridge structures. The proposed route utilises a combination of on road low volume roads and off-road shared use (1.5 metre) paths.

For the purposes of the route description and cycle trail specification, the Trail has been divided into 8 logical segments. It is noted that these segments do not necessarily reflect the likely itinerary cyclists may follow – please refer to Part 3 of this Study for a discussion on this aspect. It is envisaged that most cyclists will ride the trail in the 'down-hill' and 'down-wind' direction from alps to ocean. The route sections and distances are given below:

Section 1 – Aoraki Mount Cook National Park – Braemar Station: 37 km

Section 2 – Braemar Station to Twizel: 45 km

Section 3 – Twizel to Lake Ohau Lodge: 39 km

Section 4 – Lake Ohau Lodge to Omarama: 42 km

Section 5 – Omarama to Otematata: 24 km

Section 6 – Otematata to Kurow: 43 km

Section 7 – Kurow to Duntroon: 27 km

Section 8 – Duntroon – Oamaru: 53 km

1.4 Consultation

Given the length, location and nature of the proposed cycle trail, the Establishment Committee has undertaken extensive consultation with private landowners to secure access as well as Land Information New Zealand, the Department of Conservation, the New Zealand Transport Agency, Local and Regional Authorities (Mackenzie District Council, Waitaki District Council, Waimate District Council, Environment Canterbury, Otago Regional Council), the Historic Places Trust and Te Rununga O Ngai Tahu. A full summary of this consultation is included in Part 9 of this study.

In general, it is noted that the outcome of the consultation undertaken by the Establishment Committee has been positive and the Committee has received significant support from all sectors of the community. In particular, we note the substantial co-funding contributions from the Department of Conservation and the Waitaki District Council.

Support from affected landowners has also been considerable – to the extent that the proposed cycle trail route is a "green light" in its entirety except for the portion through the Aoraki Mount Cook National Park which requires formal changes to the Management Plan to be approved before cycle trail access can be confirmed.

In the view of the Establishment Committee, the positive response to this consultation is an important aspect of the cycle trail proposal and its feasibility in that it signifies public acknowledgment that the proposal has the potential to significant benefits to the region. Community support of this kind is also an important part of the stated vision and objectives of the National Cycleway Project, in particular, the objective of engaging communities.

1.5 Cost Estimates

The estimated construction cost of the cycleway is $3,250,000 for the 312 km route. The net cost is $3,250,000, less $20,000 legal costs for easement, which is excluded from the New Zealand Cycleway Fund. For this project the estimate contingency has been reduced from 20% to 17% due to the assessed low subgrade risk and low value of new structures.

Funding provided from alternate sources to the New Zealand Cycleway Fund amounts to $500,000 (16%). $20,000 of these funds will cover legal easement cost, with a balance of $500,000 reducing the net amount of our New Cycleway Fund application.

The table below summarises the total cost of each segment of the cycleway.

Section	Section Name	Estimated Cost
	Professional Services	$423,000
1	Aoraki Mount Cook National Park to Braemar Station	$231,000
2	Braemar Station to Twizel	$281,000
3	Twizel to Lake Ohau Lodge	$269,000
4	Lake Ohau Lodge to Omarama	$480.000
5	Omarama to Otematata	$338,000
6	Otematata to Kurow	$297,000
7	Kurow to Duntroon	$272,000
8	Duntroon to Oamaru	$660,000
	Total Cost	$3,250,000

1.6 Study Structure

The study presents the details of our findings and addresses the following areas for the development of the Alps to Ocean cycle trail:

- Market Assessment;
- Methodology;
- Route Description;
- Trail Specification;
- Major Structures and Works;
- Land Ownership and Consultation with Landowners;
- Statutory Approvals and Assessments of Effects;
- Design and Construction Costs; and
- Issues to be resolved prior to construction

2 Introduction

On February 11, 2010, thirteen proposed cycle trails were approved by the Ministry to receive funding from the New Zealand Cycle Trail Fund to proceed with a feasibility assessment. The Alps to Ocean cycle trail was one of these.

The proposed Alps to Ocean cycle trail is 312km long beginning in the Southern Alps at Aoraki/Mt Cook National Park, descending 780m through the Mackenzie basin down the Waitaki Valley to Oamaru and the Pacific Ocean with multiple access points to begin or end the ride or to ride only local sections/loops.

The Alps to Ocean Cycle Trail proposal is particularly distinctive as it showcases a unique selection of New Zealand's iconic geological, geographical and historic highlights including: Aoraki Mount Cook, the Ben Ohau and Ohau mountain ranges, Lakes Pukaki, Ruataniwha, Ohau, Benmore, Aviemore and Waitaki, the Pukaki, Benmore, Aviemore and Waitaki hydro dams, the Elephant Rocks and Vanished World limestone wonderland, Maori rock art, and the historic Tokarahi Branch rail line containing the limestone block lined Rakis and Tapui tunnels. A full suite of significant sites and attractions located along the trail is contained in Appendix A to this study.

It is anticipated that the trail will be used by a range of visitors looking for different cycling experiences. The trail has eight logical stages along its 312km length. It would likely take six - eight days to ride in its entirety by a typical Grade 2 trail rider cycling approximately 30km – 50km each day. The trail can also be enjoyed in discreet sections and is therefore also suitable for cyclists seeking shorter cycling excursions.

For location based cyclists, or trail cyclists looking for side trips along the way, the trail is also ideally placed to combine with existing cycle trails in the region. Those worthy of note are: Twizel (Twizel River Trail, Baikie Hut Track, Dusky Trail, Darts Bush Stream Track); Lake Ohau (Parsons Mountain Bike Track, Monument Hut); Omarama (Wairepo Kettleholes, Otamatakou Scenic Reserve, Ahuriri Valley – Avon Burn, Shamrock Hut, Hagens Hut); Waitaki Valley (Oteake Conservation Area – Manuherekia Track Circuit).

The route is well serviced by established accommodation, food outlets and amenities and can easily cater to both multi and single day cyclists. A schedule of food and accommodation providers is also contained in Appendix A to this report.

2.1 Potential Multi-Day Itinerary

The following table represents a potential multi-day itinerary for someone who plans to cycle the entire trail with a day at each end taking in the local attractions. The trail is also designed to accommodate day and multi-day visitors looking for a shorter cycling excursion.

Day	Location	Highlights[JC1]
1	**Mt Cook** Arrive at Mt Cook, partake in a local walk, a glacier tour, take in the Sir Edmund Hillary Alpine Centre, and visit the Department of Conservation Visitors Centre.  **Figure 1 Mt Cook**  **Figure 2 Cyclists outside the Sir Edmund Hilary Centre**	∞Aoraki/Mt Cook ∞Native cushion plants ∞Glaciers ∞Rare wading bird breeding area (Kaki, Wrybill)
2	**Mt Cook to Braemar Station** On the first day cyclists will make a helicopter crossing of the Tasman river to the eastern side of Lake Pukaki. On a clear day the trail will provide unique views of Aoraki/Mt Cook which at 3,753 metres towers above a range of massive snow washed peaks in the Mt Cook National Park. This section continues on through tussock river margins once part of the iconic Mt Cook Station.	∞ Hooker Valley ∞Geological interpretation ∞ Alpine Village ∞ Lake Pukaki ∞ Mackenzie Basin ∞ Wide open spaces

	Enjoy the hospitality of true high country hospitality at Braemar Station.  **Figure 1 Cyclists with Mt Cook in the Background**  **Figure 2 View along the trail looking north east from the carpark close to Mt Cook Station**	∞ Botanical interpretation ∞ High Country Stations
3	**Braemar Station to Twizel** Cyclists will continue down the eastern shores of Lake Pukaki passing the Tekapo B power station. This section provides astounding views across Lake Pukaki towards the Southern Alps. Cyclists will see native plants on the lake edge including kowhai, flax and tussocks, and exotics such as larch and pines. As the trail meets the State Highway, cyclists will enjoy traversing the undulating and picturesque Lake Pukaki terminal moraine.	∞ Links to the Te Araroa Walking Trail ∞Tekapo B Power Station ∞ Planet Station for Tekapo solar system model ∞Links to glacial moraine walk (Kettlehole)

The trail will link with the Te Araroa Trail and wind its way around the lakeshore to the Pukaki Visitors Centre with Aoraki / Mt Cook as a backdrop. The trail also passes over the engineering feature of the Pukaki high dam and spillway.

From the Information Centre the route passes alongside Meridian Energy's Pukaki Canal overflow path and across dry tussock grasslands characteristic of the Mackenzie landscape. The trail then proceeds to Twizel, a fully serviced destination with a range of accommodation options available.

Figure 3 Tekapo B Power Station

Figure 4 The Shoreline of Lake Pukaki

∞Iconic views of Aoraki/Mt Cook

∞Pukaki Spillway

∞Pukaki Information Centre

∞Pukaki flats – short tussock grassland

∞Helicopter scenic flights

∞Links to Twizel river mountain bike trail

∞Twizel 1970's project town

	 **Figure 5 Track to the Pukaki Information Centre**	
4	**Twizel to Lake Ohau Lodge** Leaving Twizel, the trail follows the newly constructed Meridian staff cycleway adjacent to the state highway. The trail then proceeds over the Lake Ruataniwha outlet and follows the Lake margins before traversing the banks of the Ohau River to Lake Ohau. The trail in this location has spectacular views of Ruataniwha (a culturally significant peak for the tangata whenua) and the foot of the Ben Ohau Range. Ohau (the place of wind) was a mahinga kai (food-gathering place) for many generations of tangata whenua. This was also part of the "greenstone route" for Maori passing to the west coast via Broderick Pass. An interpretation panel is intended to be erected in this area. The trail traverses the bottom of the lake and passes the historic and once contentious Canterbury/Otago "Spade Line". The trail then follows the road to the Lake Ohau Village and Lodge where fully serviced accommodation is available.  **Figure 6 View of Ben Ohau from Lake Ohau Road**	∞Kaki/Black Stilt captive breeding centre tours ∞Links to Ohau River mountain bike track ∞Historic Iron Bridge ∞Ruataniwha spillway ∞Planet station for Tekapo solar system model and powerhouse turbine static display ∞Ohau B canal and Salmon Farm. Lake Ruataniwha ∞Remnant Ohau River – Ancient Maori pathway part of the Greenstone trail to Broderick Pass ∞Black fronted tern breeding area ∞Lake Ohau ∞Ohau Weir ∞Ohau lakeshore remnant moraine vegetation / scree skinks

	 **Figure 7 Lake Ohau Lodge**  **Figure 8 The Bar at Lake Ohau Lodge**	∞Planned Maori history interpretation site ∞The Spade Line boundary between Otago and Canterbury
5	**Lake Ohau Lodge to Omarama** The trail leaves the Lake Ohau Lodge and traverse the lower slopes of the Ohau conservation estate with views across the Basin to the Benmore range. The trail visits the historic woolshed at Quailburn and then follows the Quailburn Road to the Ahuriri River and Omarama. Take a quiet stroll through the native beech forest to Quailburn Saddle or take a side trip to see the Clay Cliffs. Stop at Omarama for the night - a fully serviced visitor destination. Options for the afternoon include; fishing, a glider flight or relaxing with a local wine after a dip in the hot tubs.	∞Freehold creek historic sawmill camp and logging skid ∞Typical 'High Country' setting ∞Ohau moraine wetland complex ∞Quailburn historic site with old beechpole constructed woolshed and sheep-dip ∞Side trip to Wairepo wetlands – Ephemeral tarns ∞Side trip to Ben Dhu Bog pine reserve ∞Remnant Beech Forest

	 **Figure 9 Cycle Tourists at Omarama**  **Figure 10 Hot Tubs in Omarama**	∞Ahuriri River – famous trout fishing area ∞Side trip to Clay Cliffs ∞Omarama Sheep Shearing show ∞Omarama glider and plane flights ∞Hot tubs
6	**Omarama to Otematata** Leave Omarama following a path adjacent to the state highway. Join the shores of Lake Benmore at the scenic Pumpkin Point. Follow the lake shore to Sailors Cutting - a popular boating/fishing/camping destination. Climb the Ahuriri Pass/Otematata saddle and enjoy views of Lake Aviemore and the valley beyond. Otematata is a fully serviced for day trippers and overnight visitors.	∞Man made lake Benmore. ∞Sailors cutting boat charters ∞Waitaki Valley ∞Lake Benmore ∞Historic Otematata construction village

	 **Figure 11 Sailors Cutting**  **Figure 12 Lake Aviemore**	
7	**Otematata to Kurow** Cycle via the shores of Lake Aviemore up and over the massive Benmore Hydro Dam. Follow Te Akatarawa Road along the margins of Lake Aviemore to the Aviemore Dam. After crossing the Dam the trail follows the main road alongside Lake Waitaki to the Waitaki Dam and Kurow township. Scenic camping opportunities exist on the shores of Lake Aviemore or stay the night in Kurow.	∞Benmore Dam information centre ∞Planet station for Tekapo solar system model ∞Benmore dam and Benmore peninsular walking track ∞Deep Stream walking track into flooded valley – fishing area ∞Autumn colours ∞Lake Aviemore ∞Aviemore Dam

	 **Figure 13 Benmore Dam**  **Figure 14 Waitaki Dam**	∞Wharekuri historic site – early stone buildings ∞Historic Waitaki Hydro Village and Waitaki dam ∞power house ∞Salmon spawning race near the Aviemore dam ∞Waitaki Dam
8	**Bike Kurow to Duntroon** Cycle over the 1880's Kurow Bridge overlooking the vast Waitaki river, then follow the old river haulage road traversing ancient alluvial plains passing Kurow's wine country. Cross to the south side of the state highway and make a short ascent above the limestone buttresses before enjoying the gentle down hill gradient on local roads into Duntroon township.  **Figure 15 View from the Old Haulage Road**	∞ Old Haulage Road ∞ Maori Rock Art ∞ Historic Duntroon

	 **Figure 16 Kurow Winery**  **Figure 17 Maori Rock Art near Duntroon**	
Day 9	**Duntroon to Oamaru** From Duntroon the trail diverts south through a magic limestone area and rock formations in the Waiareka Valley known as Elephant Rocks. The trail connects with the historic Tokarahi Branch rail corridor which meanders through the rolling farmland and passes through two former rail tunnels featuring iconic limestone block lining. The trail passes through Victorian Oamaru where the heritage architecture ranks as one of New Zealand's most impressive historic precincts. The Trail ends adjacent to the Pacific Ocean at the Oamaru Blue Penguin Colony.	∞ Elephant Rocks ∞ Fossil Trail ∞ Limestone Escarpments ∞ Waitaki Valley Rail Line ∞Limestone block lined Tunnels ∞Heritage town area

Figure 18 Elephant Rocks

Figure 19 Raki Tunnel

Day 10

Spend a day exploring historic Oamaru. Take a trip out to the penguin colony and enjoy a celebratory dinner in the Oamaru town historic precinct to mark the end of the Trail.

Figure 20 Historic Oamaru

Figure 21 Historic Oamaru

Figure 22 Blue Eyed Penguin

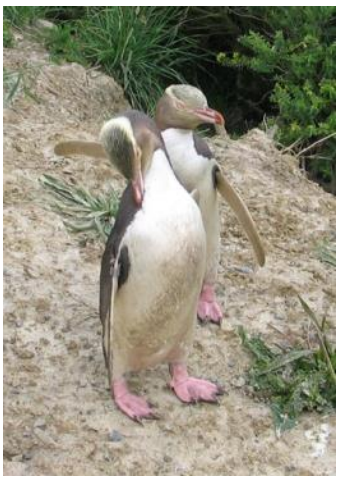


Figure 23 Yellow Eyed Penguins

2.2 Branding

The Establishment Committee has taken steps to prepare a name and logo for the cycle trail to be used for marketing purposes. This logo is shown below.

It is anticipated that this logo will be protected as a registered trademark should the cycle trail be approved for funding by the Ministry. The Establishment Committee has undertaken preliminary enquiries in relation to the trademark registration process with the Intellectual Property Office of New Zealand (IPONZ). It is understood that registration can be achieved following the payment of an application fee of $112.50 providing certain trademark criteria are met.

As discussed in the High Level Business Case submitted with this study, the operation of a website by the governance committee is a key feature of the cycle trail governance structure which will serve as the mechanism to capture an income for maintenance and other expenses related to the Trail. A collection of domain names have been reserved by the Mackenzie Tourism and Development Trust for future use. These include:

- www.alps2ocean.com
- www.mountains2sea.co.nz
- www.alpstoocean.co.nz
- www.alpstoocean.com
- www.mountainstothesea.co.nz
- www.a2o.co.nz

It is anticipated that one of these domain names will accommodate the Alps to Ocean official website. Multiple combinations have been reserved to protect the dilution of the “Alps to Ocean” brand name by unlicensed users.

2.3 Synergies with other Tourism Infrastructure

The Mackenzie and the Waitaki local economies are heavily dependent on tourism activities. Accordingly, a significant number of tourist attractions and visitor infrastructure already exists along the Trail. The proposal takes advantage of these existing facilities by following a logical path from the Alps and Aoraki Mount Cook to the Pacific Ocean on the east visiting most of the major visitor attractions, villages and towns along the way.

The full suite of attractions and facilities located along the trail is outlined in Appendix A to this study. Please also refer to the Alps to Ocean Cycle Trail concept proposal for further detail in this regard.

2.4 Major Assumption

This project has been designed and the route selected to provide a green light route with no assumptions made on access. There is potential in the future with land tenure reviews and further

negotiations with existing land owners to increase the length of off-road paths, but at this stage we can confirm access to the proposed route.

General assumptions include:

- That the world class scenery along this route along with good trail design will make this trail New Zealands most spectacular ride.
- That the funding that the Ministry would contribute would be $2,750,000.
- That funding would be provided by the Local Authorities and the New Zealand Transport Agency for some road related items. Should these not eventuate then potential savings have been identified but these would reduce either the quality of parts of the trail or increase the on-road lengths.

Engineering assumptions are limited to:

- Use of standard DOC timber structures over low spans with suitable instu foundation subgrade.
- Insitu ground is consistent glacial or alluvial gravels with limited poor subgrade.

3 Market Assessment

The Alps to Ocean Cycle Trail has been designed to meet the largest market segment as defined in the Tourism Resource Consultants Report dated September 2009. The following key elements identified in the report have been taken into account:

- The potential market is directly related to the ability of the cycling audience – there are more novices than experts.
- The entire visitor experience is important, not just the cycling aspect.
- International cycle tourists want easy multi day trips with good supporting services or events. They require trips that take in New Zealand's landscape, natural environment and culture.
- Domestic cycle tourists and recreational cyclists are not primarily focussed on cycling but on the broader experience.
- Both domestic and international markets are looking for easy access to safe and traffic free trails.
- Trail gradient is a critical factor with a gradient of 2 - 3° being ideal.

The Alps to Ocean Cycle Trail has been designed as a predominantly Grade 2 trail in terms of surface, gradient and width. It follows a logical route from Aoraki Mount Cook National Park descending in altitude to Oamaru on the east coast. The trail traverses the key visitor attractions for the region and engages with the major towns and service centres along the way.

Opportunities for a variety of cycling experiences are available from location based cyclists (based for example in Twizel or Omarama), long stay and short stay multi day visitors, day cyclists and commuters (predominantly limited to the Oamaru region).

The trail has the capacity to service novice to experienced cyclists and provides opportunities for a cohesive visitor experience incorporating the spectacular natural environment as well as cultural and historical elements unique to the region. Key attractions include Aoraki Mount Cook (village and views), hydro lakes and dams - Pukaki, Ruataniwha, Benmore, Aviemore and Waitaki, Lake Ohau (lodge and views), Ruataniwha, historic huts – Quailburn, Elephant Rocks, Tokarahi Branch historic rail line and tunnels, the majestic Victorian heritage limestone architecture of Oamaru and the nearby penguin colony.

The trail design also fits neatly with existing services and tourist flows in the region.
Commencing in Aoraki Mount Cook the trail taps into existing tourist flows to this iconic, uniquely New Zealand, destination. Additional access points along the 312km length of the trail exist at Twizel, Omarama, Otematata, Kurow, Duntroon - all located on main tourism routes in South Canterbury and North Otago.

It is anticipated that the accessibility and number of access points in conjunction with the key attractions along the trail will drive the visitor numbers specified in Table 1 Cycle Trail Visitor Number Estimates. In this regard we note that these tables indicate realistic estimates of 3,000 multi day visitors in year one and 10,000 single day visitors rising to 22,560 multi day visitors and 20,000 day visitors in year five.

In addition to this, it is anticipated that in the longer term, the majority of multi day trail users will be international visitors attracted by the trail as it provides an easy multi day trip incorporating New

Zealand's landscape, natural environment and culture in conjunction with good supporting services. This is consistent with current statistics on international versus domestic visitor numbers in the Mackenzie and Waitaki regions.

It is noted that the only service limitation identified at this point are accommodation capacity constraints at Braemar Station and Duntroon – Tokarahi as visitor numbers increase after year one. In this regard, the Committee anticipates that nearby farming operations will seek to diversify by providing visitor accommodation once the presence of cycling tourists in the region becomes apparent - similar to the Otago Central Rail Trail experience. In the event that there is a short term accommodation shortage in these locations, accommodation providers based elsewhere could shuttle visitors to other locations for accommodation purposes and drop them back on the trail the next morning.

The Establishment Committee also understands that the key to the success of this project is ensuring that financial strategies are in place to support the costs of maintenance, upgrades and infrastructure. Please refer to the High Level Business Case for further information in relation to this aspect.

4 Engineering Methodology

4.1 Description of Methodology and Investigation

This feasibility study is based on scoping work of the proposed route by foot and by vehicle. A number of site visits were conducted, these included two day drive/walk over on April 6 and 7; and a three day drive/walk over April 21-23. As part of this work, a record of the proposed trail was created, this information supplemented aerial photo data. Detailed topographical and aerial data has also been consulted.

The cost estimate is based on local construction rates supplied by local Department of Conservation track construction supervisors and this has been supplemented by information from the other cycle way projects. The trail design guide and general comments issued by the Ministry have also been taken into account. This cycleway project has been designed to be cost efficient yet offer a unique, enjoyable and safe wilderness cycle experience.

The cycle route traverses unique geological glacial moraine alpine plateaus and alluvial river plains. The Mackenzie Plateau and Waitaki Valley features an arid dry climate. The favourable geology and climate offer an ideal location for efficient construction and maintenance of the trail. The route has been carefully selected to avoid major river crossings and utilises existing dam and bridge structures.

The route utilises existing low volume local roads, with extensive lengths of 4WD tracks and dedicated off road trails. In excess of $330,000 of existing trails are already formed along the proposed route. Sections of the abandoned railway corridor will be opened between Duntroon and Oamaru. This will provide access to two historic rail tunnels which are generally in good condition and only need minor repairs. A separate engineering report has been prepared by a structural specialist on the tunnel condition.

The bridge structures proposed are generally short spans with the largest being 20m. Department of Conservation standard timber structure designs will be used and it is anticipated that that the parts of the trail located on conservation land will be maintained in partnership with the Department particularly in relation to regular structural inspections and maintenance contracts.

No detailed survey, geotechnical or structural investigation or design has been undertaken. However given the uniform geology and relative low risk short span structures proposed this is considered appropriate for this feasibility stage.

5 Route Description

The trail has been designed in accordance with the Grade 1 (Easiest) and 2 (Easy) track design standards as set out in the Ministry of Tourism – Cycle Trail Design Guide, February 2010. In particular, consideration has been given to trail alignment and gradient such that the trail is generally flat and smooth and suitable for novice cyclists.

The preliminary design of the Alps to Ocean Trail has also taken into account the design criteria set out in Austroads Guide to Traffic Engineering - Part 14: Bicycles, NZTA New Zealand Supplement to Austroads Part 14, the NZTA Cycle and Route Planning Guide, NZTA Pedestrian Planning and Design Guidelines, and SNZ HB 8630:2004 Tracks and Outdoor Visitor Structures. The route is shown below. For a more detail overview route map (map scale 1:50,000) and a detailed trail alignment (map scale 1:10,000) see the Trail Maps volume of this study.

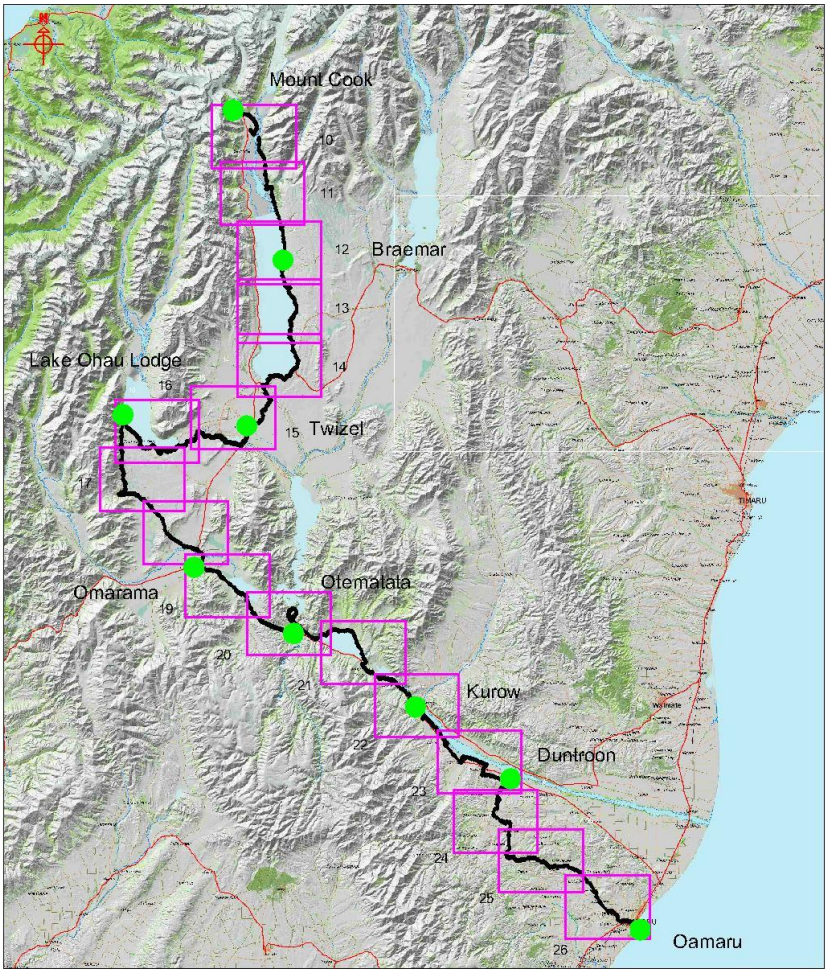


Figure 24 Alps to Ocean Route Map

A written description of the route is provided below:

Section 1: Mt Cook to Braemar Station, 37km

The Cycle Trail begins at the Hermitage Hotel site located in the Aoraki Mount Cook Village, and winds its way to the Tasman Road using existing sealed roads with less than 1000 AADT. The trail will utilise an existing vehicle track and a newly constructed trail to access the Aoraki Mount Cook Airport.

One of the major hurdles for the proposed route has been the securing a safe and appropriate method for crossing the Tasman River. The Establishment Committee Working Party considered a selection of feasible options in this regard. Please refer to the issues and options report attached to this report in Appendix B for further details. The Working Party has decided that in the formative years of the cycleway, the preferred option for crossing the river is by way of helicopter from the Aoraki Mount Cook Airport. This option is preferred for its safety, reliability and minimal capital expense.

Thus from the airport cyclists are transported across the Tasman River by way of helicopter. The route then traversed is through conservation land and legal river bed following a combination of existing four wheel drive tracks and newly constructed track to the Jollie River Bridge.

From the Jollie River Bridge the trail is on the Braemar/Mt Cook Station Road (an existing gravel road with less than 1000 AADT) to Braemar Station.

Alternate Start Points

Alternatively, cyclists will be able to join the trail from:

- The carpark adjacent to Mt Cook Station, or
- Braemar Station, or
- The intersection of SH8 and Braemar Road

Potential Future Development Subject to Funding at a Later Date

- A bridge crossing of the Tasman River to provide an alternative to the helicopter ride.

Section 2: Braemar Station to Twizel, 45km

From Braemar Station the trail continues along a combination of the Braemar/Mt Cook Station and Hayman Roads (unsealed) and lakeside trail to the Tekapo B Power Station.

From the Tekapo B Power Station the trail largely remains on Hayman Road (with short lengths of lakeside trail) through to the intersection with State Highway 8. Immediately prior to the intersection of Hayman Road and SH8 the route joins an existing trail located on the lake margins before joining a formed gravel track (unnamed) and then a new track to the Pukaki Information Centre.

From the Pukaki Information Centre the route crosses the State Highway and follows an existing gravel track through Meridian hydro land before traversing a trail through Department of

Conservation tussock grasslands (a combination of new and existing trail) to SH8 on the outskirts of Twizel.

Section 3: Twizel to Lake Ohau Lodge, 39km

The trail leaves Twizel on an existing trail within the road reserve of SH8.The track then follows an existing gravel track followed by a section of newly constructed track rejoining SH8 to cross the Ohau B Canal Bridge. The trail then continues along the shoreline of Lake Ruataniwha, firstly on an existing gravel track then on existing trail. The existing trail links with new trail leading to the Lake Ohau Weir. From this point the trail will follow a new track to be constructed within the marginal strip traversing the bottom of Lake Ohau. From this point a combination of existing track and new track is used, the trail roughly follows the Lake Ohau Road (but is in the road reserve) to the Ohau Lodge.

Section 4: Lake Ohau Lodge to Omarama, 42km

The trail goes across country closely following contours on steep ground and in some places an existing farm track coming out at the Qualiburn Woolshed at the head of the Quailburn Road. The route then follows Quailburn Road through to the State Highway 8 Twizel - Omarama Road. The trail briefly follows State Highway 8, then conservation land adjacent to the Ahuriri River Bridge. Cyclists will cross the bridge manually triggering electronic warning signs then continue on a trail located in the road reserve alongside State Highway 8 into Omarama (consistent with the Omarama Triangle Cycleway Proposal).

Potential Future Development Subject to Funding at a Later Date

- Clay Cliffs – preferred scenic route, where cyclists leave the Quailburn Rd, and travel right to the base of the majestic Clay Cliffs, then cross the Ahuriri River and meander across the gentle slopes of the wide Ahuriri alluvial flats until they reach the bridge over the Omarama Stream and follow the existing walkway into Omarama.

- Chain Hill Arm - (*in conjunction with the Clay Cliffs option assures the Omarama Township is incorporated on route) to the Ahuriri River, where additional benefits include aiding riverbank protection and restoration program, assistance with stock control and improved fisherman access. Going round the upper end of the Ahuriri arm of Lake Benmore creates a sense of curiosity, then you enter a whole new scene as the wonderland of the Ahuriri delta and wetland unfolds. This trail requires some boardwalk construction.

Section 5: Omarama to Otematata, 24km

A trail will be created in the road reserve of State Highway 83, with short sections on the State Highway through to Otematata. This section traverses the Ahururi Pass/Otematata Saddle.

Potential Future Development Subject to Funding at a Later Date

- Bog Roy and Rostrievor Station alternative following a track above the margins of Lake Benmore. Likely construction cost $250,000. Landowners intend to consider the proposal as part of the tenure review process.
-

Section 6: Otematata to Kurow, 43km

From Otematata the route will take Loch Laird Road on an existing cycle track to a point just prior to the Benmore Dam where the trail will remain on the road and climb to the crest of the dam structure (this section has a steep gradient over 6% for 1.5km to climb up to the Dam). There is no alternative to this climb. It provides stunning panoramic views over the Waitaki valley. The path then crosses the dam and descends down Te Akatarawa Rd to the margins of Lake Aviemore. It follows the sealed carriageway of Te Akatarawa Road to the Aviemore Dam and then follows the berm of SH83 to the Waitaki Dam and then Kurow via the "Way Forward" Trail..

Section 7: Kurow to Duntroon, 28km

The route leaves Kurow along the old haulage road (an existing four wheel drive track) that follows the margins of the Waitaki River. The route has a wet weather option of coming up to SH 83 to use a bridge for crossing the Kurow River. The route crosses SH83 Kurow Duntroon Road east of the Otiake River and continues along an old railway formation. It crosses back over the SH83 Kurow Duntroon Road at the Otekaieke River and rejoins the old haulage track. The trail then crosses SH83 again some 3km west of Duntroon and follows local back country roads through to Duntroon.

Section 8: Duntroon to Oamaru, 53km

From Duntroon the trail crosses over the Maerewhenua River Bridge then goes up the side of the Maerewhenua River on new track. Where the trail track meets the Island Cliff Duntroon Road the trail will continue on Island Cliff Road to another new off-road track that traverses through the Elephant Rocks using a mixture of new trail and existing farm track.

The trail will cross Grant Rd and then continue cross country to Prydes Gully Road where it will be on road. The trail will then turn onto Island Cliff Duntroon Road/Tokarahi Ngapara Road before leaving the road again and following the historic Tokarahi Branch rail corridor featuring the historic Rakis and Tapui limestone block lined tunnels. The trail exits onto Windsor Road and follows low volume roads into Oamaru.

Potential Future Development Subject to Funding at a Later Date

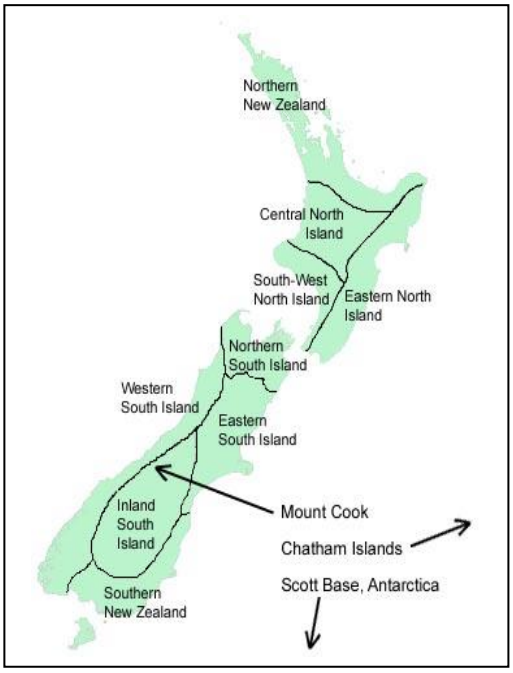
- The Waitaki District Council is responsible for the future trail route from the Weston Limeworks to Oamaru township. It is envisaged that the future route into Oamaru will be an entirely off-road route. This proposal is in the early planning phase. It is understood that partial funding for this route has been allocated in the Waitaki District Council's LTCCP.

- An alternate route along the Waiareka Stream from Windsor to Weston has been discussed and support received from the North Otago Irrigation Company (NOIC). The timeframes proposed for the initiative are not consistent with the timeframes available for the application for this trail, however it is envisaged that the Waitaki District Council and the Cycleway Committee will continue to work with NOIC to bring this initiative to fruition,

5.1 Weather Analysis

Climate - General Summary

The proposed trail is characterised by 2 distinct climate zones across its length: Inland South Island and Southern New Zealand. The zones are largely determined by the presence of the Southern Alps extending the length of the South Island - this has a major effect on the climate of the various regions, and produces much sharper climatic contrasts from west to east, than from north to south.



The Inland South Island experiences warm afternoons in summer, particularly when a hot dry foehn wind is blowing. The maximum summer daytime air temperature generally lies between 20°C to 26°C, although it sometimes rises above 30°C. This region can experience severe frosts in winter, and daytime maximum air temperatures range from 3°C to 11°C.

The Southern New Zealand Zone is heavily influenced by the changing weather patterns out at sea. While the summer daytime maximum usually falls between 16°C to 23°C, a hot north-westerly wind may cause the temperature to rise above 30°C. Winters are cold, with maximum daily air temperatures ranging from 8°C to 12°C, and although snow is fairly rare, frosts are common.

The climate at Aoraki Mount Cook, being located in the heart of New Zealand's Southern Alps, differs slightly to the above scenarios in that higher rainfall occurs here as the mountains are exposed to the direct sweep of the westerly and northwesterly winds. The mean annual rainfall at Aoraki Mount Cook Village reaches 4293 mm.

Climate – Specific Statistics on Wind, Rain, Temperature

The following summary has been prepared in accordance with statistics gathered from the NIWA website and weather stations located at Aoraki Mount Cook, Pukaki Aerodrome (Twizel), Hakataramea (Normanvale) and the Oamaru Airport. Also note that the statistics are taken from those recorded in 2009 – copies of the relevant data in tabular form are contained in Appendix C to this Study.

Temperature

Statistics indicate that January and February are likely to be the hottest months of the year In Aoraki Mount Cook, Twizel and Oamaru – the hottest location being the Twizel region with a total of 24 days with temperatures reaching in excess of 25 degrees Celsius in 2009.

Aoraki Mount Cook and Twizel experience the coldest temperatures with the lowest daily mean temperature reaching sub zero degrees for successive months in the winter. The potential for sub

zero degree temperatures in the winter months in the Aoraki Mount Cook and Twizel regions is not considered to be problematic as it is anticipated that this will be the off-season for cycling activities.

The temperature spectrum in Oamaru is less extreme with a highest daily mean temperature of 22.4 degrees in February 2009 and a lowest daily mean temperature of 2.4 degrees in June and July 2009. Temperatures on this part of the trail are not considered to be problematic for cycling activities.

Rain

Rainfall statistics indicate that Aoraki Mount Cook is subject to the highest rainfall on the trail receiving a total of 4613mm in the 2009 year. The statistics indicate that it can rain at any time of the year in this location with a total of 143 rain days that experienced more than 1mm of rain for the 2009 year. In 2009, the highest daily rainfall was experienced in April with 341 mm falling in a 12 hour period. The statistics indicate that the lowest rainfall months are likely to be June and November.

The Twizel and Oamaru areas are significantly drier compared with Aoraki Mount Cook with a total of 78 days and 80 days respectively experiencing more than 1mm of rain for the 2009 year. Oamaru received a total of 487mm for the 2009 year and the Twizel region received a total of 647mm.

There are likely to be a number of days each year where heavy rain makes cycling in the Aoraki Mount Cook region unsuitable. High rainfall days are more likely to occur in the seasons either side of winter however heavy rainfall may also occur at other times of the year.

The Twizel and Oamaru regions are less likely to experience heavy rainfall days that adversely affect cycling activities.

Wind

The prevailing wind direction along the entire trail is north to north west, although in individual months north easterlies may predominate in the vicinity of Twizel. The prevailing wind direction is considered to be an advantage on the basis that most cyclists will enjoy a tail wind!

Statistics indicate that Aoraki Mount Cook is the most exposed part of the trail in terms of wind with gusts exceeding 51 knots (94 km/h) on 9 days in 2009. Gusts in excess of 33 knots (61 km/h) occurred on 95 days in 2009, while gusts in excess of 24 knots (44 km/h) occurred 164 days in 2009.

Wind conditions in the Mackenzie Basin are not as severe as those at Aoraki Mount Cook. Statistics indicate 4 days with gusts in excess of 51 knots in 2009, 47 days with gusts in excess of 33 knots and 141 days with gusts in excess of 24 knots.

Oamaru statistics indicate a more mild wind climate. No gusts in excess of 51 knots were recorded in 2009 (although statistics limited to July - December). 23 days experienced gusts in excess of 33 knots and 64 days experienced gusts in excess of 24 knots.

The frequency of gusts suggest that windy conditions can prevail at any time of the year however the statistics indicate that the strongest winds are likely to occur in August or October.

It is noted that these wind conditions will make cycling activities unsuitable for a number of days per year, particularly in the Aoraki Mount Cook – Twizel region. However, it is anticipated that the majority of these days will prevail in the tourist off-season. Wind conditions down the Waitaki Valley are generally milder than the upper part of the trail, although this area is not immune from gusty days.

5.2 Average Annual Daily Traffic

Where achievable the route travels off-road and when on-road wherever possible the route travels along existing low volume roads.

For the areas where the proposed trail uses a formed public road or crosses one and the Average Annual Daily (AADT) is less than 1000, the 85% speed, the posted speed, and the road surface type are provided in the table below:

Road name	AADT Veh/day	85% Speed	Posted Speed	Road Surface
Terrace Road	100	40	50	chip seal
Bowen Drive	100	40	50	chip seal
Kitchener Drive	100	40	50	chip seal
Tasman Valley Road	120	86	100	chip seal
Braemar Mt Cook Station Rd/Hayman Rd	50	90	100	gravel (27km) chip seal (8km)
Ruataniwha Road	200	60	100	chip seal
Quailburn Road	40	60	100	chip seal
SH 83 Omarama Otematata Road	739	96	100	chip seal
Loch Laird Road	120	87	100	chip seal
Te Akatarawa Road	540	72	100	chip seal
SH83 Kurow Duntroon Rd	853	96	100	chip seal
Island Cliff Duntroon Road	90	60 to 70	100	chip seal
Grants Road	40	60	100	gravel
Priests Road	25	60	100	gravel
Racecourse Road	29	60	100	gravel
Earthquake Road	28	60 to 70	100	chip seal
Prydes Gully Road	80	60 to 70	100	chip seal
Tokarahi Ngapara Road	220	60 to 70	100	chip seal
Victoria Hill Road	20	60 to 70	100	gravel

Table 6.4.1 Roads with fewer than 1000 AADT and 85% speed

For the areas where the proposed trail uses a formed public road or crosses one and the Average Annual Daily (AADT) is greater than 1000, the 85% speed, the posted speed, the road surface type and the proposed crossing type are provided in the table below:

Road Name	AADT Veh/day	85% Speed	Posted Speed	Road Surface	Shoulder width	Crossing Type/Comment
SH8, Tekapo Twizel Road	1680	96	100	chip seal	1 to1.5m	Trail in road reserve At grade road crossing with giveway control on the cycle path
SH8 Twizel Omarama Road	1535	96	100	chip seal	1 to1.5m	Will be widened where necessary. At grade road crossing with giveway control on the cycle path
SH83 Otematata Kurow Road	1020	96	100	chip seal	1 to1.5m	Will be widened where necessary At grade road crossing with giveway control on the cycle path
Weston Ngapara Road	1330	60 to 70	100	chip seal	No marked shoulder	
Whiterocks Road	1500	60 to 70	100	chip seal	No marked shoulder	
Western Road	5190	60 to 70	100	chip seal	No marked shoulder	
Saleyards Road	2690	46	50	chip seal	No marked shoulder	
Chelmer Street	2810	46	50	chip seal	No marked	

					shoulder	
Severn Street	3000	46	50	chip seal	No marked shoulder	A signalised crossing is to be established by NZTA in the financial year starting July 2010
Lower Thames Street	4000	46	50	chip seal	No marked shoulder	

Table 6.4.2 Roads with over 1000 AADT, Surface Type, Shoulder width, 85% speed, Crossing type

6 Trail Specification

The trail has been designed with the objective of achieving Grade 2 (Easy) track design standards as set out in the Ministry of Tourism – Cycle trail Design Guide, February 2010. Consideration has been given to ensure that the alignment and gradient is generally flat and smooth suitable for non-cyclists and beginner cyclists.

The preliminary design of the Alps to Ocean Trail has also considered the design criteria set out in Austroads Guide to Traffic Engineering – Part 14: Bicycles, NZTA New Zealand Supplement to Austroads Part 14, the NZTA Cycle and Route Planning Guide, NZTA Pedestrian Planning and Design Guidelines, and SNZ HB 8630:2004 Tracks and Outdoor Visitor Structures.

Design Parameters

The following section specifies the general design parameters for the Cycleway, particularly the actual path construction. The next section of the study sets out in detail the proposed cycleway route along each section and the design requirements.

Criteria	Requirements
Typical cross sections path types	1.5 metres wide to accommodate shared use one directional travel from Aoraki Mt Cook in an easterly direction downhill to the Ocean. Due to the remoteness of the track sections it is envisaged that pedestrian numbers will be low.
Surfacing	Generally constructed from insitu crushed gravels using a mobile rock crusher over moraine or alluvial gravel soils. Compacted aggregate, well drained, with minimal roughness. The insitu soils and gravel has minimal environmental impact and have a proven performance track record, with many kilometres of this path already constructed and operating well in this region.
Sight Distance	The route is generally open over the majority of its length. Where there are possible sight distant conflicts, relevant design standards will apply.
Gradients	The gradient of the cycleway is generally downhill and follows existing lake and rivers along with sections of existing railway formation. In areas where the cycleway must ramp up or down to cross over bridges, the maximum gradient allowed is 6 degrees. Where sections of the route uses existing low volume roads the gradient is governed by the road alignment.

Criteria	Requirements
Bridges	The majority of watercourses will be bridged. The width of all bridges along the cycleway will be a minimum of 1.5 metres. Some dry rivers will be spanned with concrete fords with wet weather alternatives using existing bridges. Where possible, options have used existing stream and drain crossings where practical and economical alternatives to avoid building new bridges or culvert structures.
Culverts	Minimal culverts will be required apart from local side drainage requirements.
Amenity infrastructure (toilets, shelters, seating and information displays, bicycle parking, rubbish bins)	Supporting amenity infrastructure locations have been considered where there are likely rest places or places of interest (e.g. morning, lunch and afternoon breaks). The following infrastructure has been considered: Emergency shelters have been considered on route sections where there is little natural shelter and the path is distant from assistance or help. Information boards, including historical information and Cycleway information. These are to be installed at all major junctions or rest points. Toilets –are spaced along the route at 10km spacings and where possible existing facilities are used. Locations where toilets are required have been identified. No rubbish bins will be provided along the route and a "carry out what you carry in approach" will apply. Additional rubbish bins may be required in existing town centres or lunch areas where there are existing facilities.
Fencing	Any locations of known fence replacements and requirements which are to be at the cost of the project have been included in the project estimate.
Signage	Directional signage will be placed near intersections and town route access. Distance markers will be located along the route every 1 km. Major bridges will be named.

Criteria	Requirements
Route access	Various access points along the route will be marked where there are connections to towns and state highways.
Road Crossing Points	Where the cycleway connects or crosses roads, the path will narrow and have a right angle bend to reduce speed and enable cyclists to check for traffic. All road cross points will include barriers to prevent unauthorised vehicles entering. There is detail prepared for low volume road crossings and high volume crossings. Where the path crosses a sealed road arrows will be marked on the road to remind foreign tourist cyclists to check the "right" direction for oncoming traffic.

6.1 Design Parameters

The following trail types are proposed for the cycle track.

Trail Type	Description	Width	Surface	Rate per Km
A	New Gravel Path, flat rocky insitu material by rock crusher	1.5m	Gravel	$2,000/km
B	New Gravel Path, Rolling sloping country, rocky insitu material , may need some supplementing fines and earthworks by rock crusher	1.5m	Gravel	$6,500/km
C	Existing 4WD path/road low volume good condition repair pot holes and ruts.	1.5m	Gravel	$4,000/km
D	Existing 4WD path/road medium volume average condition, bony, supplement fines and rock crush surface.	1.5m	Gravel	$6,200/km
E	New Concrete path through urban areas	1.5m	Concrete	$67,500/km
F	New Gravel path formed on State Highway berm, flat country may need some supplementing fines and earthworks, by rock crusher	1.5m	Gravel	$6,500/km
G	New Gravel path formed on State Highway berm, rolling country, may have some cutting or sideling fill, may need some supplementing fines and earthworks, by rock crusher	1.5m	Gravel	$12,150/km
H	Abandoned Railway Corridor, rock crush insitu material	1.5m	Gravel	$2,400/km
I	Widening existing SH road to 2m sealed shoulder on 1 side of the road.	1.5m	Sealed shoulder	$140,000/km

Different Trail Types to be Constructed

The different types of trails to be constructed along with lengths, design grade, gradients, widths and surface types are given in the table below.

Section	Length km	Grade	Ave Gradient	Max Gradient	Width m	Surface
1. Mt Cook to Braemar Station	37.36	2	<1%	-3% +3%	1.5 min	sealed road Gravel road 4WD track Cycle track Unsealed road
2. Braemar Station to Twizel	50.87	2	<1%	-6% +5%	1.5 min	Unsealed Road Sealed road Gravel road Cycle track
3. Twizel to Lake Ohau Lodge	38.63	2	<1%	-10% +12%	1.5 min	Sealed road Gravel road 4WD/Farm track Cycle track
4. Lake Ohau Lodge to Omarama	39.32	2	<1%	-8% +6%	1.2 min	Sealed road Gravel road 4WD/Farm track Cycle track
5. Omarama to Otematata	24.52	2	<1%	-8% +6%	1.5 min	Sealed road Cycle track
6. Otematata to Kurow	45.96	2	<1%	-10% +10%	1.5 min	Sealed road Gravel road Cycle track
7. Kurow to Duntroon	23.67	2	<1%	-1% +10%	1.5 min	Sealed road Gravel road
8. Duntroon to Omarama	52.87	2	<1%	-2% +7%	1.5 min	Sealed road Railway embankment Sealed Road

In places the path does exceed the gradient criteria for short sections. The path is designed to be predominantly used in the downhill direction, so all downhill negative gradients (-) can be considered compliant. Those sections that exceed gradient criteria in the uphill directions are restricted to short on road routes or those routes on State Highway berms. The project has no viable option to provide alternative to these sections. These short sections will be advertised well in the promotional material and route information. Local shuttle services will be encouraged to establish to provide an option for less active cyclists to by-pass these section[JC2].

6.2 Construction Methodology

Conventional construction techniques have been applied to this project with careful route selection avoiding major structure construction.

The project will be constructed using a mix of lump sum and measure and value contracts.

Significant lengths of cycle off-road paths have been formed through this area by the Department of Conservation using an insitu rock crusher technique. This methodology has produced a high quality path for an average cost $2,000/km. Refer photographs 6.2 below.

This technique is proposed for significant lengths of the Alps to Ocean Cycle path at a km/unit rate $2,000/km. This provides significant cost advantages for this project.

These paths have performed well in the Mackenzie country climatic condition and meet the Level 2 Cycle Path Ministry of Tourism Guidelines.

Photograph 6.2: Rock crushed existing cycle path in Mackenzie country with tight granular mosaic surface locked up with existing fine soil material.

There are accessible, local quarry sources throughout the route. The cycle route has competent local rock supplies. There is an alternative option of local contractors setting up a river gravel temporary rock crusher as this may more cost effective solution. This will be left to the contract process with a specification for gravel AP20 fines ratio and grading curve included in the contract specification. We have specified actual quarry sites as this is considered not necessary with the plentiful local supply.

Path Type	Unit Rate ($/Km)	Construction Methodology
A	$2,000.00	New Flat ground Rocky Moraine Rock Crusher Path ***This involves a tractor rock crusher over existing ground with insitu ground cover removed in places and only minor levelling for access. Compaction will be undertaken.***
B	$6,500.00	Rolling country sloping new Rocky Moraine Rock Crusher Path ***This involves a tractor rock crusher over sloping ground with a benched track formed with insitu ground cover removed in places. It allows for additional compacted fill and additional fines to supplement boney granular material where necessary. Compaction will be undertaken.***
C	$4,000.00	4WD Path tidy existing use ***This involves reshaping and compacting an existing low volume 4WD track with some pothole repairs in places. Insitu material of suitable grading***
D	$6,200.00	Rough 4WD track Rock Crush with additional fines ***This involves reshaping an existing medium volume 4WD track with some pothole repairs in places. Insitu material will be supplemented with additional fines where necessary and crushed and compacted using a tractor rock crusher***
E	$67,500.00	New Concrete Path ***Standard concrete footpath construction, unreinforced***.
F	$6,850.00	Beside SH / road level berm ***This involved forming a path on level road berm with insitu ground cover removed in places. There is an allowance for new AP20 50mm surfacing.***
G	$12,150.00	Beside SH/ road, hill, cutting ***This involved forming a path on sloping road berm with insitu ground cover removed in places. Additional cut or fill earthworks are included. There is an allowance for new AP20 50mm surfacing.***

H	$2,400.00	Railway corridor - Ballast per Km ***This involves a tractor rock crusher over existing insitu railway ballast material and ground cover removed in places. Compaction will be undertaken.***
I	$140,400.00	Seal widening beside SH ***Standard seal widening methods over varying terrain to 2m seal width.***

6.3 On-road Section Safety Mitigation

Portion of the route utilise low volume gravel roads and sealed roads. These roads do have sections which exceed the gradient criteria of level two routes and over some short sections are impractical to seal widen.

The cycle trail trust is very aware of the need to provide the highest level of user safety and level of comfort for users. To this end cost have been built into the project cost to provide advisory signage of national cycle route for motorists and pass cyclists signage recommending a maximum passing speed for vehicles. Compliant with these speeds will be voluntary, but this approach has proven successful in locations where passing speed can be associated with immediate user needs.

It is proposed to ask motorists to pass cyclist on these on-road sections at a speed no greater than 40km/h and signage will be provided on these routes at a frequency in both directions to greater than 1km on high speed roads and as necessary on lower volume roads.

7 Major Structures and Works

7.1 Introduction

The Alps to Ocean Cycle Trail is 312km in length and has a current estimated net cost for construction of $3,250,000.

Structures Cost Schedule

Item	Total	% of total cost
Culverts	$20,000	1%
Bridges	$202,950	6%
Toilets	$64,000	2%
Fencing	$150,000	5%
Supporting facilities	$203,000	6%
Signage	$117,000	4%
Other	$109,550	3%

Table 7.1: Major Structures Schedule for Alps to Ocean (24th May 2010)

7.2 Bridges

The schedule of bridge work is shown in table 7.2 on the following page. There is one swing bridge of 20m span with all other structures less than 15m in length. The route selection has been carefully undertaken to utilise existing crossing structures where at all possible.

The majority of proposed structures are low cost small span structures within 0 to 10m spans.

In order to be cost efficient and to standardise maintenance, standard DOC structures will be used throughout the project. Access to all sites is good via 4WD access for both construction and maintenance.

No detailed geotechnical investigation of foundations has been undertaken nor have the structure sites been visited by a structural engineer. However due to the low structural cost (6% of total cost) and relatively small spans this considered appropriate at this feasibility stage.

The path crosses a number major existing hydro-electricity scheme lake control or dam structures. Refer photo 7.2.1.

The path also utilises a number of existing road bridges for on-road routes along low volume local roads and on state highways. Refer Photo 7.2.2

The path has also utilised electronic cycle count and warning sign technology on the SH8 Ahuriri River bridge on the approach to Omarama. Refer Photo 7.2.3.

No	Section	km	Location	Description	Cost
1	1	18.5	Micks Point	Doc Timber bridge with rails 4m	$6,000
2	2	32.6	Pukaki High Dam	Upgrade Safety rail on existing bridge	$5,000
3	2	44.0	Twizel River Bridge SH 8	Upgrade Safety rail on existing bridge	$5,000
4	3	4.3	Ruataniwha Spillway	Upgrade Safety rail on existing bridge	$5,000
5	3	4.7	Ohau B Canal	Upgrade Safety rail on existing bridge	$5,000
6	3	35.1	Lake Ohau Road	Doc Timber bridge with rails 10m	$10,000
7	3	36.1	Lake Ohau Road	Footpath clip on to existing road bridge	$6,000
8	4	1.1	Ohau Range lower slopes	Timber DOC Bridge rails 10m	$11,250
9	4	2.6	Ohau Range lower slopes	Timber DOC Bridge rails 10m	$11,250
10	4	4.0	Ohau Range lower slopes	Timber DOC Bridge no rails 5m	$4,500
11	4	5.5	Ohau Range lower slopes	Timber DOC Bridge rails 10m	$11,250
12	4	15.0	Ohau Range lower slopes	Timber DOC Bridge rails 8m	$4,500
13	4	15.5	Ohau Range lower slopes	Timber DOC Bridge rails 5m	$4,500
14	4	16.2	Ohau Range lower slopes	Timber DOC Bridge rails 5m	$5,700
15	4	39.6	Ahuriri River Bridge SH 8	Electronic cycle signs	$45,000
17	6	30.5	Wharekuri Stream Culvert SH 83	Footpath clip on to existing culvert headwall	$10,000
18	6	38.3	Awakino River	Swing bridge 20m	$20,000
19	7	1.0	Haul road stream/creek	Timber boardwalk no rails 6m	$6,000
20	7	2.5	Haul road stream/creek	Timber boardwalk no rails 6m	$6,000
	7	6.4	Haul road stream/creek	Timber boardwalk no rails 6m	$4000
	7	7.4	Haul road stream/creek	Timber boardwalk no rails 6m	$4000
	7	8.6	Haul road stream/creek	Timber boardwalk no rails 6m	$4000
	7	8.9	Haul road stream/creek	Timber boardwalk no rails 8m	$8000
25	8	13.6	Awamoko Stream	Timber DOC bridge rails 6m	$4,000
	8	16.0	Karara Creek	Timber DOC bridge rails 6m	$4000
					$202,950

Table 7.2 Bridge Structures

Photograph 7.2.1: Typical Hydro Access Structure

Photograph 7.2.2: SH 8 Twizel River Bridge

Example in operation in Nelson is shown below.

Photograph 7.2.3: Ahuriri Bridge SH8 proposed site for Cycle Electronic Warning Signs.

7.3 Other Structures

Other structures along the route are set out in the table 7.3.

These costs include the use of two historic abandoned rail tunnels between Duntroon and Oamaru. One of these tunnels is shown below in photographs 7.3.1

These tunnels have been inspected by both an engineering geologist and structural engineer and both upgrade costs and annual maintenance costs have been estimated.

Other Structures required are listed in the table below.

Photograph 7.3.1 Rail tunnels at Tunnel Hill

No	Section	km	Location	Description	Cost
1	1	11.1	Tasman River Bluff	Helicopter landing area	$2,000
2	1	11.1	Tasman River Bluff	Shelter	$5,000
3	1	18.5	Micks Point	Water Supply	$4,000
4	2	30.7	Lake Pukaki Bluffs	Safety fence	$3,000
5	2	32.5 & 32.8	Pukaki High Dam	Safety fence	$12,000
6	3	20.0	Ruataniwha to Ohau Plateau	Water Supply	$8,000
7	3	29.8	Lake Ohau shoreline	DOC information Lake Ohau	$3,000
8	4	11.4	Ohau Range lower slopes	Poor weather Isolated Area Emergency Shelter	$5,000
9	4	11.4	Ohau Range lower slopes	Water Supply	$2,000
11	8	22.6	Tapui Tunnel	Tunnel repairs	$10,000
12	8	26.0	Rakis Tunnel	Tunnel repairs	$10,000
					$64,000

Table 7.3 Other Structures Schedule

7.4 Toilets

The path meets the level 2 cycle path spacing of toilet facilities at 10km spacing. Table 8.4 below lists the toilet location and facility type. The selected Eco-toilets do not require resource consent or building consent and can be located with minimal site works.

No	Section	km	Location	Description	Cost
1	1	18.5	Micks Point	Eco -toilet	$8,500
2	1	26.5	Lake Pukaki Hayman Rd	Eco -toilet	$8,500
3	2	9.4	Lake Pukaki Hayman Rd	Eco -toilet	$8,500
4	2	18.1	Tekapo B	Eco -toilet	$8,500
5	3	10.0	Ruataniwha to Ohau Plateau	Eco -toilet	$8,500
6	3	20.0	Ruataniwha to Ohau Plateau	Eco -toilet	$8,500
7	3	29.0	Lake Ohau Shore Centre	Eco Toilet	$8,500
8	4	11.4	Ohau Range lower slopes	Eco -toilet	$8,500
9	4	30.6	Quailburn Road	Eco -toilet	$8,500
10	6	29.0	Aviemore Dam	Eco -toilet	$8,500
11	7	9.3	Haul road	Eco -toilet	$8,500
12	7	20.6	Priest Rd	Eco -toilet	$8,500
13	8	9.5	Grant Rd	Eco -toilet	$8,500
14	8	20.8	Cants Rd	Eco -toilet	$8,500
15	8	31.6	Windsor	Eco -toilet	$8,500
				Total	$127,500

Table 7.4 Toilet Schedule

7.5 Car parks and Cycle Racks

The project uses existing formed car parks at start end and points and at DOC access points. At all start and end points, helicopter transfer site, lunch stops with toilets and places of interest at Cycle storage rack has been provided.

7.5 Signage and Interpretation Facilities

Direction signage and route delineation Km markers have been provided along all path routes and on-road routes. Track markers have been provided every 1km spacing.

For all on-road routes and State Highway access points additional tourist direction signage has been provided.

A design has been prepared for all local road and State Highway crossing points with appropriate advance warning signage and give way control signage on the cycle path.

A route map board with information and places of tourist interest has been provide at each days start point, each daily halfway lunch stops and at places of major access or interest. As shown below in Photograph 7.5.1

Photograph 7.5.1 Example of Interpretation Panel

8 Land Ownership and Consultation

One of the distinctive features of the Alps to Ocean Cycle Trail is its length, and diversity of scenery and cycling experience along that length. These factors have resulted in a trail that traverses a range of tenure including: unoccupied crown land; legal river and stream beds; National Park, conservation land and marginal strip; local authority and state highway roads and road reserve; and privately owned land. This has required extensive consultation to be undertaken with the following parties:

- Land Information New Zealand;
- Department of Conservation;
- New Zealand Transport Agency;
- District Councils – Waitaki, Mackenzie, Waimate;
- Meridian Energy Limited;
- 25 private landowners to secure 54 access easements (approx).

In addition to affected land owners, consultation has also been undertaken with the following parties in relation to the trail generally:

- Te Runanga O Ngai Tahu;
- The NZ Historic Places Trust;
- District and Regional Councils – Waitaki, Mackenzie, Waimate, Environment Canterbury and Otago Regional Council.

A summary of consultation in relation to each of these groups is provided below. Note that where written support letters or written agreement in principle to provide access has been provided by affected parties, these documents are attached in Appendix D to this study. Please also refer to the Table Confirming Land Access Rights Status contained in Appendix D.

Land Information New Zealand

The proposed trail passes through a combination of legal river and stream beds, unoccupied crown land, pastoral lease land and crown land subject to operating easements in favour of Meridian Energy Limited (Meridian).

Consultation has been undertaken with both the Crown Property Management and Pastoral – Crown Property divisions of Land Information New Zealand (LINZ) as the administrator of this land. It is noted that in accordance with the instructions from the Ministry, this consultation sought agreement in principle to provide access for the Cycle Trail across the relevant parcels however the details in relation to the specific instrument that will secure such access rights have not been confirmed as the Ministry is pursuing negotiations in this regard on behalf of all applicants.

The LINZ Crown Property Management division has provided agreement in principle to provide access across all parcels of crown land and legal river / stream beds affected by the proposed Cycle Trail route. This also includes the use of the Tasman Riverbed for a helicopter landing site

and a low flying zone across the Riverbed for Helicopter transport from the Mount Cook airport to Tasman Point.

LINZ has noted that its agreement in principle in relation to crown land subject to Meridian operating easement is conditional on obtaining agreement from Meridian in the future. The Establishment Committee has undertaken informal consultation with Meridian in relation to this point and Meridian indicated that it had no objection to the trail in locations subject to Meridian operating easements. Accordingly we do not see this condition as a significant risk in terms of feasibility at this stage.

The Pastoral Lease division of LINZ has expressed its support for the proposal but has noted the procedural limitations on the Commission of Crown Lands which prevents this branch of the department from providing the Establishment Committee with an "agreement in principle". The Establishment Committee has also undertaken consultation with lessees where pastoral lease land is concerned and has received support from the lessees themselves. Lessee support, in combination with LINZ's expression of support for the cycleway (notwithstanding the technical inability to provide "agreement in principle" in terms of access), is considered to be sufficient at this stage for the Committee to indicate the relevant parts of the route as "green light" sections.

Department of Conservation

The Establishment Committee has had significant support from both the Aoraki Mount Cook and Twizel Te Manahana Area Offices of the Department of Conservation. As with crown land, in accordance with instructions from the Ministry, this consultation sought agreement in principle to provide access for the Cycle Trail across land administered by the Department however the details in relation to the specific instrument that will secure access rights have not been confirmed as the Ministry is pursuing negotiations in this regard on behalf of all applicants.

The Department's Twizel office has agreed in principle to allow access to the cycleway across all conservation land affected by the trail in its area.

Agreement in principle in relation to access to conservation land parcels down the Waitaki is yet to be confirmed.

In addition to this, the Department's Twizel office has offered to construct various parts of the trail that are located on conservation land and marginal strip. Further details on this are provided in the High Level Business Case submitted in conjunction with this study.

The Department's Aoraki Mount Cook office has given the cycle trail similar support however the current Management Plan restrictions on cyclists within the National Park has meant that agreement in principle to provide access is subject to the necessary changes to the Management Plan being achieved. This is noted in the letter from the Department contained in Appendix E to this study – yet to be received.

The Department has indicated that while the process to change the Management Plan has been initiated, it could take 6 – 12 months to be completed. For this reason, access through the National Park is considered to have "orange light" status at present. The Committee is confident that the necessary changes will be achieved in due course. An alternative route option taking cyclists along the formed legal road to the airport is available in the meantime if needed.

New Zealand Transport Agency

Consultation with the New Zealand Transport Agency (NZTA) was undertaken by Opus International Limited on behalf of the Establishment Committee. NZTA has reviewed maps of the proposed trail and discussed the various parts of the trail that directly relate to the State Highway network with Opus. In particular, details on cycle trail design where the proposed route runs adjacent to or intersects with the State Highway - including specific design measures proposed for bridge crossings - were considered.

The NZTA has provided its written support for the proposed trail as part of the feasibility phase of the project.

Waitaki, Waimate and Mackenzie District Councils – Roading

The proposed trail utilises Mackenzie, Waimate and Waitaki District Council roads at various points. All three of the District Council roading departments have expressed approval of the trail in those locations.

Meridian Energy Limited

As the trail follows a substantial part of the Meridian hydro network, a number of Meridian core land parcels are affected. Meridian has provided approval in principle to grant an access easement to the cycle trail where its land is affected. As part of this, Meridian has provided a copy of a template easement instrument that it generally uses for such access and has noted its preference to use this instrument as opposed to that prepared by the Ministry. A copy of this is attached to its approval letter contained in Appendix D. The Committee is particularly grateful for Meridian's support of this proposal. Note this correspondence is yet to be received.

Private Landowners

A total of approximately 25 private land owners are affected by the proposed trail. Most of these landowners are located in the Waitaki Valley portion of the trail and particularly on the Duntroon to Oamaru leg where the proposed trail follows a historic rail corridor that reverted back to private ownership after the rails were lifted many years ago.

Consultation with these landowners was initiated on the basis of the advice provided by the Ministry that the preferred access right is via right of way easement. Accordingly the Committee has obtained agreement in principle to provide access by way of right of way easement across all private properties affected by the trail. The relevant agreements in this regard are contained in Appendix D to this study. Please refer to the Table Confirming Land Access Rights Status for further details in relation to these agreements.

Te Runanga O Ngai Tahu

While the proposed route does not cross any land owned by Te Runanga O Ngai Tahu, it does pass near a collection of Nohoanga Sites. In addition to this, one of the key attractions along the part of the trail from Twizel to Lake Ohau is the view of the iconic and culturally significant "Ruataniwha" also known as Ben Ohau Peak. It is envisaged that an information panel located on the Lake Ohau marginal strip will be prepared in relation to the significance of this landform to Maori. Te Runanga O Ngai Tahu via local Runanga - Moeraki and Waiho have expressed their

anecdotal support in relation to this initiative and the trail generally however negotiations with the Runanga are ongoing.

The NZ Historic Places Trust

A number of historic or archaeological sites are located in the vicinity of the trail. Further detail on this aspect is discussed in the statutory approvals section of this study. General consultation has been undertaken with the Historic Places Trust and the Trust has not expressed any objection or opposition to the trail as proposed.

District and Regional Councils – Waitaki, Mackenzie, Environment Canterbury, Otago Regional Council – Planning / Resource Consents

Consultation with local and regional authorities has been undertaken in relation to planning and consent requirements. While the outcome of any resource consents required cannot be predetermined, the relevant authorities have not expressed any objection or opposition to the proposal. This consultation is yet to be progressed.

The results of the consultation have shown agreement in principal……..

9 Statutory Approvals and Assessments of Effects

Introduction

This section identifies the statutory approvals required in order to construct and use the proposed Cycle Trail. An outline of the scope of any assessment of environmental effects is provided where relevant.

Prior to undertaking this assessment, the following key aspects of the intended trail construction and operation should be noted:

- The proposed trail will be a public facility available to the public for use at no cost. Accordingly, the trail itself is not a commercial activity and its construction will not necessitate the need for any statutory approvals relating to commercial cycling / guiding activities. (NB: Operators who propose to undertake commercial guiding activities on the trail will be required to obtain the necessary approvals for this land use in accordance with the relevant statutory requirements).
- The toilet design proposed to service the trail is an "Enviroloo". This is a fully enclosed unit that functions without subterranean tanks. Accordingly it requires no earthworks or discharge to land approvals in relation to both construction and operation.
- The key components of trail construction that will trigger the need for district and regional council approvals under the Resource Management Act 1991 are earthworks (cut and fill), structures (boardwalks and bridges), vegetation clearance and signage – particularly where these land use activities are proposed in riparian margins.
- The trail has been designed to follow existing contours where possible. For this reason, no major benching or cuts will need to be undertaken.
- The proposed trail traverses through some of New Zealand's most spectacular and outstanding natural landscapes. Aside from any consenting requirements, the trail has been designed to minimise any degradation or disruption to this landscape.
- The trail passes a number of ecologically and archeologically significant sites however, the only statutory approval triggered by the trail in this regard is the reinstatement works on the Tokarahi Branch Line tunnels which will require permission from the NZ Historic Places Trust for works on an archaeological site.
- The trail passes a number of operational and non-operational Nohoanga Sites. It is anticipated that approval from Te Runanga O Ngai Tahu will be required for the trail located within these sites.
- The trail crosses a variety of designated land use areas (for example national park, conservation land, reserve land, marginal strip, legal riverbed and rural activity zones) and administrative jurisdictions (Mackenzie District, Waitaki District, Waimate District, Canterbury and Otago Regions). For this reason some aspects of the trail may require multiple approvals from different authorities for the same activity.
- The Department of Conservation has indicated that it will be responsible for the construction of the cycle trail where it is located in national park or conservation land (including marginal strip). This simplifies the statutory approvals needed for some

construction works in that the Department will assist with the approvals process (although regional and / or district council approvals may still be required for these aspects of the trail).

- In terms of statutory approvals, of particular note is the part of the cycle trail within the Aoraki Mount Cook National Park. The relevant Management Plan does not currently allow cycling activities within the Park, accordingly changes to the Management Plan are currently being sought to facilitate the proposal.

Statutory Framework – Brief Overview

Conservation Act 1987 & National Parks Act 1980

The section of the proposed cycleway from Mt Cook Village to where the track crosses the Tasman River is located within the Aoraki/Mt Cook National Park. The Aoraki/Mount Cook National Park Management Plan has been prepared under the National Parks Act 1980. The purpose of this plan is to express overall management intentions for Aoraki/Mount Cook National Park. At present, this document does not allow for cycling activities to be undertaken within the National Park.

The Establishment Committee has consulted with representatives from the Aoraki Mount Cook National Park at length in relation to this matter. The local Area Office has indicated that it is very supportive of the proposal and the process to initiate changes to the Management Plan has commenced. The Committee understands that the Canterbury Conservator has approved the changes and the proposal is now with the Conservation Authority for consideration and that this process will require public notification including the receipt of public submissions. It is expected that this process may take a further six months to one year to complete.

The Canterbury Conservation Management Strategy (CMS) is a statutory document prepared under the Conservation Act 1987 which provides an integrated management framework for land administered by the Department of Conservation. The parts of the trail that are located on conservation land and riparian margins are governed by this strategy.

New Zealand Historic Places Act 1993

The Historic Places Act 1993 defines an archaeological site as a place associated with pre-1900 human activity, where there may be evidence relating to the history of New Zealand. If any works are to be carried out on any pre-1900 buildings, structures or where there is evidence of human activity then an "Archaeological Authority" would be required from the New Zealand Historic Places Trust.

Reserves Act 1977

The Reserves Act 1977 provides for the preservation and management of areas possessing some special feature or values. Sailors Cutting is classified as a 'recreation reserve' [PH3]under the Reserves Act 1977. Part of the cycleway route is proposed to go through this reserve, possibly utilising existing roads within the recreation reserve. Any works undertaken within the recreation reserve are required to be consistent with the 'recreation' purpose of the reserve and be consistent with any reserve management plan that may be in effect at Sailors Cutting.

Resource Management Act 1991

The Resource Management Act 1991 (RMA) provides the statutory framework for the preparation and consideration of resource consents. Section 5 of the RMA outlines the purpose of the RMA, which is to:

"Promote the sustainable management of natural and physical resources"

Demonstrating that the environmental effects from the cycleway's construction and associated infrastructure can be avoided, remedied or mitigated is the key for the resource consents required for the project.

An analysis of the relevant provisions of the Mackenzie District Plan, the Waimate District Plan, the Waitaki District Plan, the Transitional Regional Plan and Proposed Natural Resources Regional Plan of Environment Canterbury (ECan), and the Otago Regional Council (ORC) Regional Plan have been undertaken to identify the aspects of the project which will require resource consent.

Local Government Act 1978

As noted in the Ministry's Issues Paper on Access Rights, there is a risk that forming the proposed cycle trail may require approval from the relevant local authorities (Mackenzie and Waitaki) under section 348 of the Local Government Act. Given the ambiguity as to whether or not approval under section 348 is actually required in this case, the Committee has not undertaken specific consultation with the relevant local authorities on this point at this stage but would be happy to do so should the Ministry consider this to be necessary.

9.1 Summary of Statutory Approvals Required

Section 1 Aoraki Mount Cook Village to Braemar

Mackenzie District Council
Zoning - Rural
Earthworks and tracking due to location within Site of Natural Significance, proximity to Tasman River, and steep slopes (to be confirmed).
Use of the cycleway as a commercial recreational activity (if the track is to be used commercially).
Vegetation clearance in a Site of Natural Significance.
Signage generally outside road reserve and within the Lakeside Protection Areas requires resource consent.
Environment Canterbury
Earthworks for tracking and gravel extractions because of earthworks over unconfined/semi-confined aquifer.
Vegetation clearance within the riparian zone of waterways (to be confirmed).
Department of Conservation - National Park Requirements
Aoraki Mount Cook National Park Management Plan – amendments required to allow cycling activities in designated areas within the National Park. Concession from Department of Conservation required for any works within Mount Cook National Park.

Section 2: Braemar Station to Twizel

Mackenzie District Council
Zoning - Rural
Earthworks and tracking due to location within Site of Natural Significance and proximity to Lake Pukaki.
Vegetation clearance in a Site of Natural Significance.
Signage generally outside road reserve and within the Lakeside Protection Areas requires resource consent.
Environment Canterbury
Earthworks for tracking and gravel extractions because of earthworks over unconfined/semi-confined aquifer.
Vegetation clearance within the riparian zone of waterways (to be confirmed).

Section 3: Twizel to Ohau Village

Mackenzie District Council (from Twizel to Ohau River)
Zoning – Rural.
Earthworks and tracking only if this will occur on slopes greater than 20 degrees.
Waitaki District Council (from Ohau River to Ohau Village)
Zoning – Rural Scenic. Residential through Lake Ohau Village.
Earthworks for the cycleway generally.
Signage required to comply with zone bulk and location requirements and minimum lettering sizes. Generally, if sign for public purpose exceeds $3m^2$ in area and is visible from public road, resource consent would be required. Signs through residential zones are not permitted above $0.5m^2$ in area.
Environment Canterbury
Earthworks for tracking and gravel extractions because of earthworks over unconfined/semi-confined aquifer.
Structures over a waterway (to be confirmed).
Department of Conservation
Earthworks in the riparian margins.

Section 4: Ohau to Omarama

Waitaki District Council
Zoning – Rural Scenic. Rural Residential, Residential, Business 2,3, & 6 through townships.
Earthworks for the cycleway generally.
Signage required to comply with zone bulk and location requirements and minimum lettering sizes. Generally, if sign for public purpose exceeds $3m^2$ in

area and is visible from public road, resource consent would be required. Signs through residential zones are not permitted above 0.5m^2 in area.
Zoning – Rural Scenic. Rural Residential, Residential, Business 2,3, & 6 through townships.
Environment Canterbury
Earthworks for tracking and gravel extractions because of earthworks over unconfined/semi-confined aquifer.
Structures over a waterway (to be confirmed).
Vegetation clearance within the riparian zone of waterways (to be confirmed).

Section 5: Omarama to Otematata

Waitaki District Council
Zoning – Rural Scenic / Rural Residential
Earthworks for the cycleway generally.
Signage required to comply with zone bulk and location requirements and minimum lettering sizes. Generally, if sign for public purpose exceeds 3m^2 in area and is visible from public road, resource consent would be required. Signs through residential zones are not permitted above 0.5m^2 in area.
Environment Canterbury
Earthworks for tracking and gravel extractions because of earthworks over unconfined/semi-confined aquifer.
Structures over a waterway (to be confirmed).
Vegetation clearance within the riparian zone of waterways (to be confirmed).
Reserve Act Requirements
Any works or development undertaken within recreation reserves would be required to be in accordance with the purpose of the reserve under the Reserves Act 1977. This will apply to Sailors Cutting Recreation Reserve on State Highway 83 which is designated in the Waitaki District Plan.

Section 6: Otematata to Kurow

Waitaki District Council
Zoning – Rural Scenic / Rural Residential
Earthworks for the cycleway generally.
Signage required to comply with zone bulk and location requirements and minimum lettering sizes. Generally, if sign for public purpose exceeds 3m^2 in area and is visible from public road, resource consent would be required. Signs through residential zones are not permitted above 0.5m^2 in area.
Waimate District Council (between Benmore Dam and the Waitaki Dam)
Zoning – Rural
Signage is likely to be a permitted activity subject to meeting zone height and traffic safety requirements.
Zoning – Rural
Environment Canterbury

Earthworks for tracking and gravel extractions because of earthworks over unconfined/semi-confined aquifer.
Structures over a waterway (to be confirmed).
Vegetation clearance within the riparian zone of waterways (to be confirmed).

Section 7: Kurow to Duntroon

Waitaki District Council
Zoning – Rural General
Earthworks for the cycleway generally.
Signage required to comply with zone bulk and location requirements and minimum lettering sizes. Generally, if sign for public purpose exceeds 3m^2 in area and is visible from public road, resource consent would be required. Signs through residential zones are not permitted above 0.5m^2 in area.
Environment Canterbury
Earthworks for tracking and gravel extractions because of earthworks over unconfined/semi-confined aquifer.
Structures over a waterway (to be confirmed).
Vegetation clearance within the riparian zone of waterways (to be confirmed).

Section 8: Duntroon to Oamaru

Waitaki District Council
Zoning – Rural General
Earthworks for the cycleway generally.
Signage required to comply with zone bulk and location requirements and minimum lettering sizes. Generally, if sign for public purpose exceeds 3m^2 in area and is visible from public road, resource consent would be required. Signs through residential zones are not permitted above 0.5m^2 in area.
Environment Canterbury (Duntroon to Smillies Road)
Earthworks for tracking and gravel extractions because of earthworks over unconfined/semi-confined aquifer.
Structures over a waterway (to be confirmed).
Vegetation clearance within the riparian zone of waterways (to be confirmed).
Otago Regional Council (Smillies Road to Oamaru)
Structures over a waterway (to be confirmed).

9.2 District and Regional Resource Consent Requirements

The following gives a summary of the content of the relevant rules in relation to the relevant District and Regional consent requirements that may be applicable to the trail.

Canterbury Region

Gravel Extractions and Earthworks

If any earthworks (including gravel extractions) occur over an unconfined or semi-confined aquifer (such as near Omarama) and the volume of the extraction is greater than 100 cubic metres within any consecutive 12 month period, or the excavation exceeds five metres (or reaches groundwater), then resource consent will be required. This also applies to the general construction of the track.

The purpose of this requirement is to protect groundwater, therefore this should be the focus of the associated assessment of environmental effects.

For large scale extraction activities (quarrying) discharge to air from the handling of bulk materials should also be considered. This is unlikely to be required in this instance.

Bridges/Fords/Culverts and Clip-ons

The erection of bridges/fords and culverts may not require resource consent provided the :

- structure is not erected in a high naturalness water body;
- bed of the river/stream at the point of crossing is less than 5 m wide;
- structure does not restrict flood flow; and
- works do not obstruct the passage of fish.

Additions to existing structures may not require resource consent providing the following is adhered to:

- The addition to the structure does not exacerbate flooding potential;
- Discharge of sediment into the river from the construction is be minimal.

If any structures are proposed for river crossings, then the following will need to be considered in the assessment of environmental effects:

- Effects of the structure on flood risk.
- Effects of the works on aquatic ecology and water quality.

Vegetation Clearance

It should be noted that vegetation clearance associated with the maintenance of the cycleway (once constructed) will be a permitted activity. Any other vegetation clearance with the riparian zone of waterways will require resource consent from Environment Canterbury.

Effects of any vegetation clearance on water quality and ecosystems should be considered when applying for resource consent.

Land Use Activities within 7.5 Metres of the Bed or Flood Protection Structures

Land use activities within 7.5 m of the bed of any river or stream or flood protection structures will not require resource consent, provided that :

- activity/structure does not exacerbate flooding or destabilise lawfully established structures; and
- discharge of sediment to water is minimal.

Otago Region

Bridges/Culverts/Fords

Bridges and culverts are likely to be permitted activities and will not require resource consent provided the catchment area upstream is no more than 50 hectares in area. If the area upstream is greater, then resource consent will be required.

The placement of a ford (structure) within the bed of a river or stream will require resource consent.

Structures Within 7 Metres Of The Margin Of Rivers

Structures within 7 m of the margin of any river will not require resource consent, provided that the:

- structure does not restrict access for works to avoid or mitigate natural hazards; and
- Otago Regional Council is advised in writing of the details of the structure at least seven working days prior to commencing the erection or placement.

9.3 District Resource Consent Requirements

The cycleway begins in the Mackenzie District, then passes into the Waitaki District just south of Twizel. The cycleway will briefly travel through the Waimate District, between Benmore Dam and the Waitaki Dam. As such, the consenting requirements of each of these District Councils must be considered.

Mackenzie District

Having referred to the Mackenzie District Council planning maps, the entire Mackenzie District portion of the cycleway is zoned "Rural". However, the following should be noted:

- The Tasman River is a Site of Natural Significance.
- The Braemar Mt Cook Station Road is a Lakeside Protection Area.
- The Pukaki River is a Site of Natural Significance.
- The cycleway appears to avoid the Pukaki Village Zone because the village is on the southern (inside) side of State Highway 8 and the cycleway is on the north side of the State Highway in this area.
- The cycleway travels east of Twizel, avoiding the township and associated zonings. However, it is noted that cyclists will be able to enter the township on the existing roads, and some signs may be placed here.
- The Ohau Bridge, which is off the trail but is possibly a short side trip a Heritage Item.

Earthworks

Earthworks and tracking in the Mackenzie District will require resource consent because they:

- are located in Sites of Natural Significance and exceeds the permitted thresholds;
- may occur on slopes with an angle greater than 25 degrees (this does not apply to track maintenance); and/or
- will occur within 20 metres of Lake Pukaki.

The effects of the earthworks to be considered should include the extent to which any significant natural values of the site will be protected and the effects on water habitat resulting from any runoff and sedimentation from the earthworks.

Vegetation Clearance

It is assumed that vegetation clearance will be required along much of the route of the cycleway. Resource consent is likely to be required for this vegetation clearance because more than 100 m^2 per hectare is likely to be removed in riparian areas, some will be located in Sites of Natural Significance and/or on land above 900 m in altitude. If so, any significant natural values at the site will need to be protected.

Signage

Signage in the Mackenzie District associated with traffic within the road reserve, including tourist and motorist service signs or signs denoting the location or other details of a public utility or facility, are generally permitted activities.

Section 11(7) of the Mackenzie District Plan contains a number of general requirements for signage including specifications for visibility, lettering height, area (maximum total of 3 square metres per site) and setbacks in relation to traffic safety and visual impact. Other permitted signage includes signs not exceeding $1m^2$ for any public purpose and signage forming part of an information kiosk. Signage outside of the road reserve designation will likely require resource consent depending upon the size and location of the sign.

There are a number of other specific signage requirements subject to adjoining zoning and meeting the conditions for permitted activities contained in the Mackenzie District Plan.

Waitaki District

Having referred to the Waitaki District Council planning maps, the track will pass through the following zones:

- Rural Scenic
- Rural General

Other features on the planning maps that that the track will pass through or near:

- Area of flooding risk - immediately north of Omarama.
- Area of Flooding Risk - Adjacent to Waitaki River
- High Class Soil Areas – near Duntroon
- High Class Soil Areas - Enfield
- Adjacent to Cement Policy Area near Enfield

<u>Earthworks</u>

Earthworks are required for the cycleway track in numerous locations within the Waitaki District. Since the earthworks will involve more than 100 m^3 in volume or 50 m^2 in area, resource consent will be required. The resource consent will be required because a number of standards will not be complied with, as follows:

- earthworks will occur within 20 m of a lake or river;
- some earthworks may occur on slopes with angles greater than 20 degrees; and/or
- vegetation may be cleared within 20 m of a river or lake.

Any assessment of environmental effects should address the specific are of non-compliance.

Note that once the cycleway tracks are in place, future maintenance of the tracks (and associated vegetation clearance) will be a permitted activity.

<u>Signage</u>

Signage is generally required to comply with the underlying zone bulk (size, height, setbacks) and location requirements, have regard to traffic safety requirements and comply with speed limit minimum letter heights as specified in Chapter 13 of the Waitaki District Plan. Permitted signage includes traffic signs, signs for any public purpose by a central or local government agency provided they do not exceed $3m^2$ in area when visible from public road or land or visible from an

adjoining property. Therefore, whether resource consent is required for any signage on the cycleway is dependent upon the proposed bulk and location of any signage.

Waimate District

Having referred to the Waimate District Council planning maps, the track will pass through the Rural zone.

Other features:

- Designation 173 Transpower NZ Ltd, Converter Station & Outdoor Switchyard - Designation 89
- Lakeside Protection Area 1
- Lakeside Protection Area 2
- High Voltage Electricity Lines
- Site of Significant Natural Significance-3 Lake Benmore
- Site of Significant Natural Area 5-Lake Aviemore

Signage

Signage in the Waimate District associated with a public purpose or in connection with public land managed for conservation, scenic or passive recreation activity purposes is a permitted activity, subject to compliance with the General Requirements for All signs (Rule 1). These general requirements relate to meeting the height requirements for the zone to which the signs relate and having regard to traffic safety matters.

Scope of Assessment of Environmental Effects

The scope of the assessment of environmental effects is dependent on the types of resource consents / concessions required. Based on this preliminary assessment the assessment that is likely to be carried out includes:

- ecology (terrestrial and freshwater);
- landscape;
- heritage/archaeological;
- cultural;
- social and economic; and
- erosion and sediment control.

9.4 Sites of Ecological Significance

A desktop review has identified a number of sites of ecological significance on or adjacent to the proposed cycleway (note that the precise location or extent of the significant ecological values is frequently not known).

Three parts of the proposed cycleway traverse areas with particularly significant ecological values:

- Bed of the Tasman River
- Shoreline of Lake Ohau
- Waitaki Valley between Omarama and Kurow (if threatened plant populations are affected)

Whilst further assessment (including field inspection) will be required to clarify whether these significant ecological values will be affected by the cycleway it is likely that the relatively narrow

(1.5 to 2 metre wide) cycleway will have no, or only minor, adverse effects on the ecological values identified. If significant ecological values are identified on the proposed cycleway route, it may be possible to avoid these adverse effects on those values by minor or local alteration of the route, or to mitigate the loss of those values through, for example, habitat restoration.

9.5 Sites of Landscape Significance

The proposed trail passes through some of New Zealand's most spectacular and outstanding landscapes. The District and Regional Plans applicable to the trail deal with landscape matters differently. (For example, the Mackenzie District Plan uses landscape protection areas as a means of protecting significant landscapes).

It is noted that in general, the trail has been designed to follow logical contours avoiding the need for significant cuts and benching. Furthermore the trail does not traverse any sky lines, ridgelines or prominent slopes. For these reasons, it is not anticipated that the trail will result in any significant adverse visual effects. From a consenting perspective, any effects in this regard will be dealt with as part of any application for resource consent.

9.6 Sites of Heritage or Archaeological Significance

An initial preliminary desk-based study has identified 73 heritage features within 100 m of the 312km of proposed Cycleway route between Mt Cook and Oamaru (this was extended to 200 m between Tokarahi and Weston). The majority of these sites (49) are European sites, with the remainder (24) being Maori sites. A wide range of sites have been identified, including early Maori occupation and rock art sites, railway tunnels and embankments, historic houses, stores, hotels and stables and historic tracks. Of these sites, it is anticipated that only two of the sites (the Tokarahi Branch Rail tunnels) are actually located on the trail and therefore directly affected by trail construction. In accordance with the Historic Places Act, it is unlawful to damage or modify an archaeological site without first obtaining authority from the relevant authority (the NZHPT). It is anticipated that approval from the NZHPT will; be required before the reinstatement works (discussed in the Engineering Methodology) can be undertaken.

Aside from approval / consenting requirements, it is noted that heritage features which have been identified and which are of particular interest to cycleway users are the Maori rock art sites, and the historic railway and hydro features. The historic town through which the route will pass are also of considerable interest (especially Kurow and Oamaru). These sites would all translate well onto interpretation panels placed in places convenient and safe for the track-users to stop. Iwi input should feature prominently with the creation of all proposed interpretation panels which display information of the Maori history of the area.

9.7 Sites of Cultural Significance

The planning maps for the Canterbury region and the Otago region, along with the Ngai Tahu Settlement Act, has been checked in order to identify sites of cultural significance of relevance to the Alps to Ocean cycleway.
The following Statutory Acknowledgement / Deeds of Recognition relate to the proposal:

- Lake Pukaki
- Lake Ohau
- Te Ao Marama (Lake Benmore)

- Maki Tikumu (Lake Aviemore)
- Waitaki River

It is anticipated that the construction and location of the trail will not have an impact on these water bodies.

Nohoanga sites (operational and non-operation) are located in the following locations:

- Lake Pukaki
- Lake Ohau (x2)
- Ohau River (x2)
- Ahuriri River
- Lake Benmore (x2)
- Lake Aviemore

Consultation with Te Runanga O Ngai Tahu has been undertaken and it has been confirmed that the only operational sites that the trail will pass through is one at Lake Pukaki and the second at the Ahuriri River. In both of these locations, the trail follows existing paths and accordingly only minimal (if any) earth disturbance will take place. Further discussion is being undertaken with Te Runanga O Waiho and Te Runanga O Moeraki in relation to this.

10 Design and Construction Cost Estimates

A comprehensive construct cost estimate meeting the Stage 2 Feasibility Study guidelines has been prepared $3,250,000. Detailed Table 2 layout is shown on the following pages along with unit rates applied. This project has been developed with a project target cost to ensure that it will be economically affordable.

This project traverses some of New Zealand's most stunning landscape over a significant 312km distance. However this projects unique Mackenzie country moraine and river bed geology, dry weather catchment and sparse vegetation allows specialised construction techniques to be used.

10.1 Project Cost Estimate

A detailed project cost summary has been prepared and is included on the following pages.

Design and Contract Supervision cost breakdown

The professional services have been estimated in proportion to the total project cost at an applied rate of 15% plus legal costs and survey rounded to $443,000.

This can be further broken down into these proportions:

Legal Cost of Easements	$20,000
Design and Survey	$241,000
Project management of Construction	$150,000
Consents	$32,000
Totals	$443,000

Easements and legal Survey Costs

An allowance has been made of $68,000 for non legal project management of easements and $20,000 for legal costs. No provision has been made for direct land purchase. The $20,00 for legal costs has been excluded from application to New Zealand Cycleway Fund.

A total of 57 easements (per parcel) are required to give effect to the trail as currently proposed. The majority of these easements are located on the final section where a significant section of the abandoned railway reserve requires easements over private property.

Statutory Approvals and Mitigation Costs

Need further details in relation to the necessary resource consents anticipated Claire/[JC4]?

Contingency Costs

The requirement of the Stage 2: Feasibility Study is to apply a 20% contingency to the cost estimate. After further advice from the Ministry and following this sum has been reduced to 17%.

Preliminary and General Costs

The project has had a 2% preliminary and general cost applied to all the physical work. This cost includes all onsite contractor costs to comply with Health and Safety, establishment, consent mitigation requirements, programming and management costs.

10.2 Funding from the Applicant

Please refer to the High Level Business Case for information regarding items the applicant will fund. Total amount is $520,000.[JC5]

10.3 Total Cost Summary

A cost summary is given in the table below.

Table 2: Summary of Design and Construction Costs (refer to sections 3.8 & 3.11)

Alps to Ocean Cycle Trail

Descriptions	Section 1	Section 2	Section 3	Section 4	Section 5	Section 6	Section 7	Section 8	Total
Enter start and end locations/points for each section	Mt Cook to Braemar Station	Braemar Station to Twizel	Twizel to Lake Ohau	Lake Ohau to Omarama	Omarama to Otematata	Otematata to Kurow	Kurow to Duntroon	Duntroon to Oamaru	
Track length (metres)	37,013	45,048	38,077	42,036	24,023	42,088	27,078	53,029	**313,029**
Estimated Costs (not all will apply)*									
Design costs (incl surveying)									$272,971
Project Management									$150,000
Track construction (incl earthworks and culverts)	$105,503	$108,976	$92,758	$243,855	$238,377	$180,874	$153,156	$322,632	**$1,446,132**
Bridge construction (incl clip on structures)	$6,000	$0	$21,000	$52,875	$0	$30,375	$32,400	$7,500	**$150,150**
Tunnel construction / upgrades	$0	$0	$0	$0	$0	$0	$0	$20,000	**$20,000**
Fencing / Gate / Cattle Stop costs	$0	$0	$34,500	$0	$0	$0	$0	$115,500	**$150,000**
Boardwalk costs	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Other buildings e.g. toilets, shelters	$36,500	$41,500	$39,800	$41,500	$12,000	$22,000	$29,000	$45,000	**$267,300**
Parking areas	$0	$0	$0	$0	$0	$0	$0	$0	**$0**
Signage	$16,034	$45,308	$23,598	$24,578	$38,640	$20,428	$18,068	$53,528	**$240,182**
Other Costs (a) - please specify if any									$0
Section 1 : Shelter and Helicopter landing area, $22,500 sight line improvements along the road and water supply.	$33,500								$33,500
Section 2 Safety barrier near bluffs, automatic cycle counter, cover for shallow Telecom Services and safety rail upgrades on existing		$44,000							$44,000
Section 3 Remote water supply and safety rail upgrades on existing Dam			$18,000						$18,000
Section 4 Cycle Electronic warning signs Ahuriri Bridge and Water supply.				$47,000					$47,000
Section 5 no other costs					$0				$0
Section 6 no other costs						$0			$0
Section 7 no other costs							$0		$0
Section 8 no other costs								$0	$0
Subtotal (Excl GST)	**$ 197,537**	**$ 239,784**	**$ 229,656**	**$ 409,808**	**$ 289,017**	**$ 253,677**	**$ 232,624**	**$ 564,160**	**$ 2,839,235**
Contingency (17%)	$ 33,581	$ 40,763	$ 39,042	$ 69,667	$ 49,133	$ 43,125	$ 39,546	$ 95,907	$ 410,765
Total Est Design and Construction Costs (Excl GST)	**$ 231,119**	**$ 280,547**	**$ 268,698**	**$ 479,476**	**$ 338,150**	**$ 296,802**	**$ 272,170**	**$ 660,067**	**$ 3,250,000**
Funding contributed outside the NZ Cycleway Fund									$ 500,000
Funding requested from the NZ Cycleway Fund									**$ 2,750,000**

10.4 Unit Rate Cost Tables and Cost Assumption summary

Path Construction

Path Type	Unit Rate ($/Km)	Description
A	$2,000.00	New Flat ground Rocky Moraine Rock Crusher Path
B	$6,500.00	Rolling country sloping new Rocky Moraine Rock Crusher Path
C	$4,000.00	4WD Path tidy existing use
D	$6,200.00	Rough 4WD track Rock Crush with additional fines
E	$67,500.00	New Concrete Path
F	$6,850.00	Beside SH / road level berm
G	$12,150.00	Beside SH/ road, hill, cutting
H	$2,400.00	Railway corridor - Ballast per Km
I	$140,400.00	Seal widening beside SH

Structural Comments

Type	Unit Rate ($/m)
Boardwalk (2.5m)	$500
Handrails (1.4m)	$250

Other Facilities

Facility	Unit Rate
Covered Information Display	$3,500
Bike Stand	$500
Major shelter including information displays	$35,000
Remote Toilet Block x 1 pan	$8,500
New Toilet Block x 1 pan, enclosed tank	$15,000

Vegetation Clearing and Detritus Removal

Vegetation Type	Unit Rate ($/km)
Tussock land	$500
weeds, scrub & grass waist high	$5,000
Very dense vegetation	$250,000

Traffic Management

Traffic Management	Unit Rate / day
Basis (signage on entry and exit points only) on Local Roads	$50
Basis (signage on entry and exit points only) on SH	$100
Work on or beside Local Road	$400
Work on or beside SH	$500

Signs

Facility	Unit Rate ($/sign)
SH Tourist Sign	$1,500
PW35	$150
Cycleway Directional	$100
Cycleway Adv. Directional	$150
Timber Route markers	$40
edge marker posts green @1m centres	$15
Cycle behaviour share road signs	$250

Fencing

Fence Type	Unit Rate ($/m)
Repair existing fence	$10
Electric Fence - 2 wire	$5
Seven wire fence	$15
Cyclists Cattle Stop	$1,500
Mesh existing rail	$15

Road and Track Crossing Points

Crossing Type	Rate (both sides)
Road Crossing Type 1	$2,300
Road Crossing Type 2	$3,300

Legal Requirements

Legal Requirements	Unit Rate ($/km)
Legal Survey	$3,000
Establishment of Easement	$4,000

Electronic Bridge warning Light

Facility	Unit Rate ($/unit
Light warning one direction	$45,000

Cycle Counter

Facility	Unit Rate ($/unit)
Cycle Counter loop + PC Reader	$7,000

Culverts (including Fill)

Culverts (including Fill)	Unit Rate ($)
300mm	$1,100
450mm	$1,500
600mm	$1,800
900mm	$4,000

(assumes two lengths of pipe required)

Professional Services Fees

Professional Services Fees	%
Path Design, consenting and supervision	8%

Contingency

Contingency	%
Contingency	17%

Preliminary and General

P and G	%
P and G	2%

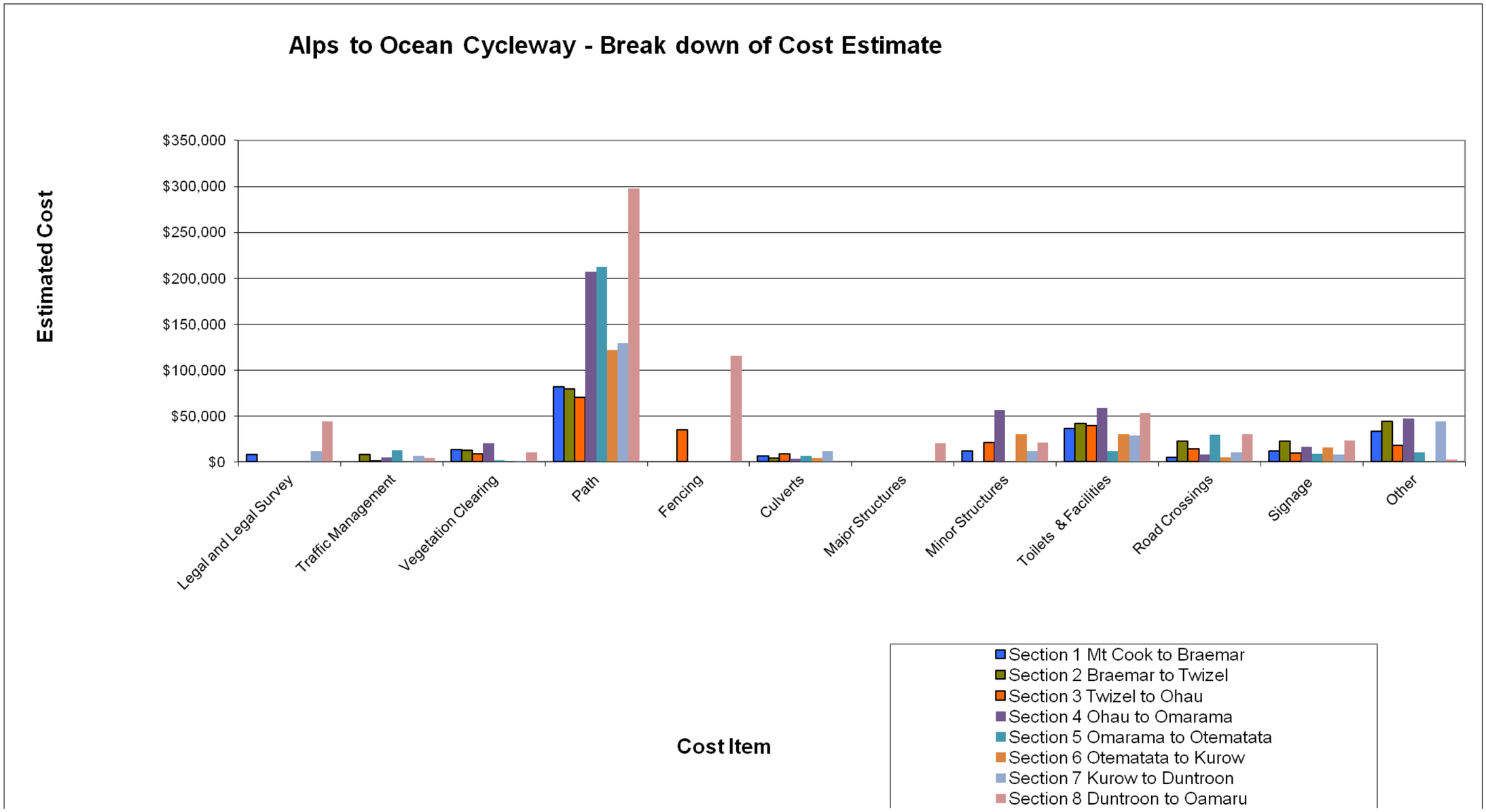
Bridges 1.5m wide No Vehicle loading

Standalone Bridge	$/m
Bridge 2m to 8m	$500
Bridge 8m to 12m	$600
Bridge 12m to 15m	$750
Bridge 15m+	$1,000

Boardwalk type no handrail

DOC rate $12,000 per 14m bridge

10.5 Section Length Cost summary Breakdown



11 Significant Issues to be Resolved Prior to Construction

The following significant issues to be resolved prior to construction have been identified. Proposed strategies for dealing with these issues are also specified.

If Ministry approval is received for the trail, it is anticipated that a formal resolution plan will be drafted and followed to resolve these issues.

Securing enforceable agreements to provide the easements required for the cycleway and registering those easements to enable trail construction to commence.

This issue will be addressed in two steps. The first step involves the drafting of all of the necessary agreements including easement instruments (inclusive of any conditions and / or modifications sought as part of previous consultation) and providing those documents to landowners for consideration and review. The second step involves further consultation with the landowners in relation to the documentation - ensuring that the landowner is happy with the content of the easement, addressing any concerns or questions before securing agreement and submitting the documents to solicitors for registration.

In addition to private land owners this step will also involve liaising with the Ministry and confirming the relevant instrument sought to secure cycle trail access across crown and conservation land as further consultation will need to be undertaken LINZ and DoC in this regard.

Finalising, applying for and securing the necessary resource consents to enable construction to commence

Preliminary scoping work has already been undertaken in terms of identifying the resource consents required. Accordingly in the first instance the relevant trail construction and design details will need to be finalised and applications for resource consents prepared and lodged with the relevant authority.

It is anticipated that the submission of these applications will be staged in accordance with the anticipated construction timetable.

Finalising funding sources

As noted in the High Level Business Case, there are a number of funding sources that are not yet finalised (NZTA, RCA and private sources). If this funding cannot be confirmed, the budget shortfall will need to be off-set by further cost savings in trail design. Accordingly, the potential funding entities will need to be approached and funding discussed immediately to allow the relevant trail design parameters to be finalised.

Forming the necessary management entity to govern the trail

As discussed in the High Level Business Case, a charitable trust will be created to manage / govern cycleway construction and operation. While the basic structure and membership of this

entity has already been considered, the relevant legal channels will need to be followed to form the entity (including the drafting of the Trust deed) in order to achieve registration.

It is noted that this step will be the first priority as the commencement of the construction process will require this entity to be in place to ensure legal capacity to enter into contracts, apply for resource consents and finalise the relevant land access documentation.

Securing trademark protection for the trail name

Preliminary enquiries have already been undertaken in relation to the process in this regard. An application will need to be prepared and lodged with the Intellectual Property Office of New Zealand for processing.

It is noted that the domain names that are intended to be used for the trail website have already been registered and accordingly, no further action is required in this regard.

Appendix A

Trail Highlights and Services

Appendix B

Tasman River Crossing Issues and Options

Appendix C

Weather Data

Appendix D

Table Confirming Land Access Rights Status and Copies of Land Owner Agreements