



Pike29 Track

RMA Application to West Coast Regional Council for Riverbed Land Use Consent and Discharge Permits

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Table of Contents

1	INTRODUCTION.....	1
1.1	Pike29 Track Proposal.....	1
1.2	Report Purpose.....	1
1.3	Report Structure.....	2
2	PROJECT OVERVIEW.....	3
2.1	Location, Ownership and Land Status.....	3
2.2	Historical Activities.....	5
2.3	Project Rationale.....	6
2.4	Great Walks.....	7
3	EXISTING ENVIRONMENT.....	8
3.1	General Site Description.....	8
3.2	Social, Economic and Recreational Environment.....	9
3.3	Geology, Landforms, Soils and Slope Stability.....	10
3.4	Freshwater Ecology.....	13
3.5	Terrestrial Flora.....	15
3.6	Terrestrial Fauna.....	18
3.7	Landscape Character and Visual Amenity.....	20
3.8	Archaeology and Historical Heritage.....	22
3.9	Maori Cultural Values.....	25
4	PROPOSAL DESCRIPTION.....	27
4.1	Track Description.....	27
4.2	Constructed Track Section Detail.....	29
4.3	Track Design and Layout.....	32
4.4	Bridging Structures.....	35
4.5	Huts and Shelters.....	40
4.6	Pike River Mine Memorial Facilities.....	43
4.7	Signage.....	45
4.8	Construction Methodology.....	46
5	RESOURCE MANAGEMENT REQUIREMENTS.....	51
5.1	Consents Sought – Construction period.....	51
5.2	Consents Sought – Operational.....	51
5.3	Part 2 of the RMA.....	52
5.4	Regional Policy Statement.....	52
5.5	Regional Land and Water Plan.....	53
5.6	Regional Air Quality Plan.....	63
5.7	Summary of Resource Management Requirements.....	63
6	CONSIDERATION OF ALTERNATIVES.....	64
6.1	Alternative Route Options.....	64
6.2	Additional Facilities Options.....	65
6.3	Part 105 of the RMA.....	65
7	ASSESSMENT OF ENVIRONMENTAL EFFECTS.....	67
7.1	Effects on Social, Economic and Recreational Values.....	67
7.2	Effects on Geology, Landforms, Soils and Slope Stability.....	72
7.3	Effects on Freshwater Ecology.....	74
7.4	Effects on Terrestrial Flora.....	76

7.5	Effects on Terrestrial Fauna.....	78
7.6	Effects on Landscape Character and Visual Amenity.....	81
7.7	Effects on Archaeology and Historical Heritage.....	85
7.8	Effects on Maori Cultural Values.....	88
7.9	Monitoring.....	90
8	CONSULTATION.....	91
8.1	Proposal Consultation.....	91
8.2	Governance Consultation.....	91
8.3	Public Consultation – Paparoa Park Management Plan.....	92
8.4	Resource Consent Consultation.....	92
8.5	Interested Parties.....	93
9	STATUTORY PLANNING MATTERS.....	93
9.1	Resource Management Act 1991.....	94
9.2	Conservation GP 2005 and GP for National Parks 2005.....	95
9.3	Conservation Management Strategy.....	98
9.4	Draft Paparoa National Park Management Plan.....	105
9.5	RMA Resource Consent Requirements.....	107
9.6	RMA Conclusions.....	110
10	SUMMARY.....	110

Appendices

- A: Location maps and NZ Gazette notices
- B: Site Photographs
- C: Social, Economic and Recreational Assessment
- D: Geology, Landforms, Soils and Slope Stability Assessment
- E: Freshwater Ecology Assessment
- F: Terrestrial Flora Assessment
- G: Terrestrial Fauna Assessment
- H: Landscape Assessment
- I: Archaeological Assessment
- J: Maori Cultural Values Assessment
- K: Track Design and Formation Drawings
- L: Bridge and Boardwalk Design Drawings
- M: Hut, Toilet and Wastewater System Design Drawings
- N: Mitigation Measures
- O: Affected Party Approvals

Table of Figures

Figure 1: Overview of Pike29 Track	4
Figure 2: Existing 'Top Croesus Hut' (black cladding, lower right) and Ces Clarke Huts.	21
Figure 3: Existing Ces Clarke Hut and track winding uphill towards Croesus Knob visible above the building.	22
Figure 4: Typical suspension bridge.....	36
Figure 5: Typical bridge over small water course	37
Figure 6: Framing of boardwalk, and timber supplies at Ship Creek Track....	38
Figure 7: Completed boardwalk at Ship Creek Track.	39
Figure 8: Boardwalk as constructed through a forested landscape.....	39
Figure 9: Indicative shelter design.....	43
Figure 10: Stage One - Clearance of vegetation for the path.....	48
Figure 11: Stage Two - Stripping of organic matter and topsoil to stockpile for later use, and placement of basecourse.	48
Figure 12: Stage Three - Placement of organic matter and topsoil along path verges.	49
Figure 13: Stage Four - Re-growth of vegetation along path verge after just 6 months.	49
Figure 14: Tindale Creek - example gravel extraction site.....	56
Figure 15: Tindale Creek - example gravel extraction site.....	57
Figure 16: Pororari River - example gravel extraction site.....	57
Figure 17: Upper Pororari River (above the gorge) example site.	58

1 INTRODUCTION

1.1 *Pike29 Track Proposal*

The Department of Conservation is proposing to develop the Pike29 Track as a memorial track to the 29 men who died as a result of the Pike River Mine disaster on 19 November 2010. The track will become New Zealand's tenth Great Walk, and was chosen by the families of the Pike River men as a fitting memorial which will bring lasting benefit to the West Coast region. The new 65km track will be a shared use track for both walkers and mountain bikers; being a 2-3 day walk or an advanced level 1-2 day mountain bike ride.

The Pike29 Track will link into existing tracks at each end, and will run from Blackball via the Croesus Track, then along the tops of the Croesus-Moonlight route before it descends into the Pororari River Valley and exits via two existing tracks to the Punakaiki area (the Pororari River Track and the Inland Pack Track). A side track running from the Moonlight tops section will provide access to the existing Pike River mine portal and amenities area which will be redeveloped for visitors.

Overall the Pike29 Track will be 65kms long, but as both ends will use existing tracks, the new track construction will total approximately 49kms. The Pike29 Track will include the construction of two new 20-person backcountry huts, as well as an alpine shelter to be located in an exposed section of alpine tops.

The majority of the Pike29 Track will be located in the Paparoa National Park which has only had a limited number of day walks and marked routes. The Pike29 Track will allow many more people to explore and enjoy the beech and podocarp forest, the alpine scrub and tussocks of the alpine tops, as well as the spectacular limestone landscapes found in the Pororari and Punakaiki valleys.

The track will provide visitors with an opportunity to learn about the historic mining and pack tracks in the area, as well as the history relating to the Pike River Mine. An Interpretation Centre at the Pike River Mine site will tell the story of the Pike River Mine operation and the tragedy that occurred. The Interpretation Centre will include the mine control room, will display memorabilia and will be a place to tell stories from the families. Access to the Pike River Mine portal will provide a place for quiet reflection.

1.2 *Report Purpose*

This report document is an Assessment of environmental Effects (AEE) to support the proposal within the Department of Conservation internal management systems, to provide guidance to the construction project team,

and to provide a basis for resource consent applications to the relevant regional and district councils, under the Resource Management Act 1991.

This Report has been prepared by McNulty Engineering Management (MEM) based on information provided by the Department, and their consultants, as well as information obtained on a site visit to the Pike River Mine undertaken in June 2016.

This reports to set out to:

1. Establish the values of the area through which the proposed new Pike29 Track will pass;
2. Identify and assess the significance of the environmental effects associated with the proposal;
3. Propose appropriate mitigation measures to protect the identified values of the area.

1.3 Report Structure

Including this introduction, this AEE comprises eight sections as follows:

Section 1: This introduction provides a background to the proposal and outlines the report structure.

Section 2: Provides a background to the project, including the rationale for the Pike29 Track route.

Section 3: Describes the Pike29 Track site and the surrounding area.

Section 4: Provides the detail of the Pike29 Track route, including the track design and layout, the ancillary activities such as hut construction, and the construction philosophy and methodology.

Section 5: Details the consent requirements in accordance with the RMA, and provides further details of the proposal in relation to the relevant plan rules.

Section 6: Provides information on alternative route options, facilities and in relation to the two huts' wastewater system discharges.

Section 7: Provides an assessment of the environmental effects associated with the proposal.

Section 8: Describes the consultation undertaken with the relevant stakeholders, potentially affected parties and interest groups.

Section 9: Provides a brief summary of the Resource Management Act matters.

Section 10: Provides a brief summary of the report.

2 PROJECT OVERVIEW

2.1 Location, Ownership and Land Status

The route of the Pike29 Track is shown on maps at Appendix A, as well as on the overview map below/overleaf. The nature and character of the landscape being traversed is illustrated by the site photographs at Appendix B.

Commencing from the Croesus Track carpark near the village of Blackball in the Grey Valley, the track will initially run along the existing Croesus Track until it reaches the junction on the tops with the Moonlight Tops route. The track will then follow the Moonlight Tops route along the Paparoa Ranges towards Mt Anderson. This section of the track route is land administered by the Department of Conservation as stewardship land, and includes the Roaring Meg Ecological Area.

The route of the track then enters the Paparoa National Park for the remainder of the route. The main route continues along the Paparoa Ranges until it sidles beneath the high point of Hawera, continuing along the Tindale Ridge, then moving down the Pororari River valley to the intersection with the Inland Pack Track.

The lower section of the Pororari River Track is to be utilised by walkers, while mountain bikers will use a re-purposed section of the Inland Pack Track. Both these tracks exit the park via road ends near the Punakaiki village. It is noted that both these existing track sections are located on road reserve but that the existing track facilities are managed by the Department.

A side track to the Pike River Mine amenities area will run from the main route off the Paparoa Ranges, leaving the main route about 2kms north of Mt Anderson. This side track is entirely within the Paparoa National Park, as the Pike River Mine locality (3,971ha) was added to the national park in 2015. Both the amenities area and the mine portal are to be redeveloped for visitors by the Department of Conservation once the existing mine infrastructure is transferred from its current owner, Solid Energy New Zealand (SENZ), at the end of 2016. The redevelopment of some existing features and facilities will provide interpretation and education about the mining operation and the mine workers, as well as opportunities for visitors to access the mine portal area for quiet reflection.

The grid references relating to the new track construction are as follows:

Waypoint	NZTM East	NZTM North
Southern end of the track construction works	1466485E	5317042N
Northern end of the track construction works	1463410E	5334807N
Top of the Pike River Mine track section	1471548E	5323972N
Bottom of the Pike River Mine track section	1475600E	5325665N

The proposed Pike29 Track is shown in Figure 1, which also illustrates the underlying land status:

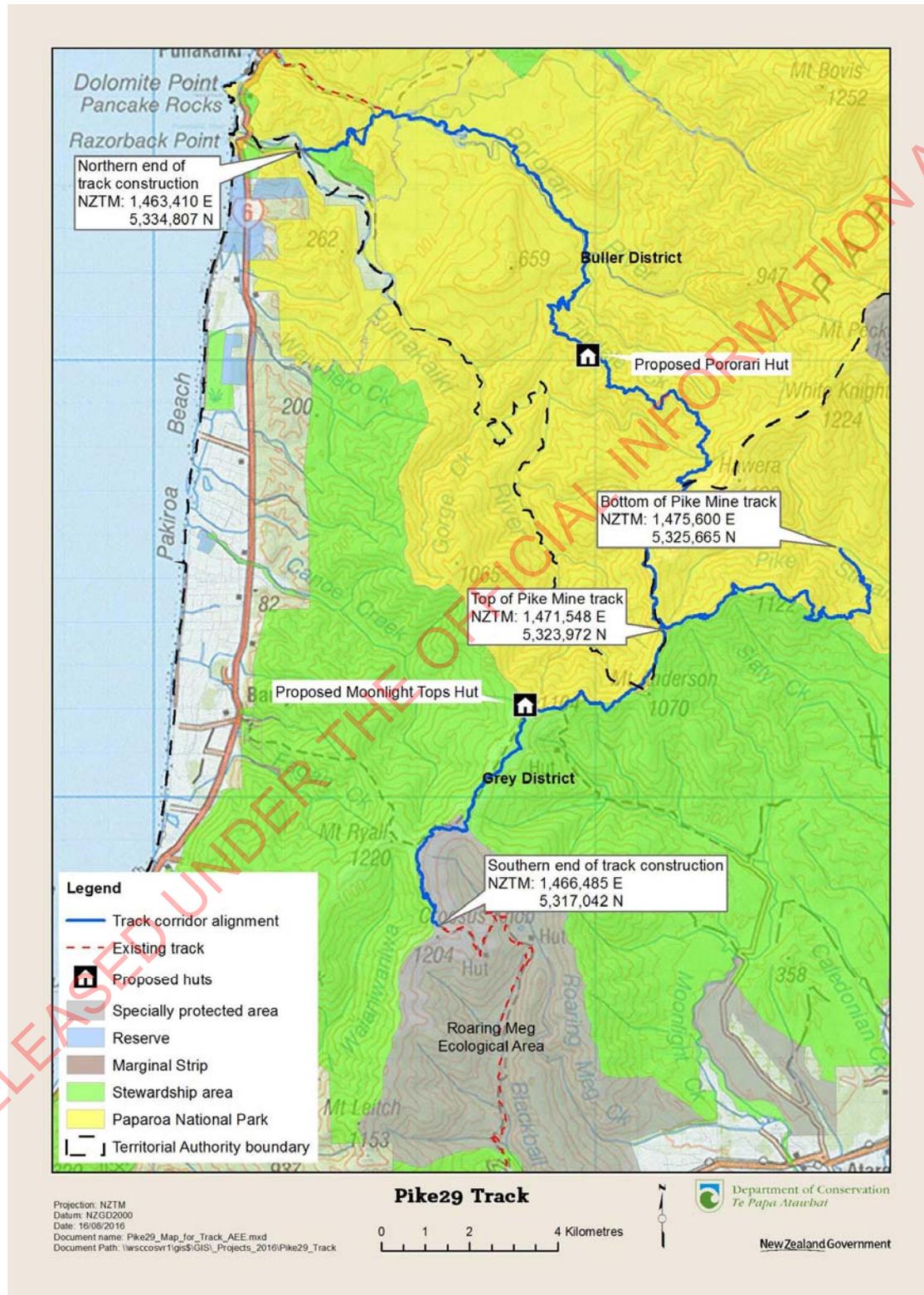


Figure 1: Overview of Pike29 Track

Land Status

A substantial part of the Pike29 Track will be within the Paparoa National Park, which is managed under the National Parks Act 1980. This Act requires that national parks be preserved as far as possible in their natural state, with the preservation of plants and animals, as well as sites/objects of archaeological and historical interest, but also provides for the public to have freedom of entry and access. The national park land is specifically managed under the guidance of the Paparoa National Park Management Plan. This plan is currently under review, and the draft management plan specifically allows and provides for the new Pike29 shared use track and associated facilities.

The southern section of the Pike29 Track, from near the location of the new Moonlight Hut to the road end at the track car park near Blackball, is all stewardship land conserved under Section 25 of the Conservation Act.

Section 25 'Management of Stewardship Areas' requires that:

"Every stewardship area shall so be managed that its natural and historic resources are protected."

As well, the majority of this section of the track is within the Roaring Meg Ecological Area, conserved under Section 21 of the Conservation Act.

Section 21 of the Conservation Act requires that:

"Every ecological area shall be so managed as to protect the value for which it is held."

The values for which the Roaring Meg Ecological Area is held are:

"A representative example of the unusual altitudinal sequence of forest types in the Blackball ED, and the beech-non beech "interface" above the floor of the Grey Valley."¹

These conservation areas are specifically managed under the guidance of the West Coast Te Tai Poutini Conservation Management Strategy (see section 8.2).

The Lower Pororari River Track, and the Inland Pack Track portion of the route are both located on Buller District Council road reserve (although these sites are surrounded by conservation managed land/national park).

2.2 Historical Activities

The Maori history linked to the Paparoa National Park is rich. The current mana whenua, Ngai Tahu, gained this right under the leadership of two brothers, Te Pare and Tuhuru, when they defeated the previous resident mana whenua (Ngati Wairangi) in a series of conflicts up and down the West

¹ Description in gazettal notice.

Coast, with the final defeat at Paparoa. Te Tuhuru and his followers became the founders of Ngati Waewae, who are the mana whenua of the Paparoa region today. The coastal area long the Paparoa Ranges was a particularly abundant location for food and other resources through the use of various flora and fauna. The coastline was also part of the traditional trade route (ara tawhito) and facilitated the trade of pounamu.

Following the Crown purchase of most of the West Coast in 1860, European settlement commenced initially with gold rushes, followed by farming and timber milling. Gradually tourism also developed. All three of the historic pack tracks to be incorporated in the Pike29 Track were initially developed as part of these early land use activities.

The first development related to the Croesus Track occurred in 1864, but development continued over several decades to facilitate access to alluvial gold resources, which were initially found in Blackball Creek but later also along the Paparoa tops. Sections of the track were upgraded much later, in 1951, as part of an investigation into the feasibility of coal mining in the area, and then again in the late 1970s by the New Zealand Forest Service.

The Inland Pack Track was initially built in 1867 to facilitate access to the Brighton and Charleston gold rushes, with a telegraph line installed along the route in 1868. The track was also used to move farming stock, which were grazed along coastal strips and river flats up the Fox River. The Inland Pack Track has been used by tourists and for recreation from at least 1900 but gradually fell into a state of disrepair over the twentieth century. However, after the area was gazetted within the new Paparoa National Park in 1987, the track received a major upgrade in the 1990s.

The Upper Pororari River Track, as it exists today, was likely constructed between c.1909 and 1915, to facilitate land settlement in the block between the Fox and Pororari Rivers. It is also possible that a route along the Pororari River was used by gold miners during the 19th century, whereas it was almost certainly used by uranium prospectors during the 1950s. The track fell into disuse in the late 20th century, and has been subject to windfalls and other damage, although the underlying track line largely remains.

2.3 Project Rationale

The Pike River Mine was established in the late 1990's to mine the rich coal seams that run through the Paparoa Ranges, after being granted a concession from the Department of Conservation to operate an underground coal mine, beneath Crown land held as conservation stewardship land. The mine was entirely underground and the coal was hydraulically sluiced from the coal seam and carried from the mine in a coal slurry pipeline. Due to its remote location in the Paparoa Ranges, the establishment of the coal mine required the building of 10km access road. A number of mine related facilities were

established along this access road, including: the bathhouse, the amenities area which housed the surface staff and machinery, and various plant outside the mine portal.

The Pike River Mine closed in 2010, after a catastrophic explosion within the mine, which killed 29 men. The bodies of these men have not been recovered and remain in the sealed mine. At the wish of the men's families', the Pike River mine site and surrounding area became part of the Paparoa National Park, to protect the resting place of the 29 men. The genesis of the Track proposal also came from representation by the families, as they wish to create something positive and which will provide economic benefits for the West Coast communities.

An Interpretation Centre is going to be developed at the Pike River mine administration/amenities area. This will be a place to tell the story of the mine, including stores from the families, as well as to display some of the memorabilia collected and gifted since the mine explosion.

2.4 Great Walks

The development intent for the Pike29 Track was that it should be constructed to the standard of an 'easy tramping track', to ensure the widest possible range of track walkers. Government determined that the new track should be built as a Great Walk from the outset, and the families of the 29 men lost at the Pike River Mine support this standard of track. Within the Department, the project is being steered by a Project Governance Group, consisting of senior Departmental managers.

The New Zealand Great Walks are constructed and maintained to a higher standard compared to other backcountry tramping tracks or routes. The tracks are well marked, generally have a better walking surface and all major river crossings are bridged, all of which make these tracks safer for trampers who may have relatively little or moderate backcountry experience. The hut facilities on Great Walks often have gas cookers provided and a higher degree of comfort compared to other backcountry huts.

Due to their popularity visitors are required book their stay in each hut, and the Department maintains a booking system. Each hut has ranger quarters and the huts are staffed for the period the Great Walk is open each year; and it is anticipated that the Pike29 Track will be open year-round.

Since 2009 a network of national cycleways has been developed in New Zealand. These cycleway developments have been governed by design guidelines, encoded in the New Zealand Cycle Trail Design Guide, which is now in its fourth edition. As the Pike29 Track is to be shared use path, for both walkers and mountain bikers, the new track is being designed to the standards set by the Cycle Trail Design Guide (which is quite similar to the

Great Walk design standards). Due to the nature of the terrain which the Pike29 Track will traverse, the cycling will be undertaken at an 'advanced grade'. The design guide itemises the minimum requirements for an advanced grade route, and these requirements are detailed in Section 4.2 Project Description.

3 EXISTING ENVIRONMENT

3.1 General Site Description

The route of the Pike29 Track essentially traverses the southern end of Paparoa Ranges, providing a crossing of the ranges from the eastern flanks from Blackball in the Grey River valley, moving north and then out to the coast at the Punakaiki on the western side of the ranges. The Pike29 route traverses through uninhabited forest and alpine tops terrain but is 'book-ended' by existing pack tracks. These historic tracks are a tangible link to the early days of European settlement, as they were built to assist access to early gold mining sites, and the Inland Pack Track was also used for early farm stock movement. Relics of this time are included in the vicinity of these tracks and will be highlighted as part of the track interpretation.

The Paparoa National Park is recognised as a biodiversity hotspot with a great diversity of ecosystems. The variety of flora extending from the mountains to the sea, is accentuated by marked differences in climate. Proximity to the Southern Alps has a cooling effect on the tops of the Paparoa Range, while the Tasman Sea 'convergence' brings warmed water to the coast near Punakaiki, all contributing to a moist temperate coastal climate. This results in lush subtropical lowland rainforest, transitioning into alpine scrub and tussock grassland at higher altitudes.

The part of the Paparoa Ranges being traversed by the new track runs from Croesus Knob north to below the high point of Hawera. The spine of the ranges is to be utilised as the easiest route, although some steeper sections will require 'sidling'. In general the Paparoa tops section is covered in alpine hard vegetation, herb fields and tussock lands. High level forests such as *Dracophyllum* forest also exists along the main ridgeline.

The southern end of the traverse is reached from the existing Croesus Track, which follows the Blackball Creek until it meets its headwaters, and then zig-zags up onto the tops via an easy pack track gradient. This section of the track moves through broad-leaved beech forest.

The Pike River Mine side track will travel through beech-podocarp forest and will follow a natural ridgeline from north of Mt Anderson. The track will include a view point of the ventilation shaft (on the high point 1122) before sidling around down to the amenities area of the Pike River Mine area. At this

point, access to the mine portal will be provided by the existing gravel access road.

The northern portion of the Pike29 Track follows a natural route along the spine of the forested Tindale Ridge, then following the Pororari River from its headwaters, then joining with existing tracks to exit near Punakaiki village. As the route moves along this section of the route the forest changes to tall lowland forests as the altitude is progressively lower and warmer in the relative shelter of the Pororari River valley.

3.2 Social, Economic and Recreational Environment

An assessment of the social, economic and recreational environment has been undertaken by a suitably experienced Departmental staff member, Ian Wightwick, Technical Adviser, Recreation. This assessment is attached at Appendix C, and a general overview of the social, economic and recreational environment is provided below.

Regional context

The West Coast region is made up of small townships that stretch 600km from Haast to Karamea. The Region has a strong association with gold and coal mining, dairy farming, timber milling, fishing and tourism. The region has a population of about 32,000 and the size of the population is closely linked to the success or otherwise of these industries.

In 2015 the two key land based commodity industries on the West Coast were performing poorly, with coal mining in significant decline and farming suffering from low international dairy prices. Fortunately for the West Coast economy, tourism on the West Coast is at an all-time high, and therefore it is a good time to expand the recreation offerings to visitors to the West Coast including overseas tourists.

The West Coast is also known for its rugged coastline, high mountains, lakes, lagoons, rivers and karst. The Department of Conservation manages approximately 1.912 million hectares or 84% of the land in the region, and this includes the Paparoa National Park. People chose to visit the West Coast because of the outstanding natural scenery and the easily accessible recreation, historic and tourism facilities.

While the glaciers underpin tourism on the West Coast, the region is keen to grow tourism in the Buller District. The majority of visitors to the northern West Coast will go for a short walk at one or more of the Department of Conservation 'icon' destinations at Denniston, Cape Foulwind and Punakaiki. Of these, the Dolomite Point Walk at Punakaiki is the most popular destination, with approximately 450,000 visitors per annum.

New track proposal

Historically, the Paparoa National Park has only had a limited number of day walks and marked routes. The Pike29 Track will provide a new 2-3 day walk and Grade 4 Advanced level 1-2 day mountain bike ride, which will allow more people to explore and enjoy the beech and podocarp forest, the alpine scrub and tussocks of the alpine tops and the spectacular limestone landscapes found in the Pororari and Punakaiki valleys. The track will provide visitors with an opportunity to learn about the historic mining and pack tracks in the area.

The Pike29 Track will be promoted as New Zealand's 10th Great Walk. The Department of Conservation Great Walks were established in the early to mid-1990s, and now have an international reputation for outstanding walking and hiking and are on the list of 'must do' tramps for many New Zealanders. The track will have broad market appeal for trampers and the number of people using Great Walks has been increasing year on year.

The New Zealand Great Walks are constructed and maintained to a higher standard compared to other backcountry tramping tracks or routes. The tracks are well marked, generally have a good walking surface and all major river crossings are bridged to make them safer for trampers to use who may have relatively little or moderate backcountry experience. The Great Walk huts often have gas cookers provided and a higher degree of comfort compared to other backcountry huts. Due to their popularity visitors are required book their stay in each hut.

Shared use tracks

In 2011, Grade 4 Advanced mountain biking was introduced onto the Heaphy Great Walk on a seasonal basis (1 May to 30 September). This is the only Great Walk to provide for dual use.

The Heaphy Track (a Great Walk) and the recently completed Old Ghost Road are also located in the northern West Coast. These tracks are becoming increasingly popular for New Zealanders and international visitors seeking a multi-day tramping and mountain biking experience. It is considered that the addition of the Pike29 Track will help cement the northern West Coast as a destination for these activities.

3.3 Geology, Landforms, Soils and Slope Stability

A desktop assessment of the geology, landforms and slope stability of the site has been undertaken by a geologist Paul Wopereis, of MWH NZ Ltd and the full report is attached at Appendix D. It is noted that Mr Wopereis has visited parts of the site, particularly the proposed hut sites. An overview of the site's geodiversity, geology and slope stability is provided below.

Geology

The Pike29 Track will traverse through varied and interesting rock types that reflect the complex geological history of the Paparoa Range. Please refer to the appendices contained in the full report at Appendix D.

The area of mountains which is now the Paparoa Range was once an elongated trough (known as a geosyncline) that was infilled with sediments between 25-100 million years ago during a period of extension (pulling apart) of the earth's crust. The sediments eventually became compressed to form rocks. Later plate movements and the formation of the current plate boundary between the Australian Plate and the Pacific Plate at the Alpine Fault resulted in east-west compression of the earth's crust across the upper South Island over the past 20 million years. This resulted in uplift of the trough on reverse faults by a process known as tectonic inversion.

Consequently there was erosion of the sedimentary rocks and exposure of the basement core consisting of ancient greywacke, granite and gneiss forming the present Paparoa Range. Younger sedimentary rocks of the western foothills of the Paparoa Range were folded to form the Barrytown Syncline parallel to the main range. Erosion has formed prominent limestone cliffs on the edges of the syncline with mudstone within the core.

The central section of the Pike29 Track traverses an isolated plateau on the crest of the Paparoa Range comprised of Island Sandstone Formation which is underlain by a top coal seam of the Brunner Coal Measures (Eocene) and a lower coal seam of the Paparoa Coal Measures Formation (late Cretaceous). The plateau is tilted to the east and has an impressive escarpment on its west side. The plateau is bounded on its east side by the Hawera Fault. The former Pike River Coalmine is located beneath this plateau.

Landforms

At the southern part of the route, the Pike29 Track follows the existing Croesus Track to reach the Moonlight Tops with alpine ridges and steep slopes dropping to deep valleys on both sides. An important and unique geomorphological characteristic of this part of the route is the presence of "ridge rents" (also known as "sackunger"). Ridge rents are troughs and ridges formed parallel to the main ridgelines due to mass movement and gravity sliding on the underlying hard sedimentary rocks. Ridge rents are most prominent on the main ridge between the Croesus Track and the Moonlight Track.

Along this southern part of the Paparoa Range there are no landform features that are characteristic of glacial processes suggesting it was ice free during the main Pleistocene ice ages, although the main part of the range further north has many glacial features. The Pike29 Track provides views of the central Paparoa Range with its sharp ridge crests and cirques formed due to past glacial actions.

The Pike River Plateau and Escarpment are the most striking landform features of the alpine section of the route. The Pike River Plateau is a remnant of a once much larger plateau that has mostly been eroded away. Open pavement areas of hard sandstone are a special feature of this section. The track route mostly follows the gently inclined eastern dip slope of the plateau and descends the northern part of the escarpment through upland beech forest.

West of the main Paparoa Range, the Pike29 Track traverses the heavily forested Tindale Ridge, which forms a sharp drainage divide between the headwaters of the Pororari River and the Punakaiki River.

North of Tindale Ridge lies the unusual landform known as the "Lone Hand". This is an outcrop of hard Hawks Crag Breccia with a "*hogback topography*" of rounded domes up to 947m in altitude. This was the site of uranium prospecting in the 1950s. The prospectors built a pack track up the Pororari Gorge for access and this will be used for part of the route of the Pike29 Track in the Pororari Valley.

The north-western part of the Pike29 Track, from the Upper Pororari River footbridge, is within the sedimentary rocks of the down-folded Barrytown Syncline. The special karst landform features include limestone cliffs, overhangs, numerous caves, sinkholes, underground streams, irregular drainage and sculptured rock. These formations are protected within the Paparoa National Park and policies for karst management are identified in the park's Management Plan.

The Pororari River has cut through the limestone and is an example of an "antecedent river" i.e., the river existed before the folding of the Barrytown Syncline occurred and the river is now entrenched resulting in the spectacular cliffs on either side of the valley.

Slope Stability

The majority of the Pike29 Track route has well established natural vegetation cover and there are only a few slip scars. Shallow slips (up to 2m in thickness) occur in the bush areas and to a lesser extent on the open alpine areas. The majority of the slips have occurred as a result of intense rainfall events, however some are likely to be related to seismic events. Minor areas of rockfall exist on the open alpine areas below rock outcrops and also below the limestone cliffs in the Pororari Valley.

Deep-seated mass movement has occurred on some ridge crest areas of the open tops as evidenced by the presence of "ridge rents", however the well vegetated ground cover and presence of older scree deposits suggests that they are relatively old features, typically several hundred to thousands of years old. The ridge rents may be subject to slow creep related to groundwater entry but this aspect is not expected to be a concern for the stability of a well formed track.

The soils along the route are susceptible to erosion where they are exposed to the elements and the area has a high rainfall (up to 4000mm/year). Mudstone and gravelly/sandy soils are potentially erosion prone. The section containing mudstone and gravels occurs between the upper and lower Pororari Gorges, and mudstone also occurs above the upper Pororari Gorge and amounts to a total of 6.5km of the track length (approximately 10% of the track).

The Project Manager for track design and construction, Mark Nelson (pers. comms. 12/9/2016), has advised that further ground investigations will take place at sites which have been identified as identified problem areas, such as possible slump sites. After further ground investigations, any confirmed risk areas will be avoided, or otherwise specific methodology will be developed to address the higher risks for slope stability.

3.4 Freshwater Ecology

A desk-top assessment of the freshwater ecology (concerning fish and macroinvertebrates) was undertaken by a freshwater ecologist, Helen McCaughan MSc of Wildland Consultants Ltd, and the full report is attached at Appendix E. It is noted that no field work was undertaken. An overview of the freshwater ecology of the site is provided below.

The New Zealand Freshwater Fish Database (NIWA 2016) was searched on 14 June 2016 for records in the following catchments: Pike Stream, Pororari River, Punakaiki River and Canoe Creek (including smaller waterways between Canoe Creek and Punakaiki River). There were no records found for the Pororari River, but fifteen indigenous and one introduced fish species, and two indigenous macroinvertebrates have been recorded in the other waterways (for the species list, please refer to the freshwater ecological report at Appendix E).

The only significant sites listed in the West Coast Regional Land and Water Plan (WCRC 2014) near the proposed Track are in the lowland/coastal zone, well away from the proposed works. None of the upper reaches of the waterways in the project area are listed as having any special significance or value, and there are no significant listed wetlands near the proposed works.

Mapped features in the Freshwater Environments of New Zealand geo-database (FENZ 2010) show that all of the wetlands and lakes within the project area are in the lowland/coastal zone, well away from the proposed works. Notably, the rivers mapped within the project area rank quite highly on a regional basis, with those on the western side of the proposed track also ranking quite highly nationally. Fish predictions indicate that several indigenous species could be distributed widely throughout the waterways within the project area.

The Cawthron (1998) survey found three indigenous and one introduced species of fish, and thirty species of macroinvertebrate in Pike Stream. Please refer to the freshwater ecological assessment report at Appendix E for the fish records from that report and refer to Cawthron (1998) for a detailed list of their macroinvertebrate findings.

Waterways within the construction project area are in steep and relatively short catchments, with many small tributaries that receive a relatively high volume of annual rainfall. Due to the location of these waterways, in an undeveloped environment, it is expected that they are in a natural state with very good habitat and water quality. Information in the FENZ geo-database and the range of fish and macroinvertebrates recorded in the catchments support this status.

Fifteen indigenous and one introduced fish species, and various indigenous macroinvertebrates have been recorded in these waterways. Of the fish species recorded, nine are classified as At Risk-Declining and one as Threatened-Nationally Vulnerable (Goodman *et al.* 2014). However, many of the records for the Punakaiki River and Canoe Creek (and nearby streams) were from sites very low in the catchments, in areas and at distances - up to several kilometres away from the proposed works - where it is expected they will not be affected by the proposed works. The FENZ fish predictions indicate that good quality habitat is present throughout the project area, suggesting that many of the species are more widely distributed than those recorded.

No Threatened or At Risk macroinvertebrate species have been recorded within the project area, but one beetle species has a conservation status of Data Deficient (Grainger *et al.* 2014). This Data Deficient beetle was recorded very low in the catchment, well away from the proposed works. Many aquatic insects have a winged adult stage, enabling them to move within and between waterways, and it would be expected that various species are present and well distributed.

Although most of the fish and macroinvertebrate records have been obtained from low in the catchments, and there are no records from the Pororari catchment, the availability of good quality habitat indicates that many of the species recorded would be expected to occur widely.

There are three Department of Conservation Ecological Management Units within the project area: Punakaiki, Paparoa and Roaring Meg. These units are being managed to protect a number of freshwater ecosystem types, under Intermediate Outcome Objectives; 1.1 "*A full range of New Zealand's ecosystems is conserved to a healthy functioning state*", and 1.2 "*Nationally threatened species are conserved to ensure persistence*" (Otley 2016).

Existing information and data from these various sources suggests that, although there are no specific significant sites to avoid, such as wetlands, waterways within the project area are ecologically important and mostly in a near pristine state. It is therefore essential that any works in their proximity should be carried out to the highest best practice standards.

3.5 Terrestrial Flora

A desk-top assessment of the terrestrial flora was undertaken by a Departmental ecologist, Dr Jane Marshall, Technical Advisor, Terrestrial Ecosystems. This assessment is attached at Appendix F. Based on this assessment an overview of the terrestrial flora of the site is provided below.

The route of the proposed Track will cross through three Ecological Management Units² (EMU) from north to south, being the Punakaiki, Paparoa and Roaring Meg EMU. These units are composed of various ecosystem types including beech and podocarp forests, small leaf and sub-alpine shrub lands, alpine tussock grasslands and herb fields, riparian margins, and wetlands. Please refer to the previous figure which shows the boundaries of these Ecological Management Units.

The northern part of the route will commence at Punakaiki and climb up the Pororari River to the head of the catchment. This section of the track will be within the Punakaiki EMU, which is dominated by forest types including the hard beech - rimu forest (Singers & Rogers, 2012) with southern rata and locally, other beech species (MF17³), and a podocarp broadleaved forest dominated by rimu and Halls totara (MF14).

The proposed route crosses from the Punakaiki EMU into the Paparoa EMU, as the route climbs out of the Pororari River headwaters and onto the Tindale Ridge. The Paparoa EMU is composed of the same mild forest type (MF17). However, on the eastern flanks there are cooler forest types including silver beech dominated forests (CF18) with celery pine, three finger and small leaved shrubs in the higher slopes and rimu, kamahi and southern rata in the mid to lower slopes.

As the track sidles around below the high point of Hawera on the main range, it will pass through the low forest scrub with a range of species of *Olearia*, *Brachyglottis*, *Pseudopanax*, *Dracophyllum*, *Hebe*, *Coprosma*, *Hoheria*, montane podocarp trees, manuka (CF13).

As the track climbs onto the main ridgeline it traverses a geologically isolated plateau comprised of Island Sandstone Formation which is underlain by a top

² EMU's are derived from the Department's system of prioritisation. They are the highest priority areas of conservation land identified for sustained conservation management.

³ As described in Singers and Rogers (2012) MF is a mild forest type, CF a cool forest type, AL is alpine flora, AH is alpine herb field.

coal seam of the Brunner Coal Measures and a lower coal seam of the Paparoa Coal Measures Formation. This geological plateau runs along the crest of the Paparoa Ranges above the Pike Stream catchment. This unique substrate has resulted in unique flora ecosystems. The alpine⁴ Paparoa coal measures ecosystems are either poorly or well drained substrates but both substrates are typically infertile. The drainage patterns control the distribution of species and floristic composition and two main vegetation types are present.

The well drained areas are characterised by snow tussocks including *Chionocloa flavescens*, and *C. australis* (carpet grass). Carpet grass forms extensive mats in places, with *Carpha alpina* and *Oreobolus impar* (comb sedge) in the turf. The dominant shrub is the turpentine scrub (*Dracophyllum rosmarianifolium*) which only gets to about 1m tall. Dalli's daisy is the most abundant large herb (*Celmisia dallii*) with only scattered individuals of the larger *C. semicordata*. This environment has a small number of abundant species, however it supports a relatively large number of uncommon species i.e. *Celmisia armstrongii* and *Poa colensoi* (Lord and Norton 1989).

In the areas of poorly drained Paparoa coal measures, the vegetation is a mix of grassland and scattered shrubland interspersed with cushion bogs. Cushion bogs are originally uncommon ecosystems which are defined as ecosystems which only ever covered less than 5% of the New Zealand mainland (Williams et al 2007). Within the areas of water logged soils, the slopes are better drained and support dwarfed silver beech, leatherwood (*Olearia colensoi*) pink pine and manuka. Grasslands of primarily *Chionochloa rubra* (red tussock), *C. australis*, *Carpha alpina* and *Schoenus pauciflorus*, and cushion bogs dominate on the more level areas of topography; cushion bogs on the most poorly drained sites. The cushion bogs commonly include *Donatia novaezelandia*, *Phyllachne colensoi* and *Oreobolus* species throughout a matrix of wire rush. The small mountain grass *Zotovia thomsonii* is also present. These areas support a relatively rich herbaceous flora (Lord and Norton 1989).

The new track from the Paparoa Ranges down into the Pike Stream catchment is likely to be beech-podocarp broadleaved forest (CF15).

Moving south along the Paparoa Ranges, the track leaves both the Paparoa EMU and the national park near the location of the new Moonlight Tops Hut, and then moves into the Roaring Meg EMU a further three kms south. In this location the track will move through the tall tussock grassland of abundant *Chionochloa pallens*, *C. flavescens* (subsp. *lupeola* and subsp. *hirta*) and locally *C. rubra* ssp. *occulta* (indicative of a wetland area), and *C. australis*. There will be shrub lands of *Hebe* and *Dracophyllum* in areas of talus, boulder field and bluffs (AL 5), and gravel/stone fields within the areas of rock

⁴ Alpine flora zone defined as being above 1100m asl.

pavement, talus, and boulder field where cushion plants are likely to be a common ground cover. There is a diversity of grasses including *Chionochoa oreophila*, and *Poa colensoi* (AH3), small herbs and sub-shrubs.

Heading down the Croesus Track is a broadleaved beech forest of silver beech, kamahi and southern rata with Hall's totara and locally mountain beech, with quintinia and red beech at lower altitudes (CF14). Locally at higher altitude, on exposed infertile sites there will be a pink pine, mountain celery pine and yellow silver pine forest type. In the lower altitudes is a kamahi, southern rata podocarp forest with occasional miro and Hall's totara (CF9) and on the lower alluvial sites there may be matai and kahikatea and broadleaved dominant forest.

Along the route of the track are Naturally Uncommon ecosystem types (Williams et al 2007):

- within the karst environment of Punakaiki - the limestone cliffs and bluffs.
- in the alpine zone - the wetlands in the form of cushion bogs and tarns.

Of these ecosystem types, the most vulnerable to negative impacts and the smallest (and thus potentially easiest to avoid) are the *cushion bogs and tarns* in the alpine zone. Also vulnerable are the limestone cliffs and bluffs, where present. The tall lowland forests of the Pororari River catchment are some of the best remaining representative examples of a greatly reduced vegetation association and as such are very important. The riparian habitats of Punakaiki Ecological District host a rich and diverse bryophyte flora and vascular species such as Tree Fuchsia which are susceptible to possum browse and therefore much less common in New Zealand's forests than they once were.

The routing of the new track will pass through all these sensitive ecosystem types. Specific locations of these ecosystems types have been identified and itemised as part of the desk-top flora assessment, based on the features and values identified by the track team. Features such as a large beech tree, wetlands and creeks have been identified, and will require sensitive management.

Important Species values

Threatened⁵ species or those with limited distributions have been found in the Paparoa National Park.

Such species which may be encountered within the beech or beech/podocarp forests include:

- Scarlet mistletoe *Peraxilla colensoi*: At Risk- Declining

⁵ Threatened refers to DOCs classification for vascular plants and follows the most recent rankings in de Lange et al 2012.

- Native iris *Libertia peregrinnans*: Threatened - Nationally Vulnerable
- Yellow mistletoe *Alepis flavida*: At Risk- Declining

Such species which may be encountered on the mountain tops or cliffs include:

- Maori Onion *Bulbinella modesta*: At Risk - Naturally Uncommon
- Gossamer grass *Anamenthale lessonia*: Threatened - Nationally Vulnerable
- Cave spleenwort *Asplenium cimmericum*: At Risk - Naturally Uncommon

Other important flora components of the area include the massive kahikatea and red beech at the base of the inland limestone escarpment where locally enriched soils occur (Park and Bartle 1978). Nikau, *Phymatosorus scandens*, *Anarthropteris lanceolata*, *Collospermum hastatum* and *Meterosideros parkinsonii* are all species found on the western side of the National Park with restricted distributions. The Paparoa Range is also the southern distribution limit for a number of plants including *Pimelea longifolia*, *Epacris pauciflora*, and *Blechnum fraseri* and *Uncinia distans*.

3.6 Terrestrial Fauna

A desk-top assessment of the terrestrial fauna values was undertaken by a suitably qualified Departmental staff member, Andrew Grant, Technical Advisor, Terrestrial Ecosystems. This assessment is attached at Appendix G and includes tables which itemises the fauna species. An overview of this report is provided below.

Birds

The route of the track is biologically diverse and supports bird communities representative of forests dominated by podocarps (e.g., kahikatea, rimu, mountain totora); beech (red, hard, mountain and silver beech); broadleaved evergreen trees (e.g., southern rata, kamahi, tawaowheo); and sub-alpine/alpine shrublands, tussock grasslands and herbfields.

The area supports populations of 24 forest and alpine bird species (refer to the full report at Appendix G), and possibly another 3 which used to be in the area but have not been recorded recently or, have had unconfirmed sightings reported.

O'Donnell (1998) identifies weka, South Island robin and great spotted kiwi as distinctive wildlife whose status in North Westland is unusual. The Paparoa Range great spotted kiwi are recognised as a distinct grouping within the species (the others being Arthur's Pass and North West Nelson). Robins remain common in the area but have vanished from many of the forests of

the South Island East Coast and South Westland. The area is a national stronghold for weka.

Bats

Long-tailed bats (*Chalinolobus tuberculatus*) and short-tailed bats (*Mystacina tuberculata*) have been recorded in North Westland. In the North Westland area, 132 records of long-tailed bats were recorded from 1995-2003, and 59 records of short-tailed bats from 1996-2003. In the Paparoa Range where the track will traverse, there have been 3 long-tailed bats recorded in the Otututu River catchment and 9 long-tailed bats in the Bullock Creek/Pororari River catchment.

Lizards

In the *Conservation of Lizards in West Coast/Tai Poutini Conservancy* (Whitaker and Lyall, 2004) seven (now six) species of lizard have been identified in the Ecological Districts within which the Pike29 Track will run through (Tables 2 and 3). Jo Monks (*pers com*), states that four species of lizards have been identified in the Paparoa National Park; West Coast green gecko, *Naultinus tuberculatus*; Forest gecko, *Mokopirirakau granulates*; Speckled skinks, *Oligosoma infrapunctatum*, and; Northern grass skink, *Oligosoma polychrome*. There is also a record (in Herpetofauna) of a Nelson green gecko, *Naultinus stellatus*, on Ikes Peak in the southern Paparoas, but from what is known of the distribution of this species it is likely to be a mislabelled West Coast green. Speckled skinks are known to be present on the tops, and based on recent discoveries in alpine areas elsewhere in the South Island, it is regarded as quite likely that there are undiscovered alpine species in the speckled skink and forest gecko complexes on the Paparoa tops.

Snails

For snails, the alpine tops are the most sensitive environment. There is a relatively high chance the coal measure vegetation above the Pike River Mine supports a species of *Powelliphanta* unique to the site, given its geographic location. It is on the boundary between two known species and its underlying unusual alpine coal measures geology and associated specialised vegetation. The assessment of specialist Departmental staff is that *Powelliphanta* species will be present, but they have not been identified.⁶ There is a colony of *Powelliphanta gagei* on the Moonlight tops alpine route and while it is possible those on the Pike River catchment tops may be the same species, the DOC specialist does not regard this as likely. DOC specialists will further investigate the snail population on this track section, as design work proceeds.

⁶ As no shells have been brought out, Kath Walker, DOC (*pers com*).

Other invertebrates

The most obvious insect of note is the Paparoa giant weta *Deinacrida talpa*. This is endemic to the area and lives in rocky or bluffy, sunny areas, on the alpine tops.

3.7 Landscape Character and Visual Amenity

An assessment of the natural character and visual amenity was undertaken by Jeremy Head, a registered NZILA Landscape Architect, and this assessment report is attached at Appendix H. Mr Head visited parts of the application site and its surrounds in June 2016. Key findings of this report are provided below.

The assessment notes that the new Track and its associated facilities will be located largely within a national park, which demands a higher level of management of effects that are likely to be generated by any proposed changes. In effect, the landscape quality is considered at least equal to or above 'outstanding natural landscape' status. The landscape setting that the proposed changes would fall within is unique and almost pristine in terms of natural character. 'Almost' - as the only human induced modification present is confined to two huts (Croesus Top Hut and Ces Clarke Hut) and three sections of historic 'pack track'.

The Landscape

The Department of Conservation website describes the area where the proposal is largely located (Paparoa National Park) as:

"The Paparoa Range forms an impressive backdrop to the park; made of ancient granite which has been slowly shaped by ice into its present rugged outline.

Limestone underlies most of the park and it is responsible for the area's amazing landforms - high coastal cliffs, impressive river canyons, delicate cave formations and the bizarre 'pancake-stack' coastal formations that the area is so well known for....

....Vegetation within the park is wide and varied, due to the mild climate and high fertility. Near the coast, broadleaf forest dominates, with glades of exotic-looking nikau palms giving a subtropical feel. Large rata trees emerge above the forest canopy. Inland, the forest is made up of hard, red and silver beech, mixed with rimu and other podocarps.

The draft Paparoa National Park Management Plan describes the area in more detail and in particular, the area where the track would be located as:

"A dramatic natural feature of Ti Kōuka Place is the inland escarpment at the head of the Punakaiki River catchment which forms the western margin of the

inland syncline. The forest vegetation in the inland area is predominately beech with a scattering of rimu, mamaku/tree ferns and other broad leaved trees....

The ecosystems in this Place support a wide range of wildlife, including threatened and at risk species such as roroa/great spotted kiwi, kea, kākā, whio/blue duck, mātā/fernbird and koekoeā/long-tailed cuckoo. Tī Kōuka is also home to the Paparoa Range alpine snail (Powelliphanta gagei)....”

Mr Head has advised that this description accords with his observations of the area. In addition, the landscape AEE partly relies on a series of photographs of parts of the landscape where the track and huts will be located (please refer to the Site Photos at Appendix B). The landscape character depicted in these photographs can be clearly described as a pristine, wild environment, with intact vegetation cover and where any buildings and human induced modification to the landscape are largely absent. The historic Ces Clarke Hut, Croesus Top Hut (Figure 2) and upper reach of the Croesus Track above this hut extending to Croesus Knob (Figure 3) comprise the only obvious human interventions. There are other sections of track within the Paparoa National Park, but these are concealed within vegetation cover and are only visible to the track users themselves.



Figure 2: Existing 'Top Croesus Hut' (black cladding, lower right) and Ces Clarke Huts.

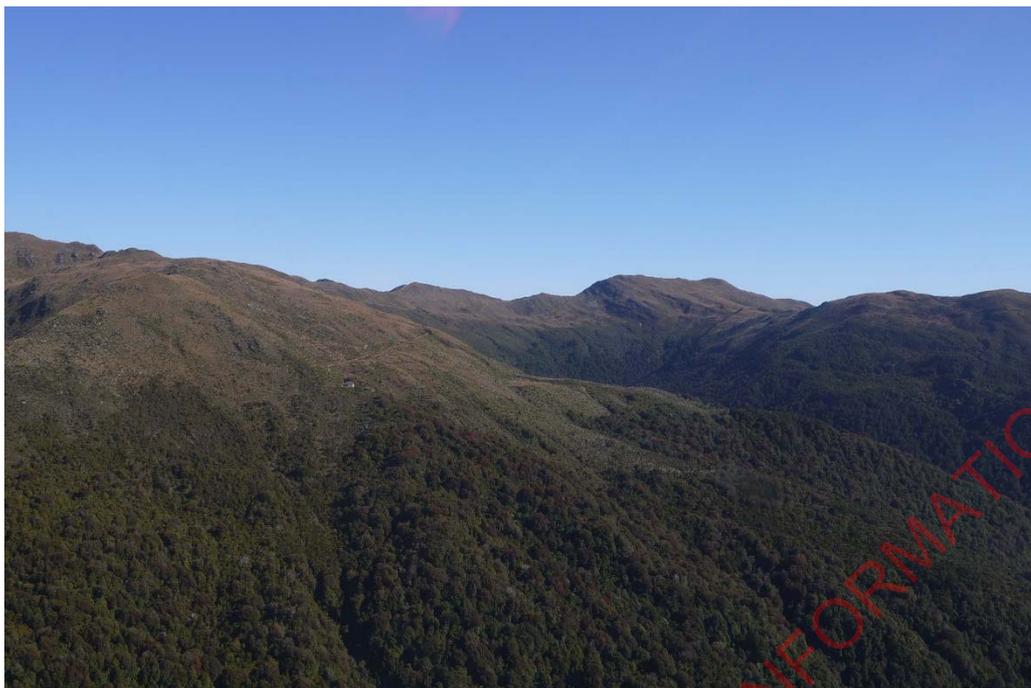


Figure 3: Existing Ces Clarke Hut and track winding uphill towards Croesus Knob visible above the building.

The Pike River Mine and Pike29 Track are now specifically mentioned in the draft Park Plan. Now that the Pike River Mine area has been incorporated into the Paparoa National Park, other built structures have been consequentially assimilated into the park. Despite this, the portion of land that the mine area occupies is relatively small and is pressed in on all sides by mature verdant indigenous forest.

3.8 Archaeology and Historical Heritage

An assessment of the archaeological and historic heritage of the site has been undertaken by an archaeologist, Kirska Webb, of Underground Overground Ltd, and this assessment is attached at Appendix I. A total of three historic pack tracks will be utilised as part of the route of the new Pike29 Track, being the Croesus Track, the Inland Pack Track and the Upper Pororari River Track.

A heritage assessment and baseline inspection report was completed for the Croesus Track in 2006 (Breen), but no further assessment nor site visit was undertaken to this track by the archaeologist, as no works are to be undertaken on this track.

Ms Webb visited the two historic pack tracks at the northern part of the application site in August 2016, and photos were taken of the track condition and features, which are included in the assessment report. Key findings of this report relating to the archaeological and historical heritage of these two pack tracks are provided below.

Inland Pack Track (K30/87)

Historical research

The Inland Pack Track was constructed in 1867 as part of an inland route between Greymouth and Westport. A telegraph line was installed along the route of the inland track in 1868. The track received very little maintenance during the 19th century and it was not until the 1990s, after the area was gazetted as a national park, that the Inland Pack Track received any major upgrades.

A thorough historic baseline inspection of the Inland Pack Track was undertaken by Breen in 2009. In spite of the modern upgrades and modifications made to the track, Breen identified several original track features along the section of track between the Punakaiki and Pororari rivers. These features include:

- six borrow pits;
- one section of fill;
- two fords;
- two sections retaining;
- two sections of side drain;
- one section of stone pitching;
- two sections of cobbling;
- several areas of original top and base course;
- several large tree stumps along the side of the track; and
- several areas of intact $\frac{1}{4}$ and $\frac{1}{2}$ benching

There is also potential for further archaeological sites associated with the construction of the track to be encountered in the vicinity. Such sites could include workers' camps and rubbish pits.

Site visit

A site visit was undertaken by Ms Webb along the 2.8 km section of the Inland Pack Track between the Punakaiki and Pororari rivers where some modification is proposed. The site record form for K30/87 has been updated as a result of this site visit.

The lower section of the track, nearest the Punakaiki River, was assessed by Breen to be the most heavily modified; however, the original line of the track has not been changed and, although there was no original track surface remaining, the raised form of the track with drains on either side is probably how the track was built originally.

On many areas of the track, parts of the original track surface or base course remain in situ. It is proposed that these features will be covered with a mix of gravel of different particle sizes. The right gravel mix will prevent erosion and degradation from foot and bicycle traffic and will protect the original track surface.

Large areas of original track benching, with a cobbled surface, also remain in situ, with the more modern track running alongside on the lower bench. These sections of original benching exist mainly where the more modern track has been aligned to follow a slightly different route or obtain a better grade. The benching has been cut away in some places. For the most part, these features will not be affected by mountain bikers since they are raised above the current track line.

During the site visit, it was evident that the track had undergone a significant upgrade since Breen's 2009 baseline assessment. Most of the track has been resurfaced, drains have been excavated, culverts have been installed and some minor realignment has been done in some areas. Some of the original track fabric, mainly areas of original surface and base course were removed at this time (M. Nelson, pers. comm. 2016). It was not immediately evident what modifications were more recent, and what had been done prior to Breen's assessment.

Archaeological value of any site is assessed in relation to the following components; the site condition as relating to modification, the contextual value, information potential, cultural associations and amenity value. The overall archaeological value of the Inland Pack Track site is assessed as being high.

Upper Pororari River Track

Historical research

The best evidence found to date, indicates that the Upper Pororari River Track, as it exists today, was constructed between c.1909 and 1915, in order to facilitate land settlement in the block between the Fox and Pororari rivers. It is possible that a route along the Pororari River was used by gold miners during the 19th century, however no documentary or physical evidence was found to substantiate this theory. The track was almost certainly used by uranium prospectors during the 1950s, although it was not evident to what extent the track had been modified during that time.

Site visit

During a site visit, an approximately 3.2 km section of the Upper Pororari River Track was followed, in order to assess how much of the original track remained. Ms Webb advises that while walking the route of the track it was clear that, except in a few places where the track had been covered with slips or fallen trees, most of the original track bench remained in situ and the original route of the track could be clearly interpreted. The track benching was up to 3m wide in flatter areas and side ditches were visible in places along the track, sometimes on both sides of the track. The function of the ditches was to keep water from seeping onto the track from the upslope side.

As well as the original benching, there were several areas of the track where sections of the original track surface remained in situ. The intact sections of track surface were approximately 2m wide and comprised a base course of broken limestone rock. Ms Webb notes that it is possible that the entire track was originally surfaced in this way. No evidence of borrow pits was observed along the route of the track, although there were many locations where loose rock was abundant in the banks above the track. There was one location where it was evident that rock had been blasted from an outcrop for use on the track.

It is likely that previously unrecorded sections of original track surfacing, which have been covered over with leaf litter vegetation, will be encountered during the construction of the new track. There are also likely to be other unrecorded archaeological sites and features associated with the track construction, such as camps and discrete artefact deposits, in the area.

As a result of this assessment, the Upper Pororari River Track has been recorded as archaeological site K30/93. Because there was no evidence found to indicate that this track was constructed during the 19th century an archaeological authority will not be required for the work on the Upper Pororari River Track.

Archaeological value of any site is assessed in relation to the following components; the site condition as relating to modification, the contextual value, information potential, cultural associations and amenity value. The overall archaeological value of the Upper Pororari River Track site is assessed as being moderate.

3.9 Maori Cultural Values

A report has been prepared on Maori cultural values which assembles information available in relation to the Pike29 Track environment. This report has been prepared by the project planner, Andrea Jackson of MEM, on behalf of the Department of Conservation. Key information sources used are the Cultural Impact Assessment Report prepared for the Pike River Coal Company (2002), and the Draft Paparoa National Park Management Plan (2016), as the majority of the track proposal lies within the national park. This report is attached at Appendix J.

The Pike29 Track site lies exclusively within the takiwa of Te Runanga o Ngati Waewae, who hold mana whenua over this area. Te Runanga o Ngati Waewae is the representative body of Ngati Waewae, and Arahura marae is their standing place. The planner's report is not a Cultural Impact Statement; as only Ngati Waewae can provide such a statement. This report has been reviewed by the Chair of Te Runanga o Ngati Waewae, Mr Francois Tumahai, and he approved the report with only a few minor amendments requested (which have been actioned).

This report has identified a number of important cultural and spiritual values associated with the Paparoa, and particularly for the Pororari River, and White Knight Stream, which are summarised as follows:

- Cultural, historical and archaeological values and sites;
- Source of mahinga kai/mauri of waters.

The Paparoa Ranges and the White Knight Stream (located in the Pike Stream catchment) have very important cultural and historical values for the whakapapa of both Ngai Tahu and Ngati Waewae. This whakapapa is detailed in the full report at Appendix J.

Maori traditionally made extensive use of the Paparoa Ranges but the route does not directly affect any recorded Maori archaeological sites. It is noted that the recorded midden site (K30/32) is located approximately 3kms from the junction of the Inland Pack Track and the Upper Pororari River Track. There is also another recorded Maori archaeological site, a cave shelter (K30/65) that is less than 2 km away (near the main road) from the south end of the Inland Pack Track, but will also not be affected by the proposed works.

The Ngai Tahu Claims Settlement Act 1998 identified Statutory Acknowledgment Areas, but none are present on the Pike29 Track site, although the legislation established a nohoanga (camping) site on the coastal northern bank of the Pororari River. This nohoanga site is located well away from any track construction works.

This Act also lists a large number of bird, plant and fish species regarded as being taonga species, many of which are present in the forests and waterways along the Pike29 Track route. Many of these species were mahinga kai - the '*customary gathering of food and natural materials, and the places where those resources are gathered.*' Examples of the plants found in the Paparoa valued as rongoa (traditional medicine) include manuka, mamaku (tree fern), matai (black pine), kareao (supplejack), and kawakawa.

A number of fauna species in the Paparoa are also valued as taonga species and in terms of mahinga kai. Larger birds and fish species are a food source, while feathers are gathered and used for clothing, jewellery, cloaks and other items. Examples of the freshwater fauna found in the Paparoa valued as taonga species include tuna (eel), inanga (whitebait), waikoura (freshwater crayfish), and other small fish species. Examples of taonga bird species include the roa (great spotted kiwi), kea and taiko (Westland petrel).

Pounamu is a very precious resource for Ngai Tahu and is vested in and is the property of Te Runanga o Ngai Tahu, by the Ngai Tahu (Pounamu Vesting) Act 1997. However as the identified and mapped pounamu resource does not

extend as far north as the site, it is considered unlikely that any pounamu will be found during construction works.

4 PROPOSAL DESCRIPTION

4.1 Track Description

As a shared use track, the Pike29 Track will be constructed as specified in the 'Easy Tramping Track' standard in accordance with *Standards New Zealand Handbook 8630:2004* and in accordance with the cycling Grade 4 criteria (advanced grade) in accordance with the *New Zealand Cycle Trail Design Guide 2015 (4th Edition)*. The minimum requirements of a Grade 4 cycle track are outlined in the table below. This level of track construction is deemed suitable for advanced grade cyclists, and from a walking perspective is considered compatible with Great Walk users.

Description	Steep climbs, with unavoidable obstacles on a narrow trail, and there will be poor traction in places. Possibly some walking sections. Suitable for intermediate and advanced riders.
Gradient	0-6.5 degrees for at least 90% of trail; between 6.5 and 8 degrees for no more than 100 metres at a time, and between 8 and 10 degrees for no more than 10m at a time. If the track is designed and promoted to be ridden predominantly in one direction then the downhills can be steeper (up to 10 degrees). Sealed trails can be steeper (same as the equivalent grade of on-road trail; see Table 11.
Width	0.6m average, 0.4m minimum. Horizontal clearances as in Section 3.5.
Radius of turn	2m minimum, with 3m desirable to outside of turn.
Surface	Firm and loose.
Watercourses	Watercourses bridged, except for fords with less than 300mm in normal flow, which can be easily ridden.
Bridge width	Recommended 1.0m; minimum 0.8m.
Obstacles	Many rocks/roots and ruts up to 200mm high/deep. Also some purpose built obstacles to liven things up, such as see-saws and jumps.
Length	4-8 hours/day for advanced cyclists.
Barriers/guard rails	Areas such as bluffs or bridges where a fall would result in death require hand rails. Areas where a fall would likely result in serious harm require either hand rails or sight rails or a warning sign, depending on the nature of the drop-off and likelihood of a fall.

Both ends of the 65km track are already established, so a total of approximately 49km of new track will be constructed. It is estimated that approximately 98% of the new track length will be 'rideable'. This means that mountain bikers would only need to dismount and walk for 2% (780m) of the new track sections. Ideally the track will have a walking/riding surface width of between 0.6m to 1.0m. The actual track width will be determined by the nature of the terrain, with an emphasis on minimising the construction effort involved, the disturbance footprint and associated environmental effects. The width of the track will be minimised to the extent possible in the exposed sub-alpine sections to minimise impacts on the most fragile environment.

This document outlines the construction methodology proposed at this stage of the project (as at October 2016). Should unforeseen conditions arise then this approach may need to be revisited. Indicative track design and formation profiles are attached at Appendix K.

To determine the overall footprint of the new track, the maximum area of disturbance is assessed. Given that the maximum track width will be 1m, and the construction footprint will be allowed to be 1.5 times the finished track width, then the maximum footprint will be 1.5m wide by 49kms long giving a total maximum disturbance of 7.35ha. It is noted that this is the maximum allowable area of disturbance given the track design specifications, and the actual construction footprint will be less.

The track construction works are expected to commence in March 2017, and to be undertaken over a 2-3 year period, depending on available resources. In relation to the track section along the alpine tops, works will only be undertaken in late spring/summer/early autumn only.

The Pike29 Track will have a series of 'sectors', i.e., distinguishable sections of the route, described as follows:

- **Croesus Track section** (11.6kms) – along the existing Croesus Track, commencing at the Smoke-ho car park north of Blackball and including the existing Ces Clarke hut, finishing on the tops above this hut. *No construction works required for this section.*
- **Moonlight Tops section** (9.4kms) – from the tops adjacent to Croesus Knob, moving north along the established Croesus-Moonlight route to the proposed Moonlight Tops Hut. Then continuing along the main ridge until it meets the bush line south of Mt Anderson.
- **Escarpment section** (12.7kms) – from the Pike Ridge Junction with the main Paparoa Range heading north along the escarpment on the divide between Pike Stream and the Punakaiki River, to the point where the proposed track drops off the escarpment south of Mt Hawera. It then continues north running below the escarpment until meeting the Tindale Ridge, which it then travels down while sidling around the seven or so small peaks on the ridge, until the track reaches the proposed Pororari Hut Site.
- **Pike Ridge/Side Track** (15.2kms) – from the entry into forest south of Mt Anderson, sidling along Mt Anderson and continuing on to the junction of Pike Ridge with the main Paparoa Ridge. The Pike side track commences under the unnamed peak marked 1030m and descends generally eastward down a bush clad ridge, to the Pike River Mine administration area.

- **Tindale Ridge/Upper Pororari section** (13.7kms) – starting at the proposed new Pororari Hut and then onto the confluence of Tindale Creek and the Pororari River. From this point the track crosses the Pororari River and follows the old pack track to just above the confluence of Cave Stream and the Pororari River.
- **Lower Pororari River section** (3.2kms/3.4kms)
 - **for walkers** the track then follows the Pororari/Punakaiki Loop Track to the swing bridge over the Pororari River, and down the Pororari River Track to the track exit at the road end near Punakaiki. *No further construction works will be required for this section of the Track.*
 - **for mountain bikers** a differentiated route to access the road end is being established, to eliminate potential conflict with day walkers on the existing Pororari River Track. Mountain bikers will separate from walkers at the track junction west of the existing swing bridge over the Pororari River and follow the south west arm of the Inland Pack Track to its conclusion at the road end on Waikori Road. Approximately one third of this route will be along the existing track formation, while the remainder will be on newly constructed track designed to mitigate mountain biking grade issues and negate interference with the heritage elements of the existing line. The new track sections will total 2.5kms.

As noted above, both ends of the new Track run along existing tracks, and for two of those three route sections no construction works are required. For the remaining sections of the route, the nature of these sections and the works required are outlined below.

4.2 Constructed Track Section Detail

Moonlight Tops Section

This section is proposed to be 9.4 kilometres long. The Moonlight Tops section is almost completely in open tops that allow enough construction space to make the most of every opportunity such as views and geological features, whilst creating a track that is fun to ride and a pleasure to walk. From the Croesus Knob starting point the first goal is the proposed Moonlight Hut Site. The track runs predominantly on the eastern face of the central ridge, crossing to the western face just before reaching the hut site. This section of track is a full bench between 600mm and 1 metre wide which will be surfaced, where necessary, with rock obtained during construction and crushed onsite. Once the track leaves the hut site it meanders down the main

ridge until the open tops meet the tree line of the forest south of Mount Anderson.

The Moonlight Tops section of track offers spectacular views down the Moonlight, across Big River into the Grey Valley and on the western side down Canoe Creek all the way to the Tasman Sea. Other than the Moonlight Tops Hut and its associated buildings, there are no other structures on this track section, other than some minor retaining walls.

Escarpment Section

This section is proposed to be 12.7 kilometres long. The Escarpment section starts where the Pike Ridge meets the main Paparoa Range and heads north along the escarpment. This first section offers spectacular views of both the Pike Valley and west down to the coast, as the track comes close to the edge of the escarpment in several places. When the track nears the northern end of the Pike Valley it leaves the escarpment and winds northeast to utilise a short enclosed gully which finishes at a point one kilometre west of Mount Hawera. At this point the proposed track drops off the escarpment in a series of meandering switchbacks, and then continues north until it meets Tindale Ridge. This section of track is again spectacular, offering up-close views of the towering escarpment above, as the track traverses virgin podocarp and beech forest.

The track then continues on down the Tindale Ridge, sidling around the seven or so small peaks on the ridge, until the track reaches the proposed Pororari Hut Site. A considerable number of structures are proposed on this section of the route, including one suspension bridge and approximately 33 other timber bridges and boardwalks. There are two viewing platforms proposed at the midpoint of the escarpment that will allow views of the escarpment cliffs in both directions as well as Pike Valley and the West Coast down to the sea. Apart from spectacular views, this section also boasts stunning birdlife.

Pike Ridge Section

This section is proposed to be 14 kilometres long, and includes the 9 kilometre side track to the Pike River Mine administration area. It commences when the open tops of the Moonlight Tops section are left behind and the track moves into podocarp/beech forest. The route climbs up and down along the ridgeline, sidling along the western side of Mt Anderson, until it meets the junction of Pike Ridge with the main Paparoa Ridge.

The entrance to the Pike side track is under the unnamed peak marked 1030m, and the side track then descends generally east, down a bush clad ridge to the Pike River Mine administration area. This Pike Ridge section of track offers a diverse range of vegetation, from ancient podocarp through to mountain tussock and *Dracophyllum* forests. There is also a viewing 'lookout' at the eastern end of Pike Ridge which allows a view of the Pike Mine

ventilation shaft. It is proposed to construct nine small bridges and boardwalks in this section of track.

Tindale/Upper Pororari Section

This section is proposed to be 13.7 kilometres long. This section of track starts at the Pororari Hut site and winds its way down Tindale Ridge until it meets the Pororari River. From there the track will cross the river on a new suspension bridge, to the true right of the river and then winds through the forest beside the river until it meets the Upper Pororari River Track (about one kilometre downstream from the bridge).

The Upper Pororari River Track is a surveyed pack track established for gold prospecting and upgraded in the 1950's as prospectors searched for uranium deposits. The original track is still visible in many places, though it is many years since it has been maintained. The pack track is built on a great line and its grades are excellent so the existing route will be utilised until just above the confluence of Cave Stream and the Pororari River. At that point a new suspension bridge will take users back to the true left of the Pororari River, where a short section of new track will be required before the route meets the Inland Pack Track at the existing suspension bridge.

The Tindale/Upper Pororari section of track offers great views of the Pororari River as the track meanders beside the river for some time. It is intended to make use of features on the "river track" so the some of the history is maintained for track users. It is proposed to construct three new suspension bridges in this section of track as well as 21 other small bridges and boardwalks.

Lower Pororari River section (3.2kms/3.4kms)

The final section of the track will then split into two sections, with a differentiated route for mountain bikers to eliminate potential conflict with day walkers on the existing Pororari River Track.

For walkers - the track follows the Pororari River Track to the track exit at the road end near Punakaiki. *No further construction works will be required for this section of the Track.*

For mountain bikers – their route will separate from walkers at the track junction west of the existing swing bridge over the Pororari River and follow the south west arm of the Inland Pack Track to its conclusion at the road end on Waikori Road. Approximately one third of this route will be along the existing track formation, while the remainder will be on newly constructed track designed to mitigate mountain biking grade issues and negate interference with the heritage elements of the existing line. The new track sections will total 2.5kms.

Inland Pack Track

For the existing sections of the Inland Pack Track to be used for the mountain bike route, no changes will be made and existing fabric will remain.

For the new sections of mountain bike track running along this section of the Inland Pack Track, it will be constructed to be consistent in cross-sectional profile, drainage and running surface with the existing track - to provide an integrated experience for the track user.

For the existing sections of the track which will not be used, there will be suitable signage or signalling to mountain bikers to avoid accidental route diversion. These sections of the track will not be actively maintained, other than for removal of vegetation which will naturally tend re-establish over time.

4.3 Track Design and Layout

NZ Cycle Design Guide

The Pike29 Track will be primarily designed and constructed in accordance with the *New Zealand Cycle Trail Design Guide 2015 (4th Edition)*, which has been prepared to ensure consistency on all the Great Rides that form part of the New Zealand Cycle Trail (NZCT) network. Standards New Zealand Handbook HB8630:2004 will also apply where appropriate. For off-road cycle trails the NZCT guideline also references the Department of Conservation's *Track Construction and Maintenance Guidelines (2008)*. The Department of Conservation guidelines and the NZCT guide give comprehensive accounts of all major steps in the development of off-road cycle trails/tracks, including landscape considerations, design, construction, water management and maintenance.

The Pike29 Track will be an off-road, shared use track, which means it will be available to both cyclists and walkers without any form of segregation of users or restriction on timing of use. In terms of cyclists the track will be constructed predominantly to Grade 4 standard, and this standard is described in the NZCT design guide as 'advanced grade', which is signified by this symbol:



As this is a shared cycling and walking track, it is proposed that the gradients, watercourse crossings and radius of turn used in the design of the track will

be those specified in the *New Zealand Cycle Trail Design Guide 2015 (4th Edition)*.

Route Design

The track route has been chosen as it will involve a journey through distinctive ecosystems, progressing from eastern beech-podocarp forest through alpine vegetation to temperate coastal forest lush with nīkau palms. The route along the tops will provide for outstanding views over the Tasman Sea to the west and towards the Southern Alps inland.

There are also spectacular geological features such as steep sided sandstone escarpments and limestone gorges that will be further appreciated from the proposed two new huts. In particular, the proposed Moonlight Tops Hut on the tops has the potential to be one of the country's more spectacular hut locations. Viewing opportunities will be maximised along the route. The Blackball connection means a strong link to the West Coast's mining heritage. This end of the track would incorporate a number of interesting historic mining sites.

The track route will generally follow the natural contours of the land, avoiding straight lines, to ensure the track 'flows' through the land and reflects the natural shape of the landscape, in accordance with the Department of Conservation track and NZCT cycle trail guidelines.

This design philosophy is particularly relevant over the generally open character of the Croesus-Moonlight Tops route. Along this section of the route, and the Tindale Ridge, the track width will be minimised and will be constructed on the flattest gradient practicable to minimise cut and fill requirements, and to minimise the effects of erosion and consequent maintenance. To protect particularly vulnerable upland habitats some sections of the track may require boardwalks.

Existing heritage track sections

The Croesus Track section of the track commencing at Blackball will utilise the existing track formation without alteration, for a total of 12kms. Nor will any existing original material/fabric be impacted, so on this basis it is considered that formal heritage management (i.e., an Archaeological Authority through Heritage New Zealand *Pouhere Taonga*) will not be required. The known historic features along the proposed track route are limited to the initial part of the Croesus Track, where mining relics are located near the track. It is noted that the Croesus Track itself is a heritage feature, which is managed under a Heritage Management Plan. This management plan will guide the use and maintenance of this section of the Track.

The Inland Pack Track section of the track route (from the Punakaiki road end to the junction with the existing Pororari River Walk) is to be utilised for mountain bikers, and will undergo some modification to incorporate some new

track sections to ensure suitable biking gradients. It is noted that the Inland Pack Track itself is a heritage feature, which is managed under an existing Heritage Management Plan. Works on the Inland Pack Track will be undertaken under an archaeological work plan, and with a general archaeological authority for minor effects in place (obtained through Heritage New Zealand *Pouhere Taonga*).

Any new archaeological/historic heritage finds during the construction process will be covered by the use of an Accidental Discovery Protocol and reported and managed in accordance with that protocol, which will meet the requirements of both the Department and Heritage New Zealand *Pouhere Taonga*.

The track section along the Pororari River will have the track located on the river terraces, avoiding the riverbed level to avoid flood event impacts on the track, and provide other benefits such as shelter under the forest vegetation. A significant portion of the track will follow the line of the now over-grown uranium prospector's track that was last upgraded in the mid 1950's. This routing will allow track users to experience both the river valley environment and get some sense of the prospecting history. Any remaining artefacts linked to this era (such as huts or adits⁷), which are discovered in the course of the construction works, will be preserved and interpreted as part of the history of the locality.

Construction philosophy

The key aspects of the construction philosophy are:

- *fitting the track to the landscape, not modifying the landscape to fit the track.*
- *once complete, the track should look like it has always been there.*

Practical application of these two overriding principles means that contractors will complete all works inside a very narrow construction corridor. There will be heavy emphasis on rehabilitation post-construction, as well as the careful management of side-cast material and cut vegetation.

The track surface will be a 'natural' surface that utilises compacted natural local material, which will be excavated or scraped during the track formation, or gathered from the riverbed and crushed with a portable crusher on site. Indicative track formation profiles are attached at Appendix K. In some locations, excess materials may be transported for use on other sections of the track. The 'cut and fill' track formation approach will be required in some sections but will be managed to ensure that excavated materials can be re-used on other sections of the track. In areas with a paucity of natural materials, it may be necessary to create borrow pits. Every effort will be made

⁷ Adits are entrances to underground tunnels used for exploration of mineral veins.

to ensure that track materials, including for retaining structures, are in local materials, or in keeping with the local substrate materials.

The proposed track formation will utilise 'grade reversals' and 'outslope' track formation as the primary means of drainage. This is a low maintenance, passive style of water management where the track is designed to quickly 'shed water' by way of sheet flow. It is preferred over the active drainage 'crowned track and side drain' method where the track system is designed to 'carry water'. The problem with this 'active drainage' method is it has high maintenance costs and if the drainage fails then the track formation fails. Side drains may be required to be used, where absolutely necessary, to resolve significant water issues that cannot be resolved using passive drainage techniques. Some wetter sections of the track will likely be constructed with a geotextile fabric used in conjunction with a gravel base. Sections of the terrain which are subject to constant moisture over winter months ("wash" areas) may require the use of boardwalks.

Use of steps is to be kept to an absolute minimum and only be used where no other rideable track solution is possible. As the track is a backcountry trail, there will be some short sections which may require cyclists to walk their bikes. These sections will be well within the Great Walk user capability.

4.4 Bridging Structures

The establishment of the track for the Pike29 Track will include the construction of four large suspension bridges, numerous smaller bridges and sections of boardwalk. The bridge/boardwalk design drawings are attached at Appendix L.

Three major river crossings have been identified and it is expected that they will be bridged using suspension cable structures (4 x 40-50m spans). One further suspension bridge is planned for the section of track from the Escarpment to Tindale Ridge, where terrain features make it difficult to establish a track formation. Smaller watercourses are expected to be bridged using timber beam and/or steel truss bridges. The location, type and size of the structures required will not be confirmed until the alignment of the track is finalised.

The four major bridges are described as follows:

Crossing point	Grid location	Type	Length (m)
Lower Pororari River	E1465807 N5335581	Suspension	38
Upper Pororari River	E1469774 N5332495	Suspension	49
Watson Creek	E1469843 N5332927	Suspension	48
Waterfall Creek	E1472533 N53327512	Suspension	43

An example of the suspension bridge type that will be used is shown in Figure 4.



Figure 4: Typical suspension bridge

Bridging structure design and construction will be to the following high level specifications:

- Bridges will be designed and constructed in accordance with the New Zealand Building Code and *Standards New Zealand Handbook 8630:2004* and the *New Zealand Cycle Trail Design Guide 2015 (4th Edition)*.
- A Chartered Professional Engineer will be involved in the design and the construction monitoring process.
- Barriers/ Guardrails - as specified in the *New Zealand Cycle Trail Design Guide 2015 (4th Edition)*.
- Bridges will primarily be designed for pedestrian load but may also be required to carry a maintenance vehicle load (suitable loading to be determined).
- The design working life to be a minimum of 50 years.
- The bridge construction materials include sawn timber, wooden tanned poles and glue-laminated timber. Suspension bridges will also include metal cabling components such as wire cables and fastenings.

The suspension bridges will involve digging in and securing the towers at each end, and up to four stabilising stays (fixed to the ground) at each end/or the use of 'deadman' concrete anchors. The initial design concept is that the

towers may be 150mm-250mm diameter tanalised wooden poles. Access ramps may also be attached to each end, which will require minor excavation works to level the ground. The overall ground disturbance is relatively minor and is conservatively estimated at 8-12m² per bridge location (including both ends of the bridge). All the suspension bridge locations will utilise terraces that exist above river flood level (generally at least 5m above the normal river flows).

Numerous smaller water courses will be bridged using timber beam bridges, as illustrated in Figure 5.



Figure 5: Typical bridge over small water course

The proposed timber beam bridge will consist of a single beam span, supported from the abutment foundations at each end. These abutments will require minor ground disturbance for benching (approximately 1m³ per bridge) or alternatively minor additional excavation for small concrete piles. These timber beam bridge locations will generally utilise terraces that exist above river flood level (generally at least 1.5m above the normal river flows).

There will approximately 150m in total of boardwalk spread across 6 – 10 locations throughout the track. The boardwalk sections will be installed in areas where swampy ground conditions occur. There will be no boardwalk through alpine tussock areas. The boardwalk sections will all be installed manually, and no machinery will be used. The boardwalks will be seated on either hand driven timber piles, pegs or small timber plates on the

ground. Sections of boardwalk will be pre-fabricated in the DOC workshop and helicoptered to each site, where this methodology is feasible. Other sections may need to be built on site but the construction impact will be minimal, as illustrated in Figure 6, Figure 7, and Figure 8.

Figures 6 and 7 show the minimal track construction traversing a fragile dune/pingao environment at Ship Creek. Figure 8 illustrates track construction within a forest environment, demonstrating the minimal impact on the surrounding land, even though construction has occurred on a slope.



Figure 6: Framing of boardwalk, and timber supplies at Ship Creek Track.



Figure 7: Completed boardwalk at Ship Creek Track.



Figure 8: Boardwalk as constructed through a forested landscape.

4.5 Huts and Shelters

The establishment of the Pike29 Track will also include the construction of two new 20 bunk backcountry huts at suitable distances along the track to divide it into manageable sections for track users. Two huts will allow users to overnight once or twice while undertaking the Track, which will provide some flexibility and safety for crossing the alpine tops.

In addition, *Standards New Zealand Handbook 8630:2004* provides for shelters in appropriate locations “where the total walking time...between huts without shelter exceeds four hours; and there is a significant level of exposure to adverse weather conditions on the most distant parts of the track.” As such, a shelter is proposed for the mid-point of the second day between Moonlight Tops Hut and the Pororari Hut. This will therefore be located at an appropriate point on the escarpment.

The hut/shelter locations are detailed below:

Structure	Grid Location	Site Photo
Moonlight Tops Hut	N5322170 E1468449	
Pororari Hut	N5330062 E1469904	

Shelter	N5326320 E1471405 (approx. location)	<p>Shelter location is expected to be located along a 2km section of the track beneath Hawera.</p> 
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Hut Details

The Moonlight Tops Hut will be located at approximately 1,000m elevation on the alpine tops of the Croesus-Moonlight route section of the new track, and the Pororari Hut located at approximately 550m, on the bush clad Tindale Ridge in the headwaters of the Pororari River. The huts will be designed and constructed in accordance with the Department's *Backcountry Hut Procurement Manual*. Suitably qualified specialists have provided information on the site geology, along with the associated greywater and sewage disposal systems.

The huts will be light timber framed buildings clad in vertical corrugated Coloursteel cladding and roofing, as designed by Pynenburg and Collins Architects. The colours for both huts have been selected from the standard NZ Coloursteel range. The colour scheme for the Moonlight Tops Hut will include 'Scoria' (a dark red/brown) for the walls and trim, and 'Lichen' (an olive green colour) for the roof and spouting. The colour scheme for Pororari Hut is different, being; 'Permanent Green' for walls and roof, with 'Metallic Grey' for the window joinery, fascia and bargeboards. Hut design will meet the requirements of the NZ Building Code under BCH/AS1 (DOC *Backcountry Hut Procurement Manual*). The huts will also have to meet the requirements of the Department's Service Standards for Great Walk Huts.

Both huts will include staff quarters, including two bunks. Insulation will include thermally broken double-glazed windows, while heating in the huts will be provided by a multi-fuel burner and a woodshed/coal bin will be provided. A lobby space inside the main entrance door will provide space for wet weather gear and boot storage. Gas cooking hobs will be supplied in the huts, so gas works supply and installation will form part of the hut construction works. Solar powered lighting will be provided to the living areas and staff quarters. Water will be supplied via water tanks with a 4,000litre

capacity, and a total of three sinks will be provided, one of which will be externally located. Mountain bikes will be specifically catered for by the installation of a simple timber bike rack. All hut users will be able to enjoy a covered deck area with seating. The huts will also have drying racks and pack storage boxes.

A proven wastewater system will be associated with the two huts. Greywater is produced by use of the three sinks in each hut, and will be settled in a separate septic tank, prior to discharge to land using the same surface land dispersal system as the toilet blackwater will use. Each hut will have a double toilet facility, with two timber framed structures being placed over either a single 9,000 litre containment tank, or two 4,500 litre tanks. Toilet solids will be contained in the alloy septic tank/s, which are periodically pumped out with waste flown out and emptied at an approved sewage disposal site. Blackwater from the septic tank/s will flow into a Flout dosing chamber, as will the greywater from the sinks. The Flout dosing chamber will produce periodic flows of the combined waste water to the surface land dispersal field.

Both 20-bunk huts will require a total of 100 pile footings per hut which will be hand-dug. The excavation of these footings will generate a total of 5.5m³ of soil/substrate material per hut, including the decking areas. The associated toilet facilities at each hut site are likely to require 8m³ of excavation to enable septic tanks to be located in the ground beneath the toilets. Some minor ground blasting may be required to achieve the depth required for these tanks, given the iron pan nature of the ground. The excavated substrate material will be re-spread/disposed of at suitable nearby locations (clear of watercourses and erosion potential).

The Hut Design Drawings and indicative Toilet Design Drawings (with the associated waste water system plans) are attached at Appendix M.

Shelter Details

It is proposed to site one weather shelter, an indicative look as shown in Figure 9, along the alpine section of the Track, to the south of Hawera, as this is a strategic location where an adverse change of weather will most require its use. A typical alpine shelter design is shown in photograph below. It is likely that the shelter will incorporate a full containment toilet system.



Figure 9: Indicative shelter design

4.6 Pike River Mine Memorial Facilities

The project will include the development of a memorial site at the Pike River mine portal, and an Interpretation Centre to be developed at the existing mine amenities area. These facilities will be able to be accessed in two ways; by the well-formed Pike River Mine access road (a gravelled road suitable for vehicles), and by a side track from the main route of the track, running off the alpine tops section.

As part of the overall project, a substantial area of conservation land surrounding the Pike River mine facilities (the mine portal, ventilation shaft, amenities area and the access road) has been added to the Paparoa National Park. The Department of Conservation proposes redevelopment or re-use of some of the existing facilities, to become visitor facilities, with a memorial focus.

Memorial Site at the Mine Portal

Before the present mine owner (Solid Energy – SENZ) vacates the site, the existing mine portal will be safely sealed and mining plant removed. SENZ will undertake agreed site rehabilitation in relation to the areas where plant and buildings have been removed. Once the site rehabilitation works have been completed to the satisfaction of the Department, the Deed of Surrender will be executed, and then the site will revert to Department of Conservation

management. From this time the site will be available for redevelopment or re-use of the remaining facilities.

It is noted that the White Knight Stream runs beneath the mine portal area, and due to the culturally sensitive nature of this watercourse, no works nor discharges to this stream will be allowed.

The final detail of this proposal is still being developed, but the key features have been agreed with the Pike Families, as follows:

- to convert the existing shelter housing for the ventilation fan transformers into a covered seating area, which will have a view of the sealed mine portal,
- to install some form of memorial and interpretation panels near the mine portal or covered seating area.

Visitor car parking will be provided by converting the existing hard surface adjacent to the mine portal to become a parking area. This proposal would include the replacement of the existing diamond mesh fence at the edge of proposed car parking area with a new timber 'type A' barrier. However, the existing concrete barrier blocks and slurry pipe are likely to remain on site. The stormwater discharge from this car park area would be redirected to flow into the existing settling pond located at the bottom of the portal site.

This settling pond treats the mine water discharge, and will be required to continue to perform this function as well. The Department will accordingly be required to maintain existing mine water discharge monitoring and treatment system, including the settling pond and ultimate discharge to Pike Stream.

Interpretation Centre at Amenities Area

Some 1.5km further downstream/back along the access road is located the amenities area previously used by the mine staff. This site houses a number of facilities, such as the Lamp Room/Control Room building, electrical workshop, main workshop and main stores buildings, underground mine vehicle parking bay, administration block, training room/mines rescue building, pump shed, dry stores building and make up water tank. A number of these facilities have already been removed, and further facilities are likely to be removed before Solid Energy Ltd exits the site. As this site is well developed and has a number of substantial buildings sited on it, it is proposed to re-use suitable buildings to create a new Interpretation Centre.

It is proposed to convert the existing Lamp Room/Control Room building into an unstaffed Interpretation Centre which will include displays of memorabilia from the Pike Mine and its miners. The Interpretation Centre will tell stories about the history of the mine and how it operated, as well as the history/story of the mining disaster in 2010, and consequent impact on Health and Safety practices in New Zealand.

As a mining history interpretation example, it is proposed to convert the electrical workshop into a replica of the miner's bathhouse. It is also proposed to erect the evasé (the ventilation cowl previously located over the ventilation shaft) on the concrete pad which is to be vacated by the main stores building. The evasé has resonance with the disaster in 2010, as the underground explosions were partially expressed via the fiery explosion through the ventilation cowl.

Associated building services on site will also be retained, including power supply, the potable water supply and wastewater treatment systems, and existing toilets at the Lamp Room/Control Room. An existing car park on the site's upper level will be maintained for visitor use.

Pike River Access Road

It is proposed to maintain the existing 10km access road (with its existing mixture of sealed and unsealed surfaces) from Logburn Road to the mine portal, including all existing bridge and culvert structures, drainage systems, and associated assets. Along the access road some further Pike River Mine assets will be retained, and subject to interpretation, being; a section of the coal slurry pipeline, and one of the associated emergency containment ponds (likely to be pond #7).

4.7 Signage

A series of signs will be located at both ends of the track, at the huts and shelters, and at other appropriate places along the track. The signage will be in the traditional Department of Conservation format. Sign size and level of information will vary depending on the location, viewing distance and travel speed of trail users at that particular point.

Larger route commencement signs will be provided at each end of the track to describe the route's location, distance, expected time for completion of sections, and the level of difficulty or experience required. These signs will likely also include a map, additional information on special features along the route, including Pike29 memorial information, the facilities provided and instructive/qualifying text to enable route users to be properly prepared for their journey. Commencement signs will be located where track users can read them without being in the way of other track users.

Information signs will be located at varying intervals along the route to describe various features, such as iconic scenery, historical attractions, wildlife, and the important features associated with the Pike29 memorial nature of the track. Generally these signs will be located in places where track users can safely stop and take time to view them. Smaller signs indicating directions will also be located as and when required along the route.

Maps and supplementary information will also be available through a variety of media formats (printed formats, DOC website, digital app, Great Walk booking system) to provide assistance to Great Walk users in planning their journey and for reference along the way.

4.8 Construction Methodology

The track will be constructed using small scale machinery such as 0.7/0.8 tonne and/or 1.5/1.6 tonne excavators. Sections of the track with the most sensitive terrain will be excavated using manual labour. The Department intends to use a tender process which will result in the involvement of selected contractors in the final design process, to ensure the practicality of the final track design, and to increase contractor investment with the track construction philosophy.

Ideally, locally available materials will be used for provision of a suitable walking and cycling surface. It is anticipated that contractors will use helicopters to transport aggregate crushing machinery, as was used by the Department on the Heaphy Track. To facilitate this approach, the use of well hidden 'borrow pits' may be necessary.

Excavation of some sections of the track will result in the production of spoil material unsuitable for track construction purposes. This spoil will need to be disposed of as near to the excavation zone as possible. In some areas borrow pits will be used for disposal of spoil, where use of the pit has been completed and the borrow pit is no longer needed. In some areas it will be necessary to 'side cast' spoil but this will only be viable where the ground being worked is stable and the side cast will not destabilise the duff layer or the track surface (by the added weight of side cast material). Where spoil is side cast it will be broadcast and subsequently "duffed" with leaf litter and organic material to speed rehabilitation.

The Department has also developed another suitable disposal methodology on other track construction projects, which utilises stable flat ridges below the construction corridor, usually under forest canopy. This onsite disposal methodology consists of the following steps:

- The leaf litter and organic material layer from these ridge zones, including seedlings, moss covered rocks, etc., is carefully removed and placed to one side.
- The spoil is transported to site and placed on the hard exposed top.
- The spoil is then shaped and compacted, and the leaf litter/organic material layer and seedlings replaced. The access track is then also rehabilitated.

The key element to this method is maintaining the existing ground profile of the hard ridge formation, and making sure drainage profiles are followed during shaping and compaction. This allows the spoil to settle on hard fill and removes the risk of side loading. When done properly this technique is successful in hiding the spoil in the landscape, without obvious sign of works having been done.

Soil erosion is high throughout the Paparoa Range, due to the high/intense rainfall, and accordingly specific attention will be given to minimising erosion potential during the construction works.

As the completely new track sections are to be largely constructed within the Paparoa National Park, the environmental performance standards are likely to include (but not be limited to):

- Operating only within a tightly controlled construction corridor of no greater than 1.5 x the finished walking/riding surface. Environmental damage outside of this construction corridor is to be repaired at the contractor's expense.
- Removal of trees with DBH of >400mm will be tightly controlled by the Department's representatives.
- Fill batter (side cast) and blasting debris (particularly on the open sub alpine sections) will be carefully controlled to minimise both environmental and visual landscape effects. The track in the sub-alpine sections will be constructed in manner that keeps to an absolute minimum the visual scar or impact as seen from a distance. This will be particularly important on any benched sections of track.
- Managing any potential impacts on kea is important including ensuring all worksites are managed to exclude and discourage kea.
- Stockpile sites will be managed to ensure there are zero impacts outside the construction corridor.

Remediation of construction impacts will be a big feature of this project. There will be clear expectations on the Contractor to replant and rehabilitate around the edges of the construction corridor to 'soften' the construction impacts, minimise the opportunity for weed establishment and ensure any construction impacts are rehabilitated as quickly as possible. The following photos illustrate the use of this technique on the Franz Josef Glacier Cycleway/Walkway, constructed in 2010.



Figure 10: Stage One - Clearance of vegetation for the path.



Figure 11: Stage Two - Stripping of organic matter and topsoil to stockpile for later use, and placement of basecourse.



Figure 12: Stage Three - Placement of organic matter and topsoil along path verges.

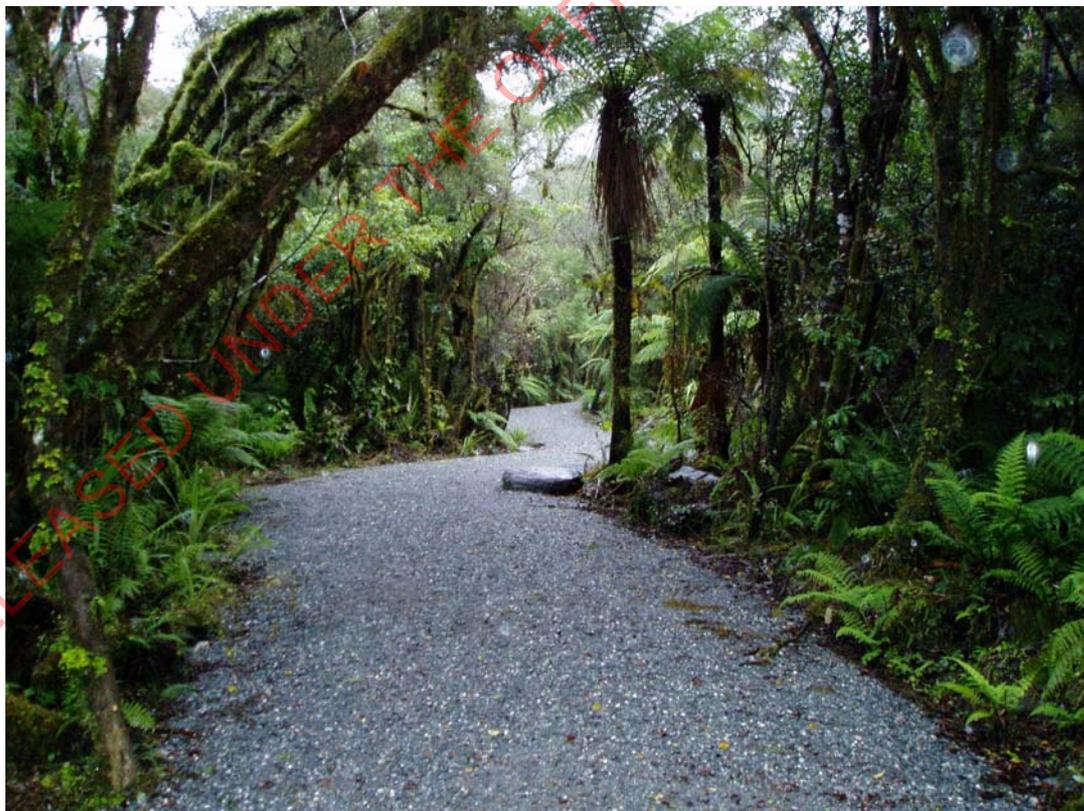


Figure 13: Stage Four - Re-growth of vegetation along path verge after just 6 months.

Habitat preservation

Track design and construction will be developed as far as possible to avoid or minimise impacts on the environment, including specific habitats, flora and fauna. As a Great Walk, the track users will wish to experience the surrounding habitat in the best condition possible, and this will be an overriding focus of the construction team. Habitat preservation measures will include the following measures:

- Terrestrial ecologist to identify and visit high risk areas for flora and fauna prior to contractors establishing on site, to inform the development of an environmental management plan and environmental briefings to be given to contractors;
- Environmental management plan developed and provided to contractors to support pre-construction briefings.
- Briefings provided to the construction team/s on habitats, flora and fauna by terrestrial ecologist, prior to works on each track section.
- Extreme care to be taken with construction works in the alpine zone where potential rock wren habitat may be (usually rocky screes, rock piles or fragmented rock stacks). The track will primarily skirt these zones and not remove or modify them. Where it is impractical to skirt these habitat areas, construction will be undertaken by hand to minimise disturbance or damage.
- Alpine rock garden sections of the track will be constructed by hand, which will allow management/relocation of resident fauna such as lizards.
- All practical steps will be made to recreate lizard/invertebrate habitat using displaced rocks and boulders, adjacent to where the track is routed through rock jumbles and screes.
- Vegetation clearance is kept to a minimum, and confined to the immediate track footprint (being a general maximum of 1.5m) and the minimum required to site the new facilities.
- All practicable steps will be taken not to cut down large canopy trees (generally measuring >400mm DBH) or standing dead trees which have potential nesting or roosting holes. A terrestrial ecologist to review the removal of any large canopy/dead standing trees, in accordance with the Bat Protection Protocol.
- Where beech tree removal is required, trees >400mm DBH will be cut into lengths not exceeding 1.5m and added to the forest floor adjacent to the track (thereby reducing the potential for pinhole borer).
- Exposed tree roots along the track route will be protected by the use of gravel applied around the base of large trees, to limit root damage and maintain root health.

Hut/shelter construction

There will be a strong emphasis on achieving minimal environmental impacts throughout the construction process. Specific requirements will be included within the contract specifications and environmental management plan for the project. Such environmental effects mitigation measures will include;

- All rubbish (e.g. wrappings, off-cuts of insulation, rivet ends etc.) is to be removed from the site at the end of the construction period. Rubbish generated during construction shall be picked up and stored as soon as practical on site secure from kea;
- Extreme care is required when filling all plant or machinery with fuel or oil to prevent ground, groundwater or water pollution. No fuelling or refuelling should take place within 20 metres of any water body;
- Extreme care is required with paint. No paint decanting should occur within 10 metres of a waterway and paint decanting should occur on a drop sheet to avoid spilling paint on the ground. Paint spills should be quickly diluted.
- Wherever possible, materials and equipment should be stored in such a way that does not damage any plant life, including the moss on boulders.

5 RESOURCE MANAGEMENT REQUIREMENTS

5.1 Consents Sought – Construction period.

- Section 13 resource consent to disturb the bed of the Pororari River, Pike Stream and Tindale Creek during the extraction of gravel, for use in construction of the Pike29 Track.
- Section 15 discharge permit to discharge incidental sediment in the course of the construction works.

The construction consents are sought for a **five year** period.

5.2 Consents Sought – Operational

- Section 15 discharge permit to discharge wastewater from two backcountry huts and their associated toilets (Moonlight Tops and Pororari).
- Section 13 resource consent to disturb the bed of the Pororari River, Pike Stream and Tindale Creek during the extraction of gravel, for on-going maintenance of the Pike29 Track.

These consents are sought for a **thirty-five** year period, commencing from the opening date for the Pike29 Track (currently expected to be in late 2018).

5.3 Part 2 of the RMA

The Department of Conservation proposal meets the purpose of the RMA (s5), *to promote the sustainable management of natural and physical resources*. The construction and operation of a major new backcountry development, a shared use track, which will enable the West Coast communities to better provide for their social wellbeing, including their health and recreation, as well as providing for their on-going economic wellbeing.

The matters of national importance (s6) and other matters (s7) have been thoroughly assessed within the Assessment of Environmental Effects and the proposal has been developed to avoid, remedy or mitigate any adverse effects on the environment, in keeping with s5(c).

5.4 Regional Policy Statement

The first West Coast Regional Policy Statement became operative on 10 March 2000. In March 2015 a revised regional policy statement was notified. Submissions and further submissions have been received, and a staff recommending report on the submissions and further submissions is being prepared. Further steps are yet to occur in the process. As this Proposed Regional Policy Statement is only part-way through the approval process, the operative 2000 Regional Policy Statement is regarded as paramount.

The Regional Policy Statement (2000) Objectives 5.2, 6, 7.2, 8.2.1, 9.3 and 9.4, 11, 15 (and their associated policies) are relevant; as these objectives and policies seek the protection of matters of significance to Poutini Ngai Tahu (5.2), heritage and archaeological sites (6), river resources (7.2), water quality (8.2.1.), to protect areas of significant habitats of indigenous fauna (9.1), and the preservation of the natural character of rivers (9.3).

In accordance with Objectives 5.2 and 8.2.1, the special relationship of Ngai Tahu with the natural waters of the Tai Poutini river systems is recognised in this application.

In planning for the construction works, a comprehensive set of mitigation measures has been developed. An Environmental Management Plan (including provisions for erosion and sediment control) will also be developed to minimise adverse effects on water quality, and the aquatic ecosystem, in accordance with Objectives 7.2, 8.2.1, and 9.1. The protection of the habitat of trout and salmon as recognised by Policy 9.3 has also been provided for, especially in relation to the Pike Stream gravel extraction site.

Objective 9.4 and associated Policy 9.7 seeks to maintain and enhance public access to rivers and their margins. The access situation in relation to the three sites are as follows:

- It is noted that the gravel extraction activity on the Upper Pororari riverbed will be undertaken to facilitate the construction of a new shared-use track, which will greatly enhance the public access to the upper portion of the Pororari River valley (no access is currently provided for by the Department of Conservation to this area).
- Track access to the Tindale Creek site does not currently exist, and the new track will make this location easier to access.
- Public access to this section of Pike Stream is not currently available, as the site lies within the area of the Pike River Mine site. Once this site is handed over to DOC by the mine owner (SENZ), public access will be available via the existing mine access road.

In general, the extraction of gravel from numerous gravel beaches along stretches of the three watercourses is not expected to impact on public access and usage.

5.5 Regional Land and Water Plan

The Regional Land and Water Plan (the RLW Plan) became operative on 27 May 2014. The relevant Policies and Objectives in the RLW Plan are outlined below, and the matters raised in these policies have been addressed throughout the Assessment of Environmental Effects at Section 6. Also assessed are any relevant proposed changes, as included in the Proposed Plan Change 1 to the RLW Plan, which was notified in August 2016.

Section 2.15 of the RLW Plan advises that there is a Ngai Tahu nohoanga site on the Punakaiki River, however, it appears that the nohoanga site has actually been established on the Pororari River instead – as illustrated on the relevant map at Appendix A.

Related Objective 3.2.3 seeks to maintain, or where appropriate, enhance the spiritual and cultural values and uses of significance to Poutini Ngai Tahu. The RLW Plan lists the specific values and uses to Maori of particular water bodies at Appendix 7C, and the Pororari River is listed as a waahi taonga, with recorded uses for mahinga kai and as a navigation route.

Objective 3.2.1 provides for the sustainable use and development of land and water resources.

Objective 3.2.2 seeks to protect water bodies from inappropriate use and development by maintaining and, where appropriate, enhancing their natural and amenity values including natural character and the life supporting capacity of aquatic ecosystems. The RLW Plan identifies water bodies that support threatened species and community water supply takes, but none of the three proposed gravel extraction sites are listed at Appendix 7A or 7B.

Objective 5.2.1 seeks to avoid, remedy, or mitigate the adverse effects of lake and riverbed activities on:

- a) The stability of beds, banks, and structures;
- b) The flood carrying capacity of rivers;
- c) The natural character of wetlands, lakes and rivers and their margins;
- d) Indigenous biodiversity and ecological values, including fish passage;
- e) Amenity, heritage, and cultural values;
- f) Sports fish habitat values;
- g) Water quality;
- h) Navigation; and
- i) Regionally significant infrastructure.

Associated Policy 5.3.2 seeks to manage bed disturbance (as well as other riverbed activities) so that the activity does not cause or contribute to significant adverse effects on the values listed at Objective 5.2.1. The potential impacts of the gravel extraction proposal itemised in Objective 5.2.1 (and referenced in Policy 5.3.2) are addressed in detail at the Rule 33 discussion section.

Related Policy 5.3.4 provides that, in addition to the requirements of Policy 5.3.2, when considering an application to excavate gravel from a river or lake bed, to consider:

- a) The sustainable yield of the lake or river system;
- b) Adverse effects on bed levels and channel location;
- c) Potential spread of pest plants.

It is noted that the proposed extraction of small quantities of gravel along considerable stretches of the three watercourses will enable the impacts on the volumes of gravel on dry beaches, bed levels and channel locations to be either completely avoided or considerably minimised. Gravel will not be extracted from locations with pest plants.

Objective 13.2.1 seeks to ensure that the adverse effects from the discharge of liquid contaminants into or onto land, on water and soil quality, social, cultural, and amenity values, and human health are avoided, remedied, or mitigated. Policy 13.3.1 seeks to ensure that the discharge of liquid contaminants into or onto land is of a nature or at a rate that does not exceed the ability of the land to assimilate the contaminant, and does not result in soil contamination.

The potential impacts of the hut wastewater discharge proposal itemised in Objective 13.2.1 (and referenced in Policy 13.3.2) are addressed in detail at the Rule 79 discussion section.

Proposed Activities - Rules

Extraction of gravel from three sites, for use in construction of the new track.

Gravel extraction sites - NZTM refs
Pororari River – above Lower Pororari Gorge up to confluence of Tindale Creek (for an approximate length of 9 kms) <u>Downstream end</u> -1465248E, 5335712N <u>Upstream end</u> – 1469967E, 5332430N
Tindale Creek (for an approximate length of 2.3 kms) <u>Downstream end</u> -1469952E, 5332413N <u>Upstream end</u> – 1470268E, 5330899N
Pike Stream - below the Pike River Mine amenities area down to confluence of Saxton Creek (for an approximate length of 2.5 kms) <u>Downstream end</u> -1477486E, 5324666N <u>Upstream end</u> – 1475618E, 5325709N

The RLW Plan (Rule 29) allows for the excavation of gravel as a permitted activity in three circumstances, as follows:

- i) The use is for reasonable domestic or agricultural purposes (Note: neither of these uses apply in this case);
- ii) The site is listed in Schedule 12 (Note: none of the three waterways are so listed);
- iii) A minor quantity take can apply for individuals (Note: does not apply).

Accordingly, a resource consent is required, in accordance with gravel extraction Rule 33, as a *restricted discretionary activity*. In relation to exercising its discretion in relation to this rule, the Council will consider the following aspects;

- a) The amount to be taken, the removal method and the location and timing of the take;
- b) The resource available at the proposed extraction site;
- c) The resource already allocated in the river;
- d) Any adverse or beneficial environmental effects;
- e) Any potential effects on existing river users or existing structures;
- f) Any potential effects on statutory acknowledgement areas or pounamu resources;
- g) The duration of the resource consent;
- h) The information and monitoring requirements;
- i) Any bond; and
- j) The review of the conditions of the resource consent.

Rule 33 Discussion

The applicant provides the following information to assist the Council in addressing the Rule 33 considerations, as follows:

- a) For the track construction project, the applicant is proposing to extract up to 4,000m³ (in total) from the three sites shown on the gravel extraction map attached at Appendix A, although the bulk of the extraction is expected to come from the Pororari River site (approximately 70% of gravel extraction total, so roughly 3,000m³).

For the on-going track maintenance, the applicant is proposing to extract up to 1,000m³ (in total) per annum from the three sites shown on the gravel extraction map attached at Appendix A.

The gravel extraction sites run along the lengths of the three watercourses for some kilometres to enable small amounts to be extracted adjacent to the track construction works, which will be efficient and also minimise impacts on the riverbed environment. The gravel will be extracted using a small excavator and truck, and processed using a small screen and crusher on the dry riverbed.

- b) No gravel resource is currently allocated at any of the three proposed extraction sites, as all these sites lie within the Paparoa National Park.
- c) The applicant has inspected the proposed extraction sites and can advise that sufficient gravel resource is available along the full length of the three sites. The site photographs below illustrate indicative gravel beaches from which extraction would occur in the Tindale Creek and the Pororari River. The general nature of the riverbed and indicative gravel beaches of Pike stream is reported to be very similar to Tindale Creek (Mark Nelson, DOC, email dated 9/11/2016).

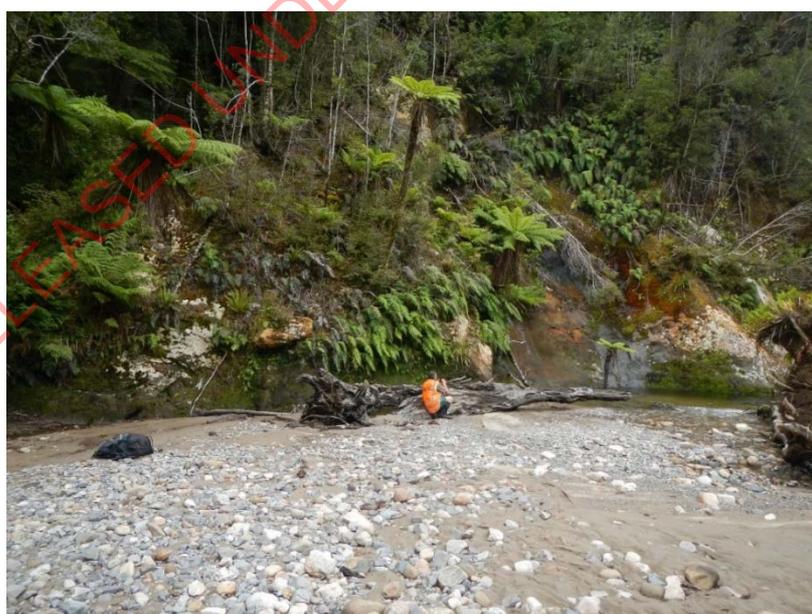


Figure 14: Tindale Creek - example gravel extraction site.



Figure 15: Tindale Creek - example gravel extraction site.



Figure 16: Pororari River - example gravel extraction site.



Figure 17: Upper Pororari River (above the gorge) example site.

- d) Any adverse environmental effects will be avoided or minimised by best practice gravel extraction methodology, including extraction of gravel from the dry riverbed only, with a buffer zone of 5 metres to any riverbank. A buffer zone of 2.5m is to be applied to any flowing water channels.
- e) The proposed gravel extraction sites on both the Pororari River and Tindale Creek are located well upstream of any existing infrastructure. Whereas the access road to the Pike River Mine runs down the valley of Pike Stream, so several bridge structures cross the stream. Therefore an exclusion zone of at least 50 metres from any bridges or other riverbed structures will be applied, and therefore no impacts on structures will occur.

Existing river users in the location of the proposed gravel extraction sites are most likely to be recreation users, given that the sites are located with the Paparoa National Park. In relation to the proposed extraction site on the Pororari River, it is noted that walkers and trampers use the Pororari River Walk, but generally only as far upstream to the intersection with the Inland Pack Track, whereas the extraction site is located above that junction. Kayakers and fishers generally progress only as far upstream as the lower gorge, while Tindale Creek is not used by recreationalists.

Limited adverse impacts on the amenity of the immediate locality of these two proposed gravel extraction sites (Tindale Creek and the Pororari River) would occur for any visiting recreation users, but this impact will be limited in duration to the track construction period of 2-3 years.

Any recreation use of this stretch of the Pike Stream is unlikely, due to this location being currently managed as part of the Pike River Mine and the public being excluded. It is expected that the mine site will not be open to the public until late 2018.

- f) There exists a statutory acknowledgement area on the Pororari River, a nohoanga (camping) site on the coastal northern bank, on the seaward side of the State Highway. As the proposed gravel extraction sites are located well upstream from this coastal camping site, no impacts on it will occur. Pounamu is vested in and is the property of Te Runanga o Ngai Tahu, by the Ngai Tahu (Pounamu Vesting) Act 1997. Therefore any pounamu found in the course of the works will be returned to Te Runanga o Ngai Tahu, and this requirement will be included in the construction contracts.
- g) The resource consent period being sought is twofold; for five years for the track construction process, and for the maximum allowable period of 35 years in relation to the on-going maintenance purposes.
- h) The applicant will comply with the usual gravel extraction reporting requirements, and payment of the Council extraction fees.
- i) The applicant considers that a bond is not appropriate or required in this case.
- j) The applicant expects that the usual review conditions of resource consents will apply.

Construction Works - Incidental Sediment Discharges

The incidental discharge of any contaminant, including sediment, to water (via the numerous watercourses along the route of the track) may occur in the course of the project, including during the activities of vegetation clearance, the initial construction works and as the earthworks settle down, despite the operation of an Environmental Management Plan. Such a plan will be developed in conjunction with the appointed contractor/s, and will include measures to minimise erosion and sedimentation, and will also include the raft of minimisation measures which has been developed for this project (please refer to Appendix N).

Such incidental sediment discharge is a *discretionary activity* and requires a discharge permit to be sought in accordance with Rule 71 (Discharge of any contaminant, or water to water, not complying with rules 63 to 70).

Backcountry Hut Wastewater Discharges

The on-site discharge of wastewater discharges from the two backcountry huts and their associated toilets, including both greywater from the hut sinks and

effluent from the toilets. Such a discharge would be allowable as a permitted activity in accordance with Rule 79, however, the system designer has advised that the discharge is unlikely to meet all the required conditions. Therefore the discharge activity must be considered as a *discretionary activity* and a discharge permit sought in accordance with Rule 91 (Discharge to land discretionary rule).

To assist the Council in their assessment of this discretionary activity, the applicant provides the following information in relation to the proposed system and how it is expected to perform in relation to the Rule 79 conditions (as a relevant benchmark).

Effluent system description

The on-site wastewater management system is detailed in the MWH report at Appendix M. The key system details are as follows:

Two backcountry huts with 20 bunks each plus staff quarters, which will generate greywater from hut sinks, and blackwater from dry vault⁸ double pan toilets. The wastewater system design has been based on a total of 29 bunks, to allow for possible future development.

Greywater will be piped to a greywater septic tank (where solids settle out) and will then be piped to the land application system. The hut toilet structures will sit above a dry vault, which will contain the solid material, while the blackwater liquids will be piped to the land application system. The land application system will be gravity feed with a land distribution field approximately 100m from each hut. At the junction of the blackwater and greywater flows will be a Flout dosing chamber, to provide a regular pressurised pulse of liquid to ensure an even distribution along the full length of the distribution line.

It is expected that the septic tank and dry vaults will require pumping out approximately once every 2-3 years. The design capacity of the toilet storage tanks is 3,000 litres each, with two tanks per two pan toilet structure. This capacity is estimated to be sufficient for at least two years, allowing for 700 litres/year of solids storage, and also 1,000 litres of liquid storage, which will be required during the winter season.

The wastewater system will operate on a differential summer/winter season basis. During the winter season (May-October), the *winter bypass* will be activated and the toilet vault overflow valves will be shut. There will be no liquid allowed to flow from the vaults and instead it will be stored. Greywater will continue to be discharged to the septic tank and discharged to ground upstream of the dosing tank, via a winter bypass distribution system located immediately prior to the Flout dosing chamber. Greywater will then be discharged to ground via a surface drain and is anticipated to cause only

⁸ Human waste only, with no flushing water.

minimal environmental impacts, due to the anticipated small scale of the greywater, and the generally relatively benign nature of hut greywater.

Rule 79 Discussion

The proposed wastewater system is considered in relation to Rule 79 conditions, as a relevant benchmark, as follows.

- a) The maximum designed discharge quantity is 46litre/day for blackwater and 580litre/day of greywater, which equates to a total discharge flow of 4,382litres/week. This quantity is well within the maximum rate of 14,000litres/week for a permitted activity. The design flow averaged over a year is 177litres/day. It is noted that this quantity is only an estimate, but is based on the number of hut bunks available at each hut. As the huts will be booked through the Great Walk system, the number of hut users will be controlled to some degree through the limitation of bed availability. However, transit users and camping users will add additional loading, but this additional loading has been allowed for in the flow calculations.
- b) The discharge zone is not located near any bore, well or drain. The discharge zones will be located further than 50m from any surface water bodies. The level of the groundwater table at each hut site is unknown. Test pit/core samples were dug at each site; to a depth of 450mm at the Moonlight Tops Hut site, and to a depth of 1600mm at the Pororari Hut site. The water table was not encountered during the digging of these samples.
- c) The hydraulic design of the waste water system is current best practice, in accordance with Human Waste Management at Back Country Huts and Campsites (New or Replacement), Standard Operating Procedure - Draft 2012, and AS/NZS 1547:2012. AS/NZS 2033 relates to the installation of polyethylene (PE) pipe systems, and AS/NZS 4130 relates to PE pipes for pressure application.
- d) Greywater is incorporated into the total discharge, which will be dispersed to land at least 20m from any surface water body. The groundwater level at the distribution fields are unknown but will be at least 0.6 metres (based on the data gathered from the sample test pits detailed at (b) above)).
- e) The land application method for effluent is via surface irrigation using 32mm ID PE distribution pipes, with 4mm diameter holes spaced 1m apart. The system design is unlikely to result in surface ponding, as the distribution areas have a land slope of approximately 30%. The irrigation area totals 540m², comprising three irrigation lines, each of which is 9m long with 20m long downslope area. Only one of these distribution lines is operational at any one time, and they will be

rotated weekly, which means each soakage area is only operational every third week.

- f) Stormwater generated from the roofs of the huts will be captured and directed to a tank storage system for use as potable water. An overflow system will operate to discharge surplus water to land, some 3-5 metres from the huts. Stormwater from the roofs of the small toilet structures will directly run-off onto ground. The stormwater discharges will be designed and installed to ensure that this discharge does not enter into the effluent discharge zones.

The on-site discharge system will limit any risks to human health by the location of the distribution field being at least 100 metres from each hut, and no public access being allowed via the minor service track. Offensive odours are present in the dry vault storage tanks, and the toilet structures will be ventilated to deal with odours. Once the wastewater is dispersed in the land distribution field, odour is not an issue, as reported by the Departmental staff with experience of similar wastewater management systems (Cameron Jones, 12/10/16, pers. comms.). The system designer advises that:

*"the effects on the natural environment are expected to be less than minor. The wastewater flows are estimated to be small (average 180 l/d) and dosed over a large area. The land application rate is low (1.5mm/d), and based on the New Zealand standard. The nutrients in the wastewater (e.g., nitrogen and phosphorus) will stimulate plant growth locally. The BOD is expected to be oxidized without any odour nuisance. Any pathogens in the discharge are expected to be attenuated in leaf litter or top soil and die through natural processes."*⁹

- g) The discharge system will use surface irrigation dispersal fields, and the dispersal method is via a 32mm pipeline, with flushes of wastewater pushed through the system by the Flout dosing chamber, which will provide for an even distribution of wastewater effluent along the length of the field distribution pipeline.
- h) The dispersal system will use a surface pipeline irrigation system, which will produce a liquid spray, similar to a grass sprinkler system (rather than an aerosol discharge to the air).

The target standards for effluent set by Rule 79 are:

- BOD5 not greater than 20mg/litre
- Suspended solids not greater than 30mg/litre
- Faecal coliforms not more than 1000/100mls

The applicant advises expects the discharge will be mostly greywater (estimated maximum discharge of 580l/d with a smaller volume of

⁹ John Cocks, MWH Ltd, email correspondence dated 13 October 2016.

blackwater (46 l/d). The greywater discharge after treatment via the septic tank with filter, should be low strength in terms of both BOD and suspended solids, and typically will not have faecal coliforms. The blackwater is expected to consist mainly of urine, which is low in these parameters. However, because urine and faeces will be mixed together in the blackwater discharge, both dissolved BOD and faecal coliforms will be present in the discharge (but will be diluted approximately 10 times by greywater).

The system designer advises that the system performance will typically be:

- BOD5 range from 70 to 120 mg/litre
- Suspended solids 30mg/litre
- Faecal coliforms average 500/100mls

This expectation is based on reported greywater septic tank quality given in TP 58 (Auckland Council) and faecal coliforms reported in treated grey water discharges by ESR (2005). Accordingly, as the wastewater discharge is expected to exceed the target standards set by Rule 79, a discharge is required as a discretionary activity, in accordance with Rule 91.

5.6 Regional Air Quality Plan

There may well be some incidental discharge of air-borne dust in the course of the gravel extraction activity within the three riverbeds. This activity is a permitted activity in accordance with Rule 4 of the Regional Air Quality Plan, provided that the discharge of dust is *"not noxious, dangerous, offensive or objectionable beyond the boundary of the subject property"*. As gravel extraction will be undertaken on generally damp riverbed sites it is anticipated that air-borne dust will not be a problem. Accordingly, no discharge to air consent is required, as the proposal will satisfy Rule 4.

5.7 Summary of Resource Management Requirements

In summary, under Sections 13 and 15 of the RMA, the proposal requires consents for restricted discretionary and discretionary activities in terms of the Regional Land and Water Plan. The tables below summarises the consents required.

Consent	Activity -construction period	RMA Section	Classification	Duration sought
1	Disturbance of the riverbeds at three sites to extract gravel (Pororari River, Tindale Creek)	s13	Restricted discretionary activity	5

	and Pike Stream) for track construction			
2	Discharge of incidental sediment during construction works	s15	Discretionary activity	5
Consent	Activity – operational	RMA Section	Classification	Duration sought
3	Disturbance of the riverbeds at three sites to extract gravel (Pororari River, Tindale Creek and Pike Stream) for track maintenance	s13	Restricted discretionary activity	35
4	Discharge of wastewater from backcountry hut's wastewater systems	s15	Discretionary activity	35

6 CONSIDERATION OF ALTERNATIVES

6.1 Alternative Route Options

The Department of Conservation commissioned a feasibility study in 2015, to investigate four potential route options in the vicinity of the Pike River mine. This study was undertaken by tourism specialists TRC Ltd.

Four options were put forward for consideration, two of which would link the Pike Stream valley to Punakaiki via the Paparoa Range. A third option links Blackball to Punakaiki via the Croesus Track, the Moonlight Tops and the Pororari Gorge (with a side track to the Pike River mine amenities area). A fourth option links the Pike River mine to Greymouth via the southern Paparoa Range and Sewell Peak. The study reported key findings about each of these four options, as follows:

Pike River mine to Sewell Peak, near Greymouth – while this route offers some expansive views from the tops, the route is seriously constrained by having to pass either through or around the Roa Mine operation.

Pike River mine to Punakaiki via Mt Bovis – this route covers such rugged terrain that it would be challenging 3-day tramp, at best.

Pike River mine directly west to Punakaiki – this route lacks any 'wow' factor as most of the route would remain within forest on both sides of the Paparoa Range with little chance of views and little time on the open tops.

Blackball to Punakaiki via the Croesus Track, the Moonlight Tops and the Pororari Gorge - this route provides for an extensive period on the open tops with impressive views, as well as time in forest. This route also offers opportunity to link with existing tracks, and provides for the possibility of a side track to the Pike River mine amenities area.

The study concluded that this last option had the best potential to become an overnight easy tramping track of regional significance, and had the potential to also be a shared use route. The study also identified that a number of track management issues would require addressing, such as; transport to each track end, marketing and promotion, the need to review and change the existing Paparoa National Park Management Plan, as well as obtaining the support from the wider community and businesses. The study also concluded that the chosen route would best be served if it was created to a very high standard, and included provision for new huts, which would allow the track to become a Top Track or Great Walk.

6.2 Additional Facilities Options

The potential to develop a short walk to the Pike River Mine ventilation shaft was initially considered as a further option for visitors. Accordingly, a route from Pike Stream to the ventilation shaft was assessed, but access up this stream is over steep and broken country, incised by side streams. The nature of this country would require a complicated series of cantilevered structures and bridges to provide this access. The report concluded that such a heavily engineered track is not practical or even feasible, and would not necessarily attract many visitors.

An alternative option for visiting the Pike River mine amenities area was also considered, which was to use the Greymouth town centre for memorials and for interpretation and historic material to be presented through the local museum.

6.3 Part 105 of the RMA

In relation to the discharge (from the two hut's wastewater systems)..., the consent authority must have regard to additional matters, including:

- a) the nature of the discharge and the sensitivity of the receiving environment to adverse effects;*
- b) the applicants' reasons for the proposed discharge, and*
- c) any possible alternative methods of discharge.*

The discharge from the huts wastewater system requires consideration under s105, as follows.

The only other option would be to store and remove all the wastewater, which would be both impractical and costly. The only feasible way to remove

the wastewater from site would be to use helicopter transport, which would be a very inefficient use of resources. Therefore a land-based disposal system is the most practical and sensible solution, given the remoteness of the hut toilets from any sewerage reticulation systems.

The proposed treatment system is a standard treatment system developed for backcountry huts/toilets. As such, this type of system is commonly used throughout New Zealand. The nature of the discharge and its impact on the receiving environment has been assessed by the system designer as being: *...the effects on the natural environment are expected to be less than minor. The wastewater flows are estimated to be (relatively) small and dosed over a large area. The land application rate is (relatively) low, and based on the New Zealand standard.*

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7 ASSESSMENT OF ENVIRONMENTAL EFFECTS

In accordance with the Fourth Schedule of the Resource Management Act 1991, the *actual and potential effects* associated with the proposal that are required to be assessed and addressed are:

- Social, economic and recreational effects;
- Effects on soils and slope stability;
- Effects on aquatic ecosystems;
- Effects on terrestrial flora and fauna values;
- Effects on landscape character and visual amenity values;
- Effects on archaeological and heritage values;
- Effects on Maori cultural values.

7.1 Effects on Social, Economic and Recreational Values

Benefits of proposal

The Pike29 Track will be promoted as New Zealand's 10th Great Walk. The Great Walks have an international reputation for outstanding walking and hiking and are on the list of 'must do' tramps for many New Zealander. The Heaphy Track as well as being a Great Walk is considered to be a 'world class' multiday mountain bike ride.

The number of people using Great Walks has been increasing year on year. Many of the Great Walks are nearing capacity over summer months and the addition of a new Great Walk on the West Coast provides a new opportunity for people to enjoy the outdoors and stay longer in the region.



The Pike29 Track will have broad market appeal for trampers and will appeal to Grade 4 'advanced' mountain bikers. It is considered that the track will appeal to people living on the West Coast, Nelson/Tasman, Marlborough and Canterbury, and should provide a wide range of positive benefits, relating to increased recreational opportunities, social events, and in providing employment/economic opportunities.

The new track is expected to compliment the Heaphy Track and The Old Ghost Road in the recreational options it will provide. Compared to these two tracks, people will be able to complete shorter one day rides such as between Blackball and Pike River, or a weekend overnight option staying at the hut on the Moonlight Tops. Completing a trip over the Paparoa Range will appeal to people seeking a longer journey.

The track will also provide opportunity for visitors to engage with local communities, and to support local events such as the Mountain Man and Goat Race, or new events such as a mountain biking enduro. The track will also provide opportunity to promote the work of the Paparoa Wildlife Trust, a community conservation project that is working to protect Great Spotted Kiwi in the Paparoa Range.

The Pike River to Punakaiki Track Feasibility Study estimated the economic impact of the Pike29 Track based on a pessimistic scenario of 500 walkers per annum, whereas a more likely scenario is 1,000 walkers per annum, while an optimistic scenario is 2,500 walkers per annum. The current Departmental assessment is that given the success of the recently opened Old Ghost Road, a scenario of 2,500 multi-day visitors seems achievable.

The Grade 4 Advanced mountain biking segment of the recreation market is narrow but highly valued by people seeking a challenging multiday ride. It is estimated that total market size of the Grade 4 advanced mountain biking segment in New Zealand is 50,000. Of these riders, approximately 82% go on a mountain bike holiday each year, and 13% or approximately 5,300 visited the West Coast. This market has the potential to grow.

In addition to the local benefits of the estimated \$10 million spend associated with the planning and construction of the trail, the annual direct outputs are estimated to be \$1.4 million and \$742,000 direct value added and 15 direct fulltime jobs (known as FTEs) and 17 indirect FTEs. The track will help support existing businesses associated with providing food and accommodation at Greymouth, Blackball, Punakaiki or Westport. The provision of mountain biking on the track will help sustain shops providing bike hire and bike servicing. Work required to provide on-going maintenance for the track and facilities is expected to support a further 1-2 FTE's.

The track will provide a new opportunity for transport /shuttle services that will required to drop off/pick up people from track entrances. New concession

opportunities will be provided for helicopter dropping off visitors for day trips, and small guiding operations.

Shared Use Track Issues

A variety of negative social and physical impacts are attributed to mountain bikers using shared use tracks. In many cases, the perception of these impacts differs from the reality of the onsite experiences. Research carried out on conflict between trampers and mountain bikers has found that, overall, walkers dislike meeting mountain bikers much more than mountain bikers disliked meeting walkers. The main perception of walkers was that mountain bikers damage the tracks and/or the environment and there were concerns about personal safety.

The Department has learnt a lot about how to minimise conflict between walkers and bikers from its experience with allowing mountain biking use on the Heaphy Track in 2011 and from feedback from users of The Old Ghost Road.

One of the main themes of negative feedback from walkers on shared use tracks is that mountain bikers do not slow down enough when approaching blind corners and as a result can surprise walkers. This potential issue should be addressed through:

- good track design and formation;
- promotion of the Mountain Biker's Code on the DOC website and on the entrance signs to the track.

Feedback from users of the Heaphy Track since seasonal mountain biking was introduced suggests that compliance of mountain bikers adhering to the mountain bikers code has been high. A limited number of instances of reported conflict demonstrate that both the mountain bikers and walkers are sharing the track with consideration for each other.

The Old Ghost Road was completed in December 2015 and is promoted for use by bikers and trampers all year round. To date there have been no reports of conflict between trampers and bikers. This positive result suggests that while some people may have the *perception* that bikers increase damage to tracks and conflict will occur between walkers and bikers, the *actual impacts* of allowing mountain biking on the Pike29 Track can be minimised by the mitigation measures listed above. By implementing these measures it is considered that conflict between walkers and mountain bikers can be minimised, and that a minimum level of conflict is acceptable.

For mountain bikers, part of the enjoyment of off-road riding comes from the challenge of having to react to changing terrain and negotiating hazards. The track design should provide suitable mountain biking features by the following means:

- Designing the track to 'flow';
- Designing good sight lines on corners so mountain bikers will be able to detect a potential hazard and either stop safely, or manoeuvre around it;
- Incorporating "chokes" (localised narrowing), gradient reversals and changes in surface type (such as cobbled sections) as design features to improve enjoyment and safety of users, and to slow down cyclists on tracks.
- Good track design and formation, good drainage design and regular maintenance will also minimise the damage to tracks by both bikers and walkers.

On-site monitoring of the Heaphy Track showed that there was no evidence of damage to track side vegetation by bikers. There were no reports of people riding off the track or reports of damage to historical features or signs on the track. Mountain bike use appeared to have no significant impact on sections of the track that were well formed and constructed, and that have the ability to drain freely.

Monitoring

Data gathering about track usage will be useful to determine the number of people who will be mountain biking the Pike29 Track. It is recommended that:

- The hut booking system requires people to identify whether they are tramping or mountain biking the track;
- The link on the Department's website allowing visitor to comment on the facilities is retained, as a way of monitoring potential conflict and allowing people to provide feedback on their experience of the track throughout the year;
- The Pike29 Track is included as part of the annual Great Walk surveys to compare the quality of the visitor experience with other Great Walks.

The Pike29 Track will be required to be formally inspected at least every two years as part of the Department's track inspection programme. Regular and ongoing inspection will determine whether the track is continuing to meet the track standards for a Great Walk and Grade 4 Advanced mountain biking.

In addition, monitoring may be required to be carried out to determine whether or not people are mountain biking off the track and/or specific monitoring may be required to determine whether damage is occurring to specific historic features on the track.

Impacts on existing recreational use in the area

The south eastern section of the Pike29 Track will use the existing Croesus Track. The Croesus follows a well formed historic pack track from Smoko carpark near Blackball to the 16 bunk (Serviced) Ces Clark Hut. From Ces Clark Hut the pack track continues to Croesus Knob and south to the historic

Croesus mine site. From the Croesus Knob the track changes in nature to a traditional tramping track to Mt Ryall and from here the track descends steeply to Barrytown. The track to Ces Clark Hut is used by both trampers and Grade 3-4 Intermediate/Advanced mountain bikers. The majority of trampers stay overnight at the Ces Clark Hut (walking time approximately 4-5 hours) and return the way they came. Mountain bikers will typically ride to the hut and back as a day trip. Ces Clark Hut has approximately 550 bed nights per annum.

As part of the Pike29 Track, it is proposed to build a new 20 bunk hut on the Moonlight Tops, which will take trampers approximately 6-7 hours to reach from the Smoko car park. A second new 20 bunk hut (Pororari Hut) will be located on a spur above Tindale Creek, some 4-6 hours from the Moonlight Tops Hut. From the Pororari Hut it will take trampers approximately four hours to walk to Punakaiki via the Pororari River. Mountain bikers will be directed to ride out via the Inland Pack Track to the Punakaiki River, to avoid conflict with the higher number of day visitors using the lower Pororari River Track.

It is considered that the existing pack track from Smoko car park to Croesus Knob is suitable to accommodate an increased number of trampers and mountain bikers without leading to any increased conflict or crowding. The existing section of track from Croesus Knob to Mt Ryall will be upgraded to meet the needs of increased numbers of trampers and mountain bikers.

It is uncertain what impact the construction of the two new huts on the Pike29 Track will have on the overnight use of the Ces Clark Hut. One scenario is that people who do not wish to tramp for 6-7 hours to the Moonlight Tops Hut, or spend half a day traveling to Blackball before starting the track, may choose to spend their first night at Ces Clark hut. Under this scenario, use of the hut will increase and Department may need to upgrade the hut to Great Walk standard, by including gas cookers and including the hut on the Great Walk booking system. Should this occur, the hut fees would be increased from the current \$15 per person/night to between \$22-54 per person/night. Under this scenario, another option is to increase the capacity of the Ces Clark Hut from 16 bunks to 20 bunks. The Department is currently planning to increase the capacity of the toilet at Ces Clark Hut.

A second scenario is that more people may carry out weekend tramps and or bike to the Moonlight Tops Hut and exit or via the side track to the Pike River Mine site. Under this scenario, use of the Ces Clark Hut could decrease and no changes to the service standard will be required nor the need to include the hut on the Great Walk booking system. Visitor feedback and monitoring of overnight use of the Ces Clark Hut will inform future management options for this hut.

In conclusion, it is considered that the existing Croesus Track and the capacity of the Ces Clark Hut (including the upgraded toilet capacity) is suitable to cater for an increased number of overnight trampers and mountain bikers. The upgrade of the section of the track from Croesus Knob to Mt Ryall will also allow for increased use of both trampers and bikers. The proposed management of the Pike29 Track to require mountain bikers to exit via the Inland Pack Track to the Punakaiki River will avoid conflict with the higher number of day walkers using the lower Pororari River Track.

7.2 Effects on Geology, Landforms, Soils and Slope Stability

Geology and Landforms

The Pike29 Track passes through some of the most diverse geology and landforms within New Zealand over its 65km length. The landforms are essentially unmodified by human impact.

The creation of the new track will enhance the opportunities for appreciation of the outstanding scenery, geodiversity and landform values. Interpretative panels will enhance the public's appreciation and scientific understanding of these outstanding natural features. These features include:

- Ridge rents on the main ridge between the Croesus Track and the Moonlight Track.
- Views of the central Paparoa Range with its sharp ridge crests and cirques formed due to past glacial actions.
- The Pike River Plateau and Escarpment are the most striking landform features of the alpine section of the route.
- North of Tindale Ridge lies the unusual landform known as the "Lone Hand", an outcrop of hard Hawks Crag Breccia with a "*hogback topography*" of rounded domes (the site of uranium prospecting in the 1950s).
- Special karst landform features which may be encountered on the north-western part of the Pike29 Track, from the Upper Pororari River footbridge, include; limestone cliffs, overhangs, numerous caves, sinkholes, underground streams, irregular drainage and sculptured rock.
- The Pororari River as an "antecedent river" having cut through the limestone substrate to form spectacular cliffs on either side of the valley.

The creation of the Pike29 Track is unlikely to impact on the landforms described because the scale of track construction is minor in the wider context of the landscape and the majority of the track is hidden within the bush. Where the track is to be created in the alpine zone there will be mitigation measures in place to minimise the visual impact, including use of manual labour in sensitive areas.

Soils and Slope Stability

The route of the new track on the exposed ridgeline north of the Moonlight Tops avoids major landslides, and the minor shallow slips can be safely crossed using the proposed construction methods. The design of the track has sought to minimise the risks related to slope instability by using best practice modern track construction methods of the *New Zealand Cycle Trail Design Guide 2015*.

The soils along the route are susceptible to erosion where they are exposed to the elements and the area has a high rainfall (up to 4000mm/year). The track will be built with an outward sloping camber so that stormwater is shed evenly off the outside of the track and point concentration of flows will be avoided, thereby minimising likelihood of erosion and slope instability.

The section of track on the open alpine area of the Moonlight Tops will be kept narrow (0.6 – 1.0m) so as to minimise the visual impact. This will also have the effect of minimising the height of cuts above the track on the side slopes, which in turn will minimise the area of exposed soils and reduce the risks of slope instability. Areas of erodible clayey soils will be covered in stockpiled topsoil and re-vegetated with plants salvaged from the track corridor to minimise erosion potential. Some areas of boardwalk are proposed where there are sensitive sites.

A total of 6.5km of the track length (approximately 10% of the track) traverses areas where the mudstone and gravelly/sandy soils are susceptible to erosion. Careful design of cut batters, replacement of soils and re-vegetation will limit the erosion so that there will be minimal effects due to erosion and sedimentation. The temporary use of short sections of silt fence can be considered as a backup mitigation if any areas or particularly erosion prone soils are encountered. The use of silt fences can be discontinued once vegetation has re-established.

Cut batter angles for the cut slopes along the majority of the track will be kept steep so as to avoid excessively high cuts and to minimise the extent of fresh surfaces that would be exposed to rainfall. Steep cuts have been shown to shed rainfall more quickly and are less prone to erosion. The rocky areas can be cut at angles of 60-80 degrees with satisfactory stability. The areas of stiff gravelly clay soils can be cut at angles of 50-65 degrees up to 2m high with satisfactory stability. Low stacked stone walls can be used in some areas to provide stability to the outside or inside of the track where side slopes are steep and where soils are weak or loose. It is expected that the maximum height of fill batters would be 0.5m and maximum height of cut batters would be 2m.

Previous experience on tracks on the West Coast shows that natural re-vegetation of cut and fill batters and track margins occurs quickly so that the erosion potential and visual impact will decrease over time.

The recommendations for environmental mitigation made by the geologist have been reviewed by the Project Manager for track design and construction, Mark Nelson (pers. comms. 12/9/2016). Mr Nelson has also recommended some further slope stability mitigation measures in relation to the track design, which have been included in the list below.

Proposed Mitigation Measures

In summary, the key environmental measures to protect geology, landforms and slope stability are:

- The route avoids major landslides.
- The route avoids special karst landform features, as far as possible.
- The track profile along the exposed Moonlight Tops section is minimised.
- Best practice track construction methods are applied [*New Zealand Cycle Trail Design Guide 2015* (4th edition)].
- The track camber is designed to shed rainfall evenly.
- Cut batter for rock substrate recommended angles of 60-80 degrees.
- Cut batter for stiff gravelly clay soils recommended angles of 50-65 degrees up to 2m high.
- The track profile along the exposed Moonlight Tops section is minimised, principally by the cut batter design, with a bottom 2/3 cut batter of 65 degrees, and a top 1/3 batter of 50 degrees - which will be covered by the organic vegetation layer.
- Low stacked stone walls recommended for use in some areas to provide stability to the outside/inside of the track, where side slopes are steep and where soils are weak or loose. It is expected that the maximum height of fill batters would be 0.5m and maximum height of cut batters would be 2m.
- Two possible sites with cut batters higher than 2m will be subject to detailed ground investigation and site-specific construction methodology.
- The temporary use of short sections of silt fence, as a backup mitigation, if any areas or particularly erosion prone soils are encountered.

7.3 Effects on Freshwater Ecology

During the construction and operation of the proposed Pike29 Track, activities that could adversely affect freshwater ecosystems include: earthworks, aggregate excavation and placement, bridge construction, culvert installation, hut construction, track side/retaining wall installation, transport of materials and infrastructure maintenance.

- Construction activities in or near waterways can result in fine sediment being washed into waterways, which can clog the gills of fish and

invertebrates, and result in structural habitat degradation by covering existing substrate and vegetation.

- Contaminants accidentally entering waterways during construction works can cause water quality degradation and/or get adsorbed into the substrate. This can reduce habitat quality and availability, and directly kill delicate aquatic organisms. Contaminants include, but are not limited to: paint, cement, waste water (for example, from dewatering), oils and fuels.
- Poor culvert placement can prevent fish passage, which is important as fish are highly mobile and move along waterways during their life to explore habitat and feeding opportunities, and to spawn. Some species must move between marine and freshwater environments to complete their lifecycle.
- Increased vehicular traffic or use of machinery in waterways can release sediments and cause localised compaction of the substrate reducing the quality and availability of habitats.
- Inadvertent introduction of invasive aquatic organisms (both plant and animal) can occur during construction projects, leading to habitat changes and potential localised species extinctions.
- Activities directly in waterways and/or in very close riparian margins can cause disruption to spawning and migration of fish species, by interrupting their movements or direct destruction of their eggs and larvae. Apart from eels (that lay their eggs at sea) the species recorded within this project area lay their eggs either in the substrate, on instream vegetation and woody debris, or amongst terrestrial vegetation along the riparian edges of waterways.
- The most important times to avoid works in the water and riparian margins are those months when eggs and larvae are likely to be present, because they are unable to move away from danger in the way that adult fish can. Spawning occurs in more permanent waterways, not those that only flow during very wet periods, and for most of the species recorded within the project area spawning is at low altitudes.

Proposed Mitigation Measures

The key environmental mitigation measures to protect freshwater values are as follows:

- The construction project and contractors will develop and comply with an Environmental Management Plan (including provisions for erosion and sediment control), to ensure that sediment does not enter waterways.
- The construction projects and contractors will follow approved guidelines, such as those in the Builders Pocket Guide (ECan 2014), to ensure that contaminants do not enter waterways.

- Culverts will be laid in a manner that will not impede fish passage, using the best practice guidance on culvert design. (Stevenson and Baker 2009, Boubée *et al.* 1999, NZTA 2013).
- Machinery and vehicles working in and/or passing through waterways will be kept to a practicable minimum.
- Strict aquatic pest control measures will be implemented during construction, principally by the use of a staging area where supervised cleaning protocols will be applied to personnel, gear and machinery.
- Any works to occur directly in the water and/or the immediate riparian margins of the following waterways should avoid the relevant spawning times:
Lower Pororari River - Spring for bully, torrentfish and lamprey; and autumn for galaxiids (Charteris 2006, McDowall 2000). Glass eels will also be migrating into these lower reaches during spring (McDowall 2000).
Pike Stream - Spring for bully; autumn for galaxiids and winter for trout (Kelly 2016, Charteris 2006, McDowall 2000).

In relation to the redevelopment of the Pike River Mine portal and amenities area, existing consented activities relating to freshwater include water abstraction and a variety of discharges, all of which ultimately enter Pike Stream. The redevelopment of these locations will require the on-going use of these existing resource consents, albeit variations may be required. The existing consents have a range of environmental standards to be met and mitigation measures to be applied in the course of their usage. Therefore the key environmental mitigation measure to protect freshwater values in relation to these facilities is to comply with the consent conditions.

It is noted that the White Knight Stream runs beneath the mine portal area, and due to the culturally sensitive nature of this watercourse, no works in nor discharges to this stream will be allowed.

7.4 Effects on Terrestrial Flora

Constructing a new track through the important and vulnerable ecosystems has the potential to cause adverse effects on ecological values and degrade ecological integrity generally. These potential impacts include the loss of native vegetation, habitat fragmentation, ground disturbance and habitat loss, weed and pest animal invasion and spread, and altered natural hydrology from diverting (channelization) natural water flows as a result of tracks and rutting (O'Connor et al 1990).

Karst surface landscapes are also vulnerable to insensitive practice of recreational activities, such as trampling of vegetation, especially where people congregate (e.g. climbers frequently gather under and around ledges) and soil disturbance (DOC 1999). It is also common for people to view tussock plants as "outdoor arm chairs" so where track design in the alpine

zone can lead people from stopping and sitting on snow tussocks or other large tussock forming plants, and provide alternatives which cause no damage these harms can be avoided.

The vegetation on the Paparoa coal measures is ecologically significant and an important part of the high representativeness of the national park. The alpine areas of coal measure vegetation in the PNP have been described as particularly important because they are less modified than the coal measures of the Buller region and are therefore important examples of natural alpine/sub alpine coal measure vegetation. Within these areas the cushion bogs are particularly noteworthy, however all the wetland types including tarns and red tussock wetlands are vulnerable to disturbance and less resilient than the forest areas to the associated fragmentation and weed invasion which occurs with disturbance.

The felling of individual biodiversity assets such as large trees, particularly beech and podocarp specimens, should be avoided as these giants represent hundreds of years of growth and are host to many epiphytic and canopy plant species and invertebrates. Amongst the epiphytic species may be the Scarlett mistletoe, *Peraxilla colensoi* and avoiding damage to their host trees is essential for their survival. The physiognomic equivalents of the charismatic individual old trees, in the alpine zone are the large snow tussocks (*Chionochloa* spp.) which can be very old and host a number of invertebrate species; accordingly any damage to these individual plants should be avoided.

One of the most significant of the negative impacts to flora and vegetation values will be the inevitable spread of pest plant species into what may well be a weed free area. Even with the best of intentions, there are no known examples of new tracks and huts not facilitating the spread of pest plant species. There are a number of key weed species that should be managed in perpetuity.

Proposed Mitigation Measures

In general, the main actions that can be taken during track planning and construction to avoid and minimise the negative ecological outcomes of track creation or compensate for the residual negative effects for flora values are;

- Sensitive micro-habitats, such as frost-heave deflation hollows, wetlands, bogs, tarns, etc, are avoided as far as possible, or protected by the use of boardwalks or hand-stacked rock base course, so that natural surface water flows continue.
- Areas containing rare and threatened species are avoided where possible.
- Vegetation clearance is kept to a minimum, and confined to the immediate track footprint (being generally a maximum of 1.5m) and the minimum required to site the new facilities.

- Any damage to large snow tussocks (*Chionochoa* spp.) should be avoided.
- Where beech tree removal is required, trees greater than 400mm (DBH) will be cut into lengths not exceeding 1.5m and added to the forest floor adjacent to the track (thereby reducing the potential for pinhole borer).
- Leaf litter and organic material will be removed from the track route prior to construction, and later spread back along the track margins.
- The design of the track formation will be undertaken so it does not cause severe ground disturbance such as obvious rutting, channelization or alteration of the natural hydrology, all of which would adversely impact on flora ecosystem viability.
- Track construction is undertaken progressively, so that the movement of machinery and equipment does not occur outside the planned impact footprint.

The mitigation measures to be implemented to control pest species include:

- Strict weed control measures will be implemented during construction, principally by the use of staging area where supervised cleaning protocols will be applied to personnel, gear and machinery.
- Stewardship signage will be placed at the track heads/ends encouraging best practice from track users, in order to minimise accidental weed spread from boots, bikes and gear.
- Annual monitoring is undertaken to assess impacts, including any occurrences of problem weed species which could aggressively establish, such as *Juncus squarrosus*, broom, gorse, Himalayan honeysuckle, and *Buddleja* (Belton 2016). None of these species should be permitted to establish, and accordingly a weed monitoring plan will be required.
- If any unexpected outcomes for flora result from the track and facilities construction, a contingency response will be developed.
- Control of browsing species which are damaging understory species along the track route, such as goats, will be undertaken.

7.5 Effects on Terrestrial Fauna

Birds

For forest bird species the greatest risk of adverse impact is removal of large/mature canopy trees which provide the best nesting or roosting habitat. In the alpine area, rock wren habitat comprising rock jumbles and rock screes is probably most at risk. Kea, which are likely to be found in any of the habitats along the track, are most at risk from the construction activities and subsequent human activity generated by track use.

Bats

The project team have identified a small number of standing dead trees which could be potential bat habitat, located under the Escarpment section and along the Tindale ridge section. The project intends to get these trees monitored for three months before construction works commence to establish if bats are present.

There is a Protocol available which DOC requires industry to follow for mitigating risk to bats, and accordingly this Protocol will also be used for the construction project. This protocol is provided with the fauna assessment in Appendix G.

Lizards/Invertebrates

Protecting habitat and preventing predator invasion would be the most effective mitigation for lizards and invertebrates. There may be very localised unique populations of snails and insects which should be identified through survey once the specific localities are made accessible via the track construction.

Pest species dispersal

In general, a track is likely to provide an invasion corridor for pest species. Some pests like rats, mice and mustelids are likely to already be widespread but cat and hedgehog dispersal could be facilitated with a clear access track. It is noted that the new track will enable goat hunters to reach localities which are currently plagued with high goat numbers, and this will be a positive benefit of the track in terms of assisting with animal pest control.

Proposed Mitigation Measures

The key environmental mitigation measure for **birds** are as follows:

- All practicable steps will be taken not to cut down large canopy trees (generally measuring >400mm DBH (diameter at breast height) or standing dead trees which have potential nesting or roosting holes.
- Extreme care will be taken with construction works in the alpine zone where potential rock wren habitat may be (usually rocky scree, rock piles or fragmented rock stacks). The track will likely skirt these zones and not remove or modify them. Where it is impractical to skirt these habitat areas, manual construction will be undertaken to minimise disturbance or damage.
- Construction materials to be used in the project have been assessed for ability to be manipulated or damaged by kea, including such construction materials as roof flashings, roof fixings, window seals, other seals, gas hosing, water pipes and so forth. Previously the use of soft edge flashing was a problem, and will not be used in this

project. Rubber components can only be used if they are fully protected from kea; the necessary rubber seals around the roof fixing screws will require the use of a Hurricane clip washer on top of the rubber seal.

- Construction materials which would poison or cause harm to kea will not be used or will be well shielded (including such materials as sealants, caulking, any lead fixture or weather proofing, and insulation materials).
- Signage will be provided to warn people not to feed or encourage congregation of kea, or leave vulnerable material available to kea.
- All rubbish (e.g. wrappings, off-cuts of timber, nails, rivet ends etc.) is to be removed from the site at the end of the construction period. Rubbish generated during construction shall be picked up and stored as soon as practical on site in a way that is secure from kea
- Plant and vehicles will be covered when not in use to prevent damage or harm to kea (particularly ancillary items such as cabling, hydraulic hoses, grease and fuels).

The key environmental mitigation measure for **bats** is:

- the avoidance of cutting large mature trees or large standing dead trees which may provide roost or breeding cavities and holes for bats.

The key environmental mitigation measures for **lizards** and **invertebrates**.

- All practical steps will be made to recreate lizard/invertebrate habitat using displaced rocks and boulders, adjacent to where the track is routed through rock jumbles and screes.
- Predator control will be undertaken along the track.
- During final track design an initial survey to be undertaken to determine if localised and unique populations of snails exist.
- Relevant construction team members will be briefed to look out for invertebrates and if any populations are located, then expert advice and species identification will be sought.

The key environmental mitigation measure for **pest control** is:

- Trapping or other pest control measures to be undertaken along the track.

7.6 Effects on Landscape Character and Visual Amenity

Pertinent to the national park/conservation land setting is whether the proposal is appropriate (or not) - taking into account the relevant objectives, policies and expected outcomes in the Department's statutory planning documents (see section 8). The proposal will introduce modification to the area (albeit small) which among other things will include up to three additional buildings; two huts and one alpine shelter. The currently high levels of remoteness will be changed with the improved levels of accessible public use including opportunities for accommodation and temporary shelter. However, current natural elements, patterns and processes will remain largely unchanged and will continue to prevail. The landscape changes that are proposed around the Pike River Mine portal and amenities area are regarded as 'remedial' or in other words - the type of changes being proposed here will improve the natural character and visual amenity of the existing baseline environment.

Regarding the effects of the proposal on the landscape character and visual amenity the following conclusions are reached:

- At the broad scale, the effects on natural character are very low. This is due to the relatively small scale of the proposal which is contributed to by a narrow track corridor with a small construction footprint and only a few, small built forms. These modifications to the otherwise highly natural landscape will be observable from a generally limited viewing environment with typically long view distances to where the proposed changes will be located.
- At the local scale (i.e., from the track users' perspective), the effects on visual amenity would be low to moderate. This is largely due to the introduction of the track itself, two huts, a shelter and other structures, such as bridges and viewing platforms and the like, into an area of very little human induced modification. The baseline environment currently holds very high natural values. However, this is tempered by the fact that the types of human modifications being proposed would be expected along a track of the length proposed. As part of other 'Great Walks' located within national parks, built structures (such as huts, shelters and other smaller structures) are found and are regarded as being essential to the track as a recreation facility, and so what is being proposed is not without precedent. For this reason the proposal would not be inconsistent with the outcomes listed under Tī Kōuka Place – ngā hua¹⁰ in the draft Paparoa National Park Management Plan (2016).

¹⁰ These outcomes are listed at page 68. 'Tī Kōuka Place – ngā hua' refers to the area within the Park where the Pike29 Great Walk will be located. "Each Place is represented within the Park Plan by a Ngāi Tahu taonga tree species that can be found within the Park. While each tree species may be found across many parts of the Park,

- At the Pike River Mine portal, amenities area and access road, any effects on natural character will be positive, as the area is remediated/rehabilitated and made safe for public access. Levels of visual amenity will be likewise improved compared to what currently exists (a decommissioned industrial facility).

Based on the above, and given the national park status, the effects on natural character and visual amenity arising from the proposal are assessed as being minor. Furthermore, the siting and design of the three new buildings further reduces any visual impacts that these built forms might otherwise generate. With careful siting and appropriate design controls including the use of natural recessive colours, the effects on this part of the Park will be minimised.

With regards to the track construction part of the proposal, potentially larger and more significant effects will be avoided by minimising the construction footprint and other measures. The visually open Moonlight Tops section of the track is the most sensitive area in terms of landscape values.

Overall, the proposal is appropriate to the natural character and its setting. A track and associated support elements (huts/shelter, viewing platforms, bridges and the like) would not be unexpected in this type of Great Walk environment. It is noted that the team developing the new track and facilities are mindful of the localities' natural character and visual amenity, and have a track construction philosophy which supports a well-designed and integrated track.

In terms of impacts on the landscape values of the new track sections and facilities associated with the Pike29 Track, it is acknowledged that any potentially affected person will be for the most part be people who are on the track itself. Other than perhaps hunters, and DOC staff and contractors, who may access other parts of the Paparoa National Park, it is unlikely that anyone else would be there for any other reason than walking or cycling the track. The track and structures associated with it would not be 'happened upon' by chance and therefore generate adverse landscape or visual effects by their very nature of being there. People will doubtless be aware of and expect the type of interventions that the proposal includes – even before they enter the national park.

To this end it is not the *type* of modifications that are being proposed that are potentially adverse – it is *how* these modifications are implemented that will be key to avoiding adverse landscape and visual effects.

the characteristics and values of each species link closely to the characteristics and values of each Place'....(from page 53, Part 2 of the draft Paparoa National Park Management Plan - 2016).

It is expected that localised landscape and visual effects will be confined to viewpoints from the track itself, or from areas very close to the track. It is not anticipated that track users will physically deviate far from the formed track in such a wild environment – particularly where the track passes through heavily vegetated areas. Localised landscape effects will also be felt from viewpoints from the huts, where track users may choose to stay overnight, or rest for short periods. Views from the huts are otherwise across a pristine highly natural landscape setting. Part of the logic of the siting of the new Moonlight Tops Hut is to provide expansive views to the north towards the escarpment, while achieving shelter from the south and south-westerly winds.

Proposed Mitigation Measures

Notwithstanding the fact that the proposal constitutes a relatively minor addition to the Paparoa National Park facilities; avoidance, remediation and mitigation of potential adverse effects has been considered from the outset.

The mitigation measures itemised below in relation to the siting and design of the built structures will assist with integrating the proposal into its setting that holds high natural character, landscape and amenity values.

Building Design and Siting

- Low, modest single storey buildings with gently pitched roofs will be used to minimise visual impacts.
- Low building proportions (approximately 3-4m height above existing ground level) which will help the structures to 'sit down' into the site and appear landscape biased, rather than sky biased.
- Well-modulated buildings generated by a stepped plan, and the use of various decks, porches and eaves that will serve to break up the visual built mass through variable areas and shapes of shadow.
- Siting of buildings on ridge/skylines will be avoided, as far as possible. To this end the Moonlight Tops Hut will be located as far downslope and 'nestled in' as much as is practicable to minimise its bulk and appearance.
- Use of natural and recessive colours. Generally speaking, this reduces the apparent size of buildings and helps them achieve a better compatibility within a highly natural environment such as this.
- Built footprints of huts/shelter and associated toilets will be as small as possible.
- Steep building sites requiring excessive amounts of cut and fill (and retaining structures) will be avoided.
- Careful siting of toilet and wastewater dispersal facilities to minimise adverse visual impact.
- Good house-keeping, including litter control and maintenance, is applied to Great Walk huts to ensure high level of presentation and attractiveness. Washing lines are not installed.

- To minimise light spill, no outside lights to be installed, only dim lighting of the main dining and cooking areas (1 amp LED lights).
- Efficient multi-fuel wood burners to be installed operate in the two huts will minimise light trails of smoke discharges.

Track design and construction

It is noted that the key aspects of the construction philosophy are:

- *fitting the track to the landscape, not modifying the landscape to fit the track.*
- *once complete, the track should look like it has always been there.*

The mitigation measures itemised below relating to the track design and construction will assist with integrating the proposal into its setting that holds high natural character, landscape and amenity values.

- A narrow construction track footprint will be applied with a maximum 1.5m x the width of the formed track surface (being 0.6-1.0m), with a minimised construction width on the Moonlight Tops section.
- Manual labour will be used to build sections of the track in highly sensitive areas.
- Cut and fill will be minimised by battering back to stable ground and or by matching existing ground profiles wherever possible.
- The careful management of side-cast and cut vegetation, borrow pits, track drainage, as well as the use of local/matching substrate materials, and a heavy emphasis on rehabilitation post-construction will all minimise potential adverse visual impacts.
- Helicopters will be used to ferry in heavy machinery and supplies which will lessen the impact on the landscape of transporting items overland.
- The track will be generally be located along natural contours and at an easy walking gradient as far as possible.
- Use of steps will be avoided as far as possible.
- Where possible, the track and buildings will be located to avoid the removal of large individual trees with > 400mm DBH (diameter at breast height).
- All areas around the construction corridor (including the sites where buildings are located) will be rehabilitated using leaf litter/organic matter carefully removed prior to works taking place. Where the use of organic material is not practical, eco-sourced seedlings will be replanted on disturbed ground.
- A weed control plan and track maintenance schedule will be developed for the new track.
- Professional design advice will be obtained for the road end presentation/signage, viewing platforms and for the siting/design of interpretation panels and other facilities.
- Particular care will be taken in integrating any new sections with existing historic pack track sections of the route.

Pike River Mine Site

- There will be substantial remediation/rehabilitation works carried out around the Pike River Mine portal and amenities area which will significantly improve the existing baseline environment.

7.7 Effects on Archaeology and Historical Heritage

The archaeological sites which have been assessed for the purposes of the Pike29 Track project are K30/87 (Inland Pack Track), as a pre-1900 archaeological site, and K30/93 (Upper Pororari River Track), which although it has not been confirmed as being constructed during the 19th century, the site has been included in this assessment because DOC's definition of what is considered 'heritage' differs to that of the Heritage New Zealand Pouhere Taonga Act 2014.

The historical and archaeological values of the Croesus Track (K31/29) was thoroughly assessed by Breen (2006) in her heritage assessment and baseline inspection report for Department of Conservation. Given that there are no proposed works on this section of the track, there has been no need to reassess the archaeological values of the site, or any of the recorded archaeological sites in the vicinity of the Croesus Track.

K30/87 Inland Pack Track

Extent of effects

The Inland Pack Track will be rerouted, in at least four areas, to allow for the use of the track by mountain bikers. Some minor earthworks will be undertaken at one of the track junctions but this will not affect any original track features. No dumping of earthworks or cleared vegetation will occur on archaeological sites during this work, spill of materials to the side of the track spill will be minimised.

Barriers will be installed, in order to direct the public off the old track and onto the new sections. At the time of writing this assessment, it was not known if the redundant sections of track would continue to be actively managed and conserved. Discontinuing maintenance of the redundant sections of the track will reduce the archaeological values of the site, by reducing its condition and amenity values.

The proposal to allow mountain bikers use of the track has the potential to have a negative impact on the condition of some of the original track features, such as the areas of cobbling and pitching, which are in a fragile state. However, the Department of Conservation have proposed a number of measures to mitigate the impact of mountain biking on track features; these are described below.

Ms Webb notes that the design and final details of the earthworks proposed on these sections of the track have not yet been finalised and accordingly she advises that this section of the assessment may need to be updated if any changes are made to the proposed work. With that caveat, the assessment regards the proposed alterations to be minimal and designed to preserve the significant heritage features on the track.

Future damage

It is unlikely that the addition of new sections of track will increase the risk of future damage to the archaeological site. It is, however, likely that discontinuing maintenance and conservation of the redundant sections of track will increase the risk of future damage, particularly vegetation growth and through tree fall, which is a common occurrence in the area. As such, it is recommended that a vegetation management plan is developed. The use of the track by mountain bikers may increase the risk of future damage, particularly to fragile features such as cobbling. However, the level of impact can be mitigated through ongoing monitoring of the track condition and regular maintenance.

K30/93 Upper Pororari River Track

Extent of effects

The Department of Conservation is proposing to construct a new shared use track which will incorporate sections of the Upper Pororari River Track (K30/93). Earthworks, including clearance of slips, windfall and vegetation will be undertaken on parts of the Upper Pororari River Track to repair those sections of the track that have been damaged in order for them to be made suitable for walkers and mountain bikers.

The proposal to allow mountain bike use of the track may have a negative impact on some of the original track features, such as the areas of cobbling which are likely to be in a fragile state. Breen (2009) has noted in her assessment of the Inland Pack Track that mountain bikers would exacerbate the impact of water damage to the features of the track to a greater degree than foot traffic alone, and this is likely to be the case for the Upper Pororari River Track as well. The Department of Conservation has proposed a number of measures to mitigate the impact of mountain biking on track features; these are described below.

From an archaeological perspective, the proposal to bring the Upper Pororari River Track back into use will have a positive impact on the amenity values of the track, while the clearance of vegetation and other proposed conservation measures may have a positive impact on the condition. The contextual and rarity values will not be affected.

The design and final details of the earthworks proposed on the Upper Pororari River Track have not yet been finalised and this section of the assessment may need to be updated if any changes are made to the proposed work.

Future damage

It is unlikely that the proposed earthworks will increase the risk of future damage to the archaeological site but the use of the track by mountain bikers may affect fragile track features and exacerbate the impact from water damage. The level of impact can be mitigated through ongoing monitoring of the track condition and regular maintenance. Track monitoring and maintenance procedures should be outlined in a management plan to be prepared for the Upper Pororari River Track.

Proposed Mitigation Measures – both tracks

The proposed works have been designed in order to avoid and/or protect the original features of the track as much as possible.

The Department of Conservation have proposed a number of measures to mitigate the impact of mountain biking on track features. They include:

- To minimise potential bike related damage to heritage fabric, steep sections of the Inland Pack Track will be avoided by re-routing the track around them.
- Protection of the pack tracks from physical damage, during the construction process, through machinery/heavy plant being transported over the tracks.
- Damage to historic track features to be minimised, by only disturbing those areas necessary to complete the works.
- No dumping of earthworks or cleared vegetation will occur on archaeological sites during this work, spill of materials to the side of the track spill will be minimised.
- Particular care will be taken in integrating any new track sections with existing historic pack track sections of the route.
- Use of cobbles or other protective track surface on any steep track sections that cannot be avoided.
- Original sections of 'cobbling' on the Inland Pack Track to be preserved by covering with new track surfacing material (rather than removal of cobbles).
- Use of 'natural' barriers (such as boulders) to direct traffic away from fragile track features.
- Covering sections of original track surface with new track surfacing material to prevent erosion, and filling of dips to minimise track damage.

It is possible that unrecorded archaeological sites may be discovered during the proposed works and they may be damaged in order to complete the

works. Where possible, damage to features will be minimised by only disturbing those areas necessary to complete the works.

The archaeologist has also made the following recommendations for action by the Department, which have been accepted by the Department:

- In relation to the works on the Inland Pack Track, the Department of Conservation should apply to Heritage New Zealand *Pouhere Taonga* for a general archaeological authority for a site where the effect will be no more than minor.
- A heritage management plan will be prepared for the Upper Pororari River Track, following the principles outlined in Section 14 of the ICOMOS NZ Charter. This plan will be implemented as a guiding document for the construction of the Upper Pororari section of the Pike29 Track.
- A detailed record of all modifications to each of the sections of existing track – the Inland Pack Track and Upper Pororari River Track– to be made before, during and following the proposed work. This work to be undertaken by the Department and should be stored on the Asset Management System (AMIS).
- No heritage fabric should be removed from any track during the construction process unless considered absolutely necessary. Any heritage fabric removed should be documented.
- The redundant sections of the Inland Pack Track should continue to be conserved. A management plan for this should be prepared and should include a plan for ongoing vegetation management.
- The proposed work for the remainder of the Pike29 Track, including the Upper Pororari River Track and the new sections of track, should proceed under an Accidental Discovery Protocol.
- No fossicking of the sites should be allowed before, during or after the construction process.

The archaeological assessment has determined that no archaeological authority needs to be sought from Heritage NZ *Pouhere Taonga* for the proposed works on the Upper Pororari River Track.

The works on the Inland Pack Track will be undertaken under an archaeological work plan, and with a general archaeological authority for minor effects in place (obtained through Heritage New Zealand *Pouhere Taonga*).

7.8 Effects on Maori Cultural Values

This report has identified a number of important Maori cultural and spiritual values associated with the Paparoa, and particularly for the Pororari River, and White Knight Stream, which are summarised as follows:

- Cultural, historical and archaeological values and sites;
- Source of mahinga kai/mauri of waters.

Proposed Mitigation Measures

The Department of Conservation has acknowledged these values and is seeking to provide appropriately for these values by use of the following mitigation measures.

- The important status of the Pike River Mine site and the White Knight Stream to Ngati Waewae needs to be appropriately acknowledged. Accordingly it would be appropriate for a site blessing ceremony be carried out prior to the mine site redevelopment works commencing.
- The importance of the White Knight Stream to Ngati Waewae will be represented in the interpretation and education material. The Department of Conservation will work in consultation with Te Runanga o Ngati Waewae in the development of these materials.
- The Department of Conservation's Accidental Discovery Protocol is to be adopted for the project, to ensure that the correct procedures are followed if any artefacts are disturbed. This Protocol is attached at Appendix 1, and the Department will include it in the construction contracts.
- Neither the nohoanga site on the coastal northern bank of the Pororari River, nor the Culturally Significant Area (CSA 10) along the coastline will be directly impacted by the proposed construction works.
- Potential adverse impacts on the water quality and associated impacts on aquatic fauna (particularly mahinga kai) will be minimised by limiting the duration and intensity of any in-stream disturbance as far as possible.
- Any works to occur directly in the water and/or the immediate riparian margins of the following waterways will avoid the relevant spawning times:
 - Lower Pororari River - Spring for bully, torrentfish and lamprey, as well as glass eel migration; autumn for inanga (galaxiids).
 - Pike Stream - Spring for bully; autumn for inanga (galaxiids).
- Pounamu is an important taonga, and is vested in and is the property of Te Runanga o Ngai Tahu, by the Ngai Tahu (Pounamu Vesting) Act 1997. Thus any pounamu found in the course of the works will be returned to Te Runanga o Ngai Tahu, and this requirement will be included in the construction contracts.

7.9 Monitoring

Construction Works

In relation to all works, the construction contractors will be required to operate in accordance with the Department of Conservation's safety protocols, to operate a Health and Safety Plan, to finalise and comply with an Environmental Management Plan (including provisions for erosion and sediment control) and to comply with any consent conditions imposed by the West Coast Regional Council.

An Accidental Discovery Protocol will guide monitoring of the construction works for archaeological artefacts which may be discovered in the course of the works throughout the entire site. Works on the Inland Pack Track will be undertaken under an archaeological work plan, and with a general archaeological authority for minor effects in place.

The Department of Conservation through its staff, and professional engineering consultants, will have oversight of the construction project, with supervising staff member/s monitoring works closely in the early stages and then at least during weekly site visits and will monitoring compliance with the requirements listed above.

Due to the pro-active approach to environmental management, including the proposed mitigation measures, it is not proposed to undertake any ecological monitoring.

Huts Wastewater System

In relation to the hut wastewater management system, there will be inspections and testing of all system components undertaken during system construction and commissioning. The contractor will be required to document the construction at each site with photographs. An Operating and Maintenance Manual is to be prepared for the onsite wastewater management system at each hut, which will include; as-built drawings, system photographs, supplier's manuals for the Flout dosing equipment and septic tanks, and contact details for the equipment suppliers and maintenance service.

The hut wastewater system designer advises that regular checks should be made of the gravity pipelines, the dry vaults (storage tanks), septic tanks, and the pipe distribution lines at the land application areas. Any blockages or biological growth build up in the distribution lines is to be cleared. During the summer season the resident hut warden will be checking the system at least weekly, and rotating the three distribution pipelines. During the winter season, a hut warden will visit the huts on a regular basis and will check the greywater bypass system, which may require flushing if it freezes in cold weather.

Due to the pro-active approach to environmental management, including the proposed mitigation measures, it is not proposed to undertake any ecological monitoring.

8 CONSULTATION

8.1 Proposal Consultation

The Pike29 Track as a concept has been developed as a memorial track to the 29 men who died as a result of the Pike River Mine disaster on 19 November 2010. The Government has made a series of decisions that relate to this proposal, in including various investigations, the purchase of the mining operation by Solid Energy New Zealand (SENZ), and the addition of the mine site to the Paparoa National Park in 2015. The Department will take over the on-going management of the mine site, once SENZ exits the site at the end of 2016.

Given that the land ownership of the Pike River Mine site was conservation stewardship land, managed by the Department of Conservation, the Department has been involved in on-going discussions with the families of the 29 men lost in the mine disaster. Over time, a core group of families have continued to engage with the Department, with Departmental staff attending the families' regular meetings held every month. The track concept was chosen by this core group of families of the Pike River Mine men as a fitting memorial, which will bring significant recreational, social and economic benefits to the West Coast region.

A sub-committee Working Group from the core families group has been formed to provide input into the specifics of the project, such as design detail, particularly at the Pike River Mine site.

8.2 Governance Consultation

The Department's governance organisation, the West Coast Tai Poutini Conservation Board, has also been updated about the project on a regular basis at its bi-monthly meetings. Within the Department, the project is being steered by a Project Governance Group, consisting of senior Departmental managers.

Consultation has been undertaken with Te Runanga o Ngati Waewae, via face to face meetings with Francois Tumahai. Ngati Waewae are also represented on the West Coast Tai Poutini Conservation Board, which has statutory responsibility for the Park Plan reviews. They are thus well informed about the Pike29 Track proposal and its rationale.

8.3 Public Consultation – Paparoa Park Management Plan

The Department has publicised the proposed Pike29 Track proposal on its website, using a brochure document, which includes map of the route. A general media release providing the same information occurred in May 2016. However, no specific public consultation process on the track proposal has been undertaken, as this proposal is part of the review of the Paparoa National Park Management Plan.

The review of the Paparoa National Park Management Plan was subject to an extensive public consultation process, which took place from late 2015 to mid-2016. This process commenced with a series of public information meetings held at Westport, Punakaiki, Reefton, Ikamatua, Runanga, Blackball and Greymouth during February and March 2016. These meetings included an information caravan format as well. In addition, consultation meetings were held with key stakeholders such as Federated Mountain Clubs, Royal Forest and Bird Society, etc. The consultation team reports that at the majority of the consultation discussions, once they had clarified the proposal, they received generally positive responses to the Pike29 Track proposal (Robyn Roberts, pers. comms. 1/09/16). Verbal presentations were also heard at hearings held by the West Coast Tai Poutini Conservation Board in August 2016.

A website was set up using a software survey tool (Survey Monkey), to allow people to make submissions on the draft of the revised management plan. The submission process closed on 5 August 2016. Responses to all submissions and a revised draft plan prepared for consideration by the West Coast Tai Poutini Conservation Board. Once the Conservation Board is satisfied with the revised draft plan, it will refer it to the New Zealand Conservation Authority for their approval.

8.4 Resource Consent Consultation

Dean Kelly of Fish & Game NZ (West Coast Region) has been consulted and he has advised that his agency has no interest in either the Pororari River or Tindale Creek, whereas Pike Stream has value as a spawning site for the downstream Big River. The issue of concern is possible sedimentation during the winter spawning period for trout. Mr Kelly seeks mitigation via either a works exclusion period, or via an exclusion zone. The works exclusion period would be the trout spawning period of May-Sept, or for a works exclusion zone to be imposed, being a 1m distance to any flowing water channel, and no fording of the watercourse (pers. comms. 20/10/16).

The Department already intended to apply a works exclusion period for Pike Stream for over winter, and this period has been now been specified as being May- September. To assist with sedimentation management, the Department

has also specified the use of a works buffer zone of 2.5m to any flowing water channel.

8.5 Interested Parties

Interested parties, and potential affected parties, in relation to this consent application have been discussed with the Regional Council planner, Rachel Clark. As the entire site is Crown land managed by the Department of Conservation, the interested and potentially affected parties are limited to only two parties, as follows:

- Fish & Game NZ (West Coast Region) would be regarded as an affected party by the Regional Council, due to the proposed gravel extraction on three riverbed sites, and the potential for sedimentation of waterways from construction works;
- Te Runanga o Ngati Waewae is regarded as an interested party by the Department of Conservation, having an important role in the Paparoa as the Department's Treaty Partner, and in recognition of their status as mana whenua;

These two parties have been provided with a copy of this application and their formal approval has been sought. Their approvals will be forwarded as they are obtained, and should be attached at Appendix O of the application and AEE.

9 STATUTORY PLANNING MATTERS

The Resource Management Act 1991 (RMA) provides the framework for all resource utilisation in New Zealand. The hierarchy of resource management documents within the RMA framework for land use is the RMA, the Department of Conservation's regional Conservation Management Strategy and the relevant National Park Management Plan.

The Department of Conservation's management framework is provided by the Conservation Act 1987 and Conservation General Policy 2005 for conservation land in general, and the National Parks Act 1980 and General Policy for National Parks 2005 for national park land. The regional Conservation Management Strategy provides management policies and objectives for all the conservation land, including national park land, while every national park has its own specific National Park Management Plan, with policies and objectives that relate to that park land only.

As the Pike29 Track will traverse land both *within* the Paparoa National Park, and within conservation managed land held *outside* the park, the full range of the Department's planning instruments applies. The key aspects of all these

planning instruments are assessed in relation to the Pike29 Track proposal in the following sections.

9.1 Resource Management Act 1991

Part II of the RMA (sections 5-8) outlines the principles that guide considerations of any resource use, development or protection.

The overriding purpose of the RMA (s5) is to "*promote the sustainable management of natural and physical resources.*" Sustainable management is to be achieved by avoiding, remedying or mitigating the adverse effects of activities on the environment.

Section 6 lists the matters of national importance that *shall be recognised and provided for*, and the following matters are those considered relevant to this project:

- a) *the preservation of the natural character of ...rivers and their margins, and protection of them from inappropriate subdivision, use, and development;*
- b) *the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development;*
- c) *the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna;*
- d) *the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers;*
- e) *the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga;*
- f) *the protection of historic heritage from inappropriate subdivision, use, and development:...*

Section 7 lists other matters to *which particular regard must be had*, and those matters considered relevant to this proposal are as follows:

- a) *kaitiakitanga:*
 - aa) *the ethic of stewardship;*
 - b) *the efficient use and development of natural and physical resources;*
 - c) *the maintenance and enhancement of amenity values;*
 - d) *intrinsic values of ecosystems;*
 - f) *maintenance and enhancement of the quality of the environment;*
 - g) *any finite characteristics of natural and physical resources;*
 - i) *the protection of the habitat of trout and salmon:*

The relevant aspects of s6 and s7, as listed above, have been thoroughly assessed within this Assessment of Environmental Effects (as detailed within section 6 of this document) and the proposal has been developed to avoid, remedy or mitigate any adverse effects on the environment, in keeping with s5(c). Therefore it is considered that the proposal is consistent with Section 5

of the RMA and will not significantly adversely affect or compromise any of the relevant matters set out in sections 6 or 7 of the RMA.

The development and use of the physical resource (the new Pike29 Track and associated infrastructure), will provide a new amenity facility which will enhance public access, and will allow for the West Coast community to provide for their social, recreational and economic wellbeing. Important aspects of the natural environment (including historic heritage, indigenous flora and fauna, outstanding landscapes and natural character of rivers) will be protected in the course of the design, construction and use of the new Track. As such, the proposal does constitute *appropriate use and development*.

9.2 Conservation GP 2005 and GP for National Parks 2005

The Conservation General Policy 2005 (CGP05) is relevant to those parts of the Pike29 Track outside the Park, while the General Policy for National Parks 2005 (GPNP05) is relevant to those parts of the Pike29 Track within the Park.

Public participation

CGP05 Policy 3(e): "*People and organisations interested in public conservation lands and waters should be consulted on specific proposals that have significance for them.*"

GPNP05 Policy 3(e): "*People and organisations interested in national parks should be consulted on specific proposals that have significance for them.*"

As the proposed Pike29 track is a significant development within and adjacent to the national park, consultation has been undertaken with a wide range of interested organisations and the public as part of the review of the park management plan.

People's benefit, use and enjoyment

Planning and management

CGP05 Policy 9.1(f): "*Recreational opportunities at places should be managed to avoid or otherwise minimise any adverse effects (including cumulative effects) on:*

- i. natural resources and historical and cultural heritage where required by the relevant Act;*
- ii. the qualities of peace and natural quiet, solitude, remoteness and wilderness, where present; and*
- iii. the experiences of other people."*

GPNP05 Policy 8.1(c): "*Planning and management for recreation and other opportunities for the benefit, use and enjoyment of each national park should:*

- (i) preserve the national park values, including natural quiet, as far as possible;*

- (ii) minimise adverse effects, including cumulative effects, on national park values;*
- (iii) provide for a range of experiences to enable people with different capabilities, skills and interests to have the opportunity to benefit, use, enjoy, and gain inspiration from national parks; and*
- (iv) maintain the distinct character of recreation in New Zealand national parks, including the traditional New Zealand backcountry experience with its ethos of self-reliance."*

The proposed Pike29 track will enable people with different capabilities the opportunity to benefit from the park, leaving the remainder of the park for self-reliance and natural quiet.

Vehicle use

CGP05 Policy 9.5(b): *"Conservation management strategies and plans will identify where the use of specified types of vehicles and other forms of transport may be allowed and will establish any conditions for use."*

GPNP05 Policy 8.6(f): *"Powered vehicles should not be taken into or used in national parks except on roads formed and maintained for vehicle use, and on routes specifically approved for use by a specified type of powered vehicle in a national park management plan."*

GPNP05 Policy 8.6(g): *"Non-powered vehicles should not be ridden or otherwise used in national parks except on roads formed and maintained for vehicle use, and on routes specifically approved for use by specified types of non-powered vehicle in a national park management plan."*

GPNP05 Policy 8.6(h): *"Roads and routes may be approved for the use of a specified type of non-powered vehicle only where:*

- i) adverse effects on national park values can be minimised;*
- ii) the track standard is suitable; and*
- iii) the benefit, use and enjoyment of other people can be protected."*

GPNP05 8.6(i): *"A national park management plan will identify measures to manage the approved use of specified types of non-powered vehicles that should be taken to:*

- i) minimise any adverse effects (including cumulative effects) on national park values; and*
- ii) protect the experiences of, and avoid creating hazards for, others."*

All types of vehicles can be allowed on the Pike29 Track provided they are specifically identified in the West Coast *Te Tai o Poutini* Conservation Management Strategy and the Paparoa National Park Management Plan, subject to criteria to protect values and avoid adverse effects.

Accommodation and related facilities

CGP05 Policy 10(a): *"Accommodation and related facilities on public conservation lands and waters may be allowed for public recreation,*

educational and community services, consistent with the outcomes planned for places."

CGP05 Policy 10(e): *"All accommodation and related facilities including replacements, additions and extensions on public conservation lands and waters should:*

- i. be consistent with the outcomes planned for places;*
- ii. avoid or otherwise minimise adverse effects on natural resources and historical and cultural heritage, and on the benefit and enjoyment of the public, including public access;*
- iii. complement and, wherever possible, be located close to existing accommodation and related facilities;*
- iv. be located, designed, constructed and maintained to meet all legal requirements and standards;*
- v. be of such a scale, design and colour that they harmonise with the landscape and seascape;*
- vi. provide for disabled people in places where this is practicable; and*
- vii. be available for use by the public."*

GPNP05 Policy 9(a): *"Accommodation and related facilities in national parks may be allowed for public use ... consistent with outcomes planned for places."*

GPNP05 Policy 9(e): *"All accommodation and related facilities, including replacements, additions and extensions and signage, in national parks should (unless otherwise provided for in an existing lease):*

- i) be consistent with the outcomes planned for places;*
- ii) minimise adverse effects on national park values and on the existing benefit, use and enjoyment of the public, including public access;*
- iii) avoid proliferation of the built environment;*
- iv) complement existing accommodation and related facilities;*
- v) be located, designed, constructed and maintained to:*
 - a) preserve a sense of naturalness;*
 - b) where possible, be close to other buildings;*
 - c) meet all legal requirements and standards;*
 - d) minimise risks from natural hazards; and*
 - e) avoid adverse effects on natural surface and underground waters and all water bodies;*
- vi) be of such a scale, design and colour as to harmonise with the landscape and seascape;*
- vii) provide for disabled people in places to the extent required by law; and*
- viii) be available for use by the public."*

The general policies allow for the new huts to be built, provided they are consistent with the outcomes in the CMS and Park plan, and other criteria to protect values and avoid adverse effects.

9.3 Conservation Management Strategy

The West Coast *Te Tai o Poutini* Conservation Management Strategy 2010-20 (CMS), has been assessed to identify any relevant inconsistencies in relation to the construction and vehicular use (including mountain bikes, all-terrain wheelchairs and e-bikes) of the Pike29 Track and associated facilities, both within the National Park and on adjoining public conservation lands and waters.

The CMS covers the area of the (former) West Coast Conservancy extending from Kahurangi Point in the Buller District south to Awarua Point in the Westland District, including Paparoa National Park. The CMS identifies a recreational zoning framework, and the proposed new track covers zones classified as being *backcountry-remote zone* and *remote zone* (including the Southern Paparoa remote zone). The track ends near Punakaiki, and will be on the *front-country site* of the Pororari-Punakaiki River loop track and the *intense interest site* of Dolomite Point Pancake Rocks.

The CMS divides the West Coast Tai Poutini Conservancy into seven land based Places (at Section 4.2). These Places are (Karamea, Paparoa, Inangahua, Māwhera, Hokitika and Te Wāhi Pounamu). As a result of the 2015 extension to Paparoa National Park following the addition of the Pike River Mine area, two Places need to be considered as part of the proposed Pike29 Track; Paparoa Place and Māwhera Place.

Objectives and policies for the recreation zones are considered first, as the overarching policy setting. In addition, the developments must be consistent with the desired outcome for the Place.

9.3.1 Relevant Sections of the CMS – new tracks

Remote Zone (3.6.1.3), pgs 120-121

Parts of the proposed track are within the Remote zone (the Southern Paparoa remote zone), which provides extensive natural settings and high levels of natural character. There are two objectives for this zone:

1. *To retain a range of challenging remote natural settings with few, if any, facilities and very limited noise intrusion, so that suitably equipped people can enjoy these places on nature's terms.*
2. *To enable people to experience extensive natural settings with diverse topography and high levels of natural character, including remoteness and natural quiet.*

Development within the remote zone is provided for by Policy 3:

"Consideration may be given to the development of a minimal number of new recreational facilities for public use within the remote zone. ..."

Backcountry-Remote Zone (3.6.1.4), pgs 122-124

Each end of the proposed Pike29 track is within the backcountry-remote zone. The Backcountry-remote zone is an area that provides access to extensive natural settings where facilities are provided but a considerable degree of physical challenge, self-reliance and isolation is involved.

There are two objectives for this zone:

- 1. To provide access to a range of recreational opportunities via facilities that enable people to enjoy challenging natural settings in the backcountry.*
- 2. To enable people to access extensive natural settings where:
 - a) facilities are provided but a considerable degree of physical challenge, self-reliance and isolation is involved;*
 - b) groups of recreational users are generally small and encounters with other groups are infrequent (except on a limited number of high-use tracks and rivers);*
 - c) huts and tracks provide the opportunity for solitude for those who seek a greater sense of isolation and challenge, but still need the security of some facilities; and*
 - d) overnight use is more intensive at some sites and at certain times of the year.**

Frontcountry sites (3.6.1.5)

One of the northern ends of the Pike29 track is on the Pororari-Punakaiki River loop track, which is a frontcountry site, while the southern end of the track links to the frontcountry site of Moonlight track and historic track. Frontcountry sites encompass a variety of facilities including high-grade tracks of short duration that cater for all ages and most abilities. There are two objectives for this zone:

- 1. To provide a range of day-use recreational opportunities located within easy reach of roads and highways, with facilities that meet high visitor asset management standards.*
- 2. To enable people to explore a wide diversity of natural landscapes and a range of historical and cultural heritage, located within relatively easy reach of vehicle access, without the burden of carrying overnight equipment or supplies.*

Provision of recreation facilities (3.6.2.1)

This section outlines how the Department intends to provide a range of appropriate recreation opportunities, facilities and services. There is one objective and one policy:

Objective

- 1. To provide facilities and services consistent with the objectives and policies for each recreation outcome zone.*

Policy

1. *Provision and management of new and existing recreation facilities should comply with the following criteria:*
 - a) *the facility complements the existing range of recreation opportunities (see Policy 4, Section 3.6.1.1);*
 - b) *the facility will not compromise the recreation outcomes described in Part 4 of this CMS for that site;*
 - c) *the effects on natural, historical and cultural heritage values and recreation opportunities are acceptable; ...*

Desired Outcome for Paparoa Place (4.2.3)

Paparoa National Park 2020 (4.2.3.2), pg 206

The outcome states: "*Paparoa National Park stands as a premier example of natural New Zealand ... where natural quiet predominates ... [and it is a place] uncluttered by intrusive structures.*

"A network of high quality tracks allow people to make short excursions to explore the Park's karst landscapes, forest, rivers and coastal scenery, and to experience natural quiet, peace and tranquillity. More adventurous recreationalists are able to venture further on extensive track systems and routes to experience peace, solitude, inspiration, recreation enjoyment and challenge."

The Park is to be managed in accordance with the Paparoa National Park Management Plan.

People's benefit and enjoyment in 2020 (4.2.3.7)

In addition to the general remote, backcountry-remote and frontcountry zones provisions, detailed in 3.6.1.3, 3.6.1.4 and 3.6.1.5 above, further guidance is provided for the recreation outcomes in the Paparoa Place within section 4.2.3.7, as follows:

Intense interest sites and frontcountry sites, pgs 214-215

The outcome includes the following statement for the Pororari-Punakaiki River loop track frontcountry site: "*Access to the Pororari-Punakaiki River Track from State Highway 6 is bridged, removing the requirement for people to ford the Punakaiki River. The section of Inland Pack Track between the Pororari River and Bullock Creek provides a day tramping trip opportunity along with easy access to the interior of the Park.*"

Backcountry-remote zones, remote zones and gazetted wilderness areas, pgs 215 – 216

"The ... Western and Southern Paparoa remote zones are protected for their particular values and provide opportunities for self-reliant recreation on nature's terms; they have few, if any, facilities or services. The marked route onto the open tops at Mt Bovis complements the access that the Croesus

Track and Buckland Peak Route provide to the Paparoa Range. In order to protect the wilderness character of the Paparoa Range, no additional tracks are available here."

Desired Outcome for Mawhera Place (4.2.5)

People's benefit and enjoyment in 2020 (4.2.5.6)

Frontcountry sites, pgs 235-236

"... The provision of recreational facilities and interpretation of gold mining history at ... the Moonlight valley enable people to enjoy quality experiences at these significant historic heritage sites. ..."

Backcountry-remote and remote zones, pgs 236-238

"Most mountain valleys in Māwhera have a system of tracks (or access up open river flats) and huts, with great scope for hunting and 'backcountry adventurer' tramping. ... Mountain range access is available at several sites including Croesus, Moonlight, and ... In the southwestern Paparoa ranges, day trip and overnight facilities are available. ... A marked route linking the Croesus and Moonlight tracks provides a unique opportunity to traverse the main ridgeline of the Paparoa Range. No further facilities or access routes to wilderness opportunities are available north of the Moonlight, along the Paparoa Range."

Discussion

The above outcome statement refers to 'wilderness' opportunities along the Paparoa Range. A Departmental Planner, Robyn Roberts, has provided the following advice in relation to the definition and understanding of 'wilderness'.

At the time the CMS was developed, areas were only referred to as 'wilderness' if they were gazetted wilderness areas, such as the gazetted Paparoa Wilderness Area. It is noted that this gazetted wilderness area lies well to the north of the Pike29 Track.

The Desired Outcome detailed in *Paparoa Place* refers to the Paparoa Range and the wilderness character and wilderness opportunities. It is considered that this reference to 'wilderness character and opportunities' is referring to the northern area of Paparoa Range towards and in the Paparoa Wilderness Area, rather than within the Paparoa National Park.

The Desired Outcome for *Mawhera Place*, although it refers to 'wilderness opportunities are available north of the Moonlight (track), along the Paparoa Range...' is essentially referring to the wilderness opportunities north of the Paparoa National Park.

The most relevant provisions of the CMS in regard to construction of the Pike29 Track are in the *Paparoa Place*, Desired Outcome for Paparoa National

Park in 2020 (as previously detailed). This outcome talks of being able to venture further into the Park on the *extensive track systems and routes*. This statement clearly indicates the intention is that tracks could and would be developed within Paparoa National Park.

In terms of the development of such facilities within the Southern Paparoa remote zone portion of the national park, Policy 3.6.1.3 allows for the consideration of new recreational facilities. The development of the Pike 29 Track through this Remote Zone remains in keeping with Desired Outcome of being *protected for their particular values and provide opportunities for self-reliant recreation on nature's terms* as the zone will still have only a "few" facilities (i.e. a single new track and hut).

9.3.2 Relevant Sections of the CMS – vehicle use

According to the General Policy for National Parks 2005 (GPNP) vehicle use, both powered and non-powered, is allowed in a National Park, provided they are used on roads and routes specifically approved for their use by a specified type of powered and/or non-powered vehicle in a national park management plan. It is proposed that the Pike29 Track will be a shared use track allowing for the use of mountain bikes, all-terrain wheelchairs and electric power-assisted pedal cycles (e-bikes).

Recreation and Tourism Activities (3.6.4)

Non-powered vehicles (3.6.4.9)

Table 5 (page 138) provides a list of roads and tracks available for non-powered vehicle use (mountain bikes) in the CMS area. In regard to the Pike29 Track, mountain biking is provided for on the Croesus Track from Smoko car park to Ces Clarke Hut, and on the Moonlight Track.¹¹ However, the area between the two tracks (from Ces Clarke Hut to the Moonlight Track) and Paparoa National Park is not detailed in Table 5.

At the time the CMS was developed, it was recognised that mountain biking was increasing as a recreational activity, and that further tracks would likely be identified during the life of the CMS. As a result, Policy 2 was developed so that further mountain bike tracks could be added to the list of tracks:

The list of tracks where non-powered vehicle use is allowed ... may be updated during the term of the CMS, in accordance with the following criteria:

- a) consistency with the purpose for which the land is held;*
- b) consistency with the desired outcome for the Place where the track is located ...; and*

¹¹ With use excluded over the period 25 December-25 January, and over Easter.

- c) *potential adverse effects of non-powered vehicle use on natural, historical or cultural heritage values and other recreational users of the track can be avoided or otherwise minimised.*

All Terrain Wheelchairs

Any wheelchair use on the Pike29 Track is likely to occur on the flatter sections of the track, and is anticipated to be the non-mechanised all-terrain wheelchairs. It is noted that all-terrain wheelchairs are not considered to be vehicles if they are propelled by hand or a propulsion system at a maximum speed of 15 km/hr.¹²

E-bikes

An e-bike is defined as a pedal cycle to which is attached one or more auxiliary electric propulsion motors having a combined maximum power output not exceeding 300 watts. They are considered to be powered vehicles under GPNP05 but are not motor vehicles in terms of the Land Transport Act 1998.

Over the last several years there has been an increase in the use of e-bikes on public conservation land. As a result, guidelines have been developed by the Department about where e-bikes should be allowed. It is noted that e-bikes are very suitable for Grades One and Two type tracks/trails, and are less suitable for the higher graded tracks/trails. However, the guidelines note that the use of e-bikes should continue to be considered, on a case by case basis, and their use should be tested in the Departmental statutory documents as these documents are reviewed. Accordingly, the use of e-bikes on the Pike29 Track has been provided for in the draft Paparoa National Park Management Plan.

Vehicle use (3.6.4.17) - Policy 11 (pg 146)

"In some circumstances, authorisation may be granted for the use of motorised vehicles on public conservation lands where roads have not previously been formed (e.g. research, search and rescue, emergency works). In the case of national parks, this may only occur if specifically provided for in the national park management plan. Assessment will be undertaken on a case by case basis and condition on use may be imposed."

Desired Outcome for Paparoa Place (4.2.3)

People's benefit and enjoyment in 2020 (4.2.3.7)

Intense interest sites and frontcountry sites (pgs 214-215)

"Additional mountain biking opportunities are also available on some tracks or routes (e.g. within Punakaiki Valley ...)."

¹² According to the definition of 'vehicle' and 'personal mobility device' in GPNP.

Backcountry-remote zones, remote zones and gazetted wilderness areas (pgs 215 – 216)

"Paparoa National Park is renowned for its natural quiet, the retention of its outstanding natural remote character and its range of low-impact, nature-based, passive recreational activities. Other than vehicle use ...of Bullock Creek public road and Perseverance Road,¹³ the Park is free of activities involving vehicles....however mountain biking opportunities may be available on specified roads or routes identified in the Paparoa National Park Management Plan."

Desired Outcome for Māwhera Place (4.2.5)

People's benefit and enjoyment in 2020 (4.2.5.6)

Backcountry-remote and remote zones, pgs 236-238

"Additional mountain biking opportunities are also available on some tracks or routes (e.g. the Moonlight Track and seasonal access to the Smoke Ho carpark to Ces Clarke Hut section of the Croesus Track."

Discussion

It is clear that the CMS envisages that the appropriate management level for mountain biking in the Park is the Paparoa National Park Management Plan, and may occur if specifically provided for in this plan. The CMS is silent on e-bikes because they were not on the market when the CMS was written, and accordingly the use of e-bikes within conservation managed land will be addressed by an amendment to the CMS in 2017.

9.3.3 Relevant Sections of the CMS – National Park Management Plans

The CMS states that the Department will manage national parks in accordance with the specific management plans for each park.

National Park Management Plans (3.8.5)

- Objective 2, pg 169

"To manage Kahurangi, Paparoa, Arthur's Pass, Westland Tai Poutini and Mt Aspiring National Parks in accordance with their individual national park management plans."

- Policy 4, pg 169

"The West Coast Tai Poutini Conservancy will amend and review as appropriate the management plans for Paparoa National Park and Westland Tai Poutini National Park in consultation with the West Coast Tai Poutini Conservation Board."

¹³ Located in the *Inangahua Place*.

9.4 Draft Paparoa National Park Management Plan

Paparoa National Park is managed in accordance with the National Park Management Plan (the Park Plan), which is currently being reviewed. The Park Plan is the primary document for informing any decisions made with regards to activities within Paparoa National Park. In essence, the Park Plan gives effect to the higher order documents including the National Parks Act 1980, the General Policy for National Parks 2005, and the West Coast *Te Tai o Poutini* Conservation Management Strategy.

The original Park Plan (1992-2016) has been unchanged and without review for some 23 years, even though there has been considerable addition of new land to the Park, including the Pike River Mine site. The Park Plan does not allow for the establishment of new tramping huts in the park, and no management policies address the Pike River Mine site and associated facilities (this area is currently covered by the CMS). As such, the Park Plan is considered well outdated and overdue for review.

Accordingly, a comprehensive new Park Plan has been prepared; the draft Paparoa National Park Management Plan 2016. The draft Park Plan was publicly notified on 1 June 2016, submissions were received until 5 August 2016, hearings held and a summary of submissions prepared. Subsequently the draft Plan has been revised and considered by the West Coast Te Tai o Poutini Conservation Board, who when satisfied with it, will send it to the New Zealand Conservation Authority (NZCA) for approval. The draft Park Plan makes specific provisions for the Pike29 Track and its associated facilities, as well as for the Pike River Mine site.

The following objectives and policies under Part 3: '*General Policy for National Parks and policy requirements for authorisations and activities in Paparoa National Park*' and Part's 4.1 '*Nikau Place*' and 4.2 '*Ti Kōuka Place*' are relevant to the proposal:

It is important to note that the draft Paparoa National Park Management Plan is still under review, therefore some of the text, Objectives and Policies identified below may change.

Part One, Section 2: Paparoa National Park – values

Objectives and related policies

Part One, Section 2 objectives and related policies are all relevant, particularly the following objective in section 2.3 Recreation values:

A range of quality recreational and visitor opportunities in Paparoa National Park enrich visitor experiences, with an emphasis on:...
(c) multi-day backcountry experiences; and

(d) protecting natural resources and historic and cultural values, including Ngai Tahu values.

The associated policies 2.3.1-2.3.6 are also relevant, as they give effect to this objective.

Part One, Section 3: General Policy for National Parks and policy requirements for ... activities in Paparoa National Park

Most of the policies under Part 3.1 Management general are relevant, as well as the following general policies.

3.5 Vehicles

- Policies 3.5.2 and 3.5.3 address monitoring and review of adverse effects of vehicle use.
- Policy 3.5.5 is about the information the Department provides to the public about what types of vehicles can be taken into the Park and where, when and how they can be used.
- Policy 3.5.6 identifies that the Department can restrict vehicle access at any time for a number of different situations.

3.6 Powered vehicles

- Policy 3.6.1 allows e-bikes, including guided e-biking and events using e-bikes, on the Pike29 Track, excluding the Lower Pororari River Track and the Pike River mine access road.
- Policies 3.6.2 and 3.6.3 provide for bylaws to give effect to Policy 3.6.1, subject to certain conditions of use.
- Motor vehicles will be allowed on the Pike River mine access road (policy 3.6.2).

3.7 Non-powered vehicles

- Policy 3.7.1 allows mountain biking, including guided mountain biking or mountain bike events, on the Pike29 Track, excluding the Lower Pororari River Track and the Pike River mine access road.
- Policy 3.7.2 provides for bylaws to give effect to Policy 3.7.1, subject to certain conditions of use.

3.17 (Structures, utilities and facilities)

- Policy 3.17.1 provides for the development of new public recreational tracks subject to various criteria including an assessment of adverse effects.

In summary, the Pike29 Track, and its use by mountain bikes and e-bikes, is specifically provided for in the revised draft Park Plan. The proposal is consistent with the above general policies.

Part Two: Places

The parts of the Pike29 Track which are within the Park are mainly in Tī Kōuka Place.¹⁴ The Lower Pororari River Track and the Inland Pack Track section of the Pike29 Track lie within Nīkau Place.

4.2 Tī Kōuka Place

Tī Kōuka Place has been given this name with the Pike River Mine tragedy in mind, as follows:

“Tī Kōuka is known as a tree that can adapt and regenerate, in the same way that the southern area has evolved with the addition of the new Pike29 Track. Tī Kōuka is also associated with mortality through the whakataukī – ‘ehara i te tī e wana ake’ (*it’s not as if he’s a tī tree that will sprout again*), which reminds humans that they cannot regenerate in the way that a tī kōuka can. This tree, coupled with its traditional use in cleansing rituals, is relevant for the southern Place because of the Pike River mine disaster, as a reminder of the tragic loss of life.”

Both the management consideration and recreation values sections refer to the Pike29 Track, with provisions made for a shared use track for walkers and mountain bikers (including e-bikes). Allowance is also made for the development of future commercial opportunities associated with the Pike29 Track.

The outcome for Tī Kōuka Place and most of the Policies in Part 4 make specific reference and provisions in relation to the Pike29 Track, including the Pike mine road, portal and ventilation shaft. Respect for the families of the 29 men lost at the mine is specifically provided for in Policies 4.2.2, 4.2.9 and 4.2.11.

4.1 Nīkau Place

Policy 4.1.17 states that the Pike29 Track should be managed in accordance with the policies in Tī Kōuka Place and notes that the existing Lower Pororari River Track will be used by walkers only to protect the experience of day walkers on this track.

9.5 RMA Resource Consent Requirements

9.5.1 Existing SENZ Consents

In relation to the Pike River Mine site, and its associated facilities, a range of existing resource consents are held, and these consents will be transferred to the Department of Conservation when Solid Energy NZ exits the mine site. Once the full detail of the proposal has been developed, these existing consents will be varied, or the consent conditions amended, to better fit the

¹⁴ Tī Kōuka /Cabbage Tree.

proposed new use. Many of these consents will also be surplus to requirements and can be retired.

9.5.2 Land Use Consent Exemption Applies

The proposal for new works has been assessed against the relevant regional and district plans, and resource consents are nominally required from three regulatory agencies; the West Coast Regional Council, the Grey District Council and the Buller District Council.

It is noted that the Department of Conservation, as a Crown agency, is usually exempt from the necessity of obtaining resource consents for (s9) land use activities. Section 4 of the RMA provides that the Crown is not bound to obtain land use consents for land held or managed under the Conservation Act 1987, provided that the works proposal is:

- a) *consistent* with a conservation management strategy, conservation management plan, or management plan; and
- b) does not have a significant adverse effect beyond the boundary of the area of land.¹⁵

While it has been assessed (at report section 9.3) that the proposal is broadly consistent with the West Coast *Te Tai O Poutini* Conservation Management Strategy, the CMS directs that a number of matters relating to the Paparoa National Park be addressed through that park's management plan. The proposal is clearly not consistent with the existing national park management plan, however this plan has been reviewed and is undergoing a substantial revision. Therefore, the provisions of the revised draft Paparoa National Park Management Plan have also been assessed above (at report section 9.4), and it has been found to be consistent with the proposal.

However, the Department will only be able to undertake any s.9 land use activities (without obtaining resource consents) once this management plan has been approved by the New Zealand Conservation Authority. This approval is expected to occur in early December 2016, at which time the management plan will become operative. At this point the exemption provided for under Section 4 (a) of the RMA will apply, in that the Crown is not bound to obtain land use consents under s9 RMA.

In relation to the second test [s4 (b)], that of a potential significant adverse effect outside the boundary of the site, the specialist assessments contained in report section 7 have determined that no significant adverse effects will result either inside or beyond the boundary of the site.

¹⁵ The 'land' is the composite set of land holdings involved, described further in the maps and gazettal notices at Appendix A.

For the purposes of clarity and transparency, the Department intends to obtain written confirmation of the applicability of the s.4 exemption for land use activities from all three regulatory agencies; the West Coast Regional Council, the Grey District Council and the Buller District Council.

9.5.3 Legal Road Reserve

The Lower Pororari River Track, and the Inland Pack Track portion of the route are both located on Buller District Council road reserve (although these sites are surrounded by conservation managed land/national park). The Buller District Council has advised that Council staff (Tony Robertson) has previously inspected the area with DOC staff. Given the location of the legal road and the existing tracks, the BDC holds no concerns with the existing tracks being on legal road, provided they are constructed and maintained to DOC standards.

It is considered that the track improvement works would fit within the requirements of Rule 6.2.9 of the Buller District Plan, to be undertaken as a permitted activity; as the tracks are either formed or partially formed currently and the works are related to improvement and/or realignment of the road/track.

9.5.4 Regional Council Consents Required

The proposal requires resource consents to be sought from the West Coast Regional Council for activities other than land use, being:

- a) Works in the riverbeds/riparian margins (s13) – gravel extraction from three riverbed sites within the Paparoa National Park (Pororari River, Pike Stream and Tindale Creek).
- b) Discharges (s15) – incidental sediment discharge during construction works, and the dispersal of wastewater from the hut sinks and toilets, to land.

Other activities regulated by the regional council are expected to be completed as permitted activities, and therefore will not require consent. These activities include; stockpiling of track construction materials, installation of bridges and culverts, and the discharge of stormwater runoff from the access road collection system.

This Assessment of Environmental Effects report forms the basis of the resource consent application to the West Coast Regional Council. It will also be provided all three regulatory agencies as part of the process of obtaining written confirmation of the applicability of the s.4 exemption for land use activities.

9.6 RMA Conclusions

In terms of the requirements of Part 2 of the RMA, the proposal meets the purpose of the Act, which is *"to promote the sustainable management of natural and physical resources"*. The construction and operation of a major new backcountry development, a shared use track, which will enable the West Coast communities to better provide for their health, and social and economic wellbeing, while ensuring the life-supporting capacity of the environment can be adequately safeguarded. On the basis of the design proposal, and the mitigation measures proposed, the construction and operation of the Pike29 Track is not considered to have any significant adverse effects on the environmental values of the site. These values have been recognised and will be adequately protected through the comprehensive range of mitigation measures.

Therefore, the resource consents sought can be granted in accordance with Part 2 and Sections 13 and 15 of the RMA and in accordance with the West Coast Regional Policy Statement, the Regional Land and Water Plan, and the Air Quality Plan. As the potential impacts of the activity are assessed as being minor, or less than minor, it is considered that these consent applications can be processed without public notification or limited notification, provided that the approvals of affected parties are obtained.

10 SUMMARY

The proposed Pike29 Track constitutes an important new recreational asset for the West Coast. The 65km track will be a shared use track for both walkers and mountain bikers; being a 2-3 day walk or an advanced level 1-2 day mountain bike ride. The majority of the track will be located in the Paparoa National Park which has only had a limited number of day walks and marked routes, and the new shared use track will provide a great recreational opportunity for a wide range of users to explore the southern end of the Paparoa Ranges.

The Department of Conservation will design, construct and operate the new Pike29 Track. Overall the track will be 65kms long, but as both ends of the track makes full use of the existing historic pack tracks, this will allow heritage and cultural interpretation of the West Coast pack tracks.

The genesis of this new track is unique, as the concept developed as a memorial track to the 29 men who died as a result of the Pike River Mine disaster on 19 November 2010. The track will become New Zealand's tenth Great Walk, and was proposed by the families of the Pike River men as a fitting memorial which will bring significant recreational, social and economic benefits to the West Coast region.

A side track running from the Moonlight Tops section will provide access to the existing Pike River Mine portal site and the mine amenities area, which will be redeveloped for visitors. An Interpretation Centre will tell the story of the Pike River Mine operation and the tragedy that occurred, while access to the Pike River Mine portal will provide a place for quiet reflection. The Interpretation Centre will tell stories about the history of the mine and how it operated, as well as the history/story of the mining disaster in 2010, and consequent impact on Health and Safety practices in New Zealand.

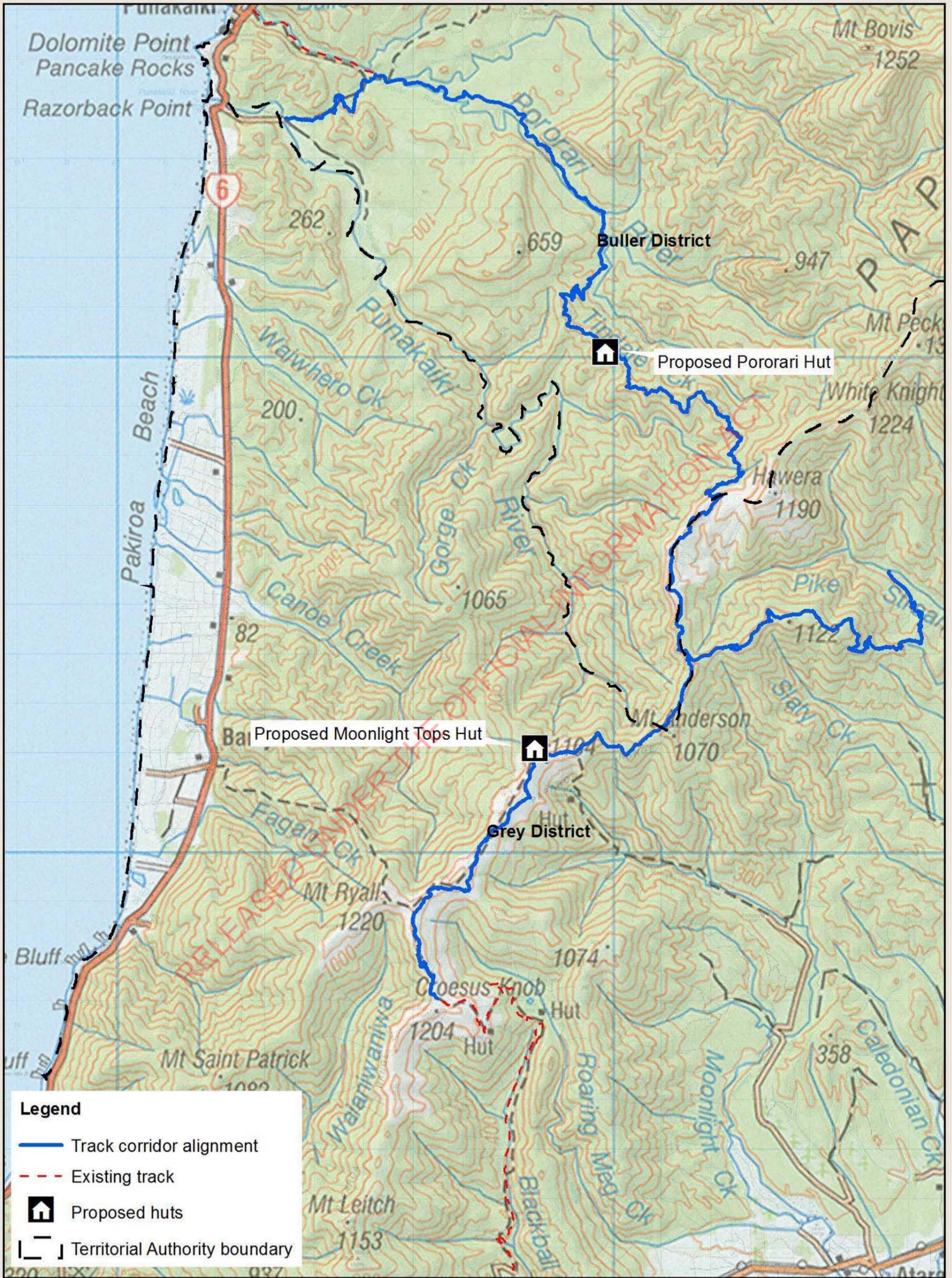
The Pike29 Track proposal is in keeping with the Department's strategic direction, intermediate outcomes and stretch goals and priorities, relating to both the historic heritage and visitor experiences outcomes, as outlined in the Department's *Outcomes Model*. The Pike29 Track project (listed as the 'Pike River experience') is listed as a 1-4 year priority for achieving the visitor outdoor experience outcome.

The construction and operation of a new track and associated facilities has the potential to affect a range of environmental aspects including terrestrial flora and fauna, freshwater ecology, archaeological and historic values, cultural heritage, landscape values and slope stability. Accordingly, these various aspects of the environment have been described, the effects of the project on those aspects assessed, and appropriate mitigation measures proposed. The mitigation measures proposed by all the specialists, including the designers, have been assembled into one list - which is attached at Appendix N.

On the basis of the design proposal, and the mitigation measures proposed, the construction and operation of the Pike29 Track is not considered to have any significant adverse effects on the environmental values of the site. These values have been recognised and will be adequately protected through the comprehensive range of mitigation measures.

Appendix A – Location maps and NZ Gazette Notices

RELEASED UNDER THE OFFICIAL INFORMATION ACT



Legend

- Track corridor alignment
- - - Existing track
- Proposed huts
- Territorial Authority boundary

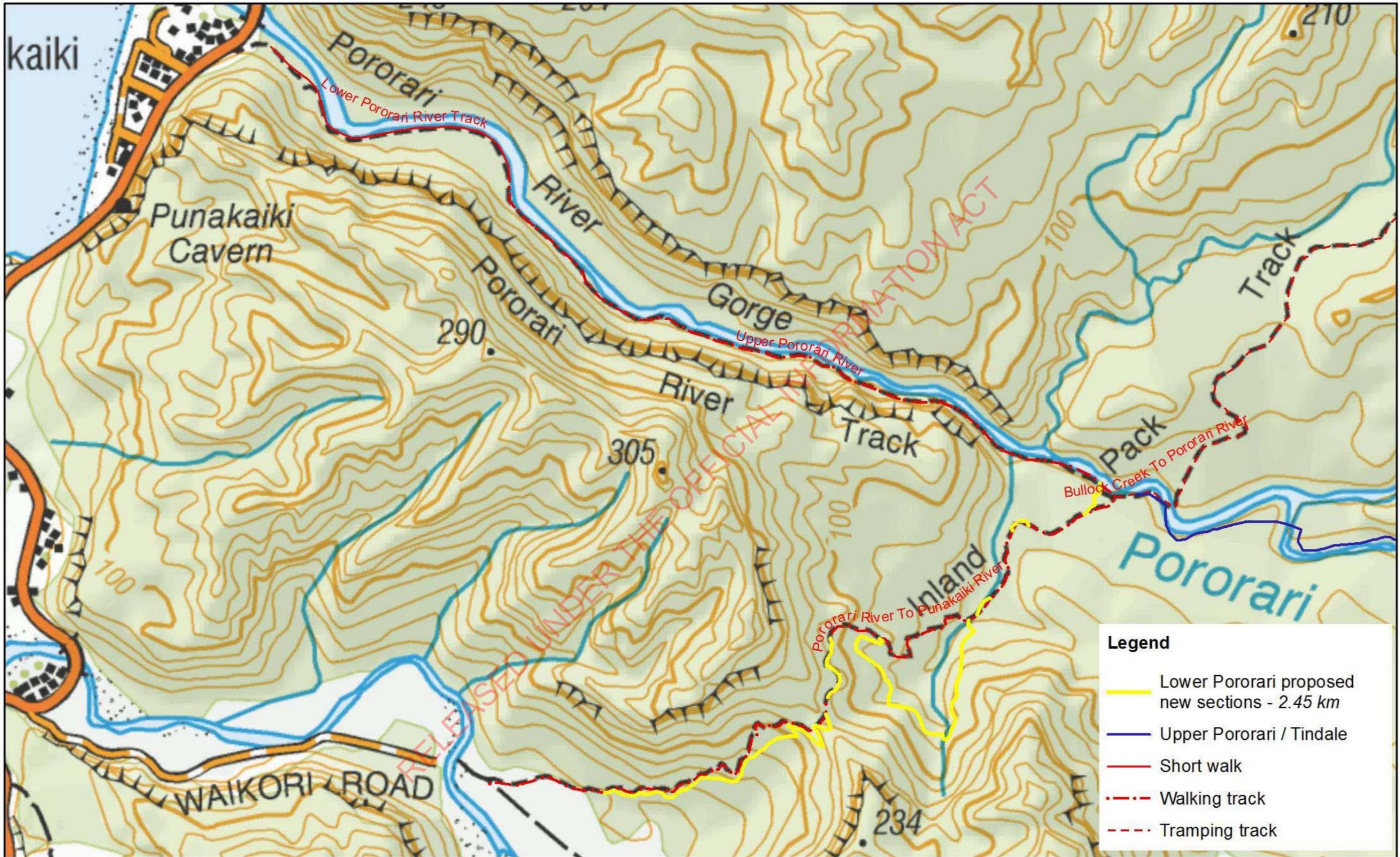
Pike29 Track

Projection: NZTM
 Datum: NZGD2000
 Date: 16/08/2016
 Document name: Pike29_Map_for_Track_AEE.mxd
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Department of Conservation
 Te Papa Atawhai

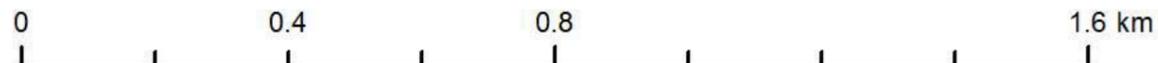
New Zealand Government



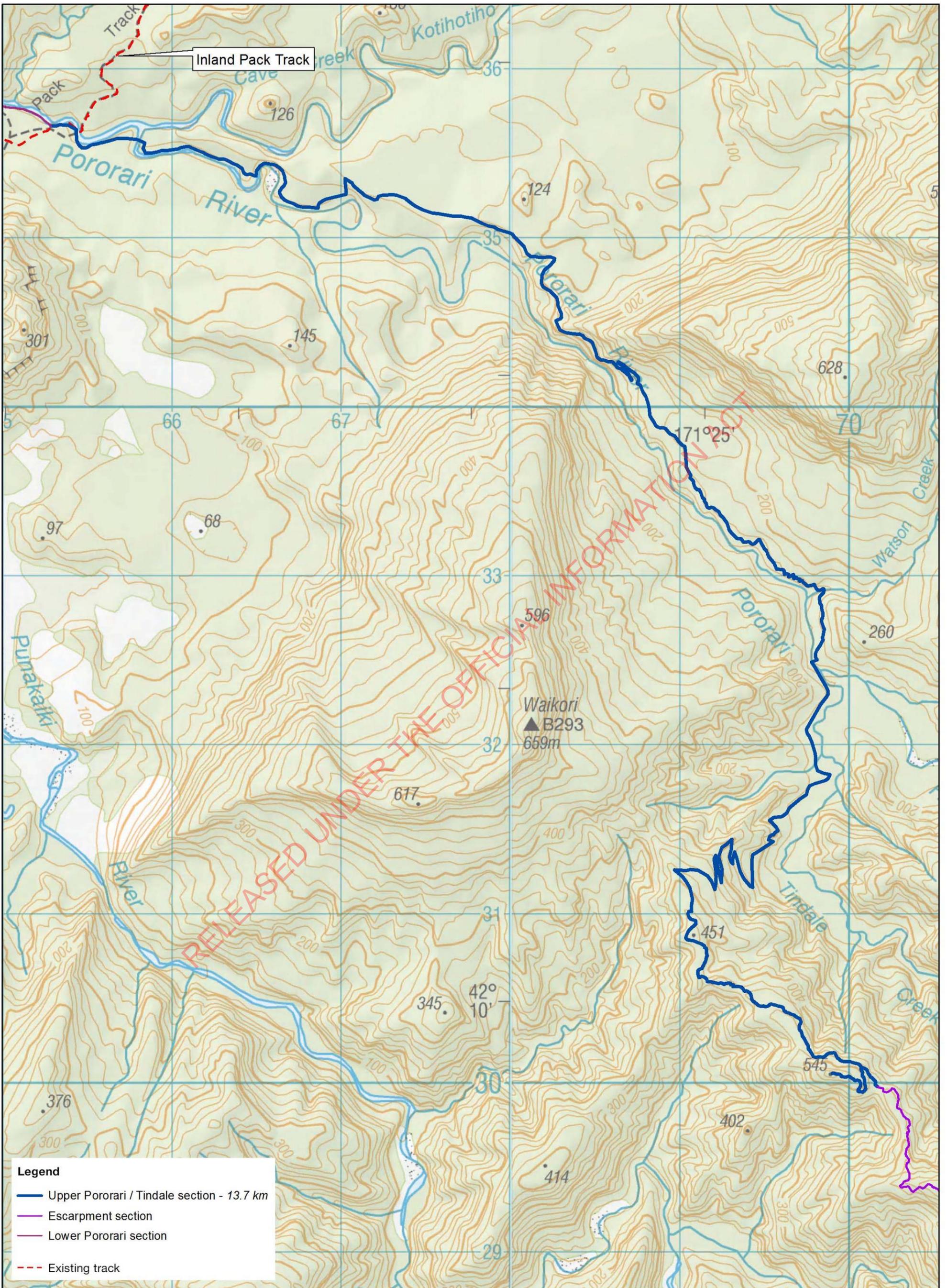
**Proposed Pike29 Track
Lower Pororari**

Department of Conservation
Te Papa Atawhai

Projection: NZTM
Datum: NZGD2000
Date: 1/08/2016



New Zealand Government



Legend

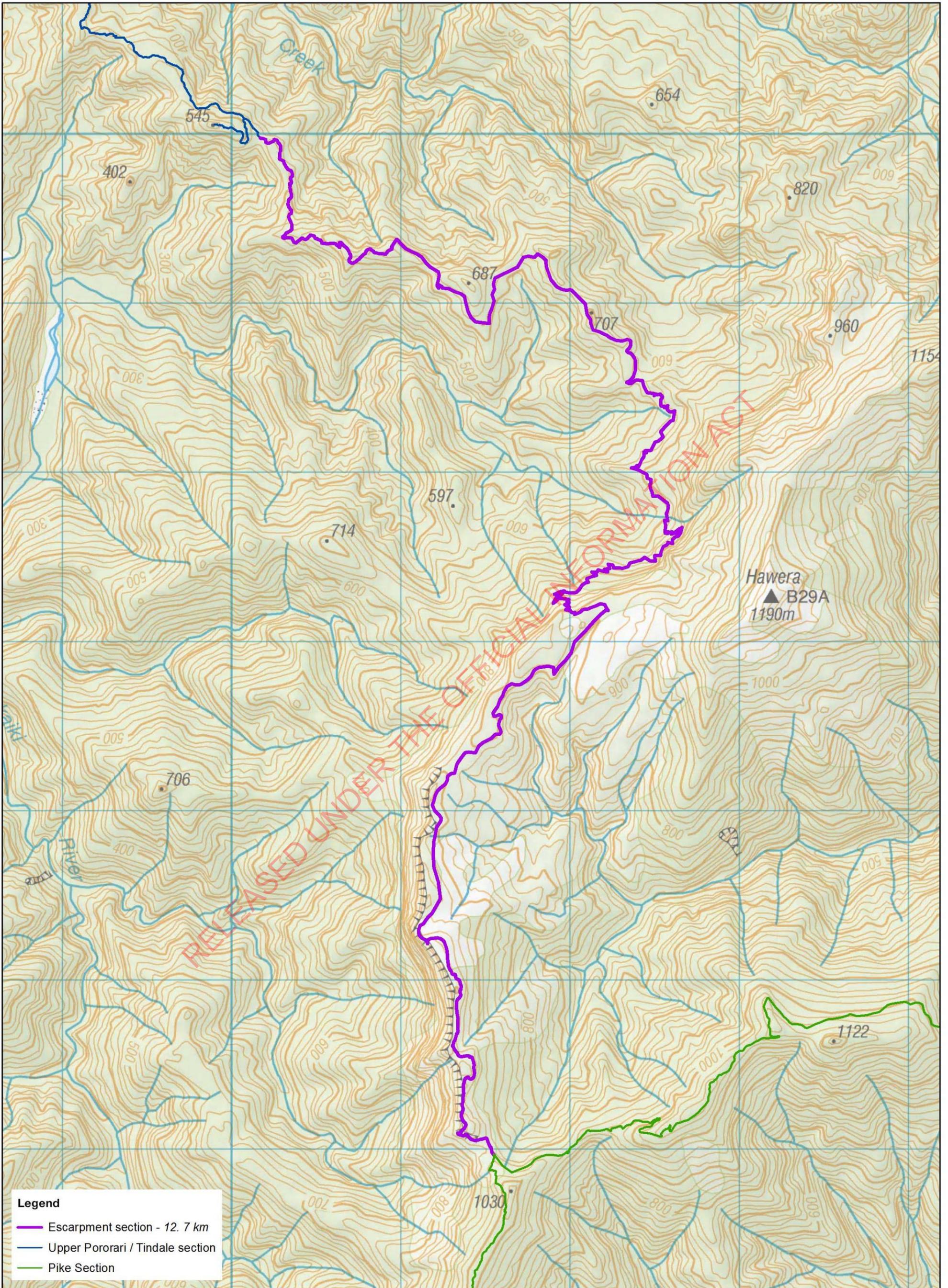
- Upper Pororari / Tindale section - 13.7 km
- Escarpment section
- Lower Pororari section
- Existing track

Proposed Pike29 Track (As at 06/09/2016)
Upper Pororari / Tindale Section (Map 1 of 4)

Projection: New Zealand Transverse Mercator
 Datum: NZGD2000
 Date: 6/09/2016



New Zealand Government

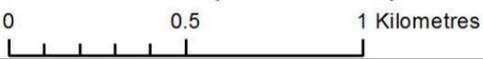


Legend

- Escarpment section - 12.7 km
- Upper Pororari / Tindale section
- Pike Section

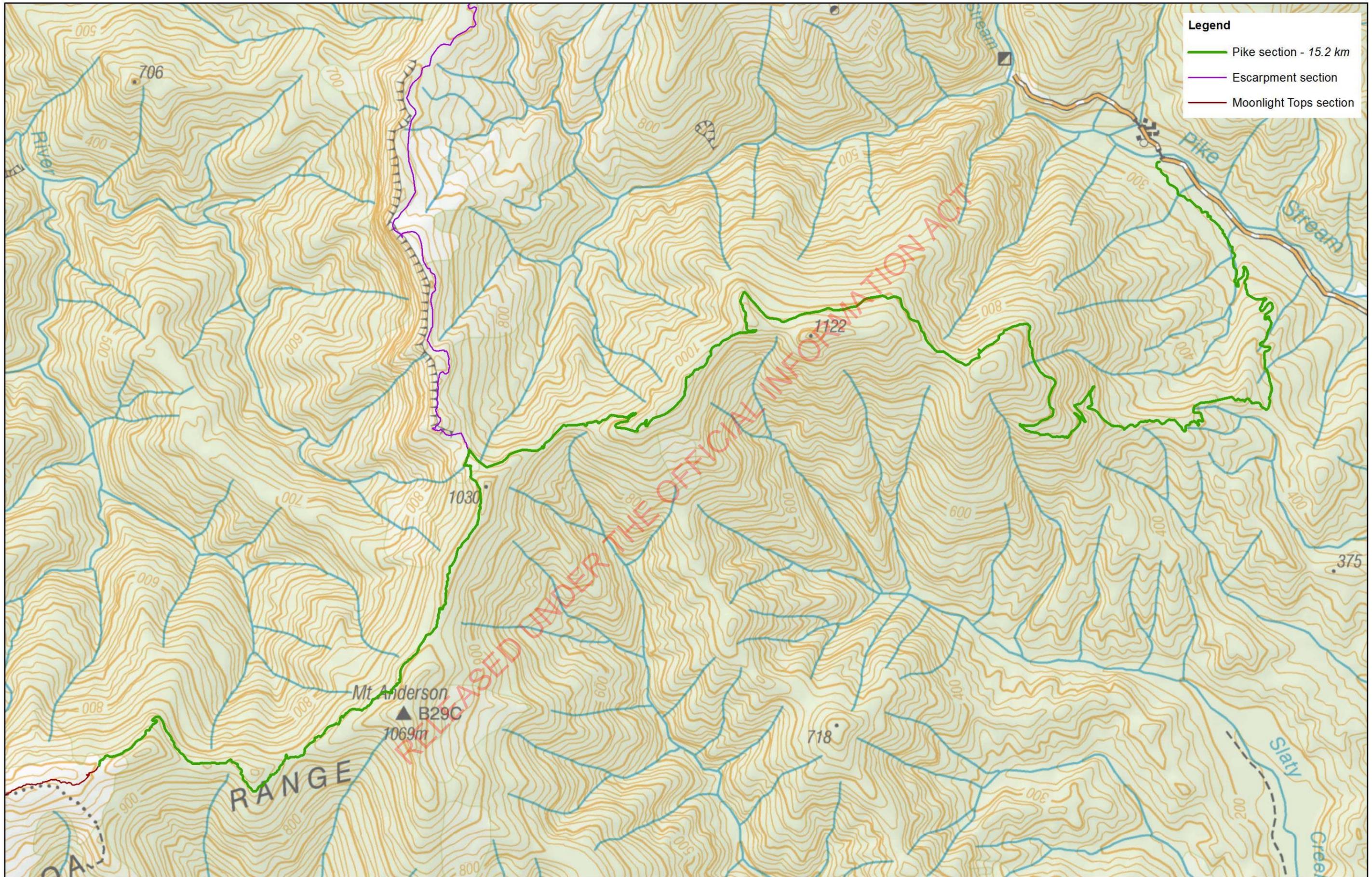
Proposed Pike29 Track (As at 06/09/2016)
Escarpment Section (Map 2 of 4)

Projection: New Zealand Transverse Mercator
 Datum: NZGD2000
 Date: 6/09/2016




 Department of Conservation
 Te Papa Atawhai

New Zealand Government



- Legend**
- Pike section - 15.2 km
 - Escarpment section
 - Moonlight Tops section

Proposed Pike29 Track (As at 06/09/2016)
Pike Section (Map 3 of 4)

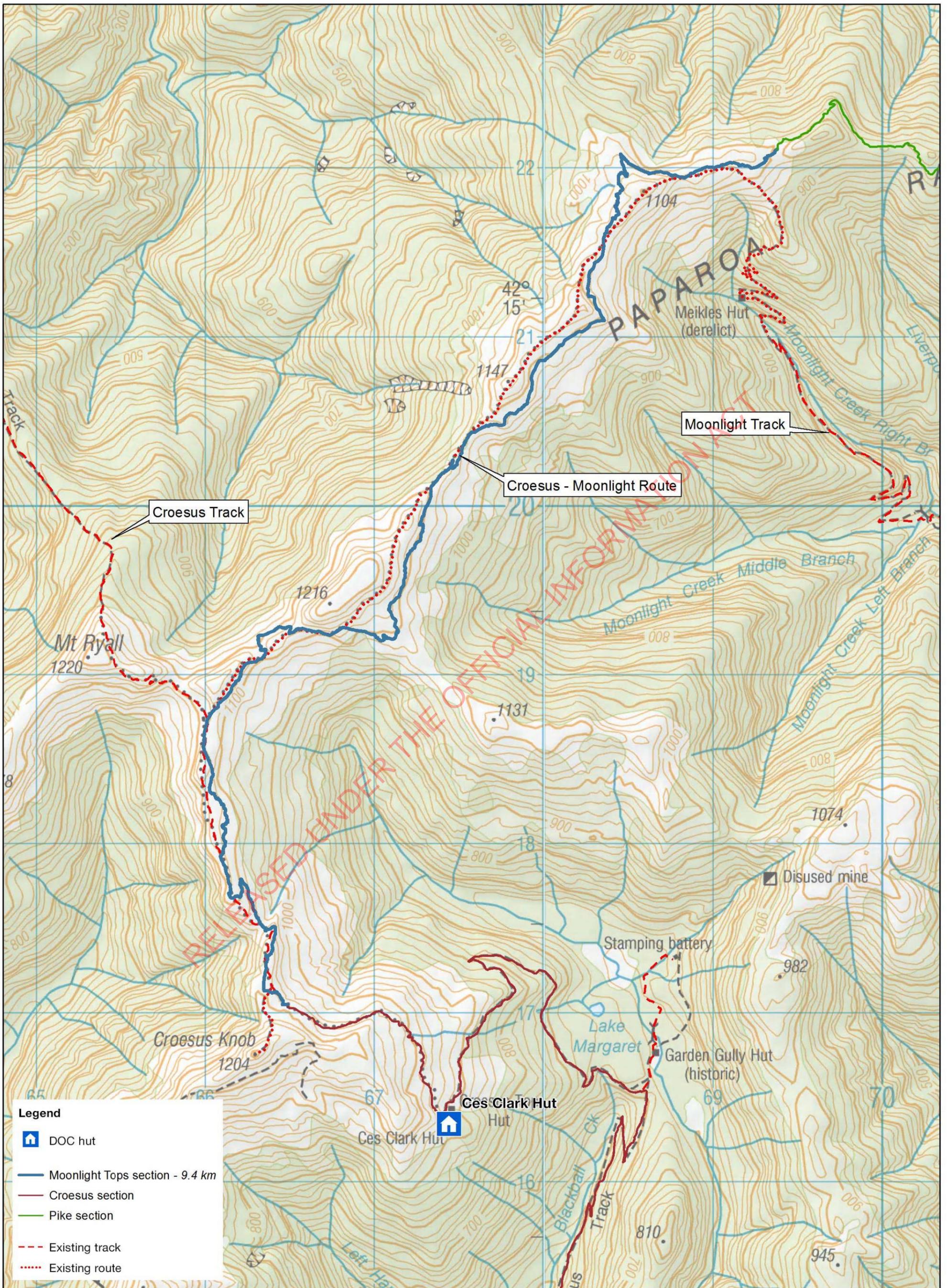
Projection: New Zealand Transverse Mercator
 Datum: NZGD2000
 Date: 6/09/2016



0 0.5 1 2 Kilometres

 Department of Conservation
 Te Papa Atawhai

New Zealand Government



Legend

-  DOC hut
-  Moonlight Tops section - 9.4 km
-  Croesus section
-  Pike section
-  Existing track
-  Existing route

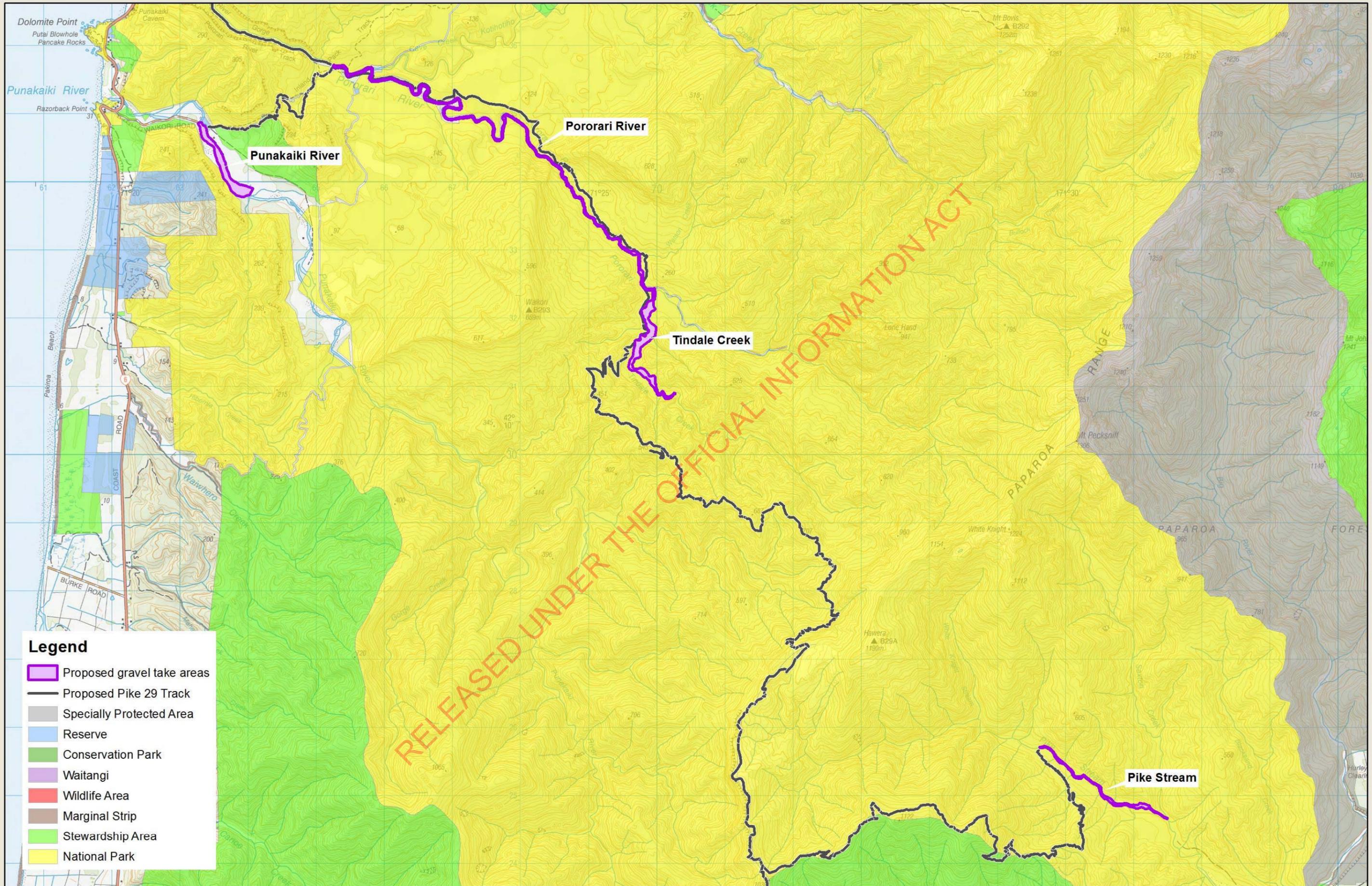
Proposed Pike29 Track (As at 06/09/2016)
Moonlight Tops Section (Map 4 of 4)

Projection: New Zealand Transverse Mercator
 Datum: NZGD2000
 Date: 6/09/2016



New Zealand Government

Document Path: G:\GIS\Projects_2016\Pike29_Track\Pike29_Memorial_Track_A3_Sections_Portrait_20160801.mxd



Legend

- Proposed gravel take areas
- Proposed Pike 29 Track
- Specially Protected Area
- Reserve
- Conservation Park
- Waitangi
- Wildlife Area
- Marginal Strip
- Stewardship Area
- National Park

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**Proposed Gravel Take Sites
Pike29 Track**



Pike29 Track Route: Land Ownership and Management Status

Appellation	Protected area name	Status	Gazette reference / Authority
Pt RES 1592	Roaring Meg Ecological Area	Ecological area	Gaz 1980 p 909
Pt RES 1693	Roaring Meg Ecological Area	Ecological area	Gaz 1980 p 909
RS 4685	Punakaiki Scenic Reserve	Scenic reserve	Gaz 1970 p 1285
RS 5283	Conservation Area - Punakaiki River	Stewardship area	Allocation K30/2 & Allocation K30/4 (Category 8 - former crown land)
Sec 5 SO 487151	Conservation Area - Paparoa Range South	Stewardship area	Allocation K31/3 (Category 6 - former state forest land, Gaz 1941 p 3089)
Sec 1 Blk XIV Brighton SD	Paparoa National Park	National Park	Gaz 1987 p 5361
Sec 2 Blk XIV Brighton SD	Paparoa National Park	National Park	Gaz 1987 p 5361
Sec 12 Blk IX Brighton SD	Paparoa National Park	National Park	Gaz 1987 p 5361
Pt Sec 4 SO 11229	Paparoa National Park	National Park	Gaz 1987 p 5361
Sec 5 SO 11229	Paparoa National Park	National Park	Gaz 1987 p 5361
Sec 7 SO 11229	Paparoa National Park	National Park	Gaz 1987 p 5361
Sec 8 SO 11229	Paparoa National Park	National Park	Gaz 1987 p 5361
Sec 2 SO 487151	Paparoa National Park	National Park	Gaz 2015In6666
Sec 3 SO 487151	Paparoa National Park	National Park	Gaz 2015In6666
Legal road		Legal road ((Buller District Council))	

Crown Land in Auckland Land District set apart for the Purposes of Part I of the Housing Act, 1919.

[L.S.] C. L. N. NEWALL, Governor-General.

A PROCLAMATION.

IN pursuance of the power and authority conferred upon me by section nine of the Housing Act, 1919 I, Cyril Louis Norton Newall, the Governor-General of the Dominion of New Zealand, do hereby proclaim and declare that the area of Crown land described in the Schedule hereto shall be and the same is hereby set apart for the purposes of Part I of the said Act.

SCHEDULE.

AUCKLAND LAND DISTRICT.—BOROUGH OF PAEROA.
SECTION 9, Block V, Paeroa Township: Area, 18 perches.

Given under the hand of His Excellency the Governor-General of the Dominion of New Zealand, and issued under the Seal of that Dominion, this 22nd day of September, 1941.

J. G. BARCLAY,
For the Minister of Lands.

GOD SAVE THE KING!

(L. and S. 9/3332.)

Crown Land in North Auckland Land District set apart for the Purposes of Part I of the Housing Act, 1919.

[L.S.] C. L. N. NEWALL, Governor-General.

A PROCLAMATION.

IN pursuance of the power and authority conferred upon me by section nine of the Housing Act, 1919, I, Cyril Louis Norton Newall, the Governor-General of the Dominion of New Zealand, do hereby proclaim and declare that the area of Crown land described in the Schedule hereto shall be and the same is hereby set apart for the purposes of Part I of the said Act.

SCHEDULE.

NORTH AUCKLAND LAND DISTRICT.—CITY OF AUCKLAND.
ALL that area containing by admeasurement 2 roods 6-4 perches, more or less, being Lot 588 on Deposited Plan No. 31201, being part of Allotments 32 and 40A, District of Tamaki, comprised in Certificate of Title, Volume 466, folio 83, Auckland Registry. As the same is more particularly delineated on plan marked L. and S. 30/228/1/"B," deposited in the Head Office, Department of Lands and Survey, at Wellington, and thereon edged red.

Given under the hand of His Excellency the Governor-General of the Dominion of New Zealand, and issued under the Seal of that Dominion, this 22nd day of September, 1941.

J. G. BARCLAY,
For the Minister of Lands.

GOD SAVE THE KING!

(L. and S. 30/228/1.)

Amending a Proclamation setting apart Crown Land and Provisional State Forests as Permanent State Forests.

[L.S.] C. L. N. NEWALL, Governor-General.

A PROCLAMATION.

WHEREAS by a Proclamation dated the twenty-third day of July, one thousand nine hundred and forty (hereinafter referred to as "the said Proclamation"), and published in the *New Zealand Gazette* No. 77 of the first day of August, one thousand nine hundred and forty, at pages 1785 to 1790 inclusive, lands containing a total area of 414,013 acres in the Westland Land District were proclaimed as permanent State forests in terms of section eighteen of the Forests Act, 1921-22:

And whereas errors were made in the Schedule to the said Proclamation and it is desirable that these errors be rectified: Now, therefore, I, Cyril Louis Norton Newall, the Governor-General of the Dominion of New Zealand, in pursuance and exercise of the powers conferred on me by section three of the Forests Amendment Act, 1925, do hereby by way of amendment to the said Proclamation declare that for the first paragraph in the Schedule to the said Proclamation there shall be substituted the words set out in the First Schedule hereto, and for that portion of the said Schedule relating to an area containing approximately 111,577 acres there shall be substituted the words and description set out in the Second Schedule

B

hereto: And I do hereby further declare that this Proclamation shall take effect from the first day of August, one thousand nine hundred and forty, being the date on which the said Proclamation was intended to take effect.

FIRST SCHEDULE.

WESTLAND LAND DISTRICT.—WESTLAND FOREST-CONSERVATION REGION.

ALL those areas in the Westland Land District containing 418,413 acres (provisional State forest 332,382 acres, and Crown land 86,031 acres) and described as follows:—

SECOND SCHEDULE.

ALL that area containing approximately 115,977 acres, being Provisional State Forest No. 1590 (*Gazette* 1919, page 1290, national-endowment provisional State forest, 8,336 acres), part of Provisional State Forest No. 1593 (*Gazette* 1919, page 1290, national-endowment provisional State forest, 5,817 acres), Provisional State Forest No. 1593 (*Gazette* 1919, page 1284, ordinary provisional State forest, 51,650 acres), part of Provisional State Forest No. 1594 (*Gazette* 1919, page 1290, national-endowment provisional State forest, 19,168 acres), part of Provisional State Forest No. 1592 (*Gazette* 1920, page 2837, national-endowment provisional State forest, 9,375 acres), part of Provisional State Forest No. 1591 (*Gazette* 1920, page 2837, national-endowment provisional State forest, 9,079 acres), and Crown land, 14,954 acres, situated in Block II, Punakaiki Survey District, Blocks I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV, and XVI, Waiwero Survey District, Blocks V, IX, X, and XIII, Maimai Survey District, Blocks I, II, V, VI, IX, X, and XIII, Mawhera-iti Survey District, Blocks I and II, Te Miko Survey District, and Blocks II and III, Mawhera-nui Survey District, and bounded generally as follows: Commencing at the most southern corner of Section 1, Block XIII, Maimai Survey District, and proceeding along the southern boundary of the said section and its production to the right bank of Rough River; thence southerly along the said bank to a point in line with the north-western boundary of Section 1, Block I, Mawhera-iti Survey District; thence to and along the said boundary, the south-western boundaries of Sections 1, 2, and 3, and the northern boundary of Section 2946; thence across a road, and southwards along the western side of the said road to Section 3170, Block X, Mawhera-iti Survey District; thence along the north-western boundaries of the said section and Sections 25, 24, 23, 22, and 180; thence northwards along a line being a production of the western boundary of Section 180 for 1400 links; thence westerly and northerly along lines parallel to and 500 links from a branch of Craigieburn Creek and from Craigieburn Creek to a point in line with the southern boundary of Section 2762, Block IX, Mawhera-iti Survey District; thence to a point on the left bank of Craigieburn Creek in line with the south boundary of aforesaid Section 2762; thence northerly along the left bank of Craigieburn Creek to the northern boundary of Block IX, Mawhera-iti Survey District; thence westerly along the said northern boundary of Block IX, Mawhera-iti Survey District, to a point due north of the most western corner of Section 2762; thence due south to the said most western corner of Section 2762; thence along the south-western and south-eastern boundaries of that section to a point distant 500 links from the right bank of Craigieburn Creek; thence southerly along a line parallel to Craigieburn Creek to the northern boundary of Section 17, Block IX, Mawhera-iti Survey District; thence south-westerly along the north-western boundaries of Sections 17, 16, and 15, a road reserve, Sections 14, 13, and 2922, Reserve 761, and part of Raupo Settlement, Block XIII, Mawhera-iti Survey District, to the most eastern corner of Section 15; thence along the north-eastern boundaries of Sections 15 and 14, a road reserve, again by Section 14 and by Section 17, all of Block XVI, Waiwero Survey District, by a road reserve and Sections 16, 14, and 13, Block XII, Waiwero Survey District; thence along the southern boundary of Section 3121, the eastern boundaries of said Section 3121 and Section 3107, and the south-eastern boundaries of Sections 3300 and 3296, and a road reserve, and along the eastern side of said road reserve to the south boundary of Section 3340; thence along the southern and eastern boundaries of said Section 33; thence along the north-eastern and northern boundaries of Section 2991; thence along a production of the north boundary of Section 2991 to the right bank of the Big River; thence southerly along the right bank of the Big River to a point in line with the northern boundary of Section 16, Block XII, Waiwero Survey District; thence to and along the northern and western boundaries of said Section 16 and the most western boundary of Section 15; thence along a right line to the north-eastern corner of Section 12; thence along the northern and western boundaries of Section 12, a road reserve, again Section 12 and Section 11 to the southern boundary of Block XII, Waiwero Survey District; thence westerly along the said block boundary for 3200 links, and due south to the northern boundary of Section 3139,

Block XVI, Waiwhero Survey District; thence westerly along the said boundary of Section 3139 to its north-western corner and continuing in a straight line to the eastern boundary of Section 12 and along the said boundary to the north-eastern corner of the said Section 12; thence due north for 3300 links and due west to the western boundary of Block XVI, Waiwhero Survey District, and south along the said block boundary to the north-western corner of Section 12, along the western boundary of the said Section 12 and the latter boundary produced for 2000 links; thence by a line bearing 121° to the right bank of Caledonian Creek, and along that creek to a point in line with the northern boundary of Section 3120; thence along the northern and western boundaries of the said section and the western boundary of Section 3119, the northern boundary of Section 3144, across a road reserve, Baxters Creek, and another road reserve to the south-western boundary of a road reserve along the western boundary of Section 3144; thence along the said south-western boundary of the said road reserve to the southern boundary of Block XV, and along the said block boundary to the left bank of Moonlight Creek; thence along the said bank of Moonlight Creek to a point in line with the northern boundary of Section 3304; thence across Moonlight Creek and along the northern and western boundaries of Section 3304 to its south-western corner; thence south-easterly by a right line to a point where Roaring Meg Creek crosses the western boundary of Section 2, Block XV aforesaid, and westerly along the left bank of Roaring Meg Creek to the eastern boundary of Block II, Mawhera-nui Survey District; thence southwards along the said block boundary to a point in line with the southern boundary of Section 2, Block II aforesaid; thence south-westerly along a right line to the south-eastern corner of the said Section 2; thence in a north-westerly direction along the north-eastern boundary of aforesaid Section 2 to its most northerly point; thence in a south-westerly direction to a point on the western boundary of Block II, Mawhera-nui Survey District, in line with the north-eastern boundaries of Sections 2 and 1, Block II, Mawhera-nui Survey District; thence due north along the western boundary of Block II, Mawhera-nui Survey District, and westwards along the northern boundary of Block I of the said survey district to the south-eastern corner of "Lands set apart for Purposes of Part II, Coal-mining Act, 1905, Gazette 1907, page 27"; thence northerly along the eastern boundary of the last-mentioned land to and across the Waianiwahiwaha Creek; thence along the right bank of the said creek to the eastern boundary of the Nelson-Grey Coalfields area; thence northerly along the boundary of that area and to and by the eastern boundary of Native Reserve 35, Block II, Te Miko Survey District, to its north-eastern corner; thence continuing in a straight line with the aforesaid boundary across a road reserve, Waiwhio Creek, and a road reserve again to the southern boundary of Section 2629; thence along the southern and eastern boundaries of the said section to its north-eastern corner; thence along a right line to the south-eastern corner of Section 2987, Block I, Te Miko Survey District, and along the south-eastern boundary of the said Section 2987 and the latter boundary continued to the left bank of the Maukurunui Creek; thence south-easterly along the left bank of the said creek to a point due south of a point 1200 links west of the south-eastern corner of Section 2988, Block IX, Waiwhero Survey District; thence due north along a line across the said Maukurunui Creek to the southern boundary of Section 2988 and along the southern and eastern boundaries of said Section 2988 and the latter boundary produced to the left bank of Fagins Creek; thence along the said creek-bank to a point in line with the eastern boundary of Section 3362; thence to and along the eastern boundary of the said section and that line produced across Granite Creek; thence westwards along the right bank of Granite Creek to a point in line with the eastern boundary of Section 2992, Block V, Waiwhero Survey District, and northerly along the eastern boundaries of Sections 2992, 2997, and 3175, and the southern and eastern boundaries of Section 3317, across a road reserve, Cancee Creek, a road reserve, and along the eastern boundaries of Sections 3313 and 3312, Block V, Waiwhero Survey District, and the eastern boundaries of Sections 2799, 3311, and 3310, to Tupapaku Road, Block I, Waiwhero Survey District; thence along the south side of the said road, the eastern boundary of Reserve 1088, and again by the said road to its most easterly point; thence easterly across the Punakaki River to the most southern corner of Section 2597; thence by the southern and eastern boundaries of the said Section 2597 and the eastern boundaries of Sections 2598 and 2595, Block II, Punakaki Survey District, to the Porarari River; thence easterly, northerly, and southerly along the boundary between the Nelson and Westland Land Districts to a point in line with the northern boundary of Section 1, Block XIII, Maimai Survey District; thence to and along the northern and western boundaries of the said Section 1 to the point of commencement; Save and excepting therefrom Sections 4 and 3, Block XV, Waiwhero Survey District, Reserve 1041, Block XI, Waiwhero Survey District, Reserve 1010, Block II,

Te Miko Survey District, and the road reserve approaching thereto. As the same is more particularly delineated on plan No. 119/40, deposited in the Head Office of the State Forest Service at Wellington, and thereon coloured green.

Given under the hand of His Excellency the Governor-General of the Dominion of New Zealand, and issued under the Seal of that Dominion, this 22nd day of September, 1941.

J. G. BAROLAY,
For the Commissioner of State Forests.

GOD SAVE THE KING!

Constituting the East Road - Makarewa Rabbit District.—
(Notice No. Ag. 3877.)

C. L. N. NEWALL, Governor-General.

ORDER IN COUNCIL.

At the Government House at Wellington, this 17th day of September, 1941.

Present:

HIS EXCELLENCY THE GOVERNOR-GENERAL IN COUNCIL.

WHEREAS by section thirty of the Rabbit Nuisance Act, 1928, it is enacted that the Governor-General may, by Order in Council, on petition in that behalf signed by a majority of the persons qualified to be enrolled on the ratepayers' list for any proposed district, constitute and declare any area of land of not less than one thousand acres a rabbit district under and for the purposes of Part II of the said Act:

And whereas, in pursuance of the provisions of the said section thirty of the said Act, a petition has been received praying that the area of land described in the Schedule hereto be constituted and declared a rabbit district under and for the purposes of Part II of the said Act, and it is deemed expedient to give effect to the prayer of the petitioners accordingly:

Now, therefore, in pursuance and exercise of the powers and authorities conferred upon him by the said Act, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, doth hereby constitute by the specific name of the "East Road - Makarewa Rabbit District" and declare that area of land defined in the Schedule hereto to be a rabbit district under and for the purpose of Part II of the said Act, and doth hereby further declare that the basis on which the Board to be established for the said district shall first levy its general rate shall be on the basis of the acreage of the rateable property in the said district.

SCHEDULE.

BOUNDARIES OF THE EAST ROAD - MAKAREWA RABBIT DISTRICT.

ALL that area in the Southland Land District containing by approximation 34,000 acres, more or less, and bounded as follows: Commencing at a point on the right bank of the Waihopai River, the said point being the south-eastern corner of Section 8, Block IV, Invercargill Hundred; thence in a northerly direction along the eastern boundary of the said Section 8, across a public road, and along another public road forming the eastern boundary of Section 19, Block IV, Invercargill Hundred, to and across Myross Bush Road; thence in a westerly direction along the said Myross Bush Road to the south-eastern corner of Section 30, Block IV, Invercargill Hundred; thence in a northerly direction along the eastern boundary of the said Section 30 to the north-eastern corner thereof; thence in an easterly direction along the southern boundary of Section 33, Block IX, Invercargill Hundred, to the south-eastern corner thereof; thence in a northerly direction along the eastern boundary of the said Section 33, across a public road, and along another public road forming the eastern boundary of Section 45, Block IX, Invercargill Hundred, to Pomona Road, Town of Makarewa; thence in an easterly direction along the said Pomona Road to the eastern side of Helena Road, Town of Makarewa; thence in a northerly direction along the said Helena Road to a point in line with the northern side of Orion Road, Town of Makarewa; thence in a westerly direction to and along the said Orion Road to Main North Road; thence in a northerly direction along Main North Road to a point in line with the northern side of the public road along the northern boundary of Section 26, Block XIII, Invercargill Hundred; thence in a westerly direction to and along the said public road to the Invercargill-Kingston Railway Reserve; thence in a north-westerly direction along the said Invercargill-Kingston Railway Reserve to the left bank of the Makarewa River; thence in a north-easterly direction generally along the left bank of the said Makarewa River to its confluence with the Hedgehope Stream; thence in an easterly direction generally along the left bank of the said Hedgehope Stream to its confluence with the Titipua

certificates of title, Volume 7c, folio 500, and Volume 7c folio 501. As shown on the plan marked L. and S. 6/1/1057A deposited in the Head Office, Department of Lands and Survey at Wellington, and thereon edged red (S.O. Plan 46076).

Dated at Wellington this 15th day of July 1970.

DUNCAN MACINTYRE Minister of Lands.
(L. and S. H.O. 6/1/1057; D.O. 8/45882)

Dedication of a Road Reserve as a Street

PURSUANT to the Reserves and Domains Act 1953, the Minister of Lands hereby dedicates the road reserve described in the Schedule hereto as a street.

SCHEDULE

NORTH AUCKLAND LAND DISTRICT—MOUNT ROSKILL BOROUGH
ROAD Reserve, as shown on D.P. 15470, being part Allotment 124, Section 10, Suburbs of Auckland, situated in Block IV, Titirangi Survey District: area, 36.8 perches, more or less. Part certificate of title, Volume 353, folio 39.

Dated at Wellington this 21st day of July 1970.

DUNCAN MACINTYRE, Minister of Lands.
(L. and S. H.O. 16/3156; D.O. 8/5/469)

Dedication of Road Reserves as Road

PURSUANT to the Reserves and Domains Act 1953, the Minister of Lands hereby dedicates the road reserves described in the Schedule hereto as road.

SCHEDULE

CANTERBURY LAND DISTRICT—WAIMAIRI COUNTY
LOT 6, D.P. 14690, being part Rural Section 114, situated in Block X, Christchurch Survey District: area, 37.6 perches, more or less. Balance certificate of title, Volume 201, folio 16.
LOT 12, D.P. 22052, being part Rural Section 114, situated in Block X, Christchurch Survey District: area, 1 rood 33.2 perches, more or less. Balance certificate of title, Volume 548, folio 190.

Dated at Wellington this 20th day of July 1970.

DUNCAN MACINTYRE, Minister of Lands.
(L. and S. H.O. 6/1/438; D.O. 8/5/403)

Reservation of Land

PURSUANT to the Land Act 1948, the Minister of Lands hereby sets apart the land described in the Schedule hereto as a reserve for recreation purposes.

SCHEDULE

NORTH AUCKLAND LAND DISTRICT—RODNEY COUNTY
SECTION 39, Block III, Okaka Survey District: area, 73 acres 3 roods 13 perches, more or less (S.O. 46496).

Dated at Wellington this 15th day of July 1970.

DUNCAN MACINTYRE, Minister of Lands.
(L. and S. H.O. 1/1406; D.O. 8/3/488)

Reservation of Land

PURSUANT to the Land Act 1948, the Minister of Lands hereby sets apart the land described in the Schedule hereto as a reserve for a youth holiday and recreation camp.

SCHEDULE

WELLINGTON LAND DISTRICT—MASTERTON COUNTY
SECTION 46 (formerly part Lot 1, D.P. 11408 and part Section 2), Tauweru District, situated in Block IX, Otahoua Survey District: area, 2 acres 1 rood 19.2 perches, more or less. All Gazette notices 809137 and 826341 (S.O. 27973).

Dated at Wellington this 17th day of July 1970.

DUNCAN MACINTYRE, Minister of Lands.
(L. and S. H.O. 1/1607; D.O. 8/3/238)

Reservation of Land and Declaration That Land be Part of Punakaiki Scenic Reserve

PURSUANT to the Land Act 1948, the Minister of Lands hereby sets apart the land described in the Schedule hereto as a reserve for scenic purposes, and further, pursuant to the Reserves and Domains Act 1953, declares the said reserve to form part of the Punakaiki Scenic Reserve, to be administered as a scenic reserve by the Punakaiki Scenic Reserve Board.

SCHEDULE

WESTLAND LAND DISTRICT—BULLER AND GREY COUNTIES— PUNAKAIKI SCENIC RESERVE

RESERVES 1831, 1832, 1972, 2150, and Rural Sections 4684 (formerly part Rural Section 2592) and 4685 (formerly part Rural Section 2592) situated in Blocks I and II, Punakaiki Survey District: area, 1,198 acres and 9 perches, more or less. (S.O. Plans 4338, 4713, 5450, and 1083.)

Dated at Wellington this 17th day of July 1970.

DUNCAN MACINTYRE, Minister of Lands.
(L. and S. H.O. 4/6; D.O. 13/11)

Reservation of Land and Vesting in the Christchurch City Council

PURSUANT to the Land Act 1948, the Minister of Lands hereby sets apart the land described in the Schedule hereto as a reserve for recreation purposes and further, pursuant to the Reserves and Domains Act 1953, vests the said reserve in the Mayor, Councillors, and Citizens of the City of Christchurch, in trust, for that purpose.

SCHEDULE

CANTERBURY LAND DISTRICT—CITY OF CHRISTCHURCH

LOT 572, D.P. 27578, being part Rural Sections 243C, 340 and 14952, situated in Block XIV, Christchurch Survey District: area, 10 acres 3 roods 20.2 perches, more or less. Part certificate of title, Volume 790, folio 5.

Dated at Wellington this 17th day of July 1970.

DUNCAN MACINTYRE, Minister of Lands.
(L. and S. H.O. 1/1107/9; D.O. 8/3/315)

Import Control Exemption Notice (No. 25) 1970

PURSUANT to regulation 16 of the Import Control Regulations 1964*, the Minister of Customs hereby gives notice as follows:

1. (a) This notice may be cited as the Import Control Exemption Notice (No. 25) 1970.

(b) This notice shall come into force on the day after the date of its notification in the *New Zealand Gazette*.

2. Goods of the class specified and for the purposes of the Customs Tariff falling within the Tariff items in the Schedule hereto, imported from and being the produce or manufacture of any country, are hereby exempted from the requirements of a licence under the said regulations.

SCHEDULE

EXEMPTIONS CREATED

Tariff Item	Class of Goods
73.15.92}	Mattress wire, of high carbon steel or of alloy steel.
73.15.96}	

Dated at Wellington this 16th day of July 1970.

L. R. ADAMS-SCHNEIDER, Minister of Customs.

*S.R. 1964/47

Licensing Frank Brent to Occupy a Site for a Pipeline at Mill Bay, Mangonui Harbour

PURSUANT to the Harbours Act 1950, the Minister of Marine hereby licenses and permits Frank Brent (hereinafter called the licensee, which term shall include his administrators, executors, or assigns, unless the context requires a different construction) to use and occupy a part of the foreshore and bed of Mangonui Harbour, at Mill Bay, as shown on plan marked M.D. 10042 and deposited in the office of the Marine

SCHEDULE

NORTH AUCKLAND LAND DISTRICT

ALL those pieces of land described as follows:

Area m ²	Being
1332	Part Section 20, Block I, Kaihu Survey District; marked "A" on plan.
5608	Part Section 22, Block I, Kaihu Survey District; marked "B" on plan.
ha	
1.0474	Part Section 21, Block I, Kaihu Survey District, marked "C" on plan.

As shown on plan S.O. 54045, lodged in the office of the Chief Surveyor at Auckland, and thereon marked as above mentioned.

Dated at Wellington this 19th day of March 1980.

W. L. YOUNG, Minister of Works and Development.

(P.W. 33/1418; Ak. D.O. 50/15/2/0/54045)

Land Proclaimed as Road in Block II, Komakorau Survey District, and Block XIV, Hapuakohe Survey District, Waikato County

PURSUANT to section 29 of the Public Works Amendment Act 1948, the Minister of Works and Development hereby proclaims as road the land described in the Schedule hereto, which land shall vest in the Waikato County Council.

SCHEDULE

SOUTH AUCKLAND LAND DISTRICT

ALL those pieces of land described as follows:

Area m ²	Being
1508	Part Lot 20, D.P. 13221; marked 'A' on plan.
392	Part Lot 20, D.P. 13221; marked 'C' on plan.

Situated in Block II, Komakorau Survey District.

Area
m²

Being	
1676	Part Lot 20, D.P. 13221; marked 'D' on plan.

Situated in Block XIV, Hapuakohe Survey District and Block II, Komakorau Survey District.

As shown on plan S.O. 49546, lodged in the office of the Chief Surveyor at Hamilton, and thereon marked as above mentioned.

Dated at Wellington this 19th day of March 1980.

W. L. YOUNG, Minister of Works and Development.

(P.W. 34/3499; Hn. D.O. 19/0/105)

Declaring Land Taken for a Government Work (Railway Purposes) at Matapuna and Not Now Required for That Purpose to be Set Apart for the Transmission of Electricity Purposes (Line Depot)

PURSUANT to section 25 of the Public Works Act 1928, the Minister of Railways hereby declares the land described in the Schedule hereto to be set apart for transmission of electricity purposes (line depot), from and after the 31st day of March 1980.

SCHEDULE

SOUTH AUCKLAND LAND DISTRICT—TAUMARUNUI BOROUGH

ALL that piece of land described as follows:

Area m ²	Railway land being
5611	Part of the North Island Main Trunk Railway, being part of the land comprised and described in <i>Gazette</i> , 1905, p. 1240, Proc. 2137.

Situated in Block II, Piopiotea Survey District.

As the same is more particularly delineated on the plan marked L.O. 31330 (S.O. 50264), deposited in the office of the Minister of Railways at Wellington, and thereon marked A.

Dated at Wellington this 19th day of March 1980.

COLIN McLACHLAN, Minister of Railways.

(N.Z.R. L.O. 29064/57)

Railway Land Proclaimed as Road at Te Kuiti

PURSUANT to section 226 of the Public Works Act 1928, the Minister of Railways hereby proclaims as road and vests in the Waitomo District Council the land described in the Schedule hereto.

SCHEDULE

SOUTH AUCKLAND LAND DISTRICT—WAITOMO DISTRICT

ALL that piece of land described as follows:

Area m ²	Railway land being
6	Lot 1, D.P. S. 26622, being all the land comprised and described in C.T. No. 24D/1205.

Situated in Block III, Otanake Survey District.

Dated at Wellington this 17th day of March 1980.

COLIN McLACHLAN, Minister of Railways.

(N.Z.R. L.O. 20725/150)

*State Forest Land Set Apart as Dedicated Areas—
Westland Conservancy*

PURSUANT to section 15 of the Forests Act 1949 (as inserted by section 2 of the Forests Amendment Act 1973, and amended by section 5 of the Forests Amendment Act 1976), the Minister of Forests hereby gives notice that the various areas of land described in the Schedule hereto are hereby set apart and dedicated for the purposes of protection, maintenance, and management of trees and other plants, and for the protection of the natural environment and native wildlife consistent with the proper use and management of State forest land. The various areas of State forest land so dedicated shall be known by the names shown.

SCHEDULE

WESTLAND LAND DISTRICT—BULLER, GREY, AND WESTLAND COUNTIES

GREENSTONE ECOLOGICAL AREA being part R1605 and part R1661, situated in Blocks VIII and XII, Waimea Survey District, and Blocks V and IX, Hohonu Survey District: area, 1144 hectares (State Forest by *New Zealand Gazette*, 1940, page 1788, and 1962, page 623) as more particularly delineated on S.O. 10130. As shown on plan S51/23 deposited in the Head Office of the New Zealand Forest Service at Wellington.

Three Mile Hill Ecological Area being part R1662 and part R2005, situated in Blocks IX and XIII, Hohonu Survey District: area, 176 hectares (State Forest by *New Zealand Gazette*, 1919, page 1288, and 1957, page 534) as more particularly delineated on S.O. 10131. As shown on plan S51/24 deposited in the Head Office of the New Zealand Forest Service at Wellington.

Deadman Ecological Area being part R1707, situated in Block XI, Mawheranui Survey District: area, 240 hectares (State Forest by *New Zealand Gazette*, 1940, page 1789) as more particularly defined on S.O. 10133. As shown on plan S44/5 deposited in the Head Office of the New Zealand Forest Service at Wellington.

Roaring Meg Ecological Area being part R1591, part R1592, and part R1693, situated in Blocks X, XIII, XIV, and XV, Waiwhero Survey District, and Blocks II and III, Mawheranui Survey District: area, 3600 hectares (State Forest by *New Zealand Gazette*, 1920, page 2837, and 1941, page 3089) as more particularly delineated on S.O. 10134. As shown on plan S44/4 deposited in the Head Office of the New Zealand Forest Service at Wellington.

Flagstaff Ecological Area being part R1598, part R1612, part R1674, part R1695, part R1702, and part R1941, situated in Blocks XI, XII, XV, and XVI, Ahaura Survey District: area, 1622 hectares (State Forest by *New Zealand Gazette*, 1940, page 1785, and 1953, page 1501) as more particularly delineated on S.O. 10138. As shown on plan S45/17 deposited in the Head Office of the New Zealand Forest Service at Wellington.

Waipuna Ecological Area being part R1606 and part R1694, situated in Blocks IV and VIII, Ahaura Survey District, and Blocks I and V, Pohaturua Survey District: area 1910 hectares (State Forest by *New Zealand Gazette*, 1940, page 1785) as more particularly delineated on S.O. 10139. As shown on plan S45/16 deposited in the Head Office of the New Zealand Forest Service at Wellington.

Number and Title of Specification	Price of Copy incl. GST (Post free) \$
NZS 7648:1987 Unplasticized PVC pipe and fittings for pressure applications. Note—The revocation of NZS 7648:1974 will be held over until 1 November 1988 for Certification Mark purposes.	42.90

Copies of the standard specification may be ordered from the Standards Association of New Zealand, Wellington Trade Centre, 181-187 Victoria Street (or Private Bag), Wellington.

Dated at Wellington this 23rd day of November 1987.

DENYS R. M. PINFOLD,
Director, Standards Association of New Zealand.

(S.A. 114/2/2:955)
au1038

Specifications Declared to be Standard Specifications

Pursuant to section 23 of the Standards Act 1965, the Standards Council, on 23 October 1987, declared the under-mentioned specifications to be standard specifications.

Number and Title of Specification	Price of Copy incl. GST (Post free) \$
NZS 6203:— Agricultural electric fencing— Part 1:1987 A.C. mains-operated electric fence energizers.	34.10

Copies of the standard specification may be ordered from the Standards Association of New Zealand, Wellington Trade Centre, 181-187 Victoria Street (or Private Bag), Wellington.

Dated at Wellington this 23rd day of November 1987.

DENYS R. M. PINFOLD,
Director, Standards Association of New Zealand.

(S.A. 114/2/2:956)
au1036

Standard Specification Revoked

Pursuant to section 23 of the Standards Act 1965, the Standards Council, on 23 October 1987 revoked the under-mentioned standard specification.

Number and Title of Specification
NZS 1525:1962 Mains operated electric fence controllers.
(Superseded by NZS 6203: Part 1:1987)

Dated at Wellington this 23rd day of November 1987.

DENYS R. M. PINFOLD,
Director, Standards Association of New Zealand.

(S.A. 114/2/7: 2016)
au1033

Provisional Standard Withdrawn

Pursuant to the provisions of the Standards Act 1965, the Standards Council, on 23 October 1987 withdrew the under-mentioned provisional standard.

Number and Title of Provisional Standard
NZS 6203:— Agricultural electric fencing—
Part 1P:1983 Mains-operated electric fence energizers.
(Cancelled and replaced by NZS 6203:1987)

Dated at Wellington this 23rd day of November 1987.

DENYS R. M. PINFOLD,
Director, Standards Association of New Zealand.

(S.A. 114/2/11:55)
au1034

Land Notices

Conservation

Harbours Act 1950

Authorising the Marlborough Harbour Board to Reclaim Crown Seabed From Picton Harbour

PAUL REEVES, Governor-General

ORDER IN COUNCIL

At Wellington this 23rd day of November 1987

Present:

HIS EXCELLENCY THE GOVERNOR-GENERAL IN COUNCIL

Pursuant to section 175 (3) and subject to section 176 to 182 of the Harbours Act 1950, His Excellency the Governor-General, acting on the joint recommendation of the Minister of Conservation and Minister of Transport and by and with the advice and consent of the Executive Council hereby authorises the Marlborough Harbour Board to reclaim an area of 100 square metres of seabed in Picton Harbour as shown on Plan MT 1268 deposited in the office of the Regional Manager, Department of Conservation, Nelson and as more particularly described in the Schedule below.

Schedule

All that parcel of land containing 100 square metres (100m²), more or less, situated in Picton Borough of the Marlborough Land District and more particularly shown as area A, B, C and D on plan MT 1268 deposited in the Nelson Regional Office of the Department of Conservation.

MARIE SHROFF, Clerk of Executive Council.

In1030

National Parks Act 1980

The Paparoa National Park Order 1987

PAUL REEVES, Governor-General

ORDER IN COUNCIL

At Wellington this 23rd day of November 1987

Present:

HIS EXCELLENCY THE GOVERNOR-GENERAL IN COUNCIL

Pursuant to section 7 of the National Parks Act 1980, His Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, hereby makes the following order.

Order

1. Title and commencement—(1) This order may be cited as the Paparoa National Park Order 1987.

(2) This order shall come into force on the 30th day of November 1987.

2. Land declared to be national park—The land described in the Schedule to this order is hereby declared to be a national park subject to the National Parks Act 1980.

3. National park named—The national park declared in clause 2 of this order is hereby assigned the name of "Paparoa National Park".

Schedule**Reserves and Conservation Areas Declared to be National Park****Westland Land District—Buller County****Westland Conservation Region**

10.5000 hectares, more or less, being Section 1, S.O. Plan 11229 (formerly Reserve 1766, part Reserves 966 and 1090), situated in Block I, Punakaiki Survey District. Part Punakaiki Scenic Reserve by part *Gazette* notices 059043 and 075840.

383.8000 hectares, more or less, being Section 4, S.O. Plan 11229 (formerly Reserves 967, 1092, 1831, part Reserve 966, Rural Sections 4684, 4865 and Section 1, S.O. 11225), situated in Blocks I and II, Punakaiki Survey District. Part Punakaiki Scenic Reserve by part *Gazette* notices 059043, 075840, 069160 and Conservation Area by part *New Zealand Gazette*, 1987, page 4724.

144.5200 hectares, more or less, being Section 5, S.O. Plan 11229 (formerly Reserves 1972, 2150 and part Reserve 968), situated in Blocks I and II, Punakaiki Survey District. Part Punakaiki Scenic Reserve by part *Gazette* notice 059043.

5050.0000 hectares, more or less, being Section 7, S.O. Plan 11229 (formerly Reserve 2145, part Reserves 968, 1590 and 1693), situated in Block II, Punakaiki Survey District and Blocks II, III, IV, VI and VII, Waiwhero Survey District. Part Punakaiki Scenic Reserve by part *Gazette* notice 059043 and Conservation Area by part *New Zealand Gazette*, 1987, page 4724.

Westland Land District—Grey County**Westland Conservation Region**

6.5650 hectares, more or less, being Section 2, S.O. Plan 11229 (formerly Reserve 1767 and part Reserve 969), situated in Block I, Punakaiki Survey District. Part Punakaiki Scenic Reserve by part *Gazette* notice 059043.

3.5250 hectares, more or less, being Section 3, S.O. Plan 11229 (formerly Reserve 1085 and part Reserve 969), situated in Block I, Punakaiki Survey District. Part Punakaiki Scenic Reserve by part *Gazette* notice 059043.

753.5000 hectares, more or less, being Section 6, S.O. Plan 11229 (formerly Reserves 970, 1797, 1832, 2098; Rural Sections 2607 and 6731), situated in Block I, Punakaiki Survey District and Blocks I and II, Waiwhero Survey District. Punakaiki Nature Reserve by all *Gazette* notice 058820 and Conservation Area by part *New Zealand Gazette*, 1987, page 4724.

2050.0000 hectares, more or less, being Section 8, S.O. Plan 11229 (formerly Reserves 1088, 1089 and part Reserves 1590 and 1693), situated in Blocks I, II, VI, VII, X and XI, Waiwhero Survey District. Conservation Area by part *New Zealand Gazette*, 1987, page 4724.

Nelson Land District—Buller County**Westland Conservation Region****Firstly****Conservation Areas**

17828.8192 hectares, more or less, being Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 Nelson S.O. Plan 14062. Part *New Zealand Gazette*, 1987, page 4724.

207.1990 hectares, more or less, being Section 5, Block IX, Brighton Survey District. Nelson S.O. Plan 7377. Part *New Zealand Gazette*, 1987, page 4724.

154.7923 hectares, more or less, being part Section 9, Block X, Brighton Survey District. Nelson S.O. Plan 7501. Part *New Zealand Gazette*, 1987, page 4724.

2392.8050 hectares, more or less, being Sections 8, 9, 10, 11 and 12, Block IX, Sections 10 and 11, Block X, Sections 1, 2, 3 and 4, Block XIV, Brighton Survey District. Nelson S.O. Plan 12575. Part *New Zealand Gazette*, 1987, page 4724.

Secondly**Scenic Reserves**

9.8136 hectares, more or less, being Section 11, Block VII, Waitakere Survey District. Nelson S.O. Plan 10685. Part *New Zealand Gazette*, 1979, page 1461.

201.1288 hectares, more or less, being Section 10, Block IX, Waitakere Survey District. Nelson S.O. Plan 8497. Part *New Zealand Gazette*, 1979, page 700.

527.9125 hectares, more or less, being Sections 3, 11, 12, 13 and 16, Block V, Brighton Survey District. Nelson S.O. Plans 6295, 7376 and 8346. Part *New Zealand Gazette*, 1980, page 2564.

109.0982 hectares, more or less, being Section 15, Block V, and part Section 2, Block IX, Brighton Survey District. Nelson S.O. Plans 7376 and 6296. Part *New Zealand Gazette*, 1980, page 2564.

138.2436 hectares, more or less, being Sections 14 and 15 and part Section 3, Block IX, Brighton Survey District. Nelson S.O. Plans 8606, 8651, 6296 and 9273. Part *New Zealand Gazette*, 1980, page 2564.

323.3438 hectares, more or less, being Sections 6 and 7, Block IX, Brighton Survey District. Nelson S.O. Plan 7377. Part *New Zealand Gazette*, 1980, page 2564.

22.6176 hectares, more or less, being Sections 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33 and 34, Block IX, Brighton Survey District. Nelson S.O. Plans 9162 and 9322. Part *New Zealand Gazette*, 1980, page 2564.

1.3810 hectares, more or less, being Lot 44, D.P. 3558, being part Section 13, Block IX, Brighton Survey District. Balance certificate of title 83/228. Part *New Zealand Gazette*, 1980, page 2564.

9637 square metres, more or less, being Lot 45, D.P. 3558, being part Section 13, Block IX, Brighton Survey District. All certificate of title 2B/380. Part *New Zealand Gazette*, 1980, page 2564.

6.6773 hectares, more or less, being Section 35, Block IX, Brighton Survey District. Nelson S.O. Plan 10692. Part *New Zealand Gazette*, 1980, page 2564.

All hereinbefore described are more particularly delineated and shown bordered by a bold black line on Nelson S.O. Plan 14063.

MARIE SHROFF, Clerk of the Executive Council.

Explanatory Note

This note is not part of the order, but is intended to indicate its general effect.

This order establishes the Paparoa National Park situated on the West Coast 15 km north of Greymouth. It consists of



View Statutory Action

Parcel Section 5 Survey Office Plan 487151

Parcel Status Current

Current Purpose Conservation purposes

Statutory Action	Type	Recorded	Action	Status
New Zealand Gazette 2015 In 4353	Gazette Notice	04/08/2015	Create	Current
Statute	Section 7(1A), Conservation Act 1987			
Purpose				
Name				
Comments	Balance			
Statutory Action	Type	Recorded	Action	Status
New Zealand Gazette 1941 p 3089	Gazette Notice	22/10/2015	Referenced	Current
Statute	Section 18, Forests Act 1921 - 22			
Purpose	State Forest Land			
Name				
Comments				
Statutory Action	Type	Recorded	Action	Status
Section 62(1), Conservation Act 1987	Statutory Vesting	22/10/2015	Referenced	Current
Statute	Section 62(1), Conservation Act 1987			
Purpose	Conservation purposes			
Name				
Comments	SO 11209 K31/3, 51 & 59			

*** End of Report ***

Adding Land to Paparoa National Park

Lt Gen The Rt Hon Sir JERRY MATEPARAE,
Governor-General

ORDER IN COUNCIL

At Wellington this 16th day of November 2015

Present:

His Excellency The Governor-General
Presiding In Council

Pursuant to section 7 of the National Parks Act 1980, His Excellency the Governor-General, acting on the advice and with the consent of the Executive Council, hereby declares that the land described in the Schedule hereto shall, as from 18 November 2015, be national park subject to the National Parks Act 1980 and shall be added to and form part of Paparoa National Park.

Westland Land District—Grey District

Schedule

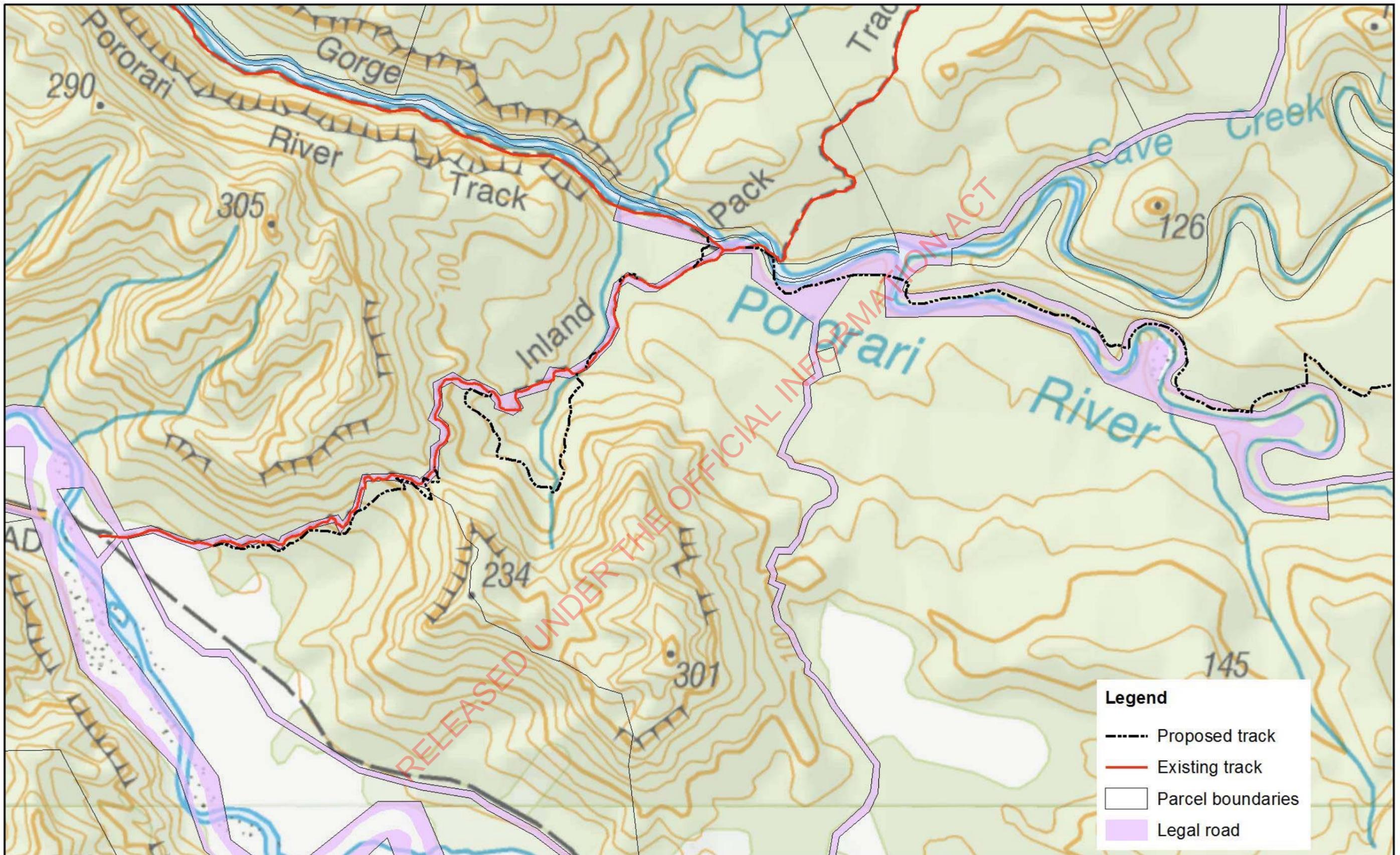
Area
ha

Description

3935.5267 Sections 1, 2, 3 and 7 SO 487151 (all [New Zealand Gazette, 23 July 2015, Issue No. 77, Notice No. 2015-In4353](#), and part *New Zealand Gazette*, 7 March 2002, No. 20, page 601).

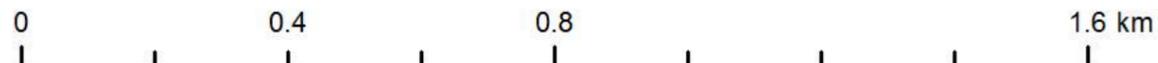
MICHAEL WEBSTER, Clerk of the Executive Council.

2015-In6666



**Proposed Pike29 Track
Lower Pororari - Legal Road**

Projection: NZTM
Datum: NZGD2000
Date: 11/11/2016



 Department of Conservation
Te Papa Atawhai

New Zealand Government

Appendix B – Site Photographs

RELEASED UNDER THE OFFICIAL INFORMATION ACT

Pike 29 Track Corridor Photo Appendix

Moonlight Tops Section



Figure 1: View indicating existing bench track (leading from Ces Clarke Hut) at horizon and Moonlight Tops route in foreground. The corridor generally follows this on a zero gradient.



Figure 4: Typical "Rock Garden" that will become a feature of the Moonlight Tops section.



Figure 2: Typical low to medium height alpine vegetation inside the track corridor.



Figure 5: Track line will hit the saddle in picture along the main Paparoa Ridge. This view shows typical transitioning between alpine hard vegetation and tussock.



Figure 3: Dracophyllum forest through which the corridor passes at the lower extremity of the alpine zone.



Figure 6: In general terms the track sidles along the main ridge, south-north, working from saddle to saddle.

Pike Section



Figure 7: Typical forest section on the approach to Mount Anderson.



Figure 8: Typical section in the lower Pike Valley through virgin Beech forest.



Figure 9: Views into the Grey Valley from half way up the Pike Ridge inside the proposed track corridor.



Figure 10: There are a number of small slips in the lower Pike Valley. Potential erosion issues exist but these will be easy to manage with sympathetic track profile setup and execution.

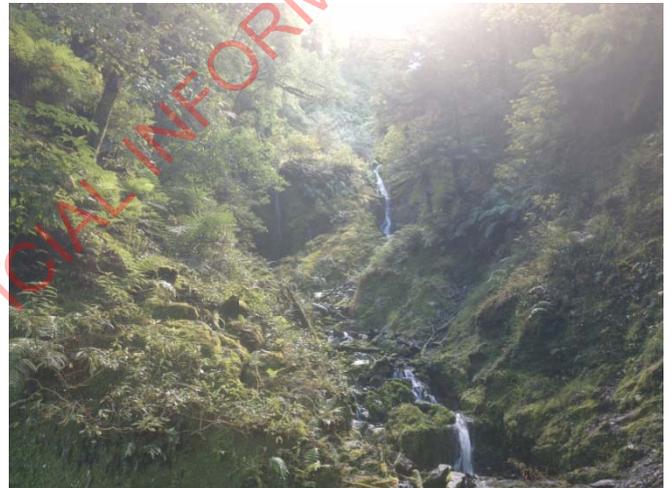


Figure 11: A creek crossing in the lower Pike Valley. This will require an 8 metre long timber bridge. There are a number of bridges in the lower Pike Valley



Figure 12: One of the many small "guts" that are a feature of the section of track on the top of Pike Ridge. From a construction perspective these are easily managed via small boardwalks or stacked stone seep culverts as needed.

Escarpment Section



Figure 13: Photo showing the gully where the track corridor exits the the escarpment and an approximation of the proposed line.



Figure 16: Under the canopy below the escarpment the terrain is very rocky and this combined with a 300 to 500 year old canopy means very careful layout and execution for construction.



Figure 14: Typical of the terrain under the escarpment where the corridor is heavily influenced by geography.



Figure 17: As with the Moonlight Tops section the Escarpment Tops corridor works from saddle to saddle with easy grades to make the most of views and geological opportunities.

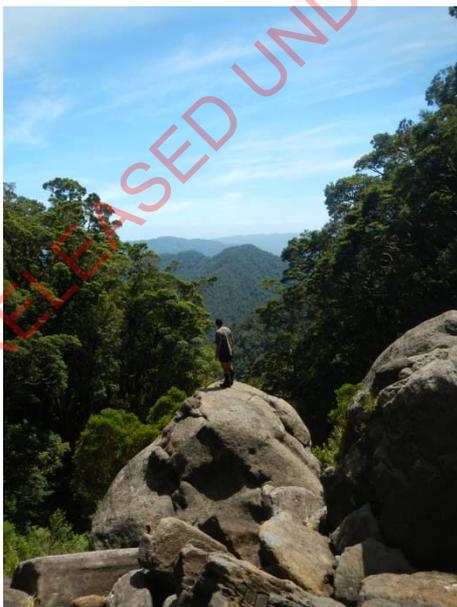


Figure 15: The waterfall suspension bridge site. The bridge will be constructed left to right in front (far side) of the figure in the picture.



Figure 18: Low, slow growing alpine vegetation will necessitate the need for contractors to strictly adhere to a restricted construction corridor. In this picture the corridor tracks along the eastern face and into the saddle at left of the picture and on to the rocky lip in the foreground before veering back onto the eastern face as it heads north.

Upper Pororari Section



Figure 19: Typical of the terrain on Tindale Ridge as the track corridor sidles from saddle to saddle around the many small knobs and high points on its way to the proposed Tindale Ridge hut site.



Figure 20: Small windfall in the corridor at the western end of Tindale Ridge is a minor issue.



Figure 21: The upper Pororari (as well as Lower Pike and under the Escarpment) abounds with excellent canopy trees of many species.



Figure 22: Showing a section of the gold mining/uranium prospecting pack track bench that will be utilised as part of the route down the Pororari River.



Figure 23: Some of the windfall damage caused by Cyclone Ita. Clearance of this will be a major issue as the track follows the old pack track down the true right of the Pororari River.



Figure 24: A section of "Roman Road" on the old pack track. this is one of a number of historic type features on the old pack track that will be preserved and interpreted as part of the new track.

Appendix C – Social, Economic and Recreational Assessment

RELEASED UNDER THE OFFICIAL INFORMATION ACT

Pike29 Track Recreation assessment



To: Andrea Jackson - (Contractor for Pike29 Track AEE)

From: Ian Wightwick - Recreation Advisor, Recreation, Tourism and Heritage,
Science and Policy, Hokitika

CC: Tom Hopkins Senior Works Officer, Hokitika

Date: 12 September 2016

Assyst Request Number: R87664 DOCDM 2875455

Task

The Pike River Mine Transition Project includes establishment of the Pike29 Track and the conversion of ex-mine infrastructure in the Pike River Valley to various visitor and memorial facilities. An assessment has been requested from a number of technical specialists, including a request for an assessment of the social, economic and recreational environment. This assessment completes this task, and provides such an assessment, including the following aspects:

- Regional context
- Benefits of the new track development and associated Interpretation Centre at Pike River Mine
- Alignment with the Department's strategic goals
- Social and physical impacts of shared use tracks
- Monitoring
- Impacts on existing recreational use

Out of scope

A landscape assessment will be carried out by an external qualified landscape architect.

Strategic Fit

The Paparoa National Park Management Plan is currently under review to provide for this opportunity.

Advice

Pike29 Track – Assessment of Environmental Effects; Social, Economic and Recreational Environment

Regional Context

The Pike29 Track is located in the northern part of the West Coast of the South Island.

The West Coast region is made up of small townships that stretch 600km from Haast to Karamea. The Region has a strong association with gold and coal mining, dairy farming, timber milling, fishing and tourism. The region has a population of about 32,000¹ and the size of the population is closely linked to the success or otherwise of these industries.

In 2015 the two key land based commodity industries on the West Coast were performing poorly, with coal mining in significant decline and farming suffering from low international dairy prices. Fortunately for the West Coast economy, tourism on the West Coast is at an all-time high², and therefore it is a good time to expand the recreation offerings to visitors to the West Coast including overseas tourists.

Overall guest nights on the West Coast for the year ended 31 December 2015 were 1,279,067, a 6.4% increase compared to the previous year.³ The number of international visitors coming to New Zealand is at an all-time high. The growth in international visitors to New Zealand is also reflected in an increasing number of visitors to the West Coast. For the year ended 31 December 2015 there were 759,878 international guest nights⁴ which was an 8.7% increase compared to the previous year.

The West Coast is also known for its rugged coastline, high mountains, lakes, lagoons, rivers and karst. The Department of Conservation manages approximately 1.912 million hectares or 84% of the land in the region,⁵ and this includes the Paparoa National Park. People chose to visit the West Coast because of the outstanding natural scenery and the easily accessible recreation, historic and tourism facilities. Travel to the West Coast often forms part of a larger loop that includes Christchurch, Arthur's Pass, the glaciers and Queenstown.⁶

The two glaciers in South Westland underpin tourism on the West Coast, with the Westland District having 776,143 annual bed nights compared to 224,260⁷ in the Buller District.

While the glaciers underpin tourism on the West Coast, the region is keen to grow tourism in the Buller District. The travel guide book, *Lonely Planet* describes the drive down the West Coast as one of the 'top ten coast drives in the World'.⁸ The majority of visitors to the northern West Coast will go for a short walk at one or more of the Department of Conservation 'icon' destinations at Denniston, Cape Foulwind and Punakaiki. Of these, the Dolomite Point Walk at Punakaiki is the most popular destination, with approximately 450,000 visitors per annum.

Benefits of the Pike29 Track and associated Interpretation Centre at Pike River Mine

The eastern entrance/s to the Pike29 Track is located approximately 45 km north of Greymouth near Blackball and at Pike River in the Grey District. The western entrance is located at Punakaiki in the Buller District.

The Pike29 Track was chosen by the families to be a way to remember the 29 men who died in an explosion in the Pike River Mine, under the Paparoa Range in 2010.

An Interpretation Centre at Pike River Mine site will tell the story of the Pike River Mine operation and the tragedy that occurred. The Interpretation Centre will include the mine control room, will display memorabilia and will be a place to tell stories from the families. Access to the Pike River Mine portal will provide a place for quiet reflection.

The families also wanted to establish a multi-day walk/mountain bike trail to bring lasting benefits to the West Coast region. To achieve this, it is proposed this to establish a 65km long shared use track

that will cross the Paparoa Range, moving into the Paparoa National Park as the route traverses from Blackball to Punakaiki and will link with Pike River Mine portal and amenities area.

Historically, the Paparoa National Park has only had a limited number of day walks and marked routes. The new 2 -3 day walk and Grade 4 Advanced level 1 -2 day mountain bike ride will allow more people to explore and enjoy the beech and podocarp forest, the alpine scrub and tussocks of the alpine tops and spectacular limestone landscapes found in the Pororari or Punakaiki valleys. The track will provide visitors with an opportunity to learn about the historic mining and pack tracks in the area.

The Pike29 Track will be built to “Great Walk” standard and will be promoted as New Zealand’s 10th Great Walk. The Department of Conservation Great Walks were established in the early to mid 1990s, and now have an international reputation for outstanding walking and hiking and are on the list of ‘must do’ tramps for many New Zealanders. The track will have broad market appeal for trampers and the number of people using Great Walks has been increasing year on year.⁹

In 2011, Grade 4 Advanced mountain biking was introduced onto the Heaphy Great Walk on a seasonal basis (1 May to 30 September). This is the only Great Walk to provide for dual use and it is now proposed to extend the mountain bike season from 1 April to 30 November each year. It is estimated that up to 2,200 – 3,000 mountain bikers will ride the Heaphy Great Walk each year.

The Heaphy Great Walk and the recently completed Old Ghost Road are also located in the northern West Coast. These tracks are becoming increasingly popular for New Zealanders and international visitors seeking a multi day tramping and mountain biking experience.¹⁰ It is considered that the addition of the Pike 29 Track will help cement the northern West Coast as a destination for these activities.

The Heaphy Great Walk receives approximately 7,500 visitors/21,000 bed nights per annum. The Old Ghost Road opened in December 2015 and demand has been strong and is expected to achieve 2,500- 3,000 visitors/5,000 – 6,000 bed nights per annum.

The Pike River to Punakaiki Track Feasibility Study¹¹ estimated the economic impact of the Pike 29 Track based on a pessimistic scenario of 500 walkers per annum, whereas a more likely scenario is 1,000 walkers per annum, while an optimistic scenario is 2,500 walkers per annum.

The Grade 4 Advanced mountain biking segment of the recreation market is narrow but highly valued by people seeking a challenging multiday ride. It is estimated that total market size of the Grade 4 advanced mountain biking segment in New Zealand is 50,000.¹² Of these riders approximately 82% go on a mountain bike holiday each year and 13% or approximately 5300 visited the West Coast.¹³ This has the potential to grow.

It is considered that the track will appeal to people living on the West Coast, Nelson/Tasman, Marlborough and Canterbury¹⁴. The track is expected to compliment the Heaphy Track and The Old Ghost Road. Compared to the longer Heaphy Track and The Old Ghost Road, people will be able to carry out shorter one day rides such as between Blackball and Pike River, or a weekend overnight option staying at the hut on the Moonlight Tops. Completing a trip over the Paparoa Range will appeal to people seeking a longer journey.

Given the success of the recently opened Old Ghost Road, a scenario of 2,500 multiday visitors seems achievable.

In addition to the local benefits of a \$10 million spend associated with the planning and construction of the trail, the annual direct outputs are \$1.4 million and \$742,000 direct value added and 15 direct fulltime jobs (known as FTEs) and 17 indirect FTEs.¹⁵

The track will help support existing business associated with providing food and accommodation, at Greymouth, Blackball, Punakaiki or Westport. The provision of mountain biking on the track will help sustain shops providing bike hire and bike servicing. Work required to maintain the hut and track each year will support one – two FTE's.

The track will provide a new opportunity for transport /shuttle services that will be required to drop off/pick up people from track entrances. New concession opportunities will be provided for helicopter dropping off visitors for day trips, and small guiding operations.

The track will also provide opportunity for visitors to engage with local community, and to support local events such as the Mountain Man and Goat Race¹⁶, or new events such as a mountain biking enduro. The track will also provide opportunity to promote the work of the Paparoa Wildlife Trust,¹⁷ a community conservation project that is working to protect Great Spotted Kiwi in the Paparoa Range.

How does the Pike 29 Track align with the Department of Conservation Strategic Goals?

The Pike29 Track will help support the Department's Intermediate Outcome that New Zealanders and our visitors are enriched by outdoor experiences.¹⁸ The track will also align with the Department's goals that both New Zealanders and international visitors can connect with our natural places and heritage.

Social and physical impacts of shared use tracks

A variety of social and physical impacts are attributed to mountain bikers using shared use tracks. In many cases, the perception of these impacts differs from the reality of the onsite experiences¹⁹. Research carried out on conflict between trampers and mountain bikers has found that, overall, walkers dislike meeting mountain bikers much more than mountain bikers disliked meeting walkers. The main perception of walkers was that mountain bikers damage the tracks and/or the environment and there were concerns about personal safety.²⁰

The Department has learnt a lot about how to minimise conflict between walkers and bikers from its experience with allowing mountain biking use on the Heaphy Track in 2011 and from feedback from users of The Old Ghost Road.²¹

One of the main themes of negative feedback from walkers on shared use tracks is that mountain bikers do not slow down enough when approaching blind corners and as a result can surprise walkers. This issue will be addressed through good track design and formation. For mountain bikers part of the enjoyment of off road riding comes from the challenge of having to react to changing terrain and negotiating hazards.²² Designing the track to 'flow' is an important element for people riding off road trails, and safety depends on users being able to detect a potential hazard and either stop safely, or manoeuvre around it. Providing good sight lines on corners, incorporating

“chokes” (localised narrowing), gradient reversals and changes in surface type are all design features that be used to improve enjoyment and safety of users, and to slow down cyclists on tracks.

Good track design, formation and maintenance will also minimise the damage to tracks by both bikers and walkers. On-site monitoring of the Heaphy Track showed that there was no evidence of damage to track side vegetation by bikers. There were no reports of people riding off the track or reports of damage to historical features or signs on the track. Mountain bike use appeared to have no significant impact on sections of the track that were well formed and constructed and have the ability to drain freely.²³

The Department, Mountain Bike New Zealand and stakeholders have also developed and promote a Mountain Biker’s Code, which has with three key messages:

- Respect others.
- Respect the rules.
- Respect the track.
-

In regard to minimising conflict with other users, mountain bikers are asked to:

- Stay in control, so you can safely avoid others and keep yourself intact.
- Give way to others.
- Use a bell or greeting when approaching others.
- Ride shared use tracks in small groups. A bike train with a dozen riders displaces other users.

This pre-trip information will be available on the DOC website and on signs at entrances to the track.

Feedback from users of the Heaphy Track since seasonal mountain biking was introduced suggests that compliance of mountain bikers adhering to the mountain bikers code has been high. A limited number of instances of reported conflict demonstrate that both the mountain bikers and walkers are sharing the track with consideration for each other.²⁴

The Old Ghost Road²⁵ was completed in December 2015 and is promoted for use by bikers and trampers all year round. To date there have been no reports of conflict between trampers and bikers.

This suggests that while some people may have the perception that bikers increase damage to tracks and conflict will occur between walkers and bikers, actual impacts of allowing mountain biking on the Pike29 Track can be minimised by good track design, describing in pre-visit information that the track is open for shared use walking and mountain biking and that mountain bikers are to follow the Mountain Biker’s Code of Conduct.

By implementing these measures, it is considered that conflict between walkers and mountain bikers can be minimised, and that a minimum level of conflict is acceptable.

Monitoring

Data gathering about use of the track will be useful to determine the number of people who will be walking and mountain biking the Pike29 Track, where people are coming from and the duration of use of the track. It is recommended that:

- The hut booking system requires people to identify whether they are tramping or mountain biking the track;
- The link on the Department's website allowing visitor to comment on the facilities is retained, as a way of monitoring potential conflict and allowing people to provide feedback on their experience of the track throughout they year
- The Pike29 Track is included as part of the annual Great Walk surveys to compare the quality of the visitor experience with other Great Walks.

The Pike29 Track will be required to be formally inspected at least every two years as part of the Department's track inspection programme.²⁶ Regular and ongoing inspection will determine whether the track is continuing to meet the track standards for a Great Walk and Grade 4 Advanced mountain biking.

In addition, monitoring may be required to be carried out to determine whether or not people are mountain biking off the track and/or monitoring may be required to determine whether damage is occurring to specific historic features on the track.

Impact of the Pike29 Track on existing recreational use in the area

The south eastern section of the Pike29 Track will use the existing Croesus Track. The Croesus follows a well formed historic pack track from Smoko carpark near Blackball to the 16 bunk (Serviced²⁷) Ces Clark Hut. From Ces Clark hut the pack track continues to Croesus Knob and south to historic Croesus mine site. From the Croesus Knob the track changes in nature to a traditional tramping track to Mt Ryall and from here the track descends to steeply to Barrytown.

The track to Ces Clark Hut is used by both trampers and Grade 3 - 4 Intermediate/Advanced mountain bikers. The majority of trampers overnight at the Ces Clark Hut (walking time approximately 4 -5 hours) and return the way they came. Mountain bikers will typically ride to the hut and back as a day trip. Ces Clark Hut has approximately 550 bednights per annum²⁸.

As part of the Pike29 Track it is proposed to build a new 20 bunk hut on the Moonlight Tops, which will take trampers approximately 6 -7 hours to reach from the Smoko car park. A second new 20 bunk hut (Pororari Hut) will be located on a spur above Tindale Creek, 4 -6 hours from the Moonlight Tops Hut. From the Pororari Hut it will take trampers approximately four hours to walk to Punakaiki via the Pororari River. Mountain bikers will be directed to ride out via the Inland Pack Track to the Punakaiki River to avoid conflict with the higher number of day visitor using the lower Pororari River Track.

It is considered that the existing pack track from Smoko car park to Croesus Knob is suitable to accommodate an increased number of trampers and mountain bikers without leading to any increased conflict or crowding. The existing section of track from Croesus Knob to Mt Ryall will be upgraded to meet the needs of increased numbers of trampers and mountain bikers.

It is uncertain what impact the construction of the two new huts on the Pike29 Track will have on the overnight use of the Ces Clark Hut. One scenario is that people who do not wish to tramp for 6 - 7 hours to the Moonlight Tops hut, or spend half a day traveling to Blackball, may choose to spend their first night at Ces Clark hut. Under this scenario the use of the hut will increase and the Department may need to upgrade the hut to Great Walk standard, by including gas cookers and including the hut on the Great Walk booking system. Should this occur, the hut fees would be increased from the current \$15 per person/night to between \$22-54 per person/night.²⁹ Under this

scenario, another option is to increase the capacity of the Ces Clark Hut from 16 bunks to 20 bunks. The Department is currently planning to increase the capacity of the toilet at Ces Clark Hut.

A second scenario is that more people may carry out weekend tramps and or bike to the Moonlight Tops Hut and exit via Punakaiki or via the side track to the Pike River Mine site. Under this scenario, use of the Ces Clark Hut could decrease and no changes to the service standard will be required nor the need to include the hut on the Great Walk booking system. Visitor feedback and monitoring of overnight use of the Ces Clark Hut will inform future management options for this hut.

In conclusion, it is considered that the existing Croesus Track and the capacity of the Ces Clark Hut is suitable to cater for an increased number of overnight trampers and mountain bikers. The upgrade of the section of the track from Croesus Knob to Mt Ryall will also allow for increased use of both trampers and bikers.

The proposed management of the Pike29 Track to require mountain bikers to exit via the Punakaiki River will avoid conflict with the higher number of day walkers using the lower Pororari River Track.

¹ <http://www.geohive.com/cntry/newzealand.aspx>

² Statistic New Zealand Commercial Accommodation Monitor January 2016 West Coast page 2 A 1,289,254 guest nights year end January 2016

³ Statistic New Zealand Commercial Accommodation Monitor December 2015 West Coast page 2

⁴ Statistic New Zealand Commercial Accommodation Monitor December 2015 West Coast page 2

⁵ West Coast *Te Tai o Poutini* Conservation Management Strategy 2010-220 page 11.

⁶ Vuletich, S. & Becken, S. (2007). The tourism flows model summary document. Ministry of Tourism, Wellington. Accessed from <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/other-research-and-reports/pdf-and-document-library/tourism-flows-model-summary.pdf>

⁷ <http://www3.stats.govt.nz/accommodation/pivot-tables/Territorial-authority-area-2016-02.xlsx>

⁸ "West Coast, New Zealand official site: Find activities, accommodation, events". Westcoastnz.com. Retrieved 2012-10-16.

⁹ Department of Conservation Great Walk booking data.



¹⁰ 6857 people tramped or biked the Heaphy Track in 2015. An increase of 37.5% since 2009. The Old Ghost Road Opened in December 2015 and already is getting 2500 – 3000 visitors per annum.

¹¹ The Pike River to Punakaiki Track Feasibility Study 7 July 2015 prepared for the Department of Conservation by TRC Tourism

¹² It is estimated that 11% or 371,200 people actively participate in off road cycling in New Zealand¹². Of these approximately half of participants carried out this activity on public conservation land¹². Data on how many people are riding Grade 3 or Grade 4 tracks is limited but is estimated that 27% of people surveyed rated themselves as advanced riders.

¹³ Trail Fund Rider Survey 2015.

<https://drive.google.com/file/d/0B9K7FFnYYJQCT3ZrZUVub2xiU1E/view?pref=2&pli=1>

¹⁴ Department of Conservation Voting With Their Feet, use of recreation sites on public conservation lands by New Zealanders, 2014

¹⁵ The Pike River to Punakaiki Track Feasibility Study 7 July 2015 prepared for the Department of Conservation by TRC Tourism

¹⁶ <http://www.eventfinda.co.nz/2017/mountain-man-goat-race/greymouth>

¹⁷ <http://pwt.org.nz/>

¹⁸ Department of Conservation Statement of Intent 2015 – 2019 page 7

¹⁹ Perception and Reality of Conflict: Walkers and Mountain Bikers on the Queens Charlotte Track in New Zealand, Cessford G R 2002

²⁰ Conflict in recreation: the case of mountain-bikers and trampers, Horn, Chrys, Lincoln University 1994

²¹ <http://www.oldghostroad.org.nz/>

²² New Zealand Cycle Design Guide, February 2104 4th Edition

²³ Department of Conservation Kahurangi National Park Mountain Bike Trial 2011-2013 Resource Document September 2013

²⁴ Department of Conservation Kahurangi National Park Mountain Bike Trial 2011-2013 Resource Document September 2013

²⁵ <http://www.oldghostroad.org.nz/>

²⁶ Department of Conservation Track Inspection SOP page 6

²⁷ Serviced Huts have mattresses, water supply, toilets, hand washing facilities and heating with fuel available. Current hut fee is \$15.00 per person per night

²⁸ Department of Conservation AMIS bednight data for the last six years. Annual overnight use recorded in hut books peaked at 695 in 2010 and was 562 in 2015.

²⁹ Current range of hut fees for adults staying in Great Walk huts

Appendix D – Geology, Landforms, Soils and Slope Stability Assessment

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Correspondence Out No.: 27912

7 September 2016

PIKE 29 TRACK, WEST COAST

REPORT ON GEOLOGY, LANDFORMS, SOILS AND SLOPE STABILITY SECTIONS OF ASSESSMENT OF ENVIRONMENTAL EFFECTS DOCUMENT

PREPARED FOR DEPARTMENT OF CONSERVATION

Geology

The Pike 29 Track will traverse through varied and interesting rock types that reflect the complex geological history of the Paparoa Range. The area of mountains which is now the Paparoa Range was once an elongated trough (known as a geosyncline) that was infilled with sediments between 25-100 million years ago during a period of extension (pulling apart) of the earth's crust. The sediments eventually became compressed to form rocks. Later plate movements and the formation of the current plate boundary between the Australian Plate and the Pacific Plate at the Alpine Fault resulted in east-west compression of the earth's crust across the upper South Island over the past 20 million years. This resulted in uplift of the trough on reverse faults by a process known as tectonic inversion. Consequently there was erosion of the sedimentary rocks and exposure of the basement core consisting of ancient greywacke, granite and gneiss forming the present Paparoa Range. Younger sedimentary rocks of the western foothills of the Paparoas were folded to form the Barrytown Syncline parallel to the main range. Erosion has formed prominent limestone cliffs on the edges of the syncline with mudstone within the core.

The southern half of the Pike 29 Track along the Croesus – Moonlight Tops section is comprised of hard sedimentary greywacke and argillite basement rocks of the Greenland Group (Ordovician period, age 440 – 490 million years) with minor granite of the Karamea Batholith (Cretaceous period, 130 million years ago) exposed along the Pike Ridge, which is a side track leading to the former Pike River Coalmine access road. High grade metamorphic rocks comprising gneiss and granite gneiss of the Charleston Metamorphic Group are exposed on Pike Ridge. This rock group is the oldest in New Zealand with an age of 665 million years¹. These basement rocks are similar to rocks found in Fiordland and north-west Nelson. The rock formations are remnants of the former ancient continent of Gondwana that existed before the New Zealand continental landmass was separated from Australia by rifting which created the Tasman Sea.

The central section of the Pike 29 Track traverses an isolated plateau on the crest of the Paparoa Range comprised of Island Sandstone Formation which is underlain by a top coal seam of the Brunner Coal Measures (Eocene) and a lower coal seam of the Paparoa Coal Measures Formation (late Cretaceous). The plateau is tilted to the east and has an impressive escarpment on its west side. The plateau is bounded on its east side by the Hawera Fault. The former Pike River Coalmine is located beneath this plateau.

¹ Adams 1975 "Discovery of Precambrian rocks in New Zealand: age relations of the Greenland Group and Constant Gneiss, West Coast, South Island", Earth and Planetary Science letters 28(1): 98-104.



Photo 1: Western escarpment of Pike Plateau with prominent beds of sandstone dipping to the east

Beyond the main Pike Plateau the track descends the forested escarpment and traverses northwards along the western facing slopes to gain the Tindale Ridge. Greywacke breccia of the Watson Formation and granitic and greywacke breccia of the Hawks Crag Breccia are passed on this section. These non-marine formations belong to the Pororari Group of the Cretaceous period (age 65 - 145 million years) and were deposited in a fault-angle depression or graben during a period of block faulting.

The Tindale Ridge is underlain by greywacke and argillite basement rocks of the Greenland Group with part of the route underlain by a granite intrusion of the Karamea Batholith.

The northern part of the route is comprised of younger sedimentary rocks of the Barrytown Syncline with the track passing through two limestone canyons that were formed by the Pororari River cutting down through the syncline. The geological sequence in the syncline from oldest to youngest is as follows:

- Basal Brunner Coal Measures (coal, shale, sandstone, and conglomerate) - Eocene period
- Island Sandstone Formation - Eocene period
- Kaiata Formation (mudstone) - Eocene period
- Potikohua Formation (limestone) - Oligocene period
- Welsh Formation (mudstone, sandstone and limestone) – Miocene period.

The Pike 29 Track route within the core of the Barrytown Syncline also crosses alluvial gravel terraces of the Waites Formation deposited during the previous interglacial stage of the late Pleistocene period (age 71,000 – 128,000 years).

Soils which mantle the slopes and alluvial gravels in the creeks have been accumulated during the Holocene period in the past 12,000 years.

Detailed geology of the area is provided in “*Geological Map of New Zealand, Sheet S37 Punakaiki, 1:63,360 scale*”, NZ Geological Survey, 1988 and in “*Geology of the Greymouth Area, Geological Map 12, scale 1:250,000*”, Institute of Geological and Nuclear Sciences, 2002.

An attached excerpt of the published geology map (2002) and an accompanying geological cross section of the Barrytown Syncline illustrate the geology of the Pike 29 Track.

Landforms

The Pike 29 Track passes through some of the most diverse geology and landforms within New Zealand over its 65km length. The creation of the trail will enhance the opportunities for appreciation of the outstanding scenery, geodiversity and landform values. Interpretative panels will enhance the public’s appreciation and scientific understanding of these outstanding natural features. The landforms are essentially unmodified by human impact.

At the southern part of the route, the Pike 29 Track follows the existing Croesus Track to reach the Moonlight Tops with alpine ridges and steep slopes dropping to deep valleys on both sides. An important and unique geomorphological characteristic of this part of the route is the presence of “*ridge rents*” (also known as “*sackungen*”). Ridge rents are troughs and ridges formed parallel to the main ridgelines due to mass movement and gravity sliding on the underlying hard sedimentary rocks. Ridge rents are most prominent on the main ridge between the Croesus Track and the Moonlight Track. They do not form where there is granite or gneiss rocks.



Photo 2: Ridge rent on northern end of Moonlight Tops forming a trough parallel to the main ridgeline. View eastwards.

Along this southern part of the Paparoa Range there are no landform features that are characteristic of glacial processes suggesting it was ice free during the main Pleistocene ice ages, although the main part of the range further north has many glacial features. The Pike 29 Track provides views of the central Paparoa Range with its sharp ridge crests and cirques formed due to past glacial actions.

The Pike River Plateau and Escarpment are the most striking landform features of the alpine section of the route. The Pike River Plateau is a remnant of a once much larger plateau that has mostly been eroded away. Open pavement areas of hard sandstone are a special feature of this section. The track route mostly follows the gently inclined eastern dip slope of the plateau and descends the northern part of the escarpment through upland beech forest.

West of the main Paparoa Range the Pike 29 Track traverses the heavily forested Tindale Ridge, which forms a sharp drainage divide between the headwaters of the Pororari River and the Punakaiki River.

North of Tindale Ridge lies the unusual landform known as the "Lone Hand". This is an outcrop of hard Hawks Crag Breccia with a "hogback topography" of rounded domes up to 947m in altitude. This was the site of uranium prospecting in the 1950s. The prospectors built a pack track up the Pororari Gorge for access and this will be used for part of the route of the Pike 29 Track in the Pororari Valley.

The north-western part of the Pike 29 Track from the Upper Pororari River footbridge is within the sedimentary rocks of the down-folded Barrytown Syncline. The special karst landform features include limestone cliffs, overhangs, numerous caves, sinkholes, underground streams, irregular drainage and sculptured rock. These landforms are the best example of forested lowland karst in New Zealand and are of high scientific importance as well as being outstanding examples of karst geomorphology. The cave systems are habitat for specialised cave faunas well as being storehouses for important fossil and sub-fossils of birds, reptiles and some mammals. The cave formations or speleothems (especially the layering in stalagmites and stalactites) are also important records of past climate change. The Geological Society of New Zealand has compiled an inventory of important geological sites and landforms in the West Coast region and has identified the Barrytown Syncline interstratal karst as the best example in New Zealand of lowland polygonal karst in native forest². These formations are protected within the Paparoa National Park and policies for karst management are identified in the park's Management Plan.

The Pororari River has cut through the limestone and is an example of an "antecedent river" ie. the river existed before the folding of the Barrytown Syncline occurred and the river is now entrenched resulting in the spectacular cliffs on either side of the valley.

The creation of the Pike 29 Track is unlikely to impact on the landforms described because the scale of track construction is minor in the wider context of the landscape and the majority of the track is hidden within the bush. Where the track is to be created in the alpine zone there will be mitigation measures in place to minimise the visual impact, including use of manual labour in sensitive areas.

Soils

Mudstone and gravelly/sandy soils are potentially erosion prone. The section containing mudstone and gravels occurs between the upper and lower Pororari Gorges and mudstone also occurs above the upper Pororari Gorge and amounts to a total of 6.5km of the track length (approximately 10% of the track). Careful design of cut batters, replacement of soils and re-vegetation will limit the erosion so that there will be minimal effects due to erosion and sedimentation.

² Joint Earth Sciences Societies Working Group on the New Zealand Geopreservation Inventory. Inventory of Important Geological Sites and Landforms in the West Coast Region, Geological Society of NZ Miscellaneous Publication No. 76 First Edition 1993, edited by Jill Kenny and Bruce Hayward.

The temporary use of short sections of silt fence can be considered as a backup mitigation if any areas or particularly erosion prone soils are encountered. The use of silt fences can be discontinued once vegetation had re-established.

Slope Stability

The majority of the Pike 29 Track route has well established natural vegetation cover and there are only a few slip scars. Shallow slips (up to 2m in thickness) occur in the bush areas and to a lesser extent on the open alpine areas. The majority of the slips have occurred as a result of intense rainfall events, however some are likely to be related to seismic events. Minor areas of rockfall exist on the open alpine areas below rock outcrops and also below the limestone cliffs in the Pororari Valley.

Deep-seated mass movement has occurred on some ridge crest areas of the open tops as evidenced by the presence of "ridge rents", however the well vegetated ground cover and presence of older scree deposits suggests that they are relatively old features, typically several hundred to thousands of years old. The ridge rents may be subject to slow creep related to groundwater entry. The route of the new track north of the Moonlight Tops avoids major landslides and the minor shallow slips can be safely crossed using the proposed construction methods.

The design of the track has sought to minimise the risks related to slope instability by using best practice modern track construction methods of the *New Zealand Cycle Trail Design Guide 2015*. The soils along the route are susceptible to erosion where they are exposed to the elements and the area has a high rainfall (up to 4000mm/year). The track will be built with an outward sloping camber so that stormwater is shed evenly off the outside of the track and point concentration of flows will be avoided, thereby minimising likelihood of erosion and slope instability.

The section of track on the open alpine area of the Moonlight Tops will be kept narrow (0.6 – 1.0m) so as to minimise the visual impact. This will also have the effect of minimising the height of cuts above the track on the side slopes, which in turn will minimise the area of exposed soils and reduce the risks of slope instability. Areas of erodible clayey soils will be covered in stockpiled topsoil and re-vegetated with plants salvaged from the track corridor to minimise erosion potential. Some areas of boardwalk are proposed where there are sensitive sites.

Section 4 of the AEE provides detail of the track construction methods and Appendix N of the AEE provides detail on mitigation measures, including general track construction mitigation measures.

Cut batter angles for the cut slopes along the majority of the track will be kept steep so as to avoid excessively high cuts and to minimise the extent of fresh surfaces that would be exposed to rainfall. Steep cuts have been shown to shed rainfall more quickly and are less prone to erosion. The rocky areas can be cut at angles of 60 -80 degrees with satisfactory stability. The areas of stiff gravelly clay soils can be cut at angles of 50 - 65 degrees up to 2m high with satisfactory stability. Low stacked stone walls can be used in some areas to provide stability to the outside or inside of the track where side slopes are steep and where soils are weak or loose. It is expected that the maximum height of fill batters would be 0.5m and maximum height of cut batters would be 2m.

Previous experience on tracks on the West Coast shows that natural re-vegetation of cut and fill batters and track margins occurs quickly so that the erosion potential and visual impact will decrease over time.

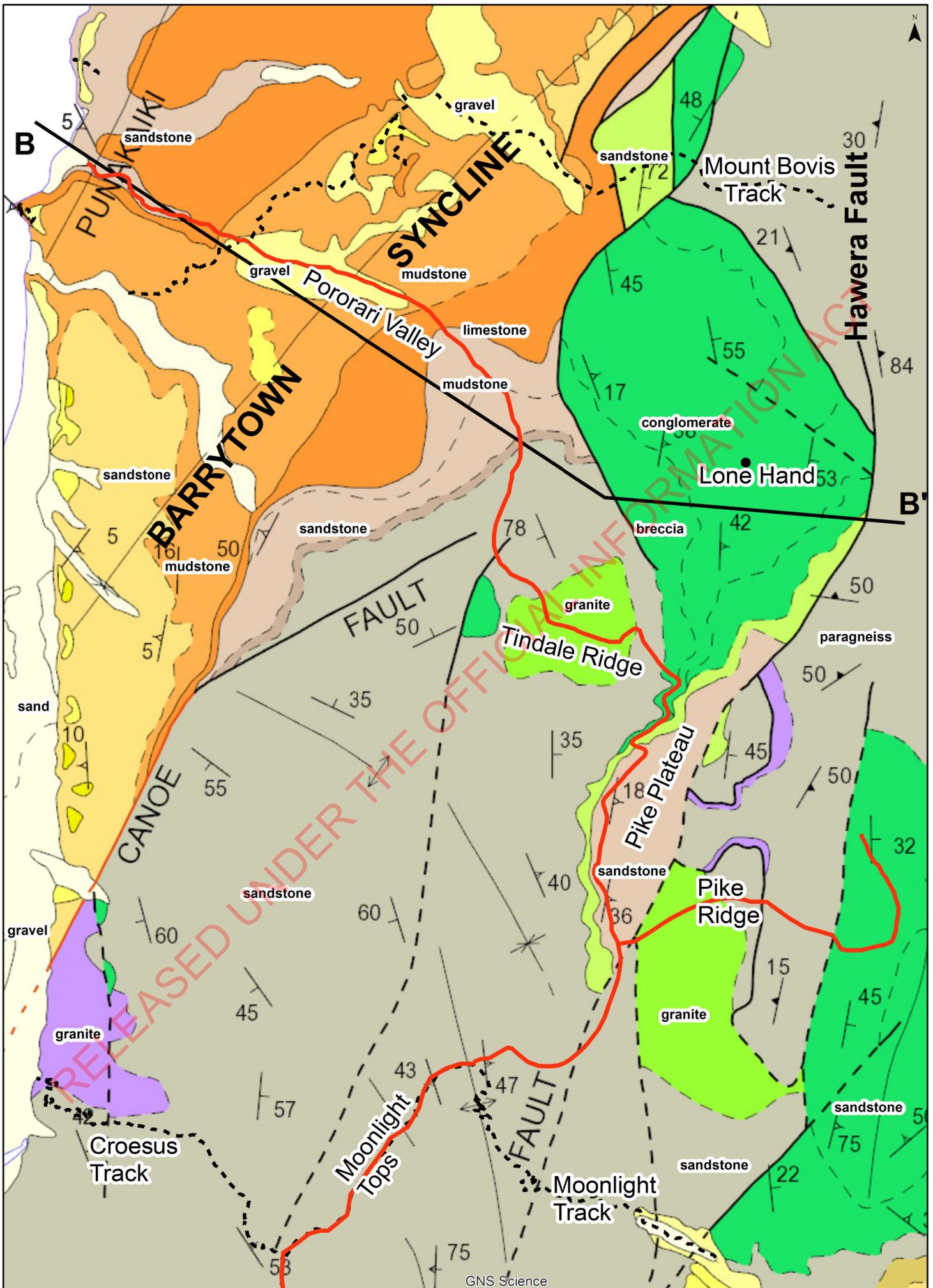


Paul J Wopereis
Principal Engineering Geologist

MWH New Zealand Limited

Attachments: Geology Map
Geological Cross Section of Barrytown Syncline

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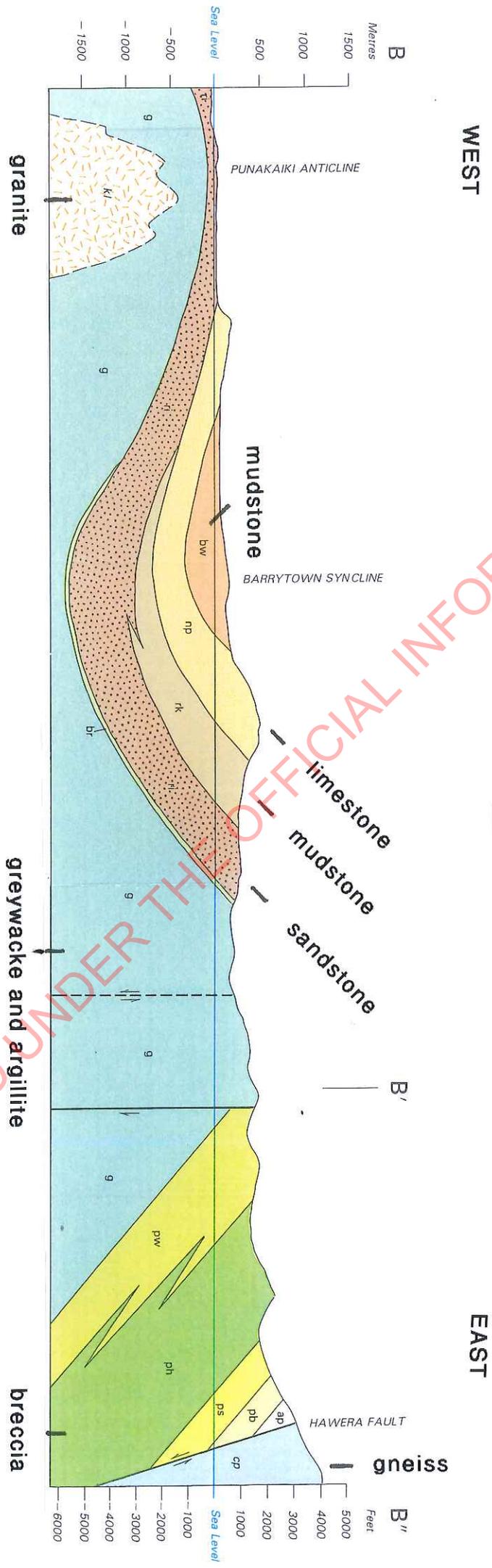
GNS Science

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BUILDING A BETTER WORLD

Geology of the Pike 29 Great Walk

0 0.325 0.65 1.3 1.95 2.6
Kilometers
Scale 1:80000
7 Sept 2016 Original map size: A4

Geological Cross Section of Barrytown Syncline



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Appendix E – Freshwater Ecology Assessment

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FRESHWATER ECOLOGICAL ASSESSMENT FOR THE PROPOSED PIKE29 GREAT WALK



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FRESHWATER ECOLOGICAL ASSESSMENT FOR THE PROPOSED PIKE29 GREAT WALK

Contract Report No. 4048

June 2016

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INTRODUCTION

The Department of Conservation is proposing to build a new Great Walk in Paparoa National Park. The walk will pass through spectacular forested limestone landscapes and be a memorial to the 29 men who died in the Pike River Mine disaster on 19 November 2010. This will be New Zealand's tenth Great Walk and the first one to be built since 1993.

The walk will be designed for use by trampers and mountain bikers, and will create approximately 49 km of new track. It will cross the Paparoa Range between Blackball and Punakaiki, and link to an 8 km side track that will go to an amenities and memorial area at the Pike River Mine. Two new high standard huts will be built for use on the track: one on the Moonlight tops, the other above the junction with Tindale Creek.

This freshwater ecological assessment discusses habitats and species within the project area and potential effects of the proposed works on the freshwater environment, and provides response measures to address any potential adverse effects. This report will form part of an Assessment of Environmental Effects (AEE) that is being produced by the Department of Conservation, and this report will comprise relevant sections of the Department's AEE. As such, this document has been formatted using the same headings and font, and the section, table and figure numbering is not continuous or complete.

3.7 FRESHWATER ECOLOGY - DESKTOP ASSESSMENT

This assessment is based on information available at the time of writing and no field work or site visits were carried out. This section deals with fish and macroinvertebrate species that live in freshwater for all or part of their life; it does not address species that live on or near the water, such as birds. Any bird species associated with these waterways are addressed in the relevant avifauna section.

3.7.1 Methods

To assess freshwater ecological values within the project area, the following information and data sources were used:

- New Zealand Freshwater Fish Database
- West Coast Regional Council Land and Water Plan
- Freshwater Environments of New Zealand geo-database
- Cawthron Pike Stream and Big River environmental survey report

Information on Ecological Management Units and selected macroinvertebrate species within the project area was supplied by the Department of Conservation.

3.7.2 Existing Information

The New Zealand Freshwater Fish Database (NIWA 2016) was searched - on 14 June 2016 - for records in the following catchments: Pike Stream, Pororari River, Punakaiki River and Canoe Creek (including smaller waterways between Canoe Creek and Punakaiki River). There were no records found for the Pororari River, but fifteen indigenous and one introduced fish species, and two indigenous macroinvertebrates have been recorded in the other waterways (Table A).

The only significant sites listed in the West Coast Regional Land and Water Plan (WCRC 2014) near the proposed Great Walk are in the lowland/coastal zone, well away from the proposed works. None of the upper reaches of the waterways in the project area are listed as having any special significance or value, and there are no significant listed wetlands near the proposed works.

Mapped features in the Freshwater Environments of New Zealand geo-database (FENZ 2010) showed that all of the wetlands and lakes within the project area are in the lowland/coastal zone, well away from the proposed works. Notably, the rivers mapped within the project area ranked quite highly on a regional basis, with those on the western side of the proposed track also ranked quite highly nationally. Fish predictions indicate that several indigenous species could be distributed widely throughout the waterways within the project area.

The Cawthron (1998) survey found three indigenous and one introduced species of fish, and thirty species of macroinvertebrate in Pike Stream. Fish records from that report are listed in Table A. Refer to Cawthron (1998) for a detailed list of their macroinvertebrate findings.

Table A. Records and conservation status of fish and macroinvertebrates within the project area.

Common Name	Scientific Name	Conservation Status ¹	Waterway ²
Fish			
Shortfin eel	<i>Anguilla australis</i>	Not Threatened	Punakaiki River ³
Longfin eel	<i>Anguilla dieffenbachii</i>	At Risk-Declining	Punakaiki River ³ Canoe Creek ³
Eel species	<i>Anguilla</i> sp.	n/a	Canoe Creek ³
Torrentfish	<i>Cheimarrichthys fosteri</i>	At Risk-Declining	Punakaiki River ³ Canoe Creek ³
Giant kōkopu	<i>Galaxias argenteus</i>	At Risk-Declining	Canoe Creek ³
Kōaro	<i>Galaxias brevipinnis</i>	At Risk-Declining	Pike Stream ^{3,4} Canoe Creek ³
Dwarf galaxias (West Coast)	<i>Galaxias divergens</i>	At Risk-Declining	Pike Stream ^{3,4}
Banded kōkopu	<i>Galaxias fasciatus</i>	Not Threatened	Canoe Creek ³
Inanga	<i>Galaxias maculatus</i>	At Risk-Declining	Punakaiki River ³ Canoe Creek ³
Galaxias species	<i>Galaxias</i> sp.	n/a	Canoe Creek ³
Lamprey	<i>Geotria australis</i>	Threatened-Nationally Vulnerable	Canoe Creek ³
Common bully	<i>Gobiomorphus cotidianus</i>	Not Threatened	Punakaiki River ³ Canoe Creek ³
Giant bully	<i>Gobiomorphus gobioides</i>	Not Threatened	Punakaiki River ³
Bluegill bully	<i>Gobiomorphus hubbsi</i>	At Risk-Declining	Punakaiki River ³ Canoe Creek ³
Redfin bully	<i>Gobiomorphus huttoni</i>	At Risk-Declining	Punakaiki River ³ Pike Stream ^{3,4} Canoe Creek ³
Bully species	<i>Gobiomorphus</i> sp.	n/a	Punakaiki River ³
Brown mudfish	<i>Neochanna apoda</i>	At Risk-Declining	Canoe Creek ³
Black flounder	<i>Rhombosolea retiaria</i>	Not Threatened	Punakaiki River ³
Brown trout	<i>Salmo trutta</i>	Introduced and Naturalised	Pike Stream ^{3,4} Canoe Creek ³
Macroinvertebrates			
Freshwater shrimp	<i>Paratya curvirostris</i>	Not Threatened	Punakaiki River ³
Kōura	<i>Paranephrops</i> sp.	Not Threatened	Pike Stream ⁴ Canoe Creek ³
Water scavenger beetle	<i>Cylomissus glabratus</i>	Data Deficient	Pororari River ⁵

¹ Source: fish status, Goodman *et al.* 2014; macroinvertebrate status, Grainger *et al.* 2014

² Canoe Creek refers to the Creek itself and smaller waterways between it and the Punakaiki River

³ Source: New Zealand Freshwater Fish Database, NIWA, 14 June 2016

⁴ Source: Cawthron 1998

⁵ Source: Department of Conservation

3.7.3 Ecological Assessment

Waterways within the project area are in steep and relatively short catchments, with many small tributaries that receive a relatively high volume of annual rainfall. Due to the location of these waterways, in an undeveloped wilderness area within a National Park, it is expected that they are in a natural state with very good habitat and water quality. Information in the FENZ geo-database and the range of fish and macroinvertebrates recorded in the catchments support this status.

Fifteen indigenous and one introduced fish species, and various indigenous macroinvertebrates have been recorded in these waterways. Of the fish species recorded, nine are classified as At Risk-Declining and one as Threatened-Nationally Vulnerable (Goodman *et al.* 2014). Many of the records for the Punakaiki River and Canoe Creek (and nearby streams) were from sites very low in the catchments, in areas and at distances - up to several kilometres away from the proposed works - where it is expected they will not be affected by the proposed works (Figure 1). The FENZ fish predictions indicate that good quality habitat is present throughout the project area, suggesting that many species are more widely distributed than those recorded.

No Threatened or At Risk macroinvertebrate species have been recorded within the project area, but one beetle species has a conservation status of Data Deficient (Grainger *et al.* 2014). This Data Deficient beetle was recorded very low in the catchment, well away from the proposed works (Figure 1). Many aquatic insects have a winged adult stage, enabling them to move within and between waterways, and it would be expected that various species are present and well distributed.

Although most of the fish and macroinvertebrate records are from low in the catchments, and there are none from the Pororari catchment, the availability of good quality habitat indicates that many of the species recorded would be expected to occur widely. Reasons for the lack of records in the upper catchments and the Pororari River could include:

- Absence of sampling work having been carried out;
- Presence of natural barriers, such as cascades and waterfalls, preventing migration/movement of species.

There are three Department of Conservation Ecological Management Units within the project area: Punakaiki, Paparoa and Roaring Meg (Figure 1). These units are being managed to protect a number of freshwater ecosystem types, under Intermediate Outcome Objectives 1.1 "A full range of New Zealand's ecosystems is conserved to a healthy functioning state" and 1.2 "Nationally threatened species are conserved to ensure persistence" (Otley 2016).

Existing information and data from these various sources suggests that, although there are no specific significant sites to avoid, such as wetlands, waterways within the project area are ecologically important and mostly in a near pristine state. It is therefore essential that any works in their proximity should be carried out to the highest best practice standards.

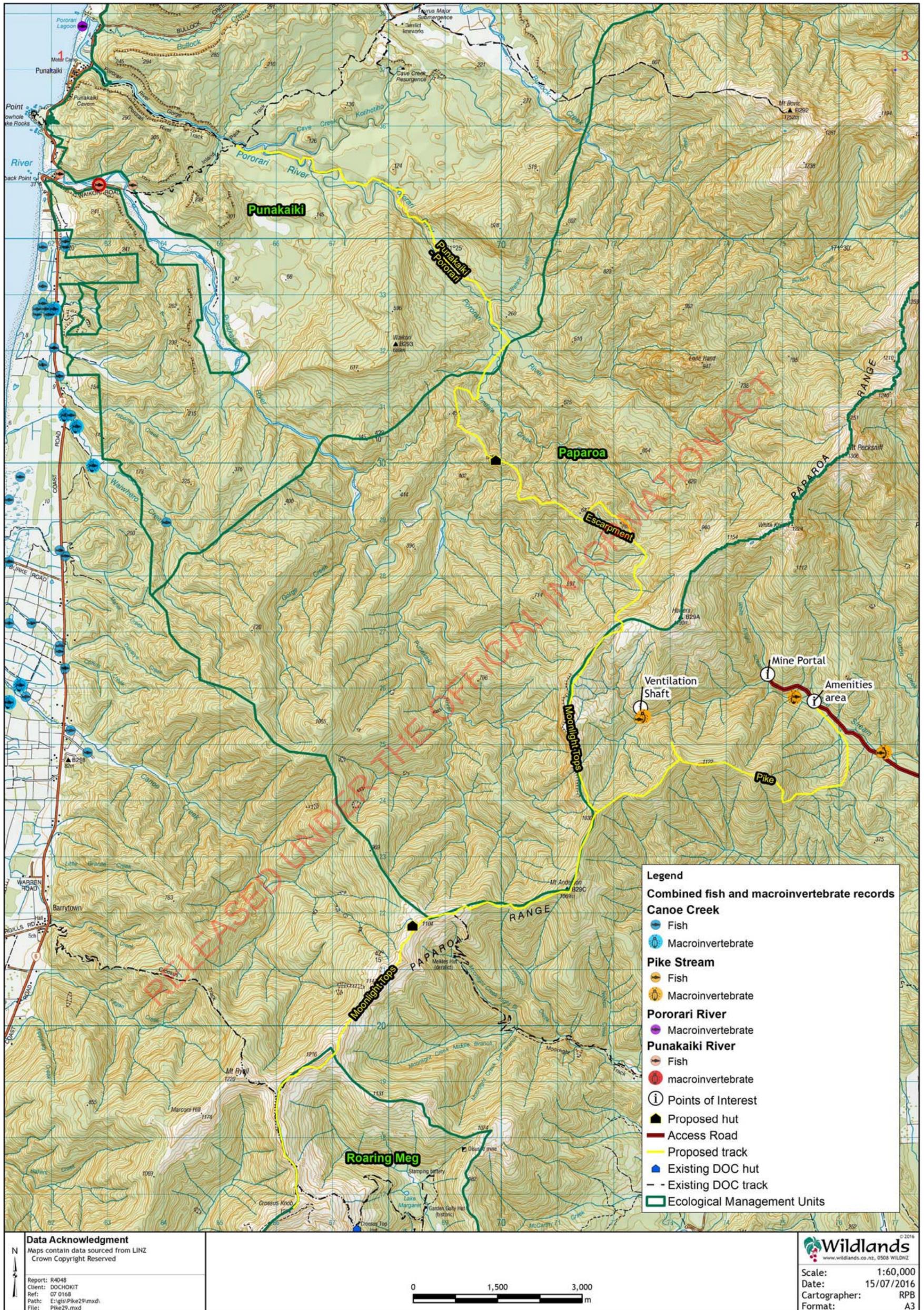


Figure 1. Map of project area showing location of the proposed Great Walk and huts, mine amenities area, Ecological Management Unit boundaries, and combined fish and macroinvertebrate records.

5.3 FRESHWATER ECOLOGY - POTENTIAL EFFECTS AND RESPONSES

This section discusses potential effects of the construction and operational phases of the proposed Great Walk on the waterways within the project area, and suggests ways to address those effects. From the description of activities in Section 4 it is expected that no works will be carried out in flowing water or where flowing water would need to be temporarily diverted, and so no such effects or response measures are discussed.

There are existing consented activities near the mine portal and amenities area. Section 5.3.3 summarises these activities, but they may need to be addressed in detail elsewhere, particularly if amendments are to be made to those operations, such as the proposed carpark stormwater diversion.

5.3.1 Construction

During construction of this proposed Great Walk activities that could affect freshwater ecosystems include: earthworks, aggregate excavation and placement, bridge construction, culvert installation, hut construction, track side/retaining wall installation and transport of materials. Construction effects of these proposed works on the waterways within the project area are addressed below, along with suggested response measures:

1. Potential Effect

Fine sediment being washed into waterways, from activities or features such as: aggregate piles, spoil piles, and during digging. Fine sediment can clog the gills of fish and invertebrates, and result in structural habitat degradation by covering existing substrate and vegetation.

Response Measures

Preparation and implementation of an approved Erosion and Sediment Control Plan to ensure that sediment does not enter waterways.

2. Potential Effect

Culvert placement could prevent fish passage. Fish are highly mobile and move along waterways during their life to explore habitat and feeding opportunities, and to spawn. Some species need to move considerable distances to complete their lifecycle, including travelling back and forth between marine and freshwater environments.

Response Measures

Follow approved guidelines to ensure that culverts are laid in a manner that will not impede fish passage. Key considerations are: culvert invert and steepness, inner surface roughness, water flow depth and velocity in the culvert (during high and low flows), and ensuring that there is no drop or lip at the downstream end (Stevenson and Baker 2009, Boubée *et al.* 1999, NZTA 2013).

3. Potential Effect

Inadvertent introduction of invasive aquatic organisms. There are various species of plant and animal that could establish in and/or near these beautiful natural waterways, leading to habitat changes and potential localised species extinctions.

Response Measures

All previously-used machinery and tools brought to the site, especially those that may come into contact with a waterway and/or waterbody, should be cleaned thoroughly before and after use at the site using biosecurity protocols such as those developed by the Ministry of Primary Industries: Check, Clean, Dry. This may necessitate the use of water-blasting or steam cleaning.

4. Potential Effect

Contaminants entering waterways can cause water quality degradation and/or get adsorbed into the substrate. This can reduce habitat quality and availability, and directly kill delicate aquatic organisms. Contaminants include, but are not limited to: paint, cement, waste water (for example, from dewatering), oils and fuels.

Response Measures

Follow approved guidelines, such as those in the Builders Pocket Guide (ECan 2014), to ensure that contaminants do not enter waterways,

5. Potential Effect

Activities directly in waterways and/or in very close riparian margins can cause disruption to spawning and migration of fish species, by interrupting their movements or direct destruction of their eggs and larvae. Apart from eels, that lay their eggs at sea, the species recorded within this project area lay their eggs either in the substrate, on instream vegetation and woody debris, or on terrestrial vegetation along the riparian edges of waterways.

Response Measures

The most important times to avoid works in the water and riparian margins are those months when eggs and larvae are likely to be present, because they are unable to move away from danger in the way that adult fish can. Spawning occurs in more permanent waterways, not those that only flow during very wet periods, and for most of the species recorded within the project area spawning is at low altitudes. If any of the proposed works were to occur directly in the water and/or the immediate riparian margins of the lower Pororari River, the relevant spawning times are: spring for bully, torrentfish and lamprey; and autumn for galaxiids (Charteris 2006, McDowall 2000). Glass eels will also be migrating into these lower reaches during spring (McDowall 2000). If any works were to occur directly in the waters of Pike Stream, the spawning times relevant to that waterway are: spring for bully; autumn for galaxiids and winter for trout (Kelly 2016, Charteris 2006, McDowall 2000).

6. Potential Effect

Increased vehicular traffic or use of machinery in waterways can release sediments and cause localised compaction of the substrate reducing the quality and availability of habitats.

Response Measures

It is important that machinery and vehicles working in and/or passing through waterways are kept to a practicable minimum.

5.3.2 Operational

During the operation of the proposed Great Walk there will be potential for ongoing effects on the waterways, particularly through activities such as:

- a) Track resurfacing
- b) Bridge and culvert maintenance
- c) Access road maintenance
- d) Hut and amenities area maintenance
- e) Windfall clearance
- f) Toilet servicing
- g) Stormwater runoff
- h) Water abstraction
- i) Mine discharge

Potential effects and mitigation for items a) to e) are covered in Section 5.3.1. Items f) and g) are covered in Section 4, which provides details on how wastewater (grey and black) will be settled and then discharged to ground treatment pits well away from surface waters, meaning that waterways should not be affected. Items h) and i) relate to the existing mine portal and amenities area, and are discussed briefly in Section 5.3.3.

5.3.3 Existing Consented Activities

Currently there are various consented activities around the mine portal and amenities area, which were obtained by Pike River Coal Limited for the operation of the mine. In relation to the freshwater ecosystem of Pike Stream, the existing consents held are for: abstraction of water for the supply of potable water, discharges from an on-site sewage treatment system, stormwater discharges from the access road, and discharge of mine water via a settling pond system. All discharges enter Pike Stream, and as part of the consenting process Cawthron Institute carried out an environmental survey of Pike Stream and Big River (Cawthron 1998).

All of these existing consented activities will continue, with both the mine portal and amenities area being redeveloped as part of the Great Walk proposal. The only new activity being proposed in the amenities area is the addition of the carpark stormwater runoff to the existing mine water discharge settlement pond. This new activity may require a variation of the existing discharge consent related to the settling pond or be allowed as a permitted activity in terms of meeting the requirements of the West Coast Regional Council for freshwater values protection. If a new consent for this activity is required, then key environmental factors to be considered would be the quantity and quality (sediment and chemical contaminants) of the carpark area stormwater runoff.

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RELEASED UNDER THE OFFICIAL INFORMATION ACT

Appendix F – Terrestrial Flora Assessment

RELEASED UNDER THE OFFICIAL INFORMATION ACT

Date: 13/09/2016
To: Operations Works - T Hopkins & A Jackson
From: Terrestrial Ecosystems – J Marshall

Subject: Terrestrial Plant information for the Pike29 Track: Assessment of Environmental Effects Report

Background

The Department has undertaken to build a new 65km track through the Paparoa National Park and surrounding areas, but as both ends will use existing tracks, the new track construction will total approximately 49kms. The Department has outlined a route corridor in which the final track location can be sited to avoid or minimise most of the anticipated biodiversity asset/value losses, particularly amongst the most sensitive and vulnerable ecosystem or habitat types in the alpine zone and limestone habitats, however the loss of uninterrupted environmental sequences over a very large area cannot be avoided or remedied.

This report is a desk top assessment of the vegetation and flora values in terms of ecosystems and species, highlighting the most vulnerable and ecologically valuable ecosystem types and vascular plant species likely to be encountered during track construction, with the intent of providing guidance, where choices are available, to protect these biodiversity assets from disturbance and/or clearance. The general principal of working to the smallest project footprint with exceptions to protect individual biodiversity assets is essential.

Ecosystem values

The track crosses through three Ecological Management Units¹ (EMU); Punakaiki, Paparoa and Roaring Meg. These units are composed of various ecosystem types (Singers and Rogers) including beech and podocarp forests, small leaf and sub-alpine shrublands, alpine tussock grasslands and herbfields, riparian margins, and wetlands.

Punakaiki EMU is dominated by forest types including the hard beech - rimu forest (Singers & Rogers, 2012) with southern rata and locally, other beech species (MF17²), and a podocarp broadleaved forest dominated by rimu and Halls totara (MF14) with silver pine, pokaka and pahautea (native cedar) reflecting the infertile terraces on which they sit.

The Paparoa EMU is composed of the same mild forest type (MF17) but also on the eastern flanks there is a cooler forest types including silver beech dominated forests (CF18) with celery pine, three finger and small leaved shrubs in the higher slopes and rimu, kamahi and southern rata in the mid to lower slopes. As the track sidles around Hawera it will pass through the low forest scrub with a range of species of *Olearia*, *Brachyglottis*, *Pseudopanax*, *Dracophyllum*, *Hebe*, *Coprosma*, *Hoheria*, montane podocarp trees, manuka (CF13).

¹ EMU's are derived from the Department's system of prioritisation. They are the highest priority areas of conservation land identified for sustained conservation management.

² As described in Singers and Rogers (2012) MF is a mild forest type, CF a cool forest type, AL is alpine flora, AH is alpine herb field.

Crossing the tops into the Roaring Meg EMU will take the track through the tall tussock grassland of abundant *Chionochloa pallens*, *C. flavescens* (subsp. *lupeola* and subsp. *hirta*) and locally *C. rubra* ssp. *occulta* (indicative of a wetland area), and *C. australis*. There will be shrublands of *Hebe* and *Dracophyllum* in areas of talus, boulder field and bluffs (AL 5), and gravel/stone fields within the areas of rock pavement, talus, and boulder field where cushion plants are likely to be a common ground cover. There is a diversity of grasses including *Chionochloa oreophila*, and *Poa colensoi* (AH3), small herbs and sub-shrubs. Heading down the Croesus track is a broadleaved beech forest of silver beech, kamahi and southern rata with Hall's totara and locally mountain beech, with quintinia and red beech at lower altitudes (CF14). Locally at higher altitude, on exposed infertile sites there will be a pink pine, mountain celery pine and yellow silver pine forest type. In the lower altitudes is a kamahi, southern rata podocarp forest with occasional miro and Hall's totara (CF9) and on the lower alluvial sites there may be matai and kahikatea and broadleaved dominant forest.

As the track climbs onto the main ridgeline it traverses a geologically isolated plateau comprised of Island Sandstone Formation which is underlain by a top coal seam of the Brunner Coal Measures and a lower coal seam of the Paparoa Coal Measures Formation. This geological plateau runs along the crest of the Paparoa Ranges above the Pike Stream catchment. This unique substrate has resulted in unique flora ecosystems. The alpine³ Paparoa coal measures ecosystems are either poorly or well drained substrates but both substrates are typically infertile. The drainage patterns control the distribution of species and floristic composition and two main vegetation types are present.

The well drained areas are characterised by snow tussocks including *Chionochloa flavescens*, and *C. australis* (carpet grass). Carpet grass forms extensive mats in places, with *Carpha alpina* and *Oreobolus impar* (comb sedge) in the turf. The dominant shrub is the turpentine scrub (*Dracophyllum rosmarianifolium*) which only gets to about 1m tall. Dall's daisy is the most abundant large herb (*Celmisia dallii*) with only scattered individuals of the larger *C. semicordata*. This environment has a small number of abundant species, however it supports a relatively large number of uncommon species ie. *Celmisia armstrongii* and *Poa colensoi* (Lord and Norton 1989).

In the areas of poorly drained Paparoa coal measures, the vegetation is a mix of grassland and scattered shrubland interspersed with cushion bogs. Cushion bogs are originally uncommon ecosystems which are defined as ecosystems which only ever covered less than 5% of the New Zealand mainland (Williams et al 2007). Within the areas of water logged soils, the slopes are better drained and support dwarfed silver beech, leatherwood (*Olearia colensoi*) pink pine and manuka. Grasslands of primarily *Chionochloa rubra* (red tussock), *C. australis*, *Carpha alpina* and *Schoenus pauciflorus*, and cushion bogs dominate on the more level areas of topography; cushion bogs on the most poorly drained sites. The cushion bogs commonly include *Donatia novaezelandia*, *Phyllachne colensoi* and *Oreobolus* species throughout a matrix of wire rush. The small mountain grass *Zotovia thomsonii* is also present. These areas support a relatively rich herbaceous flora (Lord and Norton 1989).

The new side track out of the Pike Stream catchment is likely to be beech, podocarp, broadleaved forest with; abundant red beech locally, kamahi in humid parts of the range, occasional rimu, and other podocarps and on alluvial stony terraces, red beech locally with silver beech, kamahi, southern rata (CF 15). The tops between Roaring Meg and Paparoa EMU's are likely to be the AL5 and AH3 ecosystems.

Amongst these areas are Naturally Uncommon ecosystem types (Williams et al 2007) which within the karst environment of Punakaiki are the limestone cliffs and bluffs, and in the alpine zone the wetlands in the form of cushion bogs and tarns. Karst environments are recognised by the

³ Alpine flora zone defined as being above 1100m asl.

Department as special because of their rarity, fragility and distinctiveness (DOC 1999). The dissected nature of the hillsides create many streams and the associated riparian habitats are also important as they provide for plant species with specialised environmental preferences to other native forest trees and shrubs. All of the ecosystems have significant ecological value; they are high quality examples, representative of the Punakaiki and Blackball Ecological Districts (McEwan 1987) and are ecologically important.

Of these ecosystem types the most vulnerable to negative impacts and the smallest (potentially easiest to avoid) are the cushion bogs and tarns in the alpine zone. Also vulnerable are the limestone cliffs and bluffs where present. The tall lowland forests of the Pororari River catchment are some of the best remaining representative examples of a greatly reduced vegetation association and as such are very important. The riparian habitats of Punakaiki E.D host a rich and diverse bryophyte flora and vascular species such as tree Fuchsia which are susceptible to possum browse and therefore much less common in New Zealand's forests than they once were. The routing of the new track will pass through all these sensitive ecosystem types. Specific locations of these ecosystems types are listed on the table at Appendix 1.

Important Species values

Threatened⁴ species or those with limited distributions have been found in the Paparoa National Park and may be encountered within the beech or beech/podocarp forests include:

- Scarlet mistletoe *Peraxilla colensoi*: At Risk- Declining
- Native iris *Libertia peregrinnans*: Threatened - Nationally Vulnerable
- Yellow mistletoe *Alepis flavida*: At Risk- Declining

Or on the mountain tops or cliffs include:

- Maori Onion *Bulbinella modesta*: At Risk - Naturally Uncommon
- Gossamer grass *Anamenthale lessonia*: Threatened - Nationally Vulnerable
- Cave spleenwort *Asplenium cimmericum*: At Risk - Naturally Uncommon

Other important flora components of the area include the massive kahikatea and red beech at the base of the inland limestone escarpment where locally enriched soils occur (Park and Bartle 1978). Nikau, *Phymatosorus scandens*, *Anarthropteris lanceolata*, *Collosporum hastatum* and *Meterosideros parkinsonii* are all species found on the western side of the National Park with restricted distributions. The Paparoa Range is also the southern distribution limit for a number of plants including *Pimelea longifolia*, *Epacris pauciflora*, and *Blechnum fraseri* and *Uncinia distans*.

Impacts and mitigations

Constructing a track through these ecosystems has the potential to cause adverse effects on ecological values and degrade ecological integrity generally. These potential impacts include the loss of native vegetation, habitat fragmentation, ground disturbance and habitat loss, weed and pest animal invasion and spread, and altered natural hydrology from diverting (channelization) natural water flows as a result tracks and rutting (O'Connor et al 1990).

Karst surface landscapes are also vulnerable to insensitive practice of recreational activities, such as trampling of vegetation, especially where people congregate (e.g. climbers frequently gather under and around ledges) and soil disturbance (DOC 1999). It is also common for people to view tussock plants as "outdoor arm chairs" so where track design in the alpine zone can lead people from stopping and sitting on snow tussocks or other large tussock forming plants, and provide alternatives which cause no damage these harms can be avoided.

⁴ Threatened refers to DOCs classification for vascular plants and follows the most recent rankings in de Lange et al 2012.

The vegetation on the Paparoa coal measures is ecologically significant and an important part of the high representativeness of the national park. The alpine areas of coal measure vegetation in the PNP have been described as particularly important because they are less modified than the coal measures of the Buller region and are therefore important examples of natural alpine/sub alpine coal measure vegetation. Within these areas the cushion bogs are particularly noteworthy, however all the wetland types including tarns and red tussock wetlands are vulnerable to disturbance and less resilient than the forest areas to the associated fragmentation and weed invasion which occurs with disturbance.

The felling of individual biodiversity assets such as large trees particularly beech and podocarp specimens should be avoided at all costs as these giants represent hundreds of years of growth and are host to many epiphytic and canopy plant species and invertebrates. Amongst the epiphytic species may be the Scarlett mistletoe, *Peraxilla colensoi*; avoiding damage to their host trees is essential. The physiognomic equivalents of the charismatic individual old trees, in the alpine zone are the large snow tussocks (*Chionochloa* spp.) which can be very old and host a number of invertebrate species: all opportunity to leave these iconic individuals in place is recommended.

One of the most significant of the negative impacts to flora and vegetation values will be the inevitable spread of pest plant species into what is currently a pristine and in all likelihood weed free area. Even with the best of intentions there are no known examples of new tracks and huts not facilitating the spread of pest plant species. There are a number of key weed species that should be managed in perpetuity.

In general, the main actions that can be taken during track planning and construction to avoid and minimise the negative ecological outcomes of track creation or compensate for the residual negative effects for flora values are;

- Avoiding sensitive micro-habitats, such as frost-heave deflation hollows, wetlands, bogs, tarns, etc.
- Vegetation clearance is kept to a minimum, and any areas containing rare and threatened species are avoided where possible.
- New track formation does not cause severe disturbance such as obvious rutting, channelization or alters natural hydrology, which would adversely impact on flora ecosystem viability.
- Annual monitoring is undertaken to assess impacts including any occurrences of problem weed species which could aggressively establish such as *Juncus squarrosus*, broom, gorse, *Himalayan honeysuckle*, and *Buddlejua* (Belton 2016). None of these species should be permitted to establish, and accordingly a weed monitoring plan will be required.
- If any unexpected outcomes for flora result from the track and facilities construction, a contingency response should be developed.
- Control of browsing species, such as goats, which have been identified as causing significant understory browse in the Paparoa Ranges.

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Appendix 1

These extracts from DOC-2696116 indicate the features or values already identified by Operations staff. The bridges are noted as this work could be in sensitive riparian areas and helipads may well prefer the same flat topography as small wetlands. See original document for detail. This extract indicates there are many sensitive and vulnerable areas.

Punakaiki Porarari track section

Date	M			Feature
20/01/2016	54	Ground	N	Creek - This section of track is well defined. Generally follows the highest part of the ridge sticking (generally within about 5 metres of the southern edge. It is generally wet (soft top with nothing much underneath) and would need surfacing (Geo-cloth and Base?)
20/01/2016	64	Ground	N	Reroute (link to point 63). Keep above swamp
29/01/2016	93	Ground	N	Large Beech
29/01/2016	97	Ground	N	OngaOnga - This is not a one off occurrence. It is prolific in this area of the gorge and along areas of the track that have slipped or slumped. Needs to be recognised as a health and safety issue for teams working in the area

Pike River Mine track section

28/01/2016	27	Ground	N	Stream, 2.5m boardwalk required. 70m back also requires 2.5m boardwalk.
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Punakaiki Porarari section

5/02/2016	159	Ground	Y	Swamp edge - 30 metres from track edge. Video taken
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Escarpment section

10/02/2016	216	Ground	N	Swamp Area - track will need managing 20 metre B/W
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Porarari Tindale section

23/02/2016	63	Ground	N	Feature, Giant double forked Rimu, entangled in Rata/Kamahi
24/02/2016	74	Ground	N	E1469267 N5331411 Many options exist from this point to pop up onto ridge, staying with grade with perhaps a short steep (10 degrees) section. Depending on which looks best from seat of digger. A large rotten log lies horizontal below ridge line which will need to be cut through possibly depending on how you want to weave around surrounding trees. Small natural basin exists which could be used for berm/switchback fun for bikers. Good boney gravel all around.
24/02/2016	76	Ground	Y	Bridge site/large culvert 4m span. E1469521 N5331442 Approach from uphill, sidling along steepish boggy face with large old windfall may require some creative digger and chainsaw work. Photo 1471, 1472 Video taken 1473
24/02/2016	77	Ground	Y	Pinch Point. Steep section with medium size beech trees. One tree seems almost dead so could be cut/blasted to make way for track though would still be steep. Could alter grade to go higher or lower. This last section between 076 and 077 is probably some of the most challenging track surveyed so far in terms of steepness and largish trees. E1469552 N5331574 Photo 1474 Video Taken 1475

Appendix G – Terrestrial Fauna Assessment

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Fauna information – Pike29 Track - Assessment of Environment Effects report

Species in the Area

There is not a great deal of information on fauna in the areas where this proposed track is going to traverse so much of the assessment of fauna values will be based around what could be in the area based on information which has been gathered in the adjacent areas. Ideally surveys should be undertaken to determine specifically what is in the area. For birds the predictive approach may be fairly accurate, probably for lizards as well. But for invertebrates (including snails) this approach is very unlikely to provide an accurate picture of what is around. This information is a result of consultation with Jo Monks (TA), Cath Walker (TA), Warren Chinn (TA), Moira Pryde (TA), and Colin O'Donnell (SSA).

Birds

The area in general is biologically diverse and supports bird communities representative of forests dominated by podocarps (e.g., kahikatea, rimu, mountain totora); beech (red, hard, mountain and silver beech); broadleaved evergreen trees (e.g., southern rata, kamahi, tawaowheo); and sub alpine/ alpine shrublands, tussock grasslands and herbfields.

The area supports populations of 24 forest and alpine bird species (Table 1), and possibly another 3 which used to be in the area but have not been recorded recently or, have had unconfirmed sightings reported.

O'Donnell, 1998, identifies weka, SI robin and great spotted kiwi as distinctive wildlife whose status in North Westland is unusual. The Paparoa Range great spotted kiwi are recognised as a distinct grouping within the species (the others being Arthur's Pass and North West Nelson). Robins remain common in the area but have vanished from many of the forests of the South Island East Coast and South Westland. The area is a national stronghold for weka.

Bats

Long-tailed bats (*Chalinolobus tuberculatus*) and short-tailed bats (*Mystacina tuberculata*) have been recorded in North Westland. In the North Westland area one hundred and thirty-two records of long-tailed bats were recorded between 1995-2003 and fifty-nine records of short-tailed bats between 1996-2003. In the Paparoa Range, where the track will traverse, there have been 3 long-tailed bats recorded in the Otututu River catchment and 9 long-tailed bats in the Bullock Creek/ Pororari River catchment.

Lizards

In the Conservation of Lizards in West Coast/Tai Poutini Conservancy (Whitaker and Lyall, 2004) seven (now six) species of lizard have been identified in the Ecological District within which the Pike 29 Track will run through (Tables 2 and 3). Jo Monks (*pers com*), states that four species of lizards have been identified in the Paparoa National Park; West Coast green gecko, *Naultinus tuberculatus*; Forest gecko, *Mokopirirakau granulatus*; Speckled skinks, *Oligosoma infrapunctatum*, and; Northern grass skink, *Oligosoma polychrome*. There is also a record (in Herpetofauna) of a Nelson green gecko, *Naultinus stellatus*, on Ikes Peak in the southern Paparoas, but from what we know of the distribution of this species it is likely to be a mislabelled West Coast green. Speckled skinks are

known from the tops, and based on recent discoveries in alpine areas elsewhere in the South Island it's quite likely that there are as yet undiscovered alpine species in the speckled skink and forest gecko complexes on the Paparoa tops.

Table 1: Forest and Alpine birds found in North Westland

Common Name	Generic name	Threat status
Grey duck	<i>Anas superciliosa superciliosa</i>	Nationally Critical
Kea	<i>Nestor notabilis</i>	Nationally Endangered
Great spotted kiwi	<i>Apteryx haastii</i>	Nationally Vulnerable
Banded dotterel	<i>Charadrius bicinctus bicinctus</i>	Nationally Vulnerable
Blue duck, whio	<i>Hymenolaimus malacorhynchos</i>	Nationally Vulnerable
South Island kaka	<i>Nestor meridionalis meridionalis</i>	Nationally Vulnerable
New Zealand pipit	<i>Anthus novaeseelandiae novaeseelandiae</i>	Declining
South Island fernbird	<i>Bowdleria punctata punctata</i>	Declining
Long-tailed cuckoo	<i>Eudynamys taitensis</i>	Naturally Uncommon
South Island rifleman	<i>Acanthisitta chloris chloris</i>	Not Threatened
Bellbird	<i>Anthornis melanura melanura</i>	Not Threatened
Shining cuckoo	<i>Chrysococcyx lucidus lucidus</i>	Not Threatened
Swamp harrier	<i>Circus approximans</i>	Not Threatened
Yellow-crowned parakeet	<i>Cyanoramphus auriceps</i>	Not Threatened
Western weka	<i>Gallirallus australis australis</i>	Not Threatened
Grey warbler	<i>Gerygone igata</i>	Not Threatened
New Zealand pigeon, kereru	<i>Hemiphaga novaeseelandiae</i>	Not Threatened
Morepork	<i>Ninox novaeseelandiae novaeseelandiae</i>	Not Threatened
South Island robin	<i>Petroica australis australis</i>	Not Threatened
Yellow-breasted tomtit	<i>Petroica macrocephala macrocephala</i>	Not Threatened
Pied tomtit	<i>Petroica macrocephala toitoi</i>	Not Threatened
Tui	<i>Prothemadera novaeseelandiae novaeseelandiae</i>	Not Threatened
South Island fantail	<i>Rhipidura fuliginosa fuliginosa</i>	Not Threatened
Silverye	<i>Zosterops lateralis lateralis</i>	Not Threatened
Possible		
Rock wren	<i>Xenicus gilviventris</i>	Nationally Endangered
Yellowhead, mohua	<i>Mohoua ochrocephala</i>	Nationally Vulnerable
Orange-fronted parakeet	<i>Cyanoramphus malherbi</i>	Nationally Endangered
South Island kokako	<i>Callaeas cinerea</i>	Data Deficient

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Table 2: Lizard species likely to be found in and around the proposed Pike29 Track

Current species name	Species (Whitaker & Lyall 2004)	Common name	Threat category	Threat status
<i>Woodworthia maculata</i>	<i>Hoplodactylus maculatus</i>	common gecko	Not threatened	
<i>Woodworthia cf. brunnea</i>	<i>Hoplodactylus</i> sp. 'Canterbury'	Canterbury gecko	At risk	Declining
<i>Mokopirirakau granulatus</i>	<i>Hoplodactylus granulatus</i>	forest gecko	At risk	Declining
<i>Naultinus tuberculatus</i>	<i>Naultinus tuberculatus</i>	West Coast green gecko	Threatened	Nationally vulnerable
<i>Oligosoma infrapunctatum cf. Westport</i>	<i>Oligosoma infrapunctatum</i>	speckled skink	At risk	Declining
<i>Oligosoma polychroma</i>	<i>Oligosoma</i> sp. 'Grey Valley'	'Grey Valley skink'	Not threatened	
<i>Oligosoma infrapunctatum cf. Westport</i>	<i>Oligosoma</i> sp. 'Paparoa'	'Paparoa skink'	At risk	Declining

Table 3: Distribution of lizard species in the North Westland Ecological Region and those Ecological Districts directly adjacent to, and through which, the proposed track will run

current	<i>Woodworthia maculata</i>	<i>Woodworthia cf. brunnea</i>	<i>Mokopirirakau granulatus</i>	<i>Naultinus tuberculatus</i>	<i>Oligosoma infrapunctatum cf. Westport</i>	<i>Oligosoma polychroma</i>	<i>Oligosoma infrapunctatum cf. Westport</i>
Whitaker & Lyall (2004)	<i>H. maculatus</i>	<i>H. sp. 'Canterbury'</i>	<i>H. granulatus</i>	<i>N. tuberculatus</i>	<i>O. infrapunctatum</i>	<i>O. sp. 'Grey Valley'</i>	<i>O. sp. 'Paparoa'</i>
Ecological District							
Foulwind	–	–	○	○	○	–	–
Buller	–	–	–	○	–	–	–
Punakaiki	–	–	○	–	–	–	–
Maimai	–	–	○	○	–	○	○
Blackball	–	–	○	–	–	–	–
Greymouth	○	?	○	–	○	○	–

Invertebrates

Snails

For snails, the alpine tops are the most sensitive environment. There is a relatively high chance the coal measure vegetation above the Pike Mine supports a species of *Powelliphanta* unique to the site, given its geographic location. It is on the boundary between two known species and its unusual alpine coal measures geology and vegetation. We know there are *Powelliphanta* there, but they have not been identified (i.e., no shells have been brought out), Kath Walker (*pers com*).

There is a colony of *P. gagei* on the Moonlight. It is possible those on the Pike tops may be this same species, but this is not likely, Kath Walker (*pers com*).

Other invertebrates

The most obvious insect of note is the Paparoa giant weta *Deinacrida talpa*. This is endemic to the area and lives in rocky or bluffy, sunny areas, on the alpine tops.

Effect of Work on Native Species and Proposed Mitigation

Pest species dispersal

In general, a track is likely to provide an invasion corridor for pest species. Some pests like rats, mice and mustelids are likely to already be widespread but cat and hedgehog dispersal could be facilitated with a clear access track. If possible some form of trapping along the track would be beneficial in managing this spread but also managing already widespread pest species. It is noted that the new track will enable goat hunters to reach localities which are currently plagued with high goat numbers, and this will be a positive benefit of the track in terms of assisting with animal pest control.

Birds

For forest bird species the greatest risk of adverse impact is removal of large/mature canopy trees which provide the best nesting or roosting habitat. In the alpine area, rock wren habitat comprising rock jumbles and rock screes is probably most at risk. Kea, which are likely to be found in any of the habitats along the track, are most at risk from the construction activities and subsequent human activity generated by track use. Key environmental protection measures for birds are as follows:

- Take all practicable steps not to cut down large canopy trees, generally measuring >400mm DBH (diameter at breast height) or standing dead trees which have potential nesting or roosting holes.
- Care should be exercised in the alpine zone where potential rock wren habitat may be. This is usually rocky screes, rock piles or fragmented rock stacks. It is more than likely any track will skirt these and not remove or modify them. Where it is impractical to skirt these habitat areas, manual construction should be undertaken, to minimise disturbance or damage.
- Any facility construction must use materials which cannot be manipulated or damaged by kea, including such construction materials as roof flashings, roof fixings, window seals, other seals, gas hosing, water pipes and so forth. Material which would poison or cause harm to kea should not be used or must be well shielded, such materials as sealants, caulking, any lead fixture or weather proofing, and insulation materials. Signage should be provided to warn people not to feed or encourage congregation of kea or leave vulnerable material available to kea.
- During hut and track construction rubbish should be carefully shielded from kea and removed as soon as is practical. Plant and vehicles should be covered when not in use to prevent damage or harm to kea – and particularly ancillary items such as cabling, hydraulic hoses, grease and fuels.

Bats

Avoid cutting large mature trees or large standing dead trees which may provide roost or breeding cavities and holes for bats. There is a Protocol available which DOC requires industry to follow for mitigating risk to bats, and accordingly this Protocol should also be used for DOC operations. This protocol is provided in Appendix 1. It is noted that the Protocol provides guidance on works

affecting bat habitat, but that each project will also need to consider such aspects as worker safety and general practicality.

Lizards

Protecting habitat and preventing predator invasion would be the most effective mitigation for lizards. Take all practical steps to recreate lizard habitat with displaced rocks and boulders adjacent to where the track is routed through rock jumbles and screes.

Invertebrates

As with lizards, protecting habitat is the most effective way to mitigate impact. Take all practical steps to recreate habitat with displaced rocks and boulders adjacent to where the track is routed through rock jumbles and screes.

There may be very localised unique populations of snails and insects which can only be identified through survey. It is recommended that during track location and construction some cursory survey is carried out to determine if such localised, unique populations exist. The presence of snails will be indicated by empty shells and live animals. Building teams and survey teams should be briefed to look out for invertebrates and if any populations are located, then expert advice and species identification should be sought.

Andrew Grant
Technical Advisor
Terrestrial Ecosystems Unit
Science and capability
23 June 2016

References

Whitaker, A.H., 2004. Conservation of lizards in West Coast/Tai Poutini Conservancy. Department of Conservation Internal Report.

O'Donnell C.F.J. 1998. Statement of evidence of Colin Francis John O'Donnell: resource consent application RC99/75: Timberlands West Coast limited. Buller District Council and Tasman District Council, Westport, New Zealand.

Appendix 1 - Bat Protocol

Definitions

- **Potential bat roost trees** are native or exotic trees measuring >15 cm DBH (diameter at breast height) that have roosting habitat features (hollows, cavities, knot holes, splits, cracks and peeling/flaking bark)
- **Dusk and Dawn** are defined as starting and ending 0.5 hours either side of the closest official dusk and dawn time¹

General conditions

1. The Concessionaire must engage a suitably qualified and experienced Chiropterologist (**the Expert**), subject to the Department's approval.
2. The Concessionaire, with the advice of the Expert, must take all practicable efforts ensure that no trees containing bats are felled and all practicable efforts are made to avoid felling bat roost trees.
3. The relevant provisions of [DOC's Best Practice Manual for bats](#) at should be adhered to for all aspects of bat work.

Surveying Trees Prior to deciding on road alignment and other vegetation clearance areas

4. All locations where vegetation may be disturbed must be surveyed by the Expert for 'potential bat roost trees'. In particular:
 - a. Works should avoid potential bat roosts wherever possible.
 - b. For the road alignment at least two potential routes (identified as preferred and alternative/s) must be identified; and
 - c. For other clearance sites the identified area for survey must be at least twice the area required to be cleared.
5. All potential roost trees in the site must be clearly marked.
6. A surveyed alternative route/building site should be used if potential bat roosts are present in the preferred route/building site.
7. If no practicable alternative route/clearance location without potential bat roosts can be identified, the surveyed location, which will have the least impact on bats, may be used subject to the Expert's opinion and Department's certification.
8. If potential bat roosts cannot be avoided by realignment or re-siting of works areas, all potential bat roost trees must be surveyed to determine whether they have been, or are being used as bat roosts. In particular:
 - a. Potential roosts should be climbed and inspected as soon as possible to determine if they are used or likely to be used by bats, potentially allowing trees to be dismissed as being potential bat roosts.
 - b. If cavities are confirmed as potential bat roosts then the Expert must follow pre-felling conditions, below.
 - c. If trees cannot be checked and dismissed as potential bat roosts, and the trees are targeted for eventual felling, the Expert must follow pre-felling conditions, below.

Surveying Trees Prior to Felling

9. All surveys and pre-felling checks must be undertaken by the Expert.

¹ See <http://www.linz.govt.nz/sea/nautical-information/astronomical-information>

10. All remaining potential bat roost trees must be inspected for the presence of bats immediately preceding any proposed felling.
11. Surveying must occur between dusk and dawn for three consecutive nights prior to felling using an Automatic Bat Monitor (ABM) between September and April and when overnight temperatures are $>7^{\circ}\text{C}$. Instructions for use are at Schedule X.)
12. ABM data must be reviewed prior to 12pm (noon) each day to identify if bats are present at the site.
13. If no bat activity at potential roost trees is identified the trees may be felled in accordance with the methodology identified in the construction Management Plan. Felling must occur prior to dusk on the day of the last survey (Day 3).
14. If bats are present, then felling must not occur until bats have vacated the site.
15. Bat roost trees must not be felled between:
 - a.1 May to 30 September to avoid felling trees where bats may be in torpor and therefore not active; or
 - b.1 October and 30 April if temperatures between dusk and dawn on the previous night dropped below 7°C at locations X, Y and Z².

Discovery of Bats During/After Felling

16. The Expert, using a bat detector, must be present when trees are felled.
17. Should bats be detected while felling is in progress, felling must stop.
18. If, during preparations for felling, bats are detected postpone felling until the tree has been vacated by bats. If this is a roost the tree will be vacated within a day or so, if a nursery tree this may take longer for bats to vacate.
19. The Expert should determine if bats are still present by climbing the tree and checking the roost or by monitoring the roost for 3 days using ABMs.

Reporting

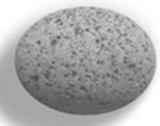
20. The concessionaire must ensure that reporting includes a record of any trees that contain bat roosts detailing the size, location and type of tree.
21. Where no bats are detected within potential bat roost trees within the proposed clearance areas then survey data will be attached in the annual monitoring report (see condition X).
22. Where bats are detected on a preferred route but the bat roost trees are being avoided then the Expert's report must be provided within 1 month of the survey to the DOC Operations manager.
23. Where there is no practicable alternative clearance location the Grantor must be notified as soon as practicable. No clearance of bat roost trees can occur until certification is provided by DOC).

Dead or Injured Bats

24. In the event of finding dead or injured bat/s at the site the concessionaire must:
 - a. Take injured bats immediately to the below named vet for assessment.
 - b. Contact the Hokitika Operations Office no longer than 2 hours after an injured or dead bat is found.
 - c. Bats should be placed in a cool dark material-lined box/bag by or under the direction of the Expert to ensure the animal is handled appropriately.
 - d. Once the vet has made an assessment the Expert and vet will determine any rehabilitation action required and the longer term future for the bat/s.
 - e. If the animal is dead or euthanized by the vet, it must be taken to the local DOC office as soon as practicable. The bat/s must be stored in a fridge at less than 4°C
 - f. Pay any associated costs.
-

Appendix H – Landscape Assessment

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NATURAL CHARACTER AND VISUAL EFFECTS ASSESSMENT REPORT

Prepared for
Department of Conservation

with regards to an Application for
Land Use Resource Consent
to construct the 'Pike29 Great Walk',
(a shared use mountain biking and tramping track and associated structures),
located in the Paparoa Ranges, West Coast Region.

August, 2016

Expert Witness

Landscape Assessment

Planning

Design

Executive Summary

The Department of Conservation (DOC) are seeking resource consents under the Resource Management Act 1991 (RMA) to construct a shared-use mountain biking and tramping track linking with the [rehabilitated] Pike River Mine amenities area¹. Most of the proposal will be located within the Paparoa National Park (**attachment 1**) but some of the track will traverse DOC stewardship land. The name 'Pike29 Great Walk' is a working name only. The final name is yet to be determined following further consultation with the Pike River families.

The Scheme will include a 65km track (providing for a 2-3 day walk or 1-2 day cycle ride) commemorating the 29 miners who perished in the Pike Mine disaster. Located along the track will be two new huts, a shelter and associated facilities and several minor structures². Both ends of the proposed track are already established with historic 'pack tracks' which reduces the length of new track construction to 49km. A spur of the track will lead to the Pike River Mine amenities area providing for a shorter loop walk or cycle ride. The changes to this area are briefly discussed next.

In addition to the track, the Pike River Mine (limited to the mine entry portal and existing amenities area and road access) will be rehabilitated and made accessible to the public. The mine shaft itself has been made inaccessible. At present the area is in the process of decommissioning and handover to DOC by Solid Energy NZ (SENZ). Several buildings have already been removed from the area. I understand that some buildings will remain to be repurposed for public use such as an interpretation centre. Some areas of hardstand where buildings once stood will be retained for other public use, such as the highly recognizable mine exhaust cowl which will be reconstructed within the amenities area. Carparking and general access will be improved, better defined and made safe and accessible to all abilities. Some of the mining artefacts will be retained for interpretation and historic reasons. The general location and alignment of the various parts of the proposal can be seen in **attachment 1**.

Consideration of Alternatives

In 2015 DOC commissioned a feasibility study investigating four possible track route options³ in the Pike River area. These options are discussed in the Planner's report in detail. Briefly, the option currently being proposed has been selected for the following reasons:

- It allows for an extended time on the open summit of the Paparoa Range,
- it provides for impressive views,
- it provides an opportunity to link with existing tracks,
- it provides an opportunity for a side track to the Pike River Mine and amenities area,
- it provides the best opportunity to become a an overnight tramp of regional significance, and,
- it allows for a shared-use mountain biking and tramping track.

This report considers the effects of the proposal on natural character or 'landscape'⁴, and visual amenity values⁵ within the Paparoa National Park (the 'Park') and surrounding land outside of the Park.

¹ An additional 3,971 ha of land around the Pike River Mine was incorporated into the Paparoa National Park in 2015.

² Bridges, viewing platforms, boardwalks, toilets, water storage tanks, signage, way finder/marker posts, handrails, interpretation and the like.

³ TRC Ltd (Tourism specialists).

Potential Landscape Effects

The actual and potential effects of the proposal on natural character / landscape and visual amenity values of the Park and surrounding context include:

- Broad scale effects - particularly on the natural character of the Park which, as a national park holds the second highest level of national conservation value (the first being a 'World Heritage Area') and how the proposal fits within the context of the June 2016 (draft) Paparoa National Park Management Plan (the 'Park Plan');
- Localised landscape effects arising from the proposal within the track corridor environment and Pike Mine portal and amenities area, including effects on visual amenity.
- Positive landscape effects on natural character and visual amenity arising from improvements at the mine amenities area following remediation works as proposed.

Results of assessment

The proposal will be located largely within a national park which demands a higher level of management of effects that are likely to be generated by any proposed changes. In effect, the landscape quality is considered at least equal to or above 'outstanding natural landscape' status. The landscape setting that the proposed changes would fall within is unique and almost pristine in terms of natural character. 'Almost' - as the only human induced modification present is confined to two huts (Croesus Top Hut and Ces Clarke Hut) and tracking including two sections of historic 'pack track'.

Pertinent to the national park setting is whether the proposal is appropriate (or not) - taking into account the relevant objectives, policies and expected outcomes. The proposal will introduce modification to the area (albeit small) which among other things will include up to three additional buildings. The currently high levels of remoteness will be changed with the improved levels of formal public access including opportunities for accommodation and temporary shelter. However, current natural elements, patterns and processes will remain largely unchanged and will continue to prevail. The landscape changes that are proposed around the Pike River Mine amenities area are regarded as 'remedial' or in other words - the type of changes being proposed here will improve the natural character and visual amenity of the existing baseline environment.

Regarding the effects of the proposal on the landscape character and visual amenity the following conclusions are reached:

- At the broad scale, the effects on natural character are 'very low'. This is due to the relatively small scale of the proposal which is contributed to by a narrow track corridor with a small construction footprint and only a few, small built forms. These modifications to the otherwise highly natural landscape are observed from a

⁴ Defined as the extent to which natural elements, patterns and processes occur. Natural character occurs on a sliding scale between highly natural/pristine (unmodified/indigenous) through to highly modified (urban/built development). There can be effects on natural character / landscape that may not be visible, but are nonetheless perceived.

⁵ As defined in Section 2 of the RMA as being "those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence and cultural and recreational attributes".

generally limited viewing environment with typically long view distances to where the proposed changes will be located.

- At the local scale (from the track users' perspective), the effects on visual amenity would be 'low to moderate'. This is largely due to the introduction of the track itself, two huts, a shelter (potentially) and other structures such as bridges and viewing platforms and the like into an area of very little human induced modification. The baseline environment currently holds very high natural values. However, this is tempered by the fact that the types of human modifications being proposed would be expected along a track of the length proposed. Within other 'Great Walks' in national parks, huts and shelters and other smaller structures are found, and so what is being proposed is not without precedent. For this reason the proposal would not be inconsistent with the outcomes listed under Tī Kōuka Place – ngā hua⁶ in the draft Paparoa National Park Management Plan.
- At the mine amenities area and access road, any effects on natural character will be positive, as the area is remediated and made safe for public access. Levels of visual amenity will be likewise improved compared to what currently exists (a decommissioned industrial facility).

Based on the above, and given the national park status of a large part of the area where the proposal is located, the effects on natural character and visual amenity arising from the proposal are 'minor'. With regards to the track part of the proposal, potentially larger and more significant effects will be avoided by minimising the construction footprint and other design measures. This will be discussed later. Furthermore, the siting and design of the three new buildings further reduces any visual impacts that these built forms might otherwise generate. The visually open Moonlight Tops section of the track is the most sensitive area in terms of landscape values. With careful siting and appropriate design controls, the effects on this part of the Park will be minimised. Overall, the proposal is appropriate to the natural character and its setting. A track and associated support elements (huts, bridges and the like) would not be unexpected in this type of environment. The proposed construction methodology, design controls and avoidance measures will optimise 'best fit' with the landscape. These measures are discussed later.

Introduction

This report has been prepared in response to a request from the Department of Conservation (Hokitika office) seeking a landscape assessment of environmental effects arising from the proposal.

This is prepared in accordance with the RMA fourth schedule, and in particular, the following matters are considered in this landscape Assessment of Environmental Effects (AEE).

- A description of the landscape of the site and its wider setting.
- A brief description of the proposal.

⁶ These outcomes are listed at page 68. 'Tī Kōuka Place – ngā hua' refers to the area within the Park where the Pike29 Great Walk will be located. "Each Place is represented within the Park Plan by a Ngāi Tahu taonga tree species that can be found within the Park. While each tree species may be found across many parts of the Park, the characteristics and values of each species link closely to the characteristics and values of each Place"....(from page 53, Part 2 of the draft Park Plan).

- An assessment of the actual and potential positive and adverse effects on the landscape, including the identification of any potentially affected parties. This will be considered at two scales; the 'contextual landscape' where the appreciation of the track from the wider setting will be assessed and the 'localised', where the largely visual impacts of the track will be addressed from close quarters (i.e. from the track).
- A description of any avoidance, remediation and mitigation measures if required.
- Proposed conditions of consent relating to landscape effects.

With regards to effects concerning landscape - including natural character and amenity, I understand that the type of proposal being sought is not provided for in the current Park Plan. However, the Pike29 Great Walk is provided for in the June 2016 draft Park Plan which will be discussed later. This assessment therefore considers the visual effects of the proposal and its effects on natural character and amenity. The majority of the track and built structures including both of the huts will be located in a national park (Paparoa National Park).

I have visited parts of the application site and its surrounds including the Pike River Mine amenities area and its road access.

The Landscape

The Department of Conservation website describes the area where the proposal is largely located (Paparoa National Park) as:

"The Paparoa Range forms an impressive backdrop to the park; made of ancient granite which has been slowly shaped by ice into its present rugged outline.

Limestone underlies most of the park and it is responsible for the area's amazing landforms - high coastal cliffs, impressive river canyons, delicate cave formations and the bizarre 'pancake-stack' coastal formations that the area is so well known for....

....Vegetation within the park is wide and varied, due to the mild climate and high fertility. Near the coast, broadleaf forest dominates, with glades of exotic-looking nikau palms giving a subtropical feel. Large rata trees emerge above the forest canopy. Inland, the forest is made up of hard, red and silver beech, mixed with rimu and other podocarps.

The draft Paparoa National Park Management Plan describes the area in more detail and in particular, the area where the track would be located as:

"A dramatic natural feature of Tī Kōuka Place is the inland escarpment at the head of the Punakaiki River catchment which forms the western margin of the inland syncline. The forest vegetation in the inland area is predominately beech with a scattering of rimu, mamaku/tree ferns and other broad leaved trees...."

The ecosystems in this Place support a wide range of wildlife, including threatened and at risk species such as roroa/great spotted kiwi, kea, kākā, whio/blue duck, mātā/fernbird and koekoeā/long-tailed cuckoo. Tī Kōuka is also home to the Paparoa Range alpine snail (Powelliphanta gagei)...."

The above more general description accords with my own observations of the area. In addition to this I have assessed a series of photographs of parts of the landscape where the track and huts will be located. The landscape character depicted in these photographs can be clearly described as a pristine, wild environment, with intact vegetation cover and where any buildings and human induced modification to the landscape are largely absent. The historic Ces Clarke Hut, Croesus Top Hut (**Figure 1**) and upper reach of the Croesus Track above this hut extending to Croesus Knob (**Figure 2**) comprise the only obvious human interventions. There are other sections of track within the Paparoa National Park, but these are concealed within vegetation cover and are only visible to the track users themselves.

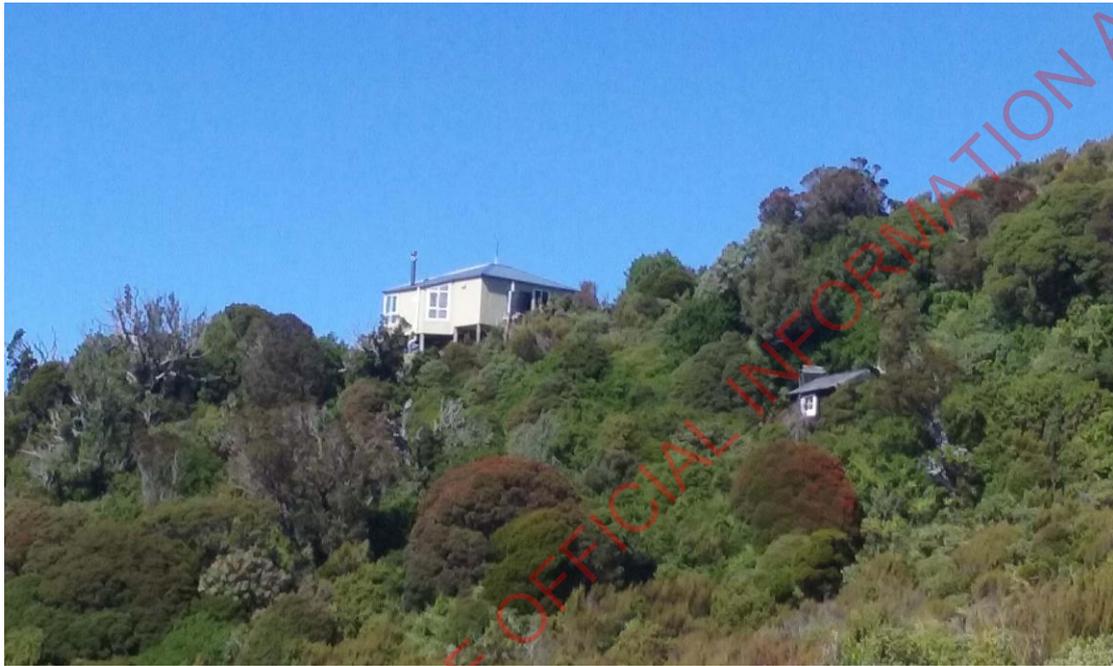


Figure 1 Existing 'Top Croesus Hut' (black cladding, lower right) and Ces Clarke Huts (photograph provided by T. Hopkins, DOC).

The Pike River Mine and Pike²⁹ Great Walk are now specifically mentioned in the draft Park Plan. And now that the Pike River Mine area has been incorporated into the Paparoa National Park, other built structures have been consequentially also assimilated into the park. Despite this, the portion that the mine area occupies is relatively small and is pressed in on all sides by mature verdant indigenous forest.



Figure 2 Existing Ces Clarke Hut and track winding uphill towards Croesus Knob visible above the building

The (draft) Paparoa National Park Management Plan (the ‘Park Plan’)

The Park Plan is the primary document for informing any decisions made with regards to changes in the Park. In essence, the Park Plan gives effect to the higher order documents including the National Parks Act 1980, the General Policy for National Parks 2005 and the West Coast Te Tai o Poutini Conservation Management Strategy.

I consider the following objectives and policies under Part 3: ‘*General Policy for National Parks and policy requirements for authorisations and activities in Paparoa National Park*’ and Part 4.2 ‘*Ti Kōuka*’ relevant to the proposal:

Objective

Te whāinga

Adverse effects on the Park’s natural, historic and cultural values, including Ngāi Tahu values, and on the public’s enjoyment of the Park are avoided while:

- (a) allowing visitors to access the Park and benefit from its values, and managing visitor activities to preserve the Park’s values;
- (b) enabling the provision of a range of high quality services to visitors through the granting of concessions consistent with the outcomes sought for the Park and its recreational settings; and
- (c) enabling Ngāi Tahu ability to access and use whenua tupuna (ancestral lands) and taonga to support intergenerational Ngāi Tahu wellbeing, where consistent with legislation.

I consider that all of the policies under Part 3.1 (Management general), 3.2 (Authorisations general), 3.5 (Vehicles), 3.6 (Powered vehicles), 3.7 (Non-powered vehicles), 3.11 (Sporting and other competitive events), 3.17 (Structures, utilities and facilities) and 4.2.1, 4.2.3 – 4.2.8 relevant.

In my opinion, notwithstanding that the Pike29 Great Walk is specifically provided for in the Plan, the proposal does not depart from the above objectives and policies.

The Proposal

A detailed description of the project is contained in Section 4 of the AEE document and won't be repeated here. Briefly, the proposal is to construct a new 49 kilometre long track⁷ extending from the northern end of the existing Croesus track above Blackball, after which it traverses the tops of the Paparoa Range and descends via the Pororari River valley. Near the coast, the track splits in two (to avoid conflict between walkers and bikers), with mountain bikers directed southwards off the main track to the Punakaiki River via the Inland Pack Track. Walkers will continue down the Pororari Gorge and River Track to Punakaiki village. The track will be constructed to 'Easy Tramping Track'⁸ and 'Advanced grade'⁹ standards to accommodate both walkers and mountain bikers. Of note, the track will not provide for downhill, freestyle and dirt jumping mountain bike activities.

Pike River Mine amenities area

Part of the proposal involves remediation work at the Pike River Mine amenities area. The scope and detail of the changes to this area are currently being developed between SENZ and DOC and are not yet finalised, and so it is difficult to provide an accurate assessment of effects. However, from discussions with DOC, it can be safely assumed that the natural character values and visual amenity including and surrounding this area will be significantly improved over what currently exists, following redevelopment. While the mine was operational it was outside of the Paparoa National Park and therefore had less stringent controls. The area can be currently described as 'post-industrial' in character and is characterised by the following features:

- Substantial cleared vegetation, including mature canopy trees.
- Large scale earthworks including cuttings, scaling and benching to provide road access resulting in either bare bedrock or only very recently revegetated, over-steepened slopes.
- Large areas of concrete or metaled hardstand.
- Several single story buildings with relatively large footprints.
- A small electrical substation.
- Mine dewatering treatment ponds and associated structures.
- Retaining structures and security/safety fencing.
- A bridge.
- Other mining paraphernalia including a coal slurry line, overflow ponds, sewerage plant, overhead transmission lines, material storage, water tanks, generators etc.

Track

I understand that the track route has been walked and GPS plotted by DOC field staff. Therefore the alignment shown in **Attachment 1** (which I rely on in this assessment) will be more or less as per what will finally be constructed. However, subtle nuances in the terrain and the need to avoid certain obstacles such as large rocks, slips, unstable ground, trees and so forth may require that the final alignment of the track differs slightly from that shown mapped. The formed track will be between 0.6 and 1.0m wide. The construction footprint of the track (the extent of ground disturbed to build the track) will be limited to 1.5 times the width of the 49km formed track (or maximum 7.35 hectares), but would not be required to be this wide along the entire length of the track. Track gradient will be such that cyclists will

⁷ The track will be 65km in overall length as it will be located between and incorporating two existing formed tracks at either end (Croesus Track and Pororari River Track).

⁸ Standards NZ Handbook 8630:2004.

⁹ NZ Cycle Trail Design Guide 2015 (4th edition).

need to dismount and walk their bikes for only 2% of the total track length. Watercourses will be bridged (or forded). Any areas where a fall would be fatal or serious harm, handrails, sight rails and or warning signs will be provided.

Two more or less identical huts are to be located along the track¹⁰. Images of the proposed huts are included in **Figure 3**. The 'Moonlight Tops' hut will be located just below and on the western side of the Paparoa Range ridge at the top of the Canoe Creek catchment at the 1005m contour. The second 'Pororari' hut will be located on Tindale Ridge at around the 550m contour in the headwaters of the Pororari River. Both huts are single storey and measure approximately 11m x 17m (including external decking). A separate pair of 2000 litre water tanks and sink will be located outside each hut and a separate single toilet building will be located nearby to both huts. Bike racks will be included. This constitutes the extent of the curtilage area. The location of the huts and curtilage area is shown on **Attachment 1**. Vegetation clearance at the Moonlight Tops hut is confined to tussocks and scattered turpentine shrub and occasional *Dracophyllum* trees¹¹ as this hut site is above the tree line. To enable the construction of the Pororari Hut some vegetation clearance is required. Vegetation cover here is dense and comprises mature mixed beech/podocarp forest¹². The huts will be typical Department of Conservation (DOC) type, comprising lightweight timber frame construction with walls clad in vertical corrugated Colorsteel. Rooves will likewise be clad in corrugated Colorsteel. Maximum height for the huts will be approximately 4m above ground level excluding chimney flues.



Figure 3 Architects concept for the Moonlight Tops Hut (top) and Pororari Hut (bottom). Note: colours shown are different to what is being proposed.

In addition to the two huts, a prefabricated-type shelter may also be erected (**Figure 4**)¹³. The purpose of this would be to include a 'day shelter' providing additional weather

¹⁰ The huts will comply with the NZ Building Code under BCH/AS1 (DOC Backcountry Hut Procurement Manual). The names of the huts are yet to be finalised.

¹¹ MWH NZ Ltd Geological Inspection report for the Moonlight Tops West Hut site, 29 march 2016 (page 2).

¹² MWH NZ Ltd Geological Inspection report for the Pororari Hut site, 29 march 2016 (page 2).

¹³ Location and necessity to be determined according to need.

protection at a point between the two huts along the alpine section of the track. The shelter would be similar to that shown in Figure 4. The location for the shelter has not been confirmed. As I understand it, the shelter will be located to the north of the escarpment near Hawera. It is likely that the shelter will be concealed from wider views as much of this part of the track is concealed within vegetation. The stretch of track where the shelter may be located along is indicated on attachment 1.



Figure 4 Weather shelter - similar to what may be built.

The huts and shelter have been sited in their proposed locations for the following reasons:

- To provide sheltered rest or overnight stops at locations that will divide the track into manageable sections for track users.
- To provide safety and flexibility when crossing the alpine tops section of the track.
- To provide shelter “where the walking time....between huts without shelter exceeds four hours and where there is a significant level of exposure to adverse weather conditions on the most distant parts of the track”.¹⁴
- To take advantage of relatively level parts of the terrain to provide ‘natural building platforms’, which will minimise earthworks.
- To take advantage of panoramic views.
- To minimise costs associated with construction and access generally.

Potential effects on natural character and visual amenity (wider setting)

As previously discussed, the proposed changes to the area around the mine amenities area would be unnoticed from the wider landscape. Even views from the loop track [that links with the mine amenities area] are precluded by forest cover until the access road is reached. This is due to the mine amenities area being closely surrounded by steep, heavily vegetated topography. It is the track and new buildings that are of primary concern with regards to potential adverse effects on natural character and amenity. These interventions constitute a ‘new addition’ to the landscape, whereas the mine facility area and its myriad structures and

¹⁴ Standards NZ Handbook 8630:2004.

support infrastructure currently exists. For this reason, the weight of this assessment of effects is concerned primarily with the track (and support structures).

From my site observations it is apparent that the primary place where the track and buildings will be potentially visible from, will be the Logburn Road / Big River valley flats. From this largely cleared and developed valley floor, unobstructed views are possible to the west where the relatively bare 'Moonlight Tops' section of the track will be located. The Big River valley currently includes the Pike River Mine memorial at its south end, at the junction of Logburn and Atarau Roads, and at its northern road end, the Pike River Mine amenities and proposed loop track which will become publicly accessible. For this reason, it can be assumed that the valley will become more visited than it is now.

Potential adverse effects on natural character and visual amenity arising from the proposal are in my opinion confined to the Moonlight Tops section of the track and would include:

1. Earthworks scarring – particularly where multiple track switchbacks may be located 'zig-zagging' across steeper stretches. In these areas the track would partly cut across, rather than run with the contour, and for this reason, increased cutting and filling may be required at directional change points. The raw, disturbed ground would appear lighter in colour and would therefore contrast sharply with the surrounding weathered and sparsely vegetated ground. At these points the track surface would be more visible as it 'turns broadside' to the slope.
2. Two new buildings - including the hut and (possible) separate shelter appearing where buildings are currently absent. Any adverse visual impacts of the buildings would be exacerbated where they would breach above ridgelines and skylines – in essence where the structure would have no land or vegetated backdrop and would form an unusual addition to the recognisable form of the Paparoa Range. In addition to siting, other potential impacts of the buildings would be:
 - *Reflectivity* – generated by sunlight reflecting off windows, but also from other smooth surfaces such as walls and roof during certain climatic conditions – particularly low sun/sunset.
 - *Light spill* – generated by internal hut lighting (fixed lighting, or temporary lighting carried in by track users). Light spill can potentially be visible at great distances at night.
 - *Smoke (hut only)* - discharging from the chimney would be visible – worse during clear, calm conditions where the smoke may rise straight up above the hut (transient effect).
 - *Colour* – where colours were not compatible with the surrounding colours of the landscape substrate and vegetation cover. Reflectivity or 'reflectance' value (RV) also contributes a potential adverse effect, where hues are light and highly visible.
 - *Movement* – where track users are moving around the buildings (transient effect).
 - People who may be aware of the changes to the summit landscape at the Moonlight Tops stretch will include but not be limited to;
 1. Tourists visiting the area – in particular the Pike River Mine Memorial at the junction of Atarau and Logburn Roads, and the Pike River Mine amenities area, and/or passing through the area on State Highway 7. From the existing memorial area, there are

clear views northwestwards to the Moonlight Tops section of the track.

2. Occupants, including farmers and foresters, living in and working in the settled rural river flats and toeslopes within the Big River and Mawheranui River Valleys,
3. Hunters, DOC staff and contractors, and,
4. The general public travelling on State Highway 6, in the vicinity of Canoe Creek, northwards to Razorback Point.

The viewshed map at Attachment 1 confirms that from these viewpoints the Moonlight Tops is visible and therefore any changes to this area arising from the proposal will also potentially be observed.

Of the above potentially affected parties, it is assumed that some will be travelling by bicycle – particularly within the Big River Valley including to the mine amenities area. This affords vistas of longer time duration than motorists, which by contrast would pass through the potentially affected landscape much more quickly. For cyclists any potentially adverse visual effects of the proposal would be more enduring.

From further afield, the track may potentially be visible from parts of the Māwheranui River flats including State Highway 7, Atarau Road and the settlements of Ngahere, Matai, Ahaura and Raupo. However, from these areas the view distances are greater, there is already other development in the visual context and for these reasons any potentially adverse visual effects will be lessened.

To put things in context, the existing Ces Clarke hut constitutes the building located on the track closest to these areas of settlement. I understand that this building is visible 'in certain lights'¹⁵ from as far as Ngahere 13km away which is also as close as state highway 7 comes to the proposal. From my observations I found this building difficult to discern.

To confirm where the proposed changes to the landscape would be seen from and therefore where any potentially adverse effects may arise, a visibility analysis or 'viewshed map' was generated using DOC GIS software (**Figure 5**)¹⁶. The extent of the potential visibility of the track was determined by attributing the track with a vertical dimension of 2m (essentially assuming the track was a 2m high 'wall'). The reason for this was to allow for an objective assessment based on a 'worst case scenario' where a cut face of 1m might be seen above the track surface coupled with a 1m band of raw fill below the track level (cut and fill). Of course, people using the track could also be included within this 2m 'factor', however I consider track users contribute only very minor transient visual effects. It is the permanent effects of the track that are therefore primarily being considered in this assessment.

While the track surface (other than at directional change points) would be largely unseen from viewpoints at lower elevations, including on the settled flats (where the majority of the viewing audience will be located), it would be the earthworks (cut and fill batters) itself that would give rise to the primary adverse visual effects.

¹⁵ From discussions with Tom Hopkins, Senior Works Officer, DOC.

¹⁶ Vegetation cover was not able to be taken into account therefore areas of track visibility assumes no vegetation cover.

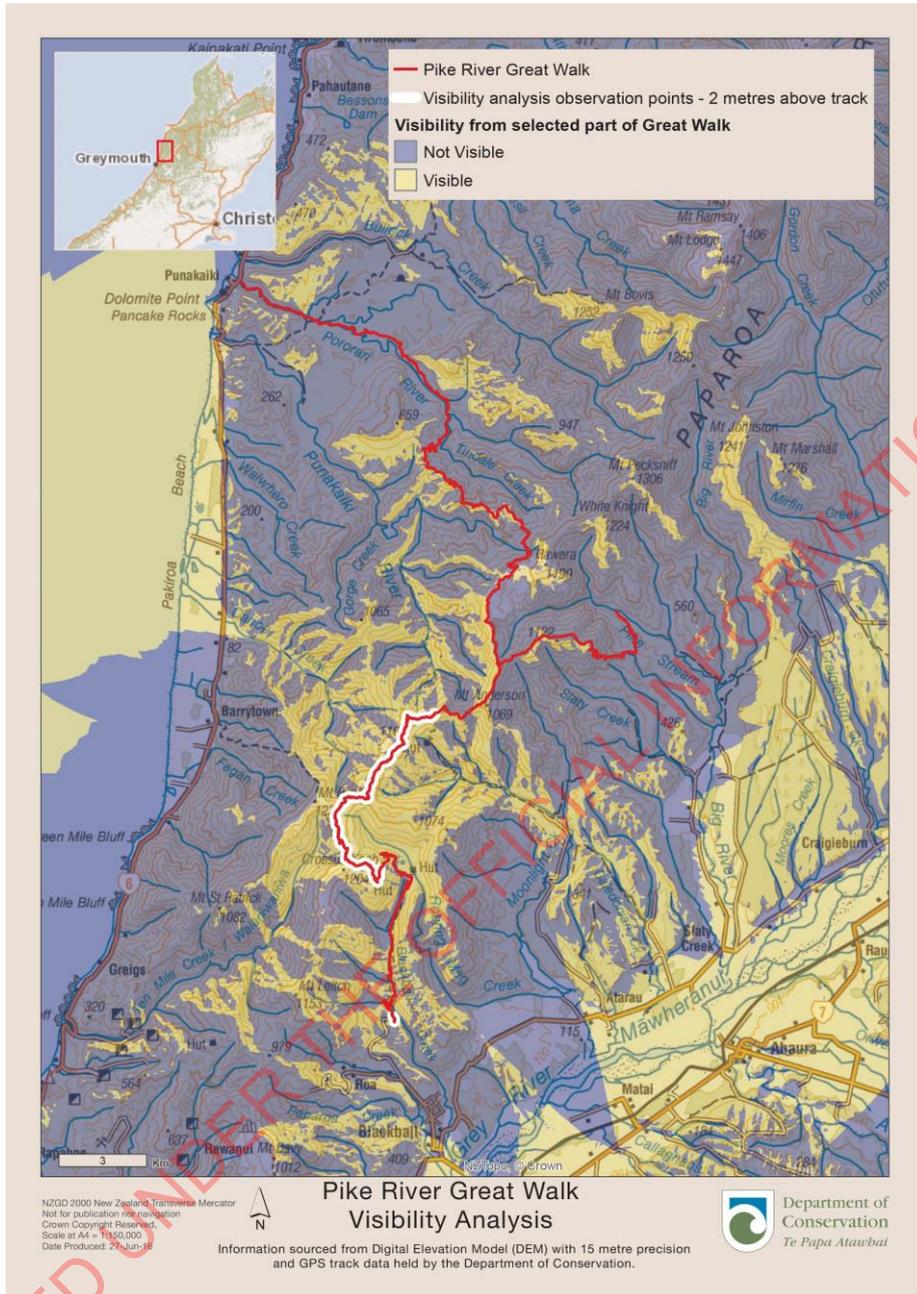


Figure 5 Viewshed map prepared by Department of Conservation GIS services

The hut and shelter would also contribute visual effects. However, for the purposes of this assessment and the small scale of the proposed structures, a 2m height value was considered adequate to generate the viewshed map. Due to the small size of the buildings, the location of these buildings below and eastward of the main ridge, a separate viewshed analysis of the buildings was not considered necessary.

It is evident that the majority of the track will be concealed from views from the wider contextual landscape by vegetation cover, including native forest and plantation forestry. This is evident in the Google Earth image (Figure 6) where the majority of the area is under heavy vegetation cover. However, a section of the track ('Moonlight Tops Section') is above the tree line for approximately 9.4kms (highlighted in white on Figure 5). This is the part of

the proposal that will potentially be visible and where any adverse landscape and visual effects may arise.



Figure 6 Google Earth image demonstrating the extent of forest cover. White line denotes Pike29 Great Walk. White dots denote huts (existing and proposed), orange dots denote Pike River mine amenities. Green line denotes Park boundary.

Of note, the DOC visibility analysis map identifies broad areas of surrounding hill country where the track appears to be 'visible'. However, these areas are for the most part clothed in native forest and comprise large tracts of hilly terrain that are not readily accessible to the general public. For these reasons, any potentially adverse visual effects of the proposal on these areas is discounted. A modified viewshed map is included that removes these areas from consideration (Attachment 1), retaining a focus on where the actual effects would be felt.

The Moonlight Tops hut will be located westwards of and just below a side ridge near the top of the Paparoa Range ridgeline (**Figure 7**). At the 1005m contour, where the hut is proposed, it is above the tree line. However, due to the topography, the hut will not be visible from the broad contextual landscape to the east of the main ridge or west (Canoe Creek). Attachment 1 indicates this hut located within the (yellow tone) viewshed area. However, to reiterate, the viewshed area indicates the areas where the track is visible *from* (not *what* is visible). The hut will be tucked out of view from the wider landscape.



Figure 7 Looking northeast towards the escarpment and Hawera from the Moonlight Tops Hut site (photograph provided by T. Hopkins, DOC).

Potential localised landscape and visual effects

It is acknowledged that any potentially affected person will be, for the most part, those people who are on the track itself. Other than perhaps hunters and DOC staff and contractors who may access other parts of the national park, it is unlikely that anyone else would be there for any other reason than walking or cycling the track. The track and structures associated with it would not be 'happened upon' by chance and therefore generate adverse landscape or visual effects by their very nature of being there. People will doubtless be aware of and expect the type of interventions that the proposal includes – even before they enter the national park and Great Walk.

To this end it is not the *type* of modifications that are being proposed that are potentially adverse – it is *how* these modifications are implemented that will be key to avoiding adverse landscape and visual effects.

It is assumed that localised landscape and visual effects will be confined to viewpoints from the track itself, or from areas very close to the track. It is not anticipated that track users will physically deviate far from the formed track in such a wild environment – particularly where the track passes through heavily vegetated areas. Localised effects will also be felt from the huts where track users may choose to stay overnight, or rest for short periods. Views from the huts will be across a pristine highly natural landscape setting.

Potential adverse landscape effects and effects on visual amenity arising from the proposal at the localised scale in my opinion can be broken down into two broad features - the track itself (and associated elements) and 'standalone' buildings¹⁷:

1. Track:

- Poorly designed and sited signage and interpretation.
- Bridge and viewing platform structures that are not well integrated into their settings. This could arise where bridges appear out of scale and 'over-engineered' given their required function. Viewing platforms could appear to 'raft' on top of the vegetation rather than nestle amongst planted patterns.
- Poor / visually 'jarring' transition between the existing historic pack tracks and the new formed track in terms of design, materiality, width and gradient.
- Impact on the archaeological/historic values of the existing pack tracks through physical damage during the construction process through machinery/heavy plant being carried over the existing track sections.
- Overly straight alignments that would appear incongruous in this highly natural landscape.
- Poor management of side-castings extending beyond the track construction footprint. This is particularly relevant where duff is not readily available to rehabilitate the areas (e.g. outside of the more lush vegetated areas).
- Unnecessary removal, modification and/or damage to vegetation cover - particularly trees with a DBH of 400mm and above.
- Width and steepness of track being greater than necessary along the Moonlight Tops section where increased scarring would be more prominent, coupled with an increased impact on ground cover species. In this area 'wilderness values' could be more readily affected where broad views over the contextual landscape will be possible.
- Sub-optimum track alignment and gradient along the Moonlight Tops section where excessive (unsightly) cut and fill may be required.
- Obtrusiveness of geotextiles and imported basecourse through the topcourse layer that would appear incongruous with the local substrates with regards to aggregate type, size and colour.
- Unnecessarily large cut and fill batters. These will dominate the experience of passing through a natural environment, through loss of vegetation cover, exposure of unweathered rock and the introduction of smooth unnatural surfaces.
- Unsightly erosion and subsidence scarring where ponding/runoff has not been sufficiently addressed and designed for. This needs careful consideration in this high/intense rainfall area, particularly along the Moonlight Tops section that are also visible from the wider landscape.
- Location of unsightly borrow pits where they would be visible from the track.
- Sub-optimum revegetation processes where rehabilitation of the construction corridor fails to thrive.
- Poor track maintenance leading to increased erosion and weed establishment through weed seeds being introduced via footwear and bicycles.

¹⁷ The two huts and shelter.

2. Buildings:

Potential adverse visual effects arising from the buildings, and experienced by track users, will largely correspond to the effects generated by the buildings on the wider landscape, discussed above under potential contextual landscape effects. To briefly reiterate, these could include:

- Buildings rising above ridge/skylines
- High reflectivity
- Excessive light spill
- Visible smoke discharges
- Incompatible colours with the surrounding landscape leading to building prominence
- High reflectance/hue value (RV)
- Movement – where track users are moving around the buildings (transient effect).

Many of the above effects listed under 'track' would also apply (e.g. earthworks scarring, poor site remediation and so forth). Other more localised adverse effects of the buildings on visual amenity that would be appreciable to track users, but would be unnoticed from the contextual landscape discussed earlier may include:

- Excessive clearance of vegetation beyond what is necessary to construct the buildings.
- Locating toilet facilities and greywater dispersal field areas where they would be visible from hut living areas including from outdoor living areas, lowering amenity values.
- Poor litter control measures, monitoring and enforcement leading to litter accumulating around rest areas and migrating beyond the extent of the proposal footprint. 'Litter' may also include such things as unwanted bike parts and accessories.
- Washing lines located where washing hanging out to dry is visually obtrusive.
- Poor building upkeep and general maintenance.

Recommended Avoidance, Remediation & Mitigation of Potential Adverse Effects

Notwithstanding the fact that the proposal constitutes a relatively minor addition (new track and associated structures), to the Paparoa National Park and conservation stewardship land; avoidance, remediation and mitigation of effects has been considered from the outset. These mitigation measures will assist with integrating the proposal into its setting that holds high natural character, landscape and amenity values. To summarise they would be as follows.

Avoidance

- Low, modest single storey buildings with gently pitched rooves.
- Small built footprints.
- Avoiding siting buildings on ridge/skylines. To this end the Moonlight Tops Hut will be located as far downslope and 'nestled in' as much as is practicable to minimise its bulk and appearance.
- Avoiding steep building sites requiring excessive amounts of cut and fill and retaining structures.

- Low building proportions (approximately 3-4m height above existing ground level) which will help the structures to 'sit down' into the site and appear landscape biased, rather than sky biased.
- Well-modulated buildings generated by a stepped plan, and the use of various decks, porches and eaves that will serve to break up the visual built mass through variable areas and shapes of shadow.
- Utilising a narrow construction track footprint (maximum 1.5 x the width of the formed track surface, with a much reduced construction width on the Moonlight Tops section).
- Using hand labour to excavate sections of the track in highly sensitive areas.
- Minimising cut and fill by battering back to stable ground and or match existing ground profiles wherever possible.
- Using helicopters to ferry in heavy machinery and supplies which lessens the impact on the landscape of transporting items overland.
- Locating the track along the contour and on gentle grades wherever possible.
- Avoiding steps where possible.
- Where possible, avoiding locating the track and buildings where trees with a DBH of 400mm and above would be adversely affected.

Remediation

- All areas around the construction corridor including the sites where buildings are located will be rehabilitated using duff carefully removed prior to works taking place. Where the use of duff is not practical, eco-sourced seedlings will be replanted on disturbed ground.
- There will be substantial remediation works carried out around the Pike mine amenities area which will significantly improve the existing baseline environment.

Mitigation

- Use of natural and recessive colours. Generally speaking, this reduces the apparent size of buildings and helps them achieve a better compatibility within a highly natural environment such as this. The colours for both huts will be from the standard NZ Colorsteel range and includes 'Scoria' (a dark red/brown) for the walls and trim and 'Lichen' (an olive green colour) for the roof and spouting. Both of these colours are 'natural' in appearance or in other words they are not dissimilar to colours found naturally occurring in vegetation and rock type. Both of the selected colours have reflectivity values at the lower end of the spectrum (white being at the top end), and will be appropriate in this landscape type.

CONCLUSION

The proposal would allow for a 65km long shared use track and associated buildings and structures to be established in the Paparoa National Park and conservation managed stewardship land. The proposal is located extending from an existing historic track (Croesus Track) near Blackball to the south and connecting with two historic tracks to the north at the Pororari and Punakaiki Rivers. A loop track will traverse a ridge accessing the Pike River Mine amenities area which will be made publicly accessible as part of the proposal. The setting that the track part of the proposal will be located within is almost pristine and exhibits very high natural character contributed by a general absence of human-induced modification. Due to the national park status of the landscape context where the proposal will be located it can be safely assumed that the existing baseline environment is one of highly intact natural character augmented by high scientific and natural values. The area where the Pike

River Mine amenities area is located is currently heavily modified, degraded and will be substantively remediated.

With regards to the potential adverse effects of the proposal, the following conclusions were reached. Firstly, at the broad scale the effects of the proposal on natural character will be 'low' to 'very low'. This is due to the very small footprint of the proposal within a very large landscape. Natural elements, patterns and processes will remain intact and continue to prevail. Remoteness values would be affected, but only to a very low degree. Similarly, effects on visual amenity would be 'very low'. This is due to the long view distances towards the [largely concealed] parts of the proposal where most of the track and associated buildings and other structures would be hidden from view by abundant vegetation cover and/or topography. In addition the mountain tops are often concealed in cloud cover, although it is acknowledged that climate contributes only transient effects. Secondly, at the local scale (concerning users of the track itself), and despite the small construction footprint, the effects on natural character and amenity will be 'low to moderate'. This is due to the simple fact that to track users, the track will always be nearby and/or visible. Occasionally buildings and other smaller structures will be encountered along the route. And despite the fact that these human induced modifications are part and parcel of any 'great walk' experience, they will also be seen juxtaposed with an area with otherwise high natural values and where there are very few other built modifications present. Therefore the potential effects on visual amenity will be 'low' at distance and 'moderate' at proximity.

Under the draft Paparoa National Park Management Plan the proposal is consistent with the outcomes¹⁸ sought for the Park. Landscape values would be affected, but not to a significant degree. Overall, when considering the effects on [the currently very high] natural character and visual amenity values arising from the proposal, these effects would be 'moderate to low'.

The proposal has minimised any potentially adverse effects largely through 'avoidance' and 'remediation'. Avoidance, in that a narrow track width and construction footprint is proposed, including buildings of modest form and style and structures – most of which will be screened from view by mature indigenous vegetation cover. This will go some way towards reducing the physical and visual impact of the built modifications to the landscape. In addition, 'remediation' is a fundamental component of the proposal. All disturbed ground will either support the various elements of the proposal or where not, be returned to the pre-existing natural state. Landscape 'remediation' will be the primary outcome at the Pike River Mine amenities area.

Despite the moderate localised effects, the proposal will not appear or be perceived as incongruous in its national park/conservation land setting. Other tracks and built infrastructure, similar to this proposal currently occur in other national parks where the nine existing Great Walks are found. There is an expectation by users of the track that this type of built intervention will occur. Therefore, the nature of the proposal, and the activities it will support, will be compatible within the highly natural landscape setting. The Moonlight Tops section of the track is the most sensitive to modification due to its location above the tree line where there is scant vegetation cover to buffer any effects of built development. However, a suite of design controls have been considered from the outset to optimize the proposal's 'fit' within the landscape. The Pike River Mine amenities area will be substantively improved over what currently exists. The existing levels of infrastructure that are there now will be lessened. The area will change from its current [post] industrial aesthetic and become

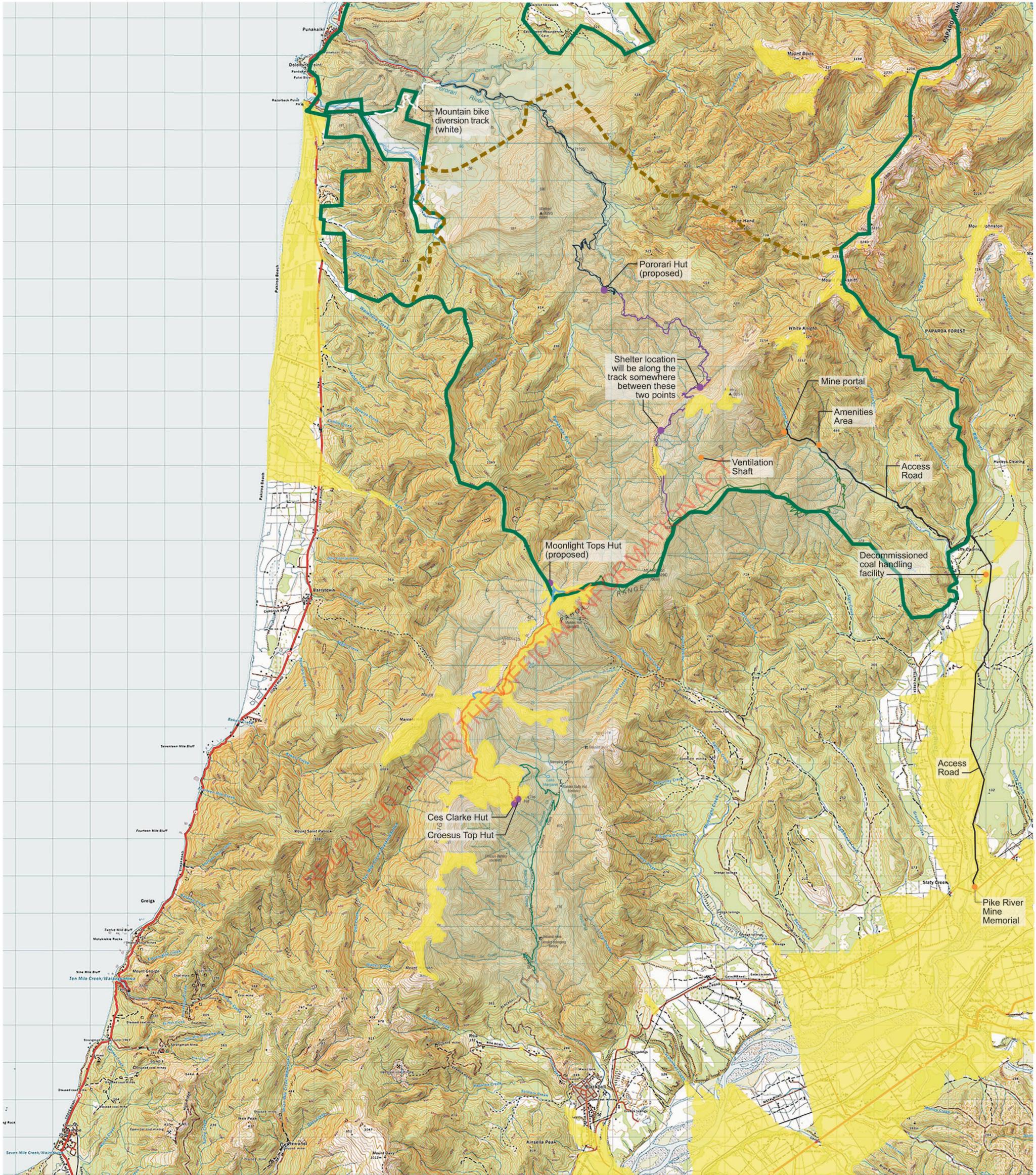
¹⁸ Page 68, Tī Kōuka Place outcomes (1-3).

more 'low-key' and contemplative. Landscape design will be similarly low-key and appropriate to its highly natural surrounds.

Jeremy Head

Registered NZILA Landscape Architect

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key

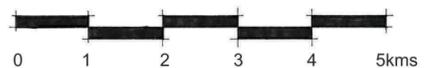
-  Section of existing Croesus Track that may be visible
-  Moonlight Tops section of proposed Pike 29 Track located eastward of the ridgeline that may be visible
-  Moonlight Tops section of proposed Pike 29 Track located westward of the ridgeline that may be visible from the west
-  Areas where the track would be visible from (worst case scenario)
-  Other sections of the existing and proposed track (not visible from the wider landscape due to substantial existing vegetative cover)

-  Paparoa National Park boundary
-  TTKōuka Place boundary

attachment 1 Location Map
Pike29 Great Walk



Prepared by Jeremy Head, Registered NZILA Landscape Architect for Department of Conservation



July 2016

Appendix I – Archaeological Assessment

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PIKE29 TRACK: AN ARCHAEOLOGICAL ASSESSMENT

KIRSA WEBB
UNDERGROUND OVERGROUND ARCHAEOLOGY LTD

OCTOBER 2016

UNPUBLISHED REPORT PREPARED FOR DEPARTMENT OF CONSERVATION

INTRODUCTION

The Department of Conservation are proposing to construct a new shared use track as a memorial to the 29 men who died as a result of the Pike River Mine disaster of 2010. The 65 km track will link sections of two existing tracks, running from Blackball via the Croesus Track (recorded as archaeological site K31/29), then north along the top of the Paparoa Range to the Pororari River, where it joins the existing Upper Pororari River Track, exiting near Punakaiki. Mountain bikers will exit the track via the southern end of the Inland Pack Track (recorded as archaeological site K30/87). Figure 1 shows the proposed route of the new track.

DOC have commissioned an archaeological assessment to determine whether or not any archaeological values will be affected by the proposed work, and whether or not an archaeological authority will be required for the proposed work. The assessment has been completed in accordance with the NZHPT (2006) guidelines on preparing an archaeological assessment. This assessment also covers 20th century archaeological sites, which are not protected under the Heritage Pouhere Taonga Act 2014.



Figure 1. The proposed route of the Pike29 Great Walk. Image: Google Maps 2016.

Project outline

- No work proposed on lower Pororari River Track (west of Inland Pack Track).
- Some sections of the Inland Pack Track are to be filled, surfaced and/or cobbled to make the track grade suitable for mountain bikers and to avoid degrading the track.
- Rocks and other natural barriers will be used to direct traffic away from heritage features on the both the Inland Pack Track and Upper Pororari River Track in order to avoid damaging them.
- New sections of track will be added to the existing part of the Inland Pack Track between the Punakaiki River and Pororari River, in order to avoid the steepest sections of the existing track.
- Barriers will be installed at junctions of the existing Inland Pack Track and new sections of track.
- The redundant sections of the Inland Pack Track are unlikely to be maintained although this is yet to be decided.
- Sections of the existing c. 1909 upper Pororari River Track are to be cleared and surfaced. Areas where the track has been destroyed by windfall or slips will be reformed along the original line of the track
- New section of track to be formed between Tindale Creek and the northern extent of the Croesus Track.
- New section of track to be formed between top of Paparoa Range and Pike River.
- No work proposed on the existing Croesus Track.

STATUTORY REQUIREMENTS

Heritage New Zealand Pouhere Taonga Act 2014

The Heritage New Zealand Pouhere Taonga Act 2014 provides protection for archaeological sites and is administered by Heritage New Zealand Pouhere Taonga. Under section 6 of the Act an archaeological site is defined as:

“(a) any place in New Zealand, including any building or structure (or part of a building or structure), that—

(i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and

(ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and

(b) includes a site for which a declaration is made under section 43(1).”

Under the Act, anyone who wishes to destroy, damage or modify an archaeological site requires an authority to do so. It is illegal to destroy damage or modify an archaeological site without an authority from Heritage New Zealand Pouhere Taonga.

Summary of the timeframes associated with applying for an archaeological authority:

- Within five working days of receiving the application, Heritage New Zealand will advise whether or not the application has been accepted (this is dependent on whether or not sufficient information has been supplied with the application).
- Once accepted, Heritage New Zealand has 20 to 40 working days to process the application.

- After the authority has been granted, there is a 15 working day stand-down period before earthworks can begin.

Conservation Act 1987

As noted above, the entirety of the proposed project is on land currently administered by DOC, who operate under the Conservation Act 1987 (along with other relevant pieces of legislation). Under this Act, DOC's role in relation to cultural heritage is to manage such heritage and advocate for its conservation. In the Act, conservation is defined as "the preservation and protection of natural and historic resources for the purpose of maintaining their intrinsic values, providing for their appreciation and recreational enjoyment by the public, and safeguarding the options of future generations."

The Department's Conservation General Policy Statement provides further guidance on the management and protection of historic heritage. The following policies are of particular relevance:

5 (b) Historical and cultural heritage on public conservation lands and waters, that is assessed as having high significance in accordance with the Historic Places Act 1993, should be actively managed (including restoration where this is necessary) within the context of integrated conservation management.

5 (d) Significant information should be recorded where historical and cultural heritage on public conservation lands and waters is threatened by unavoidable damage or destruction.

5 (e) Historic buildings and structures on public conservation lands and waters should be used in ways that:

- i. enable their preservation;
- ii. are in keeping with their assessed significance; and
- iii. provide opportunities for the public to appreciate them.

The West Coast Conservation Management Strategy 2010-2020 outlines specific policies and plans for the management of heritage within the West Coast Conservancy, including the management of historic heritage. Section 3.4.2 outlines how historic heritage is to be protected and the mechanisms for doing this. This section notes that, "management is based on the principle that historical and cultural heritage located within public conservation lands should be protected from unauthorised uses". Protection of historic heritage must be considered, in a number of specific situations, including:

- the conditions governing concessions; and
- consideration of land disposals or exchanges.

DOC has also produced "Historic Heritage Policy and Procedure Guidelines". The following statement is made in section 3.3 of this document:

The Conservancy's aim is to minimise damage and destruction to all historic resources on the conservation estate. Initial protection from modification will be provided for all historic places over 30 years old pending an assessment of historic significance.

In summary, then, the values of archaeological sites on DOC land need to be assessed to establish their significance and what the appropriate management strategy is, given that level of significance.

ICOMOS New Zealand Charter

Although not a legislative requirement, the ICOMOS New Zealand Charter, Te Pūmanawa o ICOMOS o Aotearoa Hei Tiaki I Ngā Taonga Whenua Heke Iho o Nehe, is used by the Department of Conservation to inform the department's policy on heritage conservation and management.

The ICOMOS New Zealand Charter is a set of guidelines on cultural heritage conservation, produced by ICOMOS New Zealand. The New Zealand Charter is widely used in the New Zealand heritage sector and forms a recognised benchmark for conservation standards and practice. The full charter is included in Appendix 1.

METHODOLOGY

Research on the history of the Inland Pack Track and Croesus Track had already been undertaken by Jackie Breen (2006, 2009), as part of the heritage assessments and baseline inspections of these sites. As such, little additional historical research was undertaken.

W. A. Taylor's *Lore and History of the South Island Maori* (available through New Zealand electronic text collection) and Francois Tumahai's cultural impact assessment of the Pike River coal mine provided the background about Māori activity in the area.

Research into the historical land use of the area, and the desktop assessment of the possibility of unrecorded archaeological sites, was undertaken using various sources, including: property titles, topographical, geological and survey maps available through Landonline and the National Library New Zealand and contemporary newspapers (available through the Papers Past website). A history of the uranium prospecting in the area was provided by DOC.

On 2 August 2016 a site visit along the proposed route of the upper Pororari River section of the track was undertaken by Kirsia Webb (Underground Overground Archaeology) with Mark Nelson and Mike Osborne (both of Department of Conservation). The section of Inland Pack Track between Punakaiki River and the Pororari River was walked by Kirsia Webb and Mark Nelson on 3 August 2016. During both site visits, the route of the track was walked and original track features and other points of interest were photographed and recorded by GPS.

HISTORICAL BACKGROUND

Māori occupation and use

Ngāti Wairangi were the earliest people to occupy Te Tai Poutini (the West Coast). The tribe came into conflict with Ngāi Tahu of the east coast over the control of pounamu resources at Tai Poutini between 1700 and 1800. After a series of battles, with Ngāti Wairangi making raids on the east coast, particularly around Lyttelton, five leading hapu of Ngāi Tahu of Canterbury crossed the alps and, joining Ngāi Tahu members living on the west coast, defeated Ngāti Wairangi at White Knight Stream in the Paparoa Ranges (Taylor 1952: 188).

Croesus Track¹

The first section of the Croesus Track was constructed as a result of the discovery of alluvial gold in Blackball Creek in 1864. The track was surveyed by Edward Butler by 1879 and construction of the

¹ A thorough history of the Croesus Track is provided in Breen 2006 and therefore only a summary of the history of the track construction is provided here for context.

track was contracted to Martin Kean. The metalled track was completed by 1881 and ran from the junction of Coal and Blackball tracks to Clarke Creek.

Between 1885 and 1887 a second track was cut, and finger posted between Barrytown and the junction of Moonlight and Blackball spurs, to facilitate prospector access to the Barrytown diggings.

The section of the track between Blackball, and the head of the 1881 track at Coal Creek, was upgraded and re-routed in 1889 as a result of petitioning of the Grey County Council by the Blackball Creek miners for improved access to the diggings.

As late as 1892 the only means of accessing the upper diggings at Blackball Forks was via the riverbed or an old water race. The route between the 1881 track and Blackball Forks was surveyed and plans were drawn up for a horse track to the upper diggings.

Between 1896 and 1897 increased quartz mining activity along the Paparoa tops and hydraulic slicing at Blackball Forks necessitated improved access for the transportation of the heavy machinery required for these types of mining. Access problems were alleviated by 1898 by the construction of a tramway along the 1892 section of track to the Blackball Forks, by the Roaring Meg Sluicing and Hydraulic-Power Company Limited.

By 1899, a bridle track was constructed, making horseback transport to the Paparoa tops from the Blackball Forks possible. Prior to then the only way up was a rugged and unformed bush foot-track up the mountain.

During the 1930s depression, many of the old mine claims were worked under a government sponsored 'make work' scheme. Several miners' camps were established and repair work was carried out on the track. Bridges were constructed over Smoke-ho Creek, Clarke Creek and Blackball Creek.

Sections of the track were subsequently upgraded in 1951, as part of an investigation into the feasibility of coal mining in the area, and late 1970s by the New Zealand Forest Service.

Inland Pack Track²

This pack track was built in 1867 to facilitate access to the Brighton and Charleston gold rushes, thereby avoiding the rugged and treacherous coastline. Between October and November 1866, under the supervision of Warden Kynnersley (the Nelson Provincial Government representative on the South-West Nelson goldfields), the line of the proposed inland road was surveyed between the Pakihi goldfields at Charleston and Seventeen Mile bluff, just north of Greymouth, a distance in excess of 50 km. The construction of the track was contracted out in 1 mile (1.61 km) sections to the otherwise out of work goldminers, of which there were thousands in the area. The construction of the road was completed by the end of February 1867, opening up for prospecting, the otherwise inaccessible country between Greymouth and Westport.

Within a few months of its completion, the state of the track had degraded significantly, requiring metaling in many areas, and was at times of flood impassable, but few other improvements were made. A telegraph line was installed along the route of the inland track in 1868.

² A thorough history of the Inland Pack Track is provided in Breen 2009 and therefore only a summary of the history of the track construction is provided here for context.

From as early as 1871, and into the 1880s, petitions were made to open up an alternative coastal route between Barrytown and the Fox River, not only because of the dilapidated state of the inland track but also because little to no alluvial gold had been encountered along the route of the inland road, and prospecting had moved further west toward the coast. It was not until July 1885 that the coastal road was completed.

The Inland Pack Track was used by tourists and for recreation from at least the turn of the century, although the track received very little in the way of maintenance during the early 20th century and had largely fallen into a state of disrepair by the middle of the century. It was not until the 1990s, after the area was gazetted as a national park, that the Inland Pack Track received any major upgrades. Most of this work occurred on the section of the track between Punakaiki and Pororari rivers.

Upper Pororari River track

A track along the upper part of the Pororari River was first depicted on two survey plans of the Brighton Survey District (dating to 1914), where the track is labelled as “old miner’s track” (LINZ 1914a & b; Figure 2 and Figure 3). The survey plans show the track running along the north (true right) side of the Pororari River from its junction with Cave Creek (where the track branches off the Inland Pack Track). The track crosses the Pororari River near a north to south running section of the river and travels southeast along the south (true left) side of the river. The track crosses the Pororari River again near its junction with Watson’s Creek, and then appears to follow the Tindale Creek. It is suspected that this track may have been used during the period of gold prospecting at the time the Inland Pack Track was constructed, but no evidence was found to confirm this theory.

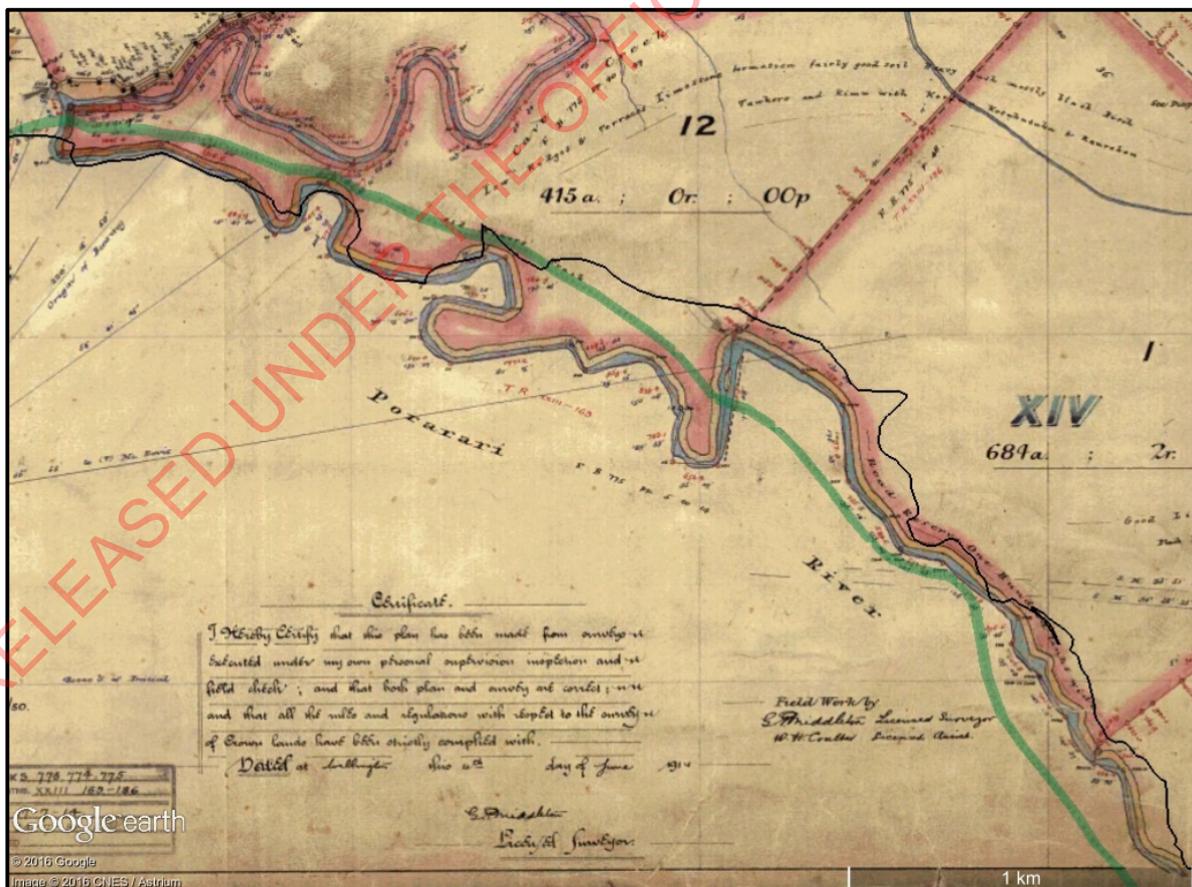


Figure 2. Detail of SO 7501 showing the route of the Upper Pororari River Track (highlighted in green). The route of the proposed track is shown in black. Image: LINZ 1914a.

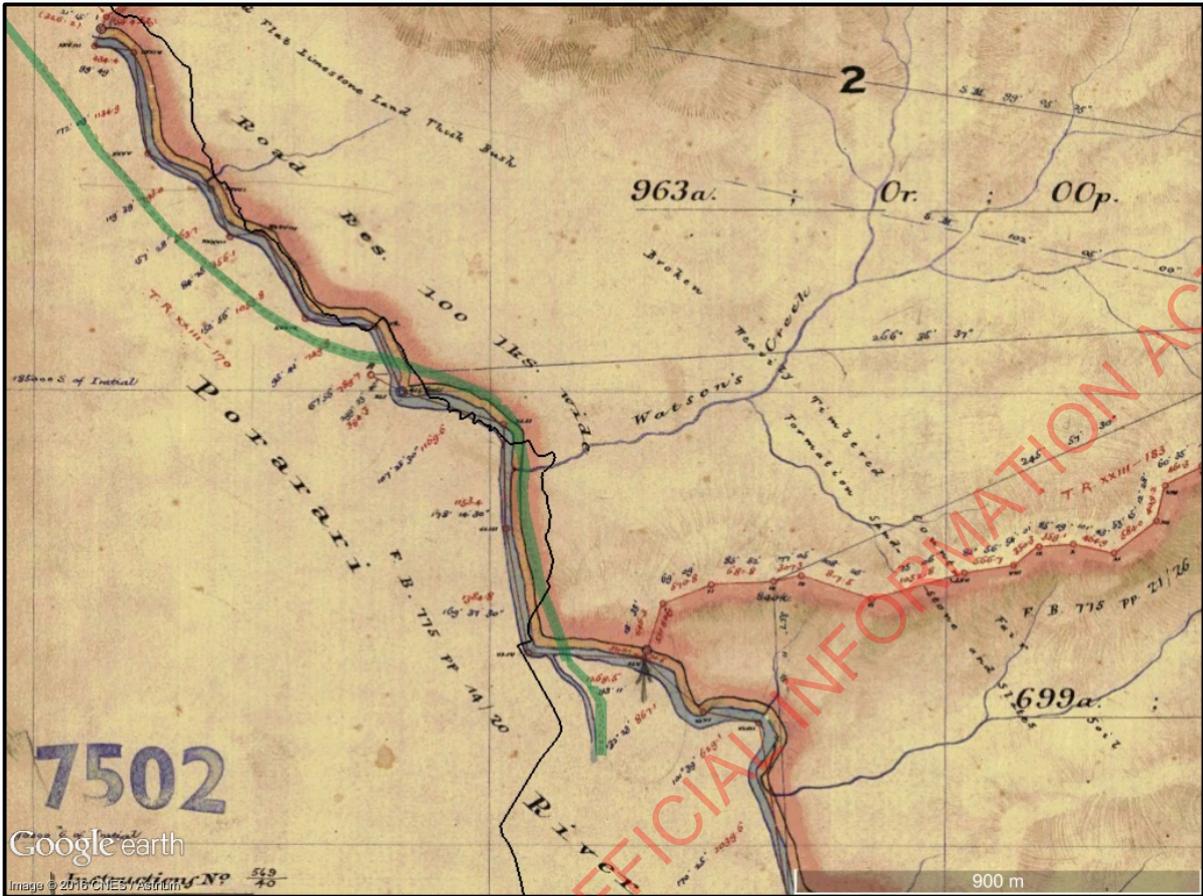


Figure 3. Detail of SO 7502 showing the route of the Upper Pororari River Track (highlighted in green). The route of the proposed track is shown in black. Image: LINZ 1914 b.

Later maps, from 1917 onwards, show the Pororari River track following along the true right of the river, approximately the same route the existing track takes (Figure 4). It is possible that, because of the rough terrain for much of the true left of the river, the route shown in the 1914 maps was drawn from conjecture or word of mouth, and that the track was not actually surveyed during the course of the land district survey (M. Nelson, pers. comm., 2016).

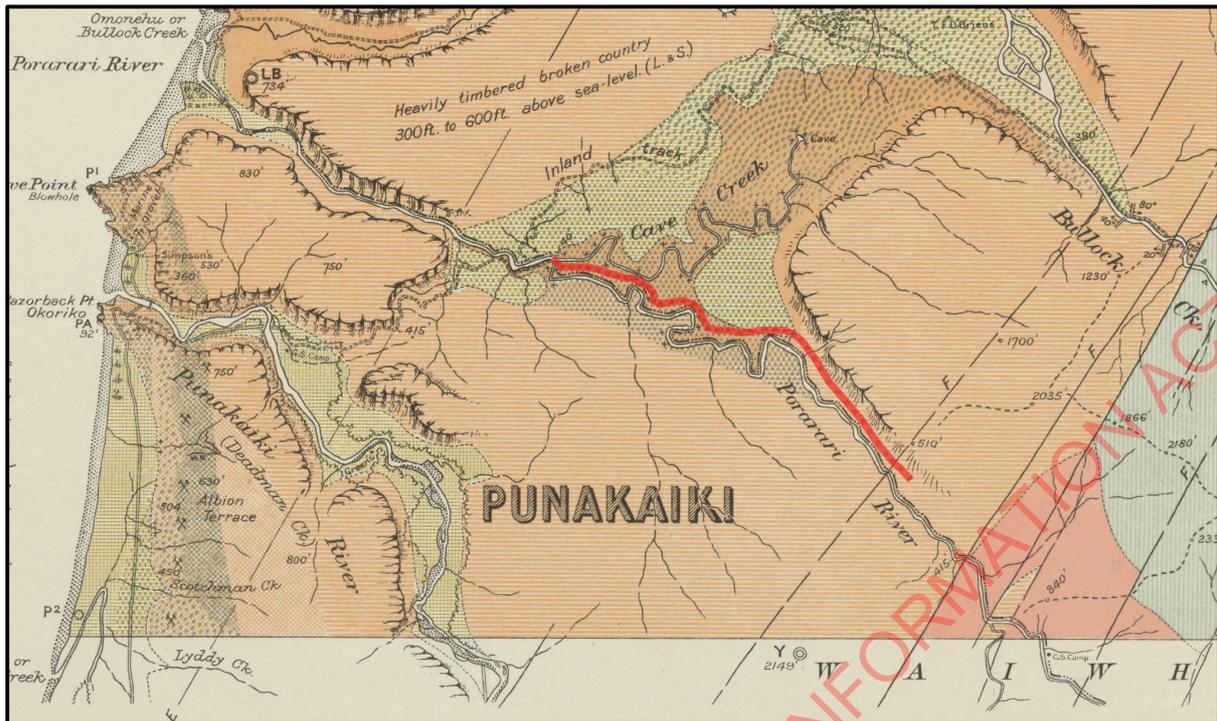


Figure 4. Detail of 1917 geological survey map of the Brighton and Punakaiki survey districts showing the route of the Pororari River track (highlighted in red). Image: New Zealand Geological Survey, National Library

The only documentary evidence of the construction of the Pororari River track found during the research for this assessment comes from newspaper reports of the Grey County Council expenditure. The earliest reference dates to 1909, when £47 was spent on construction of the 'Pororari Track' (*Grey River Argus* 13/10/1909: 4). Between 1909 and 1915 sums of between £47 and £600 were spent annually on construction of the road (*Grey River Argus* 28/11/1910: 2, 23/11/1911: 2, 21/10/1912: 1, 19/2/1913: 3, 21/4/1915: 7). Interestingly, in these accounts, this expenditure was classified under "Back Block Roads" rather than "Goldfields Roads", which were classified separately, indicating that, at this time, the purpose of the road was not to facilitate mining.

During the early 20th century, the Grey County Council and the Nelson Land Board opened up large areas of land between the Pororari and Fox rivers for settlement on farming leases (in perpetuity) to miners who remained in the area following the gold rushes (*Grey River Argus* 16/8/1911:6, *Nelson Evening Mail* 15/1/1909: 1). This would suggest that the Pororari Road was built to facilitate access to the lands that were intended for settlement. Only a small portion of the area was taken up by settlers, however, and this lack of settlement probably led to the eventual abandonment of the track.

The Pororari River track was again used and probably modified during 1950s when the upper Pororari River and its tributaries were prospected for uranium (Preston 1995). It is not known to what degree the original track was modified during this period of prospecting.

PREVIOUS ARCHAEOLOGICAL WORK

There are a large number of recorded archaeological sites in the general area of the proposed new track, as well as those sections of existing track that are to be incorporated, but only those along the route of the track will be discussed here.

Along the northern end of the track there are only two previously recorded archaeological sites in the vicinity (Figure 5). K30/32 is the site of a midden that was exposed during the construction of a building

in the area. The site record form for K30/32 indicates that a more thorough investigation of the site would be undertaken but it is not known if this was ever carried out. K30/87 is the Inland Pack Track. A heritage assessment and baseline inspection report has been prepared for the Inland Pack Track in 2009 and archaeological recording of the track as a whole was relatively thorough.

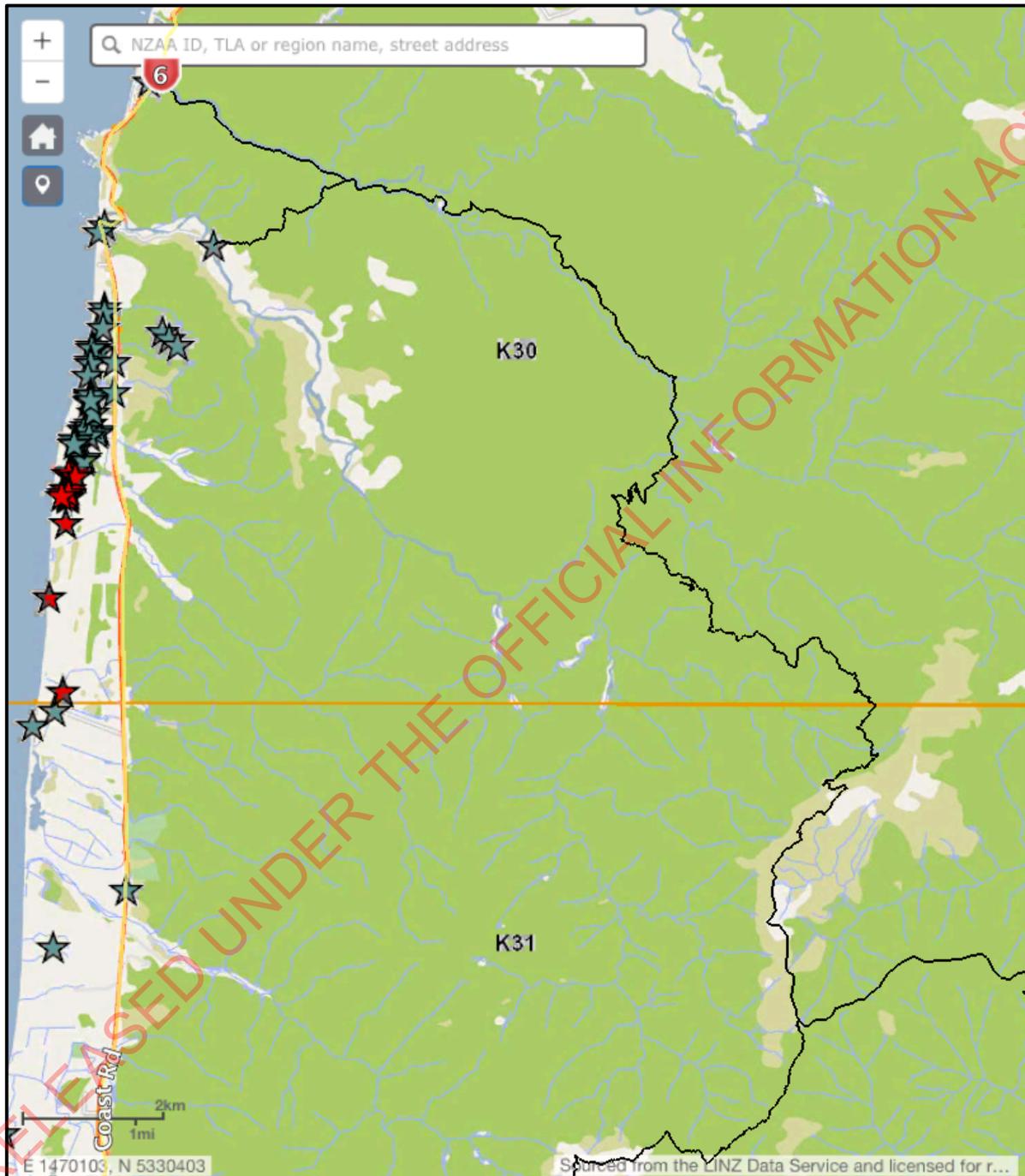


Figure 5. Recorded archaeological sites at the northern end of the proposed track (black line). Image: ArchSite.

Near the southern extent of the track there are a large number of recorded archaeological sites, many of them related to the gold mining that occurred in the area (Figure 6). These sites are summarised in Table 1 and will not be affected by the proposed work.

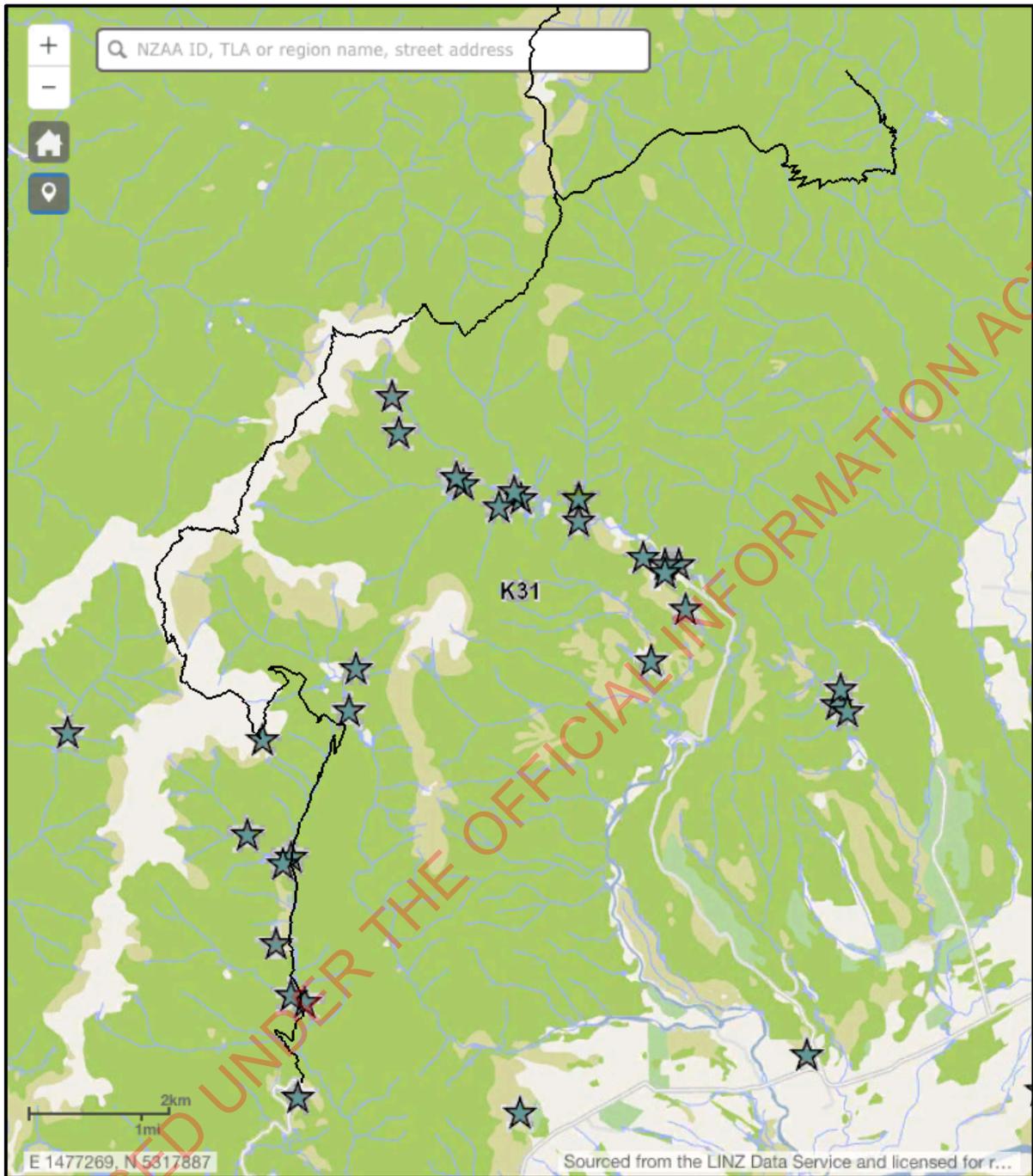


Figure 6. Recorded archaeological sites at the southern end of the proposed track (black line). Image: ArchSite.

Table 1. Summary of recorded archaeological site in the vicinity of the proposed track.

Site number	Site Name	Description
K31/22	Minerva Mine and battery	Inclined mine shaft, two battery sites and water race c. 1891.
K31/25	First hotel site	The site of a hotel and remains of at least seven huts.
K31/26	Second hotel site	The remains of the relocated first hotel and remains of at least one hut site.
K31/29	Croesus Track	Pack track. The original bridges have been replaced by steel suspension bridges. Occasional sleepers in track below the second hotel site to Croesus battery site.
K31/50	Croesus Mine	Four adits and the remains of an aerial conveyor, battery and water race.
K31/51	Garden Gully Battery	Relatively intact ten stamp battery and mine site c. 1904.
K31/54	Garden Gully hut	The site of five huts built during the depression.
K31/55	Top Hut	One of two huts in the area built during the depression but quartz prospectors.
K31/56	Upper Blackball alluvial claims	The site of several huts and mining related features including tailings and tail races. c. 1892.
K31/57	Perotti's saw mill	The remains of the saw mill and at least two hut pre-1898 sites.

RESEARCH RESULTS

Māori archaeology

Based on what is known about Māori use and occupation of the area and the proximity of the project area to previously recorded Māori archaeological sites, the likelihood of finding any archaeological material related to Māori occupation of the area during the proposed earthworks is low.

Croesus Track (K31/29)

The Croesus Track was built to facilitate access to alluvial and quartz gold mining areas in the upper Blackball Creek. The track was established in 1881 and underwent upgrades and extensions throughout the remainder of the 19th century. The Croesus Track was again used and upgraded during a period of gold prospecting and mining during the 1930s depression. There are no modifications proposed to the Croesus Track portion of the new track, and therefore the project will have no impact on the archaeological values of the track or the other archaeological sites in the vicinity of the Croesus Track.

Inland Pack Track (K30/87)

Historical research

The Inland Pack Track was constructed in 1867 as part of an inland route between Greymouth and Westport. A telegraph line was installed along the route of the inland track in 1868. The track received very little maintenance during the 19th century and it was not until the 1990s, after the area was gazetted as a national park, that the Inland Pack Track received any major upgrades.

The only portion of the Inland Pack Track to be modified during the proposed work is the 2.8 km section of track that runs between the Punakaiki and Pororari rivers, however, the site as a whole will be considered in the assessment of values.

A thorough historic baseline inspection of the Inland Pack Track was undertaken by Breen in 2009. In

spite of the modern upgrades and modifications made to the track, Breen identified several original track features along the section of track between the Punakaiki and Pororari rivers. These features include:

- six borrow pits;
- one section of fill;
- two fords;
- two sections of retaining;
- two sections of side drain;
- one section of stone pitching;
- two sections of cobbling;
- several areas of original top and base course;
- several large tree stumps along the side of the track; and
- several areas of intact $\frac{1}{4}$ and $\frac{1}{2}$ benching

There is also potential for further archaeological sites associated with the construction of the track to be encountered in the vicinity. Such sites could include workers' camps and rubbish pits.

Site visit

The 2.8 km section of the Inland Pack Track between the Punakaiki and Pororari rivers was walked in both directions in order to assess how much of the original fabric of the inland road remained, what work would be required to adapt the track to mountain biking, and what the effect of that work will be on the track. The site record form for K30/87 has been updated as a result of this site visit.

The lower section of the track, nearest the Punakaiki River, was assessed by Breen to be the most heavily modified; however, the original line of the track has not been changed and, although there is no original track surface remaining, the raised form of the track with drains on either side is probably how the track was built originally (Figure 7).

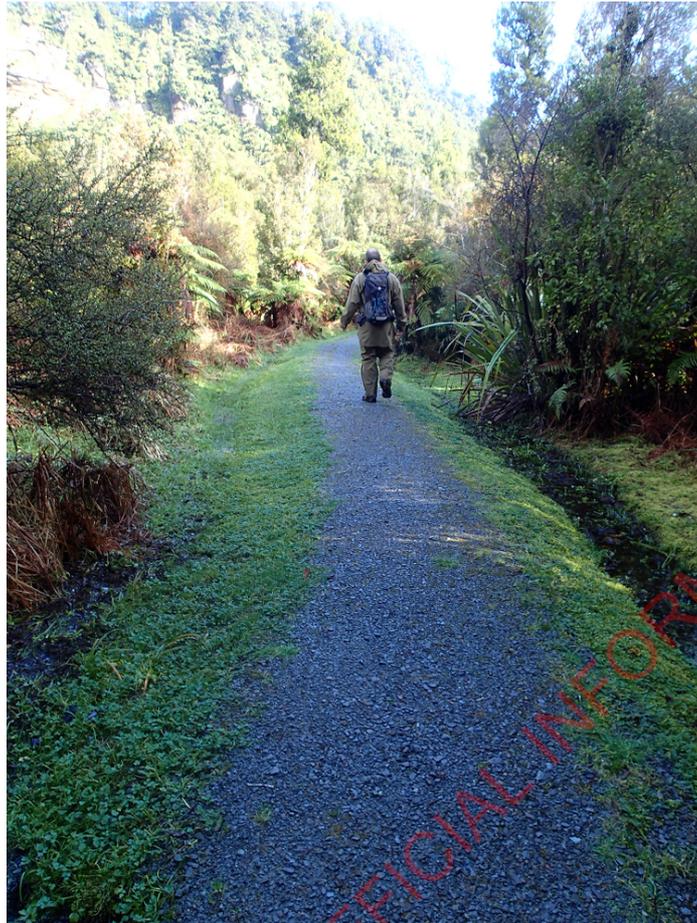


Figure 7. A section of the lower track, near the Punakaiki River, showing the original raised track with drains on either side.

On many areas of the track, parts of the original track surface or base course remain in situ (Figure 8). It is proposed that these features will be covered with a mix of gravel of different particle sizes. The right gravel mix will prevent erosion and degradation from foot and bicycle traffic and will protect the original track surface.

Large areas of original track benching, with a cobbled surface, also remain in situ, with the more modern track running alongside on the lower bench (Figure 9, Figure 10). The original and more modern surfaces are easily distinguished by the different types of rock used. The original track was surfaced with limestone that was sourced locally and broken by hand. The modern machine crushed aggregate is a type of basalt or greywacke. These sections of original benching exist mainly where the more modern track has been aligned to follow a slightly different route or obtain a better grade. The benching has been cut away in some places. For the most part, these features will not be affected by mountain bikers since they are raised above the current track line.



Figure 8. Original track base course (right) next to more modern crushed metal track surface.



Figure 9. A typical section of track with the original track surface on the upper bench (white lines) with the more modern track running beside it.



Figure 10. The ford, recorded as waypoint 43 by Breen (2009), showing the original track bench (between the white lines) next to the modern track.

The existing track will be rerouted in at least four places in order to avoid the steepest sections of the original track, which are considered to be unsuitable for mountain bikes. In all but one rerouted section, the track junctions are flat and little to no earthworks will be required to transition onto the new section of track, they will more likely be cleared of vegetation to ground level and levelled with fill material (Figure 11). Minimal excavation may be required at this single track junction, however no original track features will be affected by this work. The section of track near the Pororari River which is surfaced with pitched stones (recorded by Breen (2009) as waypoint 73), will be avoided under the works proposal, by incorporating a new section of track, that branches off just above it where it connects with the proposed new section of the Upper Pororari River track, just upstream of the existing bridge.



Figure 11. A proposed track junction. A new section of track will be constructed on the left (approximately between the white lines) in order to avoid the steep section of the existing track on the left.

Damage to steep sections of track, which cannot be avoided, will be mitigated by filling the dips between them. This construction methodology will level out the grade, so that mountain bikers will not have to brake, causing damage to the track surface. While this work may cover up some original track features, they will not be damaged by the work. Steep slopes will have a special surface treatment to prevent erosion from braking. It has been suggested that these areas would be cobbled, in keeping with the nature of the existing track.

During the site visit, it was evident that the track had undergone a significant upgrade since Breen's 2009 baseline assessment. Most of the track has been resurfaced, drains have been excavated, culverts have been installed and some minor realignment has been done in some areas. Some of the original track fabric, mainly areas of original surface and base course were removed at this time (M. Nelson, pers. comm. 2016). To the author's knowledge, an archaeological authority was not sought for this work, and no archaeological monitoring or recording of the modifications to the track took place at the time the work was carried out. It was not immediately evident what modifications were more recent, and what had been done prior to Breen's assessment.

Upper Pororari River Track

Historical research

The best evidence found to date indicates that the Upper Pororari River Track, as it exists today, was constructed between c.1909 and 1915, in order to facilitate land settlement in the block between the Fox and Pororari rivers. It is possible that a route along the Pororari River was used by gold miners

during the 19th century, however no documentary or physical evidence was found to substantiate this theory. The track was almost certainly used by uranium prospectors during the 1950s, although it was not evident to what extent the track had been modified during that time.

Site visit

During a site visit an approximately 3.2 km section of the Upper Pororari River track was followed, in order to assess how much of the original track remained. While walking the route of the track it was clear that, except in a few places where the track had been covered with slips or fallen trees, most of the original track bench remained in situ and the original route of the track could be clearly interpreted (Figure 12, Figure 13). The track benching was up to 3 m wide in flatter areas. Side ditches were visible in places along the track, sometimes on both sides of the track. The function of the ditches was to keep water from seeping onto the track from the upslope side.



Figure 12. A section of intact benching along the Pororari River track, looking downstream.



Figure 13. A section of benched track.

As well as the original benching, there were several areas of the track where sections of the original track surface remained in situ (Figure 13, Figure 14). The intact sections of track surface were approximately 2 m wide and comprised a base course of broken limestone rock. It is possible that the entire track was originally surfaced in this way. It is proposed that the sections of intact track surface will be protected by covering them with a layer of gravel. The right mix of particle sizes in the gravel will prevent erosion from foot and bike traffic. The thickness and consistency of the gravel layer is yet to be determined.



Figure 14. A long section of intact cobbled track surface. This section, recorded as WP 106, is approximately 2 m wide and extends approximately 25 m along the track. There is cut drain along the upslope (right) side of the track.



Figure 15. Another section of track with an intact cobbled surface. Scale: 500 mm.

No evidence of borrow pits was observed along the route of the track, although there were many locations where loose rock was abundant in the banks above the track. There was one location where it was evident that rock had been blasted from an outcrop for use on the track (Figure 16).



Figure 16. A rock face that has been blasted in order to obtain stone to surface the track.

In those areas where the track has been covered by slips or windfall, a new line will be cut that follows the line of the original track as much as possible (Figure 17).



Figure 17. An area where the original line of the track has been destroyed by slips.

The quality of the track construction and line that the track follows, suggests that a great deal of time, money and effort were put into the planning, surveying and construction of the Upper Pororari River Track, especially when compared to the Inland Pack Track, which is very steep in places and does not follow the best line possible with respect to grade (M. Nelson, pers. comm., 2016).

It is likely that previously unrecorded sections of original track surfacing which have been covered over with leaf litter and vegetation will be encountered during the construction of the new track. There are also likely to be other unrecorded archaeological sites and features associated with the track construction, such as camps and discrete artefact deposits, in the area.

As a result of this assessment, the Upper Pororari River Track has been recorded as archaeological site K30/93. Because there was no evidence found to indicate that this track was constructed during the 19th century an archaeological authority will not be required for the work on the Upper Pororari River Track.

ARCHAEOLOGICAL AND OTHER VALUES

Heritage New Zealand recommend using the following criteria to assess the values of an archaeological site:

- The **condition** of the site.
- Does the site possess **contextual** value?
- Is the site **unusual, rare or unique**, or notable in any other way in comparison to other sites of its kind?
- **Information potential**.
- Does the site have any special **cultural associations** for any particular communities or groups, e.g. Maori, European, Chinese.
- **Amenity value** (e.g. educational, visual, landscape). Does the site have potential for public interpretation and education?
- Other values (e.g. historical, architectural, technological, cultural, aesthetic, scientific, social, spiritual, traditional, other).

Values have been assessed as low, moderate or high.

The archaeological sites being assessed are K30/87 (Inland Pack Track), and K30/93 (Upper Pororari River Track). Although, at this stage, it cannot be confirmed that this latter track was constructed during the 19th century, the site has been included in this assessment because DOC's definition of what is considered heritage differs to that of the Heritage New Zealand Pouhere Taonga Act 2014.

The historical and archaeological values of the Croesus Track (K31/29) was thoroughly assessed by Breen (2006) in her heritage assessment and baseline inspection report for Department of Conservation. Given that there are no proposed works on this section of the track, there is no need to reassess the archaeological values of the site or any of the recorded archaeological sites, in the vicinity of the Croesus Track.

K30/87 Inland Pack Track

The **condition** of the site is moderate to high. Although the track has been extensively modified by modern upgrade work with the addition of new bridges, drains and culverts, as well as re-gravelling in many areas, a significant proportion of the original track remains in original condition and there are a large number of original features in situ along the track. Many of these features, particularly the areas of cobbling and pitching are in a fragile state.

The **contextual value** of this site is considered to be moderate to high. The context of the site is that of a 19th century bush pack track. The Inland Pack Track is significant for providing one of the important early gold rush links between Greymouth and Westport. The track is still intact, and remains in use today, and the forest surroundings have changed little since the track was first established.

While forest pack tracks are not considered to be particularly **rare** generally, and many features of the track itself are typical for tracks of this type and through this type of terrain, there are features of the Inland Pack Track that are considered uncommon, such as the areas of cobbling and pitching. On the West Coast and in a nationwide context there are few known tracks where stone was used extensively for track construction and surfacing.

The **information potential** of this site is considered to be moderate. Archaeological recording of the Inland Pack Track has the potential to reveal information about the surveying and choice of line and grade in forming the track, the level of skill of the track builders as well as track construction techniques and materials.

The Inland Pack Track may have some **cultural associations** for the survivors and the families of the victims of the Cave Creek disaster.

The **amenity value** of this site is high. The Inland Pack Track is on public land and is easily accessed. It has important amenity values, due to its condition and its association with alluvial and quartz gold mining in the area. It serves as a tangible reminder of the first serviceable road link between Greymouth and Westport.

The Inland Pack Track has important **historical associations** with the gold rush to the Brighton alluvial gold fields, and later prospecting and quartz mining undertaken further inland, after the track was constructed.

Overall, the value of the Inland Pack Track is high.

K30/93 Upper Pororari River Track

From an archaeological point of view, the **condition** of the track as a whole is moderate. While there are areas of the track that have been overgrown, or disturbed by erosion or fallen trees, the majority of the track line remains intact. Furthermore, there are several areas of original track surface and benching that remain in situ.

The **contextual value** of the site is moderate. The context of the site is that of an early 20th century pack track. The track was built to facilitate settlement of the land between the Fox and Pororari rivers. The track was later used by uranium prospectors. The forest surrounding, within which this track travels, has remained largely untouched since the track fell into disuse in the late 20th century. There are likely to be unrecorded features associated with both track construction and uranium prospecting in the area, which will have contextual association with the Upper Pororari River Track.

While pack tracks are not considered to be particularly **rare** generally, and many features of the track itself are typical of tracks of this type and through this type of terrain, there are features of the Upper Pororari River track that are considered uncommon, such as the areas of cobbling. On the West Coast and in a nationwide context there are few known tracks where stone was used extensively for track construction and surfacing (Breen 2009).

The **information potential** of this site is considered to be moderate. Archaeological recording of the Upper Pororari River track has the potential to reveal information about the track construction techniques and materials. An interesting comparison could also be made between the Upper Pororari River track and the Inland Pack Track.

The site has no known **cultural associations**.

The **amenity value** of this site in its current form is moderate to low. Although the track is located on public land, the condition of the track means that it is not easily accessible. The proposed works may have a positive impact on the amenity value of the track, as it will be incorporated into a new track and existing original features will be preserved and interpreted.

The Upper Pororari River Track has some historical associations with the gold rush to the Brighton alluvial gold fields and later settlement of the area. The track is also associated with uranium prospecting along the upper Pororari River and Bullock Creek during the 1950s.

Overall, the Upper Pororari River Track is of moderate archaeological value.

ASSESSMENT OF EFFECTS

In considering the effects of the proposal on the archaeological sites described above, the following questions were considered:

- How much of the site will be affected and to what degree? What are the **effects on the values** of the archaeological sites?
- Will the proposal increase the **risk of future damage** to the site?
- Would a **redesign** of the proposal avoid the effects?
- What are the possible methods to **avoid, minimise and/or mitigate** the adverse effects of the proposal?

K30/87 Inland Pack Track

Extent of effects

Department of Conservation is proposing to construct a new multi-use track which will incorporate sections of the Inland Pack Track (K30/87). The Inland Pack Track will be rerouted, in at least four areas, to allow for the use of the track by mountain bikers. Some minor earthworks will be undertaken at one of the track junctions but this will not affect any original track features.

Barriers will be installed, in order to direct the public off the old track and onto the new sections. At the time of writing this assessment it was not known if the redundant sections of track would continue to be actively managed and conserved. Discontinuing maintenance of the redundant sections of the track will reduce the archaeological values of the site, by reducing its condition and amenity values.

The proposal to allow mountain bikers use of the track has the potential to have a negative impact on the condition of some of the original track features, such as the areas of cobbling and pitching, which are in a fragile state. However, the Department of Conservation have proposed a number of measures to mitigate the impact of mountain biking on track features; these are described below.

The design and final details of the earthworks proposed on these sections of the track have not yet been finalised and this section of the assessment may need to be updated if any changes are made to the proposed work.

Future damage

It is unlikely that the addition of new sections of track will increase the risk of future damage to the archaeological site. It is, however, likely that discontinuing maintenance and conservation of the redundant sections of track will increase the risk of future damage, particularly vegetation growth and through tree fall, which is a common occurrence in the area. As such, it is recommended that a vegetation management plan is developed. The use of the track by mountain bikers may increase the risk of future damage, particularly to fragile features such as cobbling. However, the level of impact can be mitigated through ongoing monitoring of the track condition and regular maintenance.

Redesign

The proposed works have been designed in order to avoid and/or protect the original features of the track as much as possible.

Avoid, minimise or mitigate

The Department of Conservation have proposed a number of measures to mitigate the impact of mountain biking on track features. They include:

- avoidance of steep sections of track by rerouting,
- filling in dips to level out the track,
- cobble or use some other type of surface on steep track sections that cannot be avoided,
- the use of 'natural' barriers (such as boulders) to direct traffic away from fragile track features, and
- covering sections of original track surface with a special gravel mix to prevent erosion.

It is possible, albeit unlikely, that unrecorded archaeological sites may be discovered during the proposed works and they may be damaged in order to complete the works. Where possible, damage to features will be minimised by only disturbing those areas necessary to complete the works.

K30/93 Upper Pororari River Track

Extent of effects

Department of Conservation is proposing to construct a new multi-use track which will incorporate sections of the Upper Pororari River Track (K30/93). Earthworks, including clearance of slips, windfall and vegetation will be undertaken on parts of the Upper Pororari River Track to repair those sections of the track that have been damaged in order for them to be made suitable for walkers and mountain bikers.

The proposal to allow mountain bikers use of the track may have a negative impact on some of the original track features, such as the areas of cobbling which are likely to be in a fragile state. Breen (2009) has noted in her assessment of the Inland Pack Track that mountain bikers would exacerbate the impact of water damage to the features of the track to a greater degree than foot traffic alone, and this is likely to be the case for the Upper Pororari River Track as well. The Department of

Conservation has proposed a number of measures to mitigate the impact of mountain biking on track features; these are described below.

From an archaeological perspective, the proposal to bring the Upper Pororari River Track back into use will have a positive impact on the amenity values of the track, while the clearance of vegetation and other proposed conservation measures may have a positive impact on the condition. The contextual and rarity values will not be effected.

The design and final details of the earthworks proposed on the Upper Pororari River Track have not yet been finalised and this section of the assessment may need to be updated if any changes are made to the proposed work.

Future damage

It is unlikely that the proposed works will increase the risk of future damage to the archaeological site but the use of the track by mountain bikers may affect fragile track features and exacerbate the impact from water damage. The level of impact can be mitigated through ongoing monitoring of the track condition and regular maintenance. Track monitoring and maintenance procedures should be outlined in a management plan to be prepared for the Upper Pororari River Track.

Redesign

The proposed works have been designed in order to avoid and/or protect the original features of the track as much as possible.

Avoid, minimise or mitigate

The Department of Conservation have proposed a number of measures to mitigate the impact of mountain biking on track features. These include:

- avoidance of steep sections of track by rerouting, if necessary,
- filling in dips to level out the track,
- cobble or use some other type of surface on steep track sections that cannot be avoided,
- the use of 'natural' barriers (such as boulders) to direct traffic away from fragile track features, and
- covering sections of original track surface with a special gravel mix to prevent erosion.

It is possible that unrecorded archaeological features may be discovered during the proposed works and they may be damaged in order to complete the works. Where possible, damage to features will be minimised by only disturbing those areas necessary to complete the works.

ICOMOS PRINCIPLES

Section 17 of the ICOMOS NZ Charter sets out four levels of intervention for conservation purposes, each with increasing degrees of intervention required to achieve them. The charter notes that preference should be given to the least degree of intervention. The degrees of intervention, in order of their level of impact are as follows:

- (i) preservation, through stabilisation, maintenance, or repair;
- (ii) restoration, through reassembly, reinstatement, or removal;
- (iii) reconstruction; and
- (iv) adaptation.

Inland Pack Track

With regard to the Inland Pack Track, the highest possible degree of intervention is proposed: adaptation of the track for use by mountain bikers. The Charter states that where adaptation of a place is proposed, any alterations or additions should be as minimal as possible, should be reversible and should have little or no adverse effect on the cultural heritage value. This assessment regards the proposed alterations to be minimal and have been designed to preserve the significant heritage features on the track.

Upper Pororari River Track

The interventions proposed to the Upper Pororari River Track could be interpreted to be a mixture of restoration, reconstruction and adaptation. For the most part, the incorporation of the track into the Pike 29 Track will involve reconstruction, particularly of the sections of track that have been damaged or destroyed. 'Reconstruction' is differentiated from 'restoration' by the introduction of new material, in this case track surface material, to replace that which has been lost.

While this assessment has determined that, under the terms of the Heritage New Zealand Pouhere Taonga Act 2014, archaeological recording of the site is not required³, Section 12 of the Charter stipulates that systematic recording of the fabric of a place of cultural heritage significance should be carried out prior to, during and following any intervention.

PIKE MINE SITE

The Pike29 Track will include a memorial site at the Pike River mine portal, and an interpretation centre to be developed at the existing mine amenities area. These facilities will be accessed by the Pike River Mine access road, and by a side track from the main route of the Great Walk, extending off the alpine tops section of the track.

In 2015 a substantial area of conservation land surrounding the Pike River mine facilities (the mine portal, ventilation shaft, amenities area and the access road) was added to the Paparoa National Park. As part of the Pike29 Great Walk proposal, the Department of Conservation proposes redevelopment or re-use of some of these existing facilities, to become visitor facilities, with a memorial focus.

The key features of this part of the project will involve converting the existing shelter housing for the ventilation fan transformers into a covered seating area, which will have a view of the sealed mine portal and installing some form of memorial and interpretation panels near the mine portal or covered seating area.

From an archaeological perspective, the retention and interpretation of features of the Pike Mine site will add to the cultural heritage value of the place and ensure this important aspect of New Zealand's history is preserved.

CONCLUSIONS AND RECOMMENDATIONS

The Department of Conservation is proposing to construct a new shared use track that will incorporate the Croesus Track (K31/29), the Upper Pororari River Track (K30/93) and a section of the Inland Pack Track (K30/87), with sections of new track connecting them and a new side track to Pike River. The Croesus Track will not be impacted by the proposed work, but the Inland Pack Track and the Upper Pororari River Track, which were assessed as having high, and moderate to high archaeological values

³ Any changes to the proposed work will need to be reassessed. This conclusion may change if this is the case.

respectively, could be negatively impacted. While the work proposed to the tracks will have a minimal impact on the heritage fabric, the risk of future damage to the sites is increased by the proposal of the use of the track by mountain bikers. It is noted that the work has been designed to minimise the impact to the sites as much as possible, and, from an archaeological perspective, as long as the mitigating factors, described above, are implemented, the damage to the track by mountain bikers should be minimal. These conclusions and the following recommendations are preliminary and are subject to change as more information becomes available.

The following recommendations are made:

- In relation to the Inland Pack Track the Department of Conservation should apply to Heritage New Zealand Pouhere Taonga for a general archaeological authority for a site where the effect will be no more than minor.
- A management plan should be prepared for the Upper Pororari River Track, following the principals outlined in Section 14 of the ICOMOS NZ Charter. This plan should be implemented as a guiding document for the construction of the Upper Pororari section of the Pike 29 Track.
- A detailed record of all modifications to each of the sections of existing track – the Inland Pack Track and Upper Pororari River Track – should be made before during and following the proposed work. This work may be undertaken by DOC and should be stored on the Asset Management Information System (AMIS).
- No heritage fabric should be removed from any track during the construction process unless considered absolutely necessary. Any heritage fabric removed should be documented.
- The redundant sections of the Inland Pack Track should continue to be conserved. A management plan for this should be prepared and should include a plan for ongoing vegetation management.
- The proposed work for the remainder of the Pike 29 Track, including the Upper Pororari River Track, and the new sections of track should proceed under an accidental discovery protocol.
- On no account should any fossicking of the sites be allowed, before, during or after the construction process.

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ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value

Revised 2010

Preamble

New Zealand retains a unique assemblage of **places of cultural heritage value** relating to its indigenous and more recent peoples. These areas, **cultural landscapes** and features, buildings and **structures**, gardens, archaeological sites, traditional sites, monuments, and sacred **places** are treasures of distinctive value that have accrued meanings over time. New Zealand shares a general responsibility with the rest of humanity to safeguard its cultural heritage **places** for present and future generations. More specifically, the people of New Zealand have particular ways of perceiving, relating to, and conserving their cultural heritage **places**.

Following the spirit of the International Charter for the Conservation and Restoration of Monuments and Sites (the Venice Charter - 1964), this charter sets out principles to guide the **conservation of places of cultural heritage value** in New Zealand. It is a statement of professional principles for members of ICOMOS New Zealand.

This charter is also intended to guide all those involved in the various aspects of **conservation** work, including owners, guardians, managers, developers, planners, architects, engineers, craftspeople and those in the construction trades, heritage practitioners and advisors, and local and central government authorities. It offers guidance for communities, organisations, and individuals involved with the **conservation** and management of cultural heritage **places**.

This charter should be made an integral part of statutory or regulatory heritage management policies or plans, and should provide support for decision makers in statutory or regulatory processes.

Each article of this charter must be read in the light of all the others. Words in bold in the text are defined in the definitions section of this charter.

This revised charter was adopted by the New Zealand National Committee of the International Council on Monuments and Sites at its meeting on 4 September 2010.

Purpose of conservation

1. The purpose of conservation

The purpose of **conservation** is to care for **places of cultural heritage value**.

In general, such **places**:

- (i) have lasting values and can be appreciated in their own right;
- (ii) inform us about the past and the cultures of those who came before us;
- (iii) provide tangible evidence of the continuity between past, present, and future;
- (iv) underpin and reinforce community identity and relationships to ancestors and the land; and
- (v) provide a measure against which the achievements of the present can be compared.

It is the purpose of **conservation** to retain and reveal such values, and to support the ongoing meanings and functions of **places of cultural heritage value**, in the interests of present and future generations.

Conservation principles

2. Understanding cultural heritage value

Conservation of a **place** should be based on an understanding and appreciation of all aspects of its **cultural heritage value**, both **tangible** and **intangible**. All available forms of knowledge and evidence provide the means of understanding a **place** and its **cultural heritage value** and **cultural heritage significance**. **Cultural heritage value** should be understood through consultation with **connected people**, systematic documentary and oral research, physical investigation and **recording** of the **place**, and other relevant methods.

All relevant **cultural heritage values** should be recognised, respected, and, where appropriate, revealed, including values which differ, conflict, or compete.

The policy for managing all aspects of a **place**, including its **conservation** and its **use**, and the implementation of the policy, must be based on an understanding of its **cultural heritage value**.

3. Indigenous cultural heritage

The indigenous cultural heritage of **tangata whenua** relates to **whanau**, **hapu**, and **iwi** groups. It shapes identity and enhances well-being, and it has particular cultural meanings and values for the present, and associations with those who have gone before. Indigenous cultural heritage brings with it responsibilities of guardianship and the practical application and passing on of associated knowledge, traditional skills, and practices.

The Treaty of Waitangi is the founding document of our nation. Article 2 of the Treaty recognises and guarantees the protection of **tino rangatiratanga**, and so empowers **kaitiakitanga** as customary trusteeship to be exercised by **tangata whenua**. This customary trusteeship is exercised over their **taonga**, such as sacred and traditional **places**, built heritage, traditional practices, and other cultural heritage resources. This obligation extends beyond current legal ownership wherever such cultural heritage exists.

Particular **matauranga**, or knowledge of cultural heritage meaning, value, and practice, is associated with **places**. **Matauranga** is sustained and transmitted through oral, written, and physical forms determined by **tangata whenua**. The **conservation** of such **places** is therefore conditional on decisions made in associated **tangata whenua** communities, and should proceed only in this context. In particular, protocols of access, authority, ritual, and practice are determined at a local level and should be respected.

4. Planning for conservation

Conservation should be subject to prior documented assessment and planning.

All **conservation** work should be based on a **conservation plan** which identifies the **cultural heritage value** and **cultural heritage significance** of the **place**, the **conservation** policies, and the extent of the recommended works.

The **conservation plan** should give the highest priority to the **authenticity** and **integrity** of the **place**.

Other guiding documents such as, but not limited to, management plans, cyclical **maintenance** plans, specifications for **conservation** work, interpretation plans, risk mitigation plans, or emergency plans should be guided by a **conservation plan**.

5. Respect for surviving evidence and knowledge

Conservation maintains and reveals the **authenticity** and **integrity** of a **place**, and involves the least possible loss of **fabric** or evidence of **cultural heritage value**. Respect for all forms of knowledge and existing evidence, of both **tangible** and **intangible values**, is essential to the **authenticity** and **integrity** of the **place**.

Conservation recognises the evidence of time and the contributions of all periods. The **conservation** of a **place** should identify and respect all aspects of its **cultural heritage value** without unwarranted emphasis on any one value at the expense of others.

The removal or obscuring of any physical evidence of any period or activity should be minimised, and should be explicitly justified where it does occur. The **fabric** of a particular period or activity may be obscured or removed if assessment shows that its removal would not diminish the **cultural heritage value** of the **place**.

In **conservation**, evidence of the functions and intangible meanings of **places** of **cultural heritage value** should be respected.

6. Minimum intervention

Work undertaken at a **place** of **cultural heritage value** should involve the least degree of **intervention** consistent with **conservation** and the principles of this charter.

Intervention should be the minimum necessary to ensure the retention of **tangible** and **intangible values** and the continuation of **uses** integral to those values. The removal of **fabric** or the alteration of features and spaces that have **cultural heritage value** should be avoided.

7. Physical investigation

Physical investigation of a **place** provides primary evidence that cannot be gained from any other source. Physical investigation should be carried out according to currently accepted professional standards, and should be documented through systematic **recording**.

Invasive investigation of **fabric** of any period should be carried out only where knowledge may be significantly extended, or where it is necessary to establish the existence of **fabric** of **cultural heritage value**, or where it is necessary for **conservation** work, or where such **fabric** is about to be damaged or destroyed or made inaccessible. The extent of invasive investigation should minimise the disturbance of significant **fabric**.

8. Use

The **conservation** of a **place** of **cultural heritage value** is usually facilitated by the **place** serving a useful purpose.

Where the **use** of a **place** is integral to its **cultural heritage value**, that **use** should be retained.

Where a change of **use** is proposed, the new **use** should be compatible with the **cultural heritage value** of the **place**, and should have little or no adverse effect on the **cultural heritage value**.

9. Setting

Where the **setting** of a **place** is integral to its **cultural heritage value**, that **setting** should be conserved with the **place** itself. If the **setting** no longer contributes to the **cultural heritage value** of the **place**, and if **reconstruction** of the **setting** can be justified, any **reconstruction** of the **setting** should be based on an understanding of all aspects of the **cultural heritage value** of the **place**.

10. Relocation

The on-going association of a **structure** or feature of **cultural heritage value** with its location, site, curtilage, and **setting** is essential to its **authenticity** and **integrity**. Therefore, a **structure** or feature of **cultural heritage value** should remain on its original site.

Relocation of a **structure** or feature of **cultural heritage value**, where its removal is required in order to clear its site for a different purpose or construction, or where its removal is required to enable its **use** on a different site, is not a desirable outcome and is not a **conservation** process.

In exceptional circumstances, a **structure** of **cultural heritage value** may be relocated if its current site is in imminent danger, and if all other means of retaining the **structure** in its current location have been exhausted. In this event, the new location should provide a **setting** compatible with the **cultural heritage value** of the **structure**.

11. Documentation and archiving

The **cultural heritage value** and **cultural heritage significance** of a **place**, and all aspects of its **conservation**, should be fully documented to ensure that this information is available to present and future generations.

Documentation includes information about all changes to the **place** and any decisions made during the **conservation** process.

Documentation should be carried out to archival standards to maximise the longevity of the record, and should be placed in an appropriate archival repository.

Documentation should be made available to **connected people** and other interested parties. Where reasons for confidentiality exist, such as security, privacy, or cultural appropriateness, some information may not always be publicly accessible.

12. Recording

Evidence provided by the **fabric** of a **place** should be identified and understood through systematic research, **recording**, and analysis.

Recording is an essential part of the physical investigation of a **place**. It informs and guides the **conservation** process and its planning. Systematic **recording** should occur prior to, during, and following any **intervention**. It should include the **recording** of new evidence revealed, and any **fabric** obscured or removed.

Recording of the changes to a **place** should continue throughout its life.

13. Fixtures, fittings, and contents

Fixtures, fittings, and **contents** that are integral to the **cultural heritage value** of a **place** should be retained and conserved with the **place**. Such fixtures, fittings, and **contents** may include carving, painting, weaving, stained glass, wallpaper, surface decoration, works of art, equipment and machinery, furniture, and personal belongings.

Conservation of any such material should involve specialist **conservation** expertise appropriate to the material. Where it is necessary to remove any such material, it should be recorded, retained, and protected, until such time as it can be reinstated.

Conservation processes and practice

14. Conservation plans

A **conservation plan**, based on the principles of this charter, should:

- (i) be based on a comprehensive understanding of the **cultural heritage value** of the **place** and assessment of its **cultural heritage significance**;
- (ii) include an assessment of the **fabric** of the **place**, and its condition;
- (iii) give the highest priority to the **authenticity** and **integrity** of the **place**;
- (iv) include the entirety of the **place**, including the **setting**;
- (v) be prepared by objective professionals in appropriate disciplines;
- (vi) consider the needs, abilities, and resources of **connected people**;
- (vii) not be influenced by prior expectations of change or development;
- (viii) specify **conservation** policies to guide decision making and to guide any work to be undertaken;
- (ix) make recommendations for the **conservation** of the **place**; and
- (x) be regularly revised and kept up to date.

15. Conservation projects

Conservation projects should include the following:

- (i) consultation with interested parties and **connected people**, continuing throughout the project;
- (ii) opportunities for interested parties and **connected people** to contribute to and participate in the project;
- (iii) research into documentary and oral history, using all relevant sources and repositories of knowledge;
- (iv) physical investigation of the **place** as appropriate;
- (v) use of all appropriate methods of **recording**, such as written, drawn, and photographic;
- (vi) the preparation of a **conservation plan** which meets the principles of this charter;
- (vii) guidance on appropriate **use** of the **place**;
- (viii) the implementation of any planned **conservation** work;
- (ix) the **documentation** of the **conservation** work as it proceeds; and
- (x) where appropriate, the deposit of all records in an archival repository.

A **conservation** project must not be commenced until any required statutory authorisation has been granted.

16. Professional, trade, and craft skills

All aspects of **conservation** work should be planned, directed, supervised, and undertaken by people with appropriate **conservation** training and experience directly relevant to the project.

All **conservation** disciplines, arts, crafts, trades, and traditional skills and practices that are relevant to the project should be applied and promoted.

17. Degrees of intervention for conservation purposes

Following research, **recording**, assessment, and planning, **intervention** for **conservation** purposes may include, in increasing degrees of **intervention**:

- (i) **preservation**, through **stabilisation**, **maintenance**, or **repair**;
- (ii) **restoration**, through **reassembly**, **reinstatement**, or removal;
- (iii) **reconstruction**; and
- (iv) **adaptation**.

In many **conservation** projects a range of processes may be utilised. Where appropriate, **conservation** processes may be applied to individual parts or components of a **place** of **cultural heritage value**.

The extent of any **intervention** for **conservation** purposes should be guided by the **cultural heritage value** of a **place** and the policies for its management as identified in a **conservation plan**. Any **intervention** which would reduce or compromise **cultural heritage value** is undesirable and should not occur.

Preference should be given to the least degree of **intervention**, consistent with this charter.

Re-creation, meaning the conjectural **reconstruction** of a **structure** or **place**; replication, meaning to make a copy of an existing or former **structure** or **place**; or the construction of generalised representations of typical features or **structures**, are not **conservation** processes and are outside the scope of this charter.

18. Preservation

Preservation of a **place** involves as little **intervention** as possible, to ensure its long-term survival and the continuation of its **cultural heritage value**.

Preservation processes should not obscure or remove the patina of age, particularly where it contributes to the **authenticity** and **integrity** of the **place**, or where it contributes to the structural stability of materials.

i. Stabilisation

Processes of decay should be slowed by providing treatment or support.

ii. Maintenance

A **place** of **cultural heritage value** should be maintained regularly. **Maintenance** should be carried out according to a plan or work programme.

iii. Repair

Repair of a **place** of **cultural heritage value** should utilise matching or similar materials. Where it is necessary to employ new materials, they should be distinguishable by experts, and should be documented.

Traditional methods and materials should be given preference in **conservation** work.

Repair of a technically higher standard than that achieved with the existing materials or construction practices may be justified only where the stability or life expectancy of the site or material is increased, where the new material is compatible with the old, and where the **cultural heritage value** is not diminished.

19. Restoration

The process of **restoration** typically involves **reassembly** and **reinstatement**, and may involve the removal of accretions that detract from the **cultural heritage value** of a **place**.

Restoration is based on respect for existing **fabric**, and on the identification and analysis of all available evidence, so that the **cultural heritage value** of a **place** is recovered or revealed. **Restoration** should be carried out only if the **cultural heritage value** of the **place** is recovered or revealed by the process.

Restoration does not involve conjecture.

i. Reassembly and reinstatement

Reassembly uses existing material and, through the process of **reinstatement**, returns it to its former position. **Reassembly** is more likely to involve work on part of a **place** rather than the whole **place**.

ii. Removal

Occasionally, existing **fabric** may need to be permanently removed from a **place**. This may be for reasons of advanced decay, or loss of structural **integrity**, or because particular **fabric** has been identified in a **conservation plan** as detracting from the **cultural heritage value** of the **place**.

The **fabric** removed should be systematically **recorded** before and during its removal. In some cases it may be appropriate to store, on a long-term basis, material of evidential value that has been removed.

20. Reconstruction

Reconstruction is distinguished from **restoration** by the introduction of new material to replace material that has been lost.

Reconstruction is appropriate if it is essential to the function, **integrity**, **intangible value**, or understanding of a **place**, if sufficient physical and documentary evidence exists to minimise conjecture, and if surviving **cultural heritage value** is preserved.

Reconstructed elements should not usually constitute the majority of a **place** or **structure**.

21. Adaptation

The **conservation** of a **place** of **cultural heritage value** is usually facilitated by the **place** serving a useful purpose. Proposals for **adaptation** of a **place** may arise from maintaining its continuing **use**, or from a proposed change of **use**.

Alterations and additions may be acceptable where they are necessary for a **compatible use** of the **place**. Any change should be the minimum necessary, should be substantially reversible, and should have little or no adverse effect on the **cultural heritage value** of the **place**.

Any alterations or additions should be compatible with the original form and **fabric** of the **place**, and should avoid inappropriate or incompatible contrasts of form, scale, mass, colour, and material.

Adaptation should not dominate or substantially obscure the original form and **fabric**, and should not adversely affect the **setting** of a **place** of **cultural heritage value**. New work should complement the original form and **fabric**.

22. Non-intervention

In some circumstances, assessment of the **cultural heritage value** of a **place** may show that it is not desirable to undertake any **conservation intervention** at that time. This approach may be appropriate where undisturbed constancy of **intangible values**, such as the spiritual associations of a sacred **place**, may be more important than its physical attributes.

23. Interpretation

Interpretation actively enhances public understanding of all aspects of **places** of **cultural heritage value** and their **conservation**. Relevant cultural protocols are integral to that understanding, and should be identified and observed.

Where appropriate, interpretation should assist the understanding of **tangible** and **intangible values** of a **place** which may not be readily perceived, such as the sequence of construction and change, and the meanings and associations of the **place** for **connected people**.

Any interpretation should respect the **cultural heritage value** of a **place**. Interpretation methods should be appropriate to the **place**. Physical **interventions** for interpretation purposes should not detract from the experience of the **place**, and should not have an adverse effect on its **tangible** or **intangible values**.

24. Risk mitigation

Places of **cultural heritage value** may be vulnerable to natural disasters such as flood, storm, or earthquake; or to humanly induced threats and risks such as those arising from earthworks, subdivision and development, buildings works, or wilful damage or neglect. In order to safeguard **cultural heritage value**, planning for risk mitigation and emergency management is necessary.

Potential risks to any **place** of **cultural heritage value** should be assessed. Where appropriate, a risk mitigation plan, an emergency plan, and/or a protection plan should be prepared, and implemented as far as possible, with reference to a conservation plan.

Definitions

For the purposes of this charter:

Adaptation means the process(es) of modifying a **place** for a **compatible use** while retaining its **cultural heritage value**. **Adaptation** processes include alteration and addition.

Authenticity means the credibility or truthfulness of the surviving evidence and knowledge of the **cultural heritage value** of a **place**. Relevant evidence includes form and design, substance and **fabric**, technology and craftsmanship, location and surroundings, context and **setting**, **use** and function, traditions, spiritual essence, and sense of place, and includes **tangible** and **intangible values**. Assessment of **authenticity** is based on identification and analysis of relevant evidence and knowledge, and respect for its cultural context.

Compatible use means a **use** which is consistent with the **cultural heritage value** of a **place**, and which has little or no adverse impact on its **authenticity** and **integrity**.

Connected people means any groups, organisations, or individuals having a sense of association with or responsibility for a **place** of **cultural heritage value**.

Conservation means all the processes of understanding and caring for a **place** so as to safeguard its **cultural heritage value**. **Conservation** is based on respect for the existing **fabric**, associations, meanings, and **use** of the **place**. It requires a cautious approach of doing as much work as necessary but as little as possible, and retaining **authenticity** and **integrity**, to ensure that the **place** and its values are passed on to future generations.

Conservation plan means an objective report which documents the history, **fabric**, and **cultural heritage value** of a **place**, assesses its **cultural heritage significance**, describes the condition of the **place**, outlines **conservation** policies for managing the **place**, and makes recommendations for the **conservation** of the **place**.

Contents means moveable objects, collections, chattels, documents, works of art, and ephemera that are not fixed or fitted to a **place**, and which have been assessed as being integral to its **cultural heritage value**.

Cultural heritage significance means the **cultural heritage value** of a **place** relative to other similar or comparable **places**, recognising the particular cultural context of the **place**.

Cultural heritage value/s means possessing aesthetic, archaeological, architectural, commemorative, functional, historical, landscape, monumental, scientific, social, spiritual, symbolic, technological, traditional, or other **tangible** or **intangible values**, associated with human activity.

Cultural landscapes means an area possessing **cultural heritage value** arising from the relationships between people and the environment. **Cultural landscapes** may have been designed, such as gardens, or may have evolved from human settlement and land use over time, resulting in a diversity of distinctive landscapes in different areas. Associative **cultural landscapes**, such as sacred mountains, may lack **tangible** cultural elements but may have strong **intangible** cultural or spiritual associations.

Documentation means collecting, **recording**, keeping, and managing information about a **place** and its **cultural heritage value**, including information about its history, **fabric**, and meaning; information about decisions taken; and information about physical changes and **interventions** made to the **place**.

Fabric means all the physical material of a **place**, including subsurface material, **structures**, and interior and exterior surfaces including the patina of age; and including fixtures and fittings, and gardens and plantings.

Hapu means a section of a large tribe of the **tangata whenua**.

Intangible value means the abstract **cultural heritage value** of the meanings or associations of a **place**, including commemorative, historical, social, spiritual, symbolic, or traditional values.

Integrity means the wholeness or intactness of a **place**, including its meaning and sense of **place**, and all the **tangible** and **intangible** attributes and elements necessary to express its **cultural heritage value**.

Intervention means any activity that causes disturbance of or alteration to a **place** or its **fabric**. **Intervention** includes archaeological excavation, invasive investigation of built **structures**, and any **intervention** for **conservation** purposes.

Iwi means a tribe of the **tangata whenua**.

Kaitiakitanga means the duty of customary trusteeship, stewardship, guardianship, and protection of land, resources, or **taonga**.

Maintenance means regular and on-going protective care of a **place** to prevent deterioration and to retain its **cultural heritage value**.

Matauranga means traditional or cultural knowledge of the **tangata whenua**.

Non-intervention means to choose not to undertake any activity that causes disturbance of or alteration to a **place** or its **fabric**.

Place means any land having **cultural heritage value** in New Zealand, including areas; **cultural landscapes**; buildings, **structures**, and monuments; groups of buildings, **structures**, or monuments; gardens and plantings; archaeological sites and features; traditional sites; sacred **places**; townscapes and streetscapes; and settlements. **Place** may also include land covered by water, and any body of water. **Place** includes the **setting** of any such **place**.

Preservation means to maintain a **place** with as little change as possible.

Reassembly means to put existing but disarticulated parts of a **structure** back together.

Reconstruction means to build again as closely as possible to a documented earlier form, using new materials.

Recording means the process of capturing information and creating an archival record of the **fabric** and **setting** of a **place**, including its configuration, condition, **use**, and change over time.

Reinstatement means to put material components of a **place**, including the products of **reassembly**, back in position.

Repair means to make good decayed or damaged **fabric** using identical, closely similar, or otherwise appropriate material.

Restoration means to return a **place** to a known earlier form, by **reassembly** and **reinstatement**, and/or by removal of elements that detract from its **cultural heritage value**.

Setting means the area around and/or adjacent to a **place** of **cultural heritage value** that is integral to its function, meaning, and relationships. **Setting** includes the **structures**, outbuildings, features, gardens, curtilage, airspace, and accessways forming the spatial context of the **place** or used

in association with the **place**. **Setting** also includes **cultural landscapes**, townscapes, and streetscapes; perspectives, views, and viewshafts to and from a **place**; and relationships with other **places** which contribute to the **cultural heritage value** of the **place**. **Setting** may extend beyond the area defined by legal title, and may include a buffer zone necessary for the long-term protection of the **cultural heritage value** of the **place**.

Stabilisation means the arrest or slowing of the processes of decay.

Structure means any building, standing remains, equipment, device, or other facility made by people and which is fixed to the land.

Tangata whenua means generally the original indigenous inhabitants of the land; and means specifically the people exercising **kaitiakitanga** over particular land, resources, or **taonga**.

Tangible value means the physically observable **cultural heritage value** of a **place**, including archaeological, architectural, landscape, monumental, scientific, or technological values.

Taonga means anything highly prized for its cultural, economic, historical, spiritual, or traditional value, including land and natural and cultural resources.

Tino rangatiratanga means the exercise of full chieftainship, authority, and responsibility.

Use means the functions of a **place**, and the activities and practices that may occur at the **place**. The functions, activities, and practices may in themselves be of **cultural heritage value**.

Whanau means an extended family which is part of a **hapu** or **iwi**.

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This revised text replaces the 1993 and 1995 versions and should be referenced as the *ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value* (ICOMOS New Zealand Charter 2010).

This revision incorporates changes in conservation philosophy and best practice since 1993 and is the only version of the ICOMOS New Zealand Charter approved by ICOMOS New Zealand (Inc.) for use.

Copies of this charter may be obtained from

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Appendix J – Maori Cultural Values Assessment

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Pike29 Track - Maori Cultural Values

Planner's Assessment



Paparoa Ranges

Report Purpose

This report assembles information available about Maori cultural values in relation to the Pike29 Track environment. This report has been prepared by the project planner, Andrea Jackson of MEM, on behalf of the Department of Conservation. Key information sources have been the Cultural Impact Assessment Report prepared for the Pike River Coal Company (2002), and the Draft Paparoa National Park Management Plan (2016).

The purpose of this report is to inform the preparation of RMA consent applications and to identify appropriate recognition of Maori cultural values. This report is not a Cultural Impact Statement; only Ngati Waewae can provide such a statement.

This report has been reviewed by the Chair of Te Runanga o Ngati Waewae, Mr Francois Tumahai, and he requested a few minor amendments which have all been actioned.

At Section A, the statutory framework for Ngai Tahu and Ngati Waewae involvement in the Paparoa is outlined.

At Section B, the historical relationship of Ngati Waewae with Paparoa is detailed.

At Section C, the relevant Ngai Tahu management policies for freshwater are detailed, as well as the important governing concepts such as mauri.

At Section D, specific information relating to the site is outlined, being sourced from:

- the Cultural Impact Assessment completed for the Pike River Mine proposal
- the findings of the archaeological assessment for the new track
- sites identified as being of importance to Maori in West Coast planning documents

At Section E, the report outlines how the Pike29 Track project proposes to mitigate any potential adverse impacts on Maori cultural values.

SECTION A – STATUTORY FRAMEWORK

Te Tiriti o Waitangi

Te Tiriti o Waitangi provides the foundation for the Treaty Partnership between the Department of Conservation and Ngai Tahu.

Te Runanga o Ngai Tahu Act 1996

Ngai Tahu is the iwi comprised of Ngai Tahu Whanui, being the collective of the individuals who descend from the five primary hapu. Te Runanga o Ngai Tahu is the tribal authority and kaitiaki of tribal interests, and was established to serve Ngai Tahu whanui and the 18 papitipu runanga established by Te Runanga o Ngai Tahu Act 1996.

The Pike29 Track site lies exclusively within the takiwa of Te Rūnanga o Ngati Waewae, who hold mana whenua over this area. Te Runanga o Ngati Waewae is the representative body of Ngati Waewae, and Arahura marae is their standing place.

Te Runanga o Ngai Tahu is the Department's Treaty Partner. However, in accordance with Section 15(3) of the Te Runanga o Ngai Tahu Act, the runanga in turn consults with and is informed by the views of the papitipu runanga. In practice, in relation to both the Paparoa National Park, and the Pike29 Track proposal, the relationship between the Department and Ngai Tahu occurs directly with both Te Runanga o Ngati Waewae as mana whenua and kaitiaki of land resources, and with Te Runanga o Ngai Tahu as the Treaty Partner.

Ngai Tahu Claims Settlement Act (1998)

The Ngai Tahu Claims Settlement Act 1998 provided a framework for partnership through a number of legal mechanisms. The Department and Ngai Tahu are committed to building on the platform established by the Ngai Tahu Claims Settlement Act, to develop and strengthen a partnership that actively provides for Ngai Tahu tino rangatiratanga and its expression through kiatiakitanga. A wide range of management mechanisms, guidelines and documents have been developed to ensure that Ngai Tahu Treaty rights and Ngati Waewae kaitiaki responsibilities are recognised and provided for.

Mahinga kai is defined in the Ngai Tahu Claims Settlement Act 1998 as the '*customary gathering of food and natural materials, and the places where those resources are gathered.*' Traditionally, mahinga kai was a fundamental part of daily life, both as food resource and as tradeable items. The Ngai Tahu Claims Settlement Act 1998 lists a large number of bird, plant and fish species regarded as being taonga species; many of which are present in the forests and waterways along the Pike29 Track route.

Statutory Acknowledgment Areas were identified in the Ngai Tahu Claims Settlement Act 1998, but none are present on the Pike29 Track site, however a nohoanga site was established by this legislation on the northern bank of the coastal outlet of the Pororari River.

Draft Paparoa National Park Management Plan (2016)

A sizable part of the Pike29 Track lies within the Paparoa National Park. The Department of Conservation's management framework for national park land is provided by the National Parks Act 1980 and General Policy for National Parks 2005 for national park land. Every national park has its own specific National Park Management Plan, with policies and objectives that relate to that park land only. The Paparoa Park Management Plan is currently under review. The draft new plan has been through a public consultation process, and is due to be finalised at the end of 2016.

The Draft Paparoa National Park Management Plan (2016) has an objective of strengthening and maintaining the Treaty partnership with Ngai Tahu, as well as reinforcing Ngati Waewae as mana whenua with whenua tupuna (ancestral land), mahinga kai and taonga. A raft of policies describe the mechanism whereby these objectives will be met.

Ngati Waewae are kaitiaki of the species and ecosystems of the Paparoa National Park. This kaitiaki responsibility for native taonga, derived from whakapapa, is passed through the generations and relies on matauranga (traditional knowledge) to guide the care and use of native species.

A number of indigenous plant species thriving within the Paparoa National Park are highly valued by Ngai Tahu as food sources, for medicinal purposes and for traditional activities such as carving, weaving and making dyes. Examples of the plants found in the Paparoa valued as rongoa (traditional medicine) include manuka, mamaku (tree fern), matai (black pine), kareao (supplejack), and kawakawa.

A number of fauna species in the Paparoa are also valued as taonga species and in terms of mahinga kai. Larger birds and fish species are a food source, while feathers are gathered and used for clothing, jewellery, cloaks and other items. Examples of the freshwater fauna found in the Paparoa valued as taonga species include tuna (eel), inanga (whitebait), waikoura (freshwater crayfish), and other small fish species. Examples of taonga bird species include the roa (great spotted kiwi), kea and taiko (Westland petrel).

SECTION B

Relationship with Paparoa

The Paparoa is within the rohe of Te Runanga o Ngai Tahu, and the mana whenua is Te Runanga o Ngati Waewae.

Mana whenua (tribal authority over the area) was gained through Ngai Tahu's defeat of Ngati Wairaki, Tumatakokiri and Ngati Toa. For Ngai Tahu, histories such as this reinforce tribal identity and solidarity, and continuity between generations, and document the events which shaped Ngai Tahu as an iwi. Ngai Tahu are the descendants of Tahu Potiki, and this iwi migrated to the South Island from the Tai Rawhiti region (via Wellington). Through conquest and intermarriage, Ngai Tahu gradually established mana whenua in the South Island, from the older resident iwi.

History of Maori settlement of the West Coast/Te Tai Poutini

In the 16th century, Tuaroaroteraki led his Ngati Wairangi people down from the North Island via the Kawatiri (Buller) River to settle in Tai Poutini. These are one of the first recorded peoples occupying Te Tai Poutini, along with Ngati Tumatakokiri occupying the Whanganui Inlet and Karamea.

An early route across the Southern Alps was discovered by a Ngati Wairangi woman, Raureka, who found an alpine pass route through Noti Raureka/Brownings Pass. On the east coast she met some Ngai Tahu people who were building a canoe with stone axes. Raureka took from her garments a parcel containing a pounamu adze head, and showed it to the Ngai Tahu party who were impressed and became desirous of the pounamu resource. Te Tai Poutini is one of only a few places where the taonga pounamu (greenstone) is found. Pounamu was traded with other iwi for goods, and was manufactured to make tools such as adzes, chisels and knives, as well as items of personal adornment such as hei tiki.

The Ngai Tahu desire to control the pounamu resource ultimately led Ngai Tahu into conflict with Ngati Wairangi. After a series of battles between Ngai Tahu and Ngati Wairangi up and down the length of Tai Poutini, and both sides losing chiefs in battle, a sizable party of Ngai Tahu warriors crossed the Southern Alps. This war party was led by two brothers, Te Pare and Tuhuru, and decisively defeated Ngati Wairangi at the battle of Paparoa. The site of this battle on the slopes near the Paparoa peak called Hawera. The warriors washed their bloody hands in the nearby White Knight Stream which thereafter became tapu. These events are reported to have occurred between 1700-1800.

It is also reported that Ngati Tumatakokiri came into conflict with Ngai Tahu after killing a Ngai Tahu chief called Pakeke, at Maruia. Both Poutini Ngai Tahu and Ngai Tuahuriri sought revenge, and joined forces to defeat Ngati Tumatakokiri at West Wanganui. It is said that the survivors of both the defeated iwi (Ngati Wairangi and Ngati Tumatakokiri) were absorbed into Tai Poutini Ngai Tahu.

Te Tuhuru, the younger brother of Te Pare, was left in charge of Te Tai Poutini and Te Pare returned to the Canterbury Region. Chief Tuhuru established the Mawhera Pa on the southern bank of the Mawhera (Greymouth) River, which was strategically placed at the base of the Paparoa Ranges as this is where Ngati Wairangi were finally defeated. Tuhuru became the founding ancestor of the Ngai Tahu hapu, Ngati Waewae, who remain the mana whenua of the Paparoa region.

History of Maori use of the West Coast/Te Tai Poutini

When Ngai Tahu, and the older resident iwi, first settled in the South Island, they regularly moved across the land, sustainably hunting and gathering the natural resources. Seasonal migrations were undertaken to follow the lifecycles of animals and plants to gather food resources such as weka, kakapo, kiore and tuna/eels. The Paparoa area was particularly abundant, providing people with many different resources and foods through various flora and fauna. Numerous archaeological sites and place names along the coastline provide detailed evidence of the historic use by Maori.

The Paparoa coastline had an abundance of mahinga kai, and provided travellers along the coastline (a key transit route) with a source of fish, kutai/mussels and tuaki/cockles. The forests and plains of the Paparoa teemed with bird, waterfowl and plant resources. The rivers flowing through the Paparoa were a source of fish, tuna/eels and inanga/whitebait.

Ngati Waewae have engaged in sustainable management practices of their environment and the natural resources contained within them, guided by tikanga (custom) that remind individuals to respect and be considerate of the resource. An example of such tikanga is limiting the harvesting of leaves from a plant to only the sunny side, or specific leaves. The ability of Ngati Waewae to manage natural resources according to tikanga is an important expression of rangatiratanga and kaitiakitanga.

SECTION C – FRESHWATER POLICY

Te Runanga o Ngai Tahu Freshwater Policy Statement (1999)

This Policy Statement has the status of an iwi management plan, having been adopted as such by Te Runanga o Ngai Tahu, and must be read alongside iwi management plans prepared by papatipu runanga. As the papatipu runanga, Te Runanga o Ngati Waewae, does not have a specific management plan for freshwater resources, this Policy Statement provides the overarching guidance for freshwater management within the rohe.

The Introduction of the Policy Statement advises that:

"Water is central to all Maori life. It is a taonga left by ancestors to provide and sustain life. It is for the present generation, as tangata tiaki (guardian/caretaker), to ensure that the taonga is available for future generations in as good as, if not better quality."

The Policy Statement elaborates about the principles or guiding values relating to water, as follows:

- Water plays a unique role in the traditional economy and culture of Ngai Tahu / Ngāti Waewae. Without water no living thing can survive.
- Water is a taonga which has an inherent value that should be recognised in the event of potentially competing uses. Taonga value refers to values associated with the water itself, the resources living in the water and the resources in the wider environs that are sustained by the water.
- Water is a holistic resource. The complexity and interdependency of different parts of the hydrological system should be considered when developing policy and managing the water resource.

The Policy Statement identifies the Ngai Tahu / Ngāti Waewae values and uses associated with freshwater resources.

Mauri

The primary management principle for Ngai Tahu / Ngāti Waewae is the maintenance and enhancement of the *mauri* (or life-giving essence) of a resource. While *mauri* has intangible aspects, the *mauri* of a waterway can be tangibly represented in terms of elements of the physical health of a river ecosystem. The elements which Ngai Tahu / Ngāti Waewae use to reflect the status of *mauri* (and to identify enhancement potential) are:

- aesthetic qualities, e.g., clarity, natural character and indigenous flora and fauna;
- life-supporting capacity and ecosystem robustness;
- depth and velocity of flow;
- continuity of flow from the mountain source of a river to the seas;
- fitness for cultural usage; and productive capacity.

The mauri of waterways can be degraded by water use and development, by various means including the (permanent) diverting of waters. Ngai Tahu / Ngāti Waewae advise they generally have concerns about the cumulative impact of development and use on any particular waterway.

Resource managers must recognise that each water body has its own mauri, guarded by separate spiritual guardians, its own mana and its own set of associated values and uses.

Pike29 Track proposal: It is noted that the Freshwater Ecology Assessment completed for the Pike29 Track proposal advises that although there are no specific significant sites to avoid, such as wetlands, waterways within the project area are ecologically important, and are mostly in a near pristine state. The freshwater ecologist regards it as essential that any works in their proximity be carried out to the highest best practice standards.

It is anticipated that limited and temporary impacts will occur on localised river ecosystems during the construction phase but no on-going impacts will occur on aquatic ecosystems which might adversely impact the waterways (including the Pororari River) fitness for cultural usage and its productive capacity. A range of environmental mitigation measures to protect freshwater values have been identified by the freshwater ecologist, and have been adopted by the project.

Kaitaikitanga

Preservation of the integrity of valued waterways is an important aspect of the responsibilities of those members of Ngai Tahu Whanui that are identified as the tangata taiki. Values, both tangible and intangible, associated with specific water bodies include:

- the role of particular waterways in unique tribal creation stories;
- the role of those waterways in historical accounts;
- the proximity of important wahi tapu, settlement or other historical sites in or adjacent to specific waterways;
- the use of waterways as access routes or transport courses;
- the value of waterways as traditional sources of mahinga kai food and other cultural materials; and
- the continued capacity for future generations to access, use and protect the resource.

Pike29 Track proposal: It is noted that White Knight Stream and the Pororari River, in particular, have values of importance to Te Runanga o Ngati Waewae, as listed above.

Mahinga Kai

Mahinga kai refers to the resources of the land, and from the bush and forests, including all birds and animals dependent upon these resources. Mahinga kai was and remains one of the cornerstones of Ngai Tahu / Ngāti Waewae existence and culture. Healthy water bodies continue to:

- be a direct source of mahinga kai,
- provide ecosystem support for mahinga kai species, and
- support other significant mahinga kai environments such as forests, riparian margins and coastal environs.

Ensuring the health and wellbeing of freshwater is a prerequisite for ensuring the continued health and wellbeing of mahinga kai resources and ultimately the people. Papatipu runanga are likely to accord special value to a waterbody that:

- provides significant habitats for important food species and materials such as eels, watercress, flax, etc.;
- affords breeding and migratory environments for those species, and the species they feed on, such as wetlands and lagoons;
- has long-standing histories of use by whanau, hapu and iwi; or
- deserves protection because it safeguards critical habitats, protects robust ecosystems or represents degraded mahinga kai environments that are in need of restoration.

For Ngai Tahu Whanui today, participation in mahinga kai activities is an important expression of cultural identity, and continuing traditional practices around mahinga kai is an important means of passing values on to future generations.

Pike29 Track proposal: It is noted that the Pororari River has been identified as an important site for mahinga kai, particularly inanga (whitebait).

Pounamu Resource Management Plan (2002)

Pounamu is a very precious resource for Ngai Tahu and is vested in and is the property of Te Runanga o Ngai Tahu, by the Ngai Tahu (Pounamu Vesting) Act 1997.

The areas where pounamu is found are known; and the papitipu runanga of Ngai Tahu which has mana whenua for that source are identified. Te Runanga o Ngati Waewae is the only runanga with mana whenua for pounamu in the Pike29 Track location. However as the identified and mapped pounamu resource does not extend as far north as the site, it is considered unlikely that any pounamu will be found during construction works.

SECTION D – SITE INFORMATION

Pike River Mine - Cultural Impact Assessment Report (2002)

Background

In 2002, Te Runanga o Ngati Waewae (then spelt "Te Runaka o Kati Waewae") commissioned a detailed Cultural Impact Assessment Report for Pike River Coal Company Limited (CIA Report), in relation to resource consents being sought from the regional and district councils for the creation of a new mine.

Relevant material from that CIA report is detailed below, along with commentary on the implications for the Pike29 Track proposal. It is noted that the CIA Report advises (pg 15) that the information on the Kati Waewae relationship with Paparoa is the intellectual property of the runanga, and that PRCC Ltd is only able to use this information for the purposes of its resource consent applications. Use of the information for other purposes will be subject to gaining the written approval of Te Runaka o Kati Waewae.

Pike29 Track proposal: The information contained in the CIA Report is now being used for 'other purposes', and this use has been authorised by the current Chair of Te Runanga o Ngati Waewae, Francois Tumahai. On the basis that Mr Tumahai is satisfied with this planner's assessment of Maori Cultural Values, he will approve the use of this report for the purposes of the Pike29 Track proposal.

Relevant Matters

The CIA Report details the history of Ngati Waewae settlement in Tai Poutini, their relationship with the Paparoa, and emphasises the mana whenua of Ngati Waewae. Specific matters which Ngati Waewae were concerned about in relation to the underground mining development included:

- A proposed water take from a mountain tarn was deemed unacceptable.
- Water management in regard to water drainage and use (water discharge treatment system).
- Subsidence, from underground mining works, which could adversely affect the ridgeline and skylines of the Paparoa Ranges.
- Underground mining directly below aged taoka (treasured) trees >600mm DBH.
- Underground mining beneath any significant permanent waterways, which might impact on their natural flow.
- Strengthening of the stone drive and portal area, through localised areas of weaker strata and adjacent to faults including the Hawera fault.
- Continued access to the landscape above the underground mine site.
- On-going consultation, meetings and representation with the mining company *"to ensure that the integrity of Kati Waewae values are maintained and adhered to..."*

Pike29 Track proposal: It is noted that the only area of concern which has on-going relevance to the Pike29 Track project is the mine water discharge treatment system,

which will be inherited by the Department of Conservation after the current mine owner, Solid Energy NZ, leaves the site.

An Accidental Discovery Protocol was appended to the report, in relation to *"any archaeological material unearthed as a result of a particular project"*.

Pike29 Track proposal: It is noted that an Accidental Discovery Protocol will be used during the construction works, as has been recommended by the project archaeologist.

Only one water course is specifically mentioned in terms of having special values: the White Knight Stream. Two requirements were detailed in relation to this watercourse, as follows:

1. *"The natural flow of White Knight Stream is to be maintained, however the stone drive side facing the White Knight Stream can be armoured using large boulders placed on the edge of White Knight Stream"*.

It is noted that edging works were completed along the White Knight Stream, in the area directly outside the tunnel portal, as illustrated in the photo below.

Pike29 Track proposal: No further works are proposed in or along the edges of White Knight Stream, in relation to the proposed redevelopment of the Pike Mine portal and amenities areas.



Armour works being installed above White Knight Stream

2. *"Furthermore it should be ensured that Kati Waewae are notified before the commencement of this particular section of the proposal/work so that Runaka representatives can perform the necessary whakawatea (clear the way) this will involve karakia (incantation/prayer).*

Pike29 Track proposal: It would be appropriate for such a site blessing to occur before the redevelopment works occur at the Pike Mine portal area and/or at the time the site is officially handed over from Solid Energy NZ.

The CIA Report advises that Kati Waewae access to the area affected by the mining proposal should continue, in accordance with safety protocols. The purpose of this unfettered access provision was to *"ensure that Kati Waewae cultural integrity is upheld and the relationship that Kati Waewae has with, not only with Pike River Coal Company Limited, the natural environment is maintained in its entirety."*

On-going consultation, meetings and representation were also expected to *"ensure that the integrity of Kati Waewae values are maintained and adhered to..."*

Pike29 Track proposal: Ngati Waewae will continue to have access to the site, along with the general public, once the Pike River Mine area is managed by the Department of Conservation. New safety requirements will apply to the site, particularly in relation to vehicular access to the mine portal. Use of the access road beyond the Amenities Area is likely to be restricted to daylight hours for safety reasons.

Consultation has been undertaken with Te Runanga o Ngati Waewae, via face to face meetings with the Chairman, Francois Tumahai. Ngati Waewae are also represented on the West Coast Tai Poutini Conservation Board, which has statutory responsibility for the review of the Paparoa National Park Plan, and is being involved as the plan review process continues. Consultation with Te Runanga o Ngati Waewae will continue via Francois Tumahai, to ensure that they continue to be well informed about the Pike29 Track proposal, and the redevelopment of the Pike river Mine site.

Accidental Discovery Kawa/Protocol

The CIA Report had appended an Accidental Discovery Kawa/Protocol in relation to Cultural Site discovery. This Protocol was specific to the Pike River Coal Company Limited, and to the mining proposal.

Pike29 Track proposal: An Accidental Discovery Protocol will be applied to any vegetation clearance, earthworks and construction works. This document is attached as an Appendix to this report. The Protocol is the current one in use by the Department of Conservation, and will be customised for this project.

Pike29 Track - Archaeological Assessment Information (2016)

An assessment of the archaeological and historic values along the route of the Pike29 Track has been undertaken by an archaeologist, Kirsia Webb, of Underground Overground Ltd. The following paragraphs are excerpts of the material relating to Maori occupation, use and archaeology.

W. A. Taylor's *Lore and History of the South Island Maori* and the cultural impact assessment of the Pike River Coal Company provided the background about Māori activity in the area. Research into the historical land use of the area, and the desktop assessment of the possibility of unrecorded archaeological sites, was undertaken using various sources, including: property titles, topographical, geological and survey maps available through Landonline and the National Library New Zealand and contemporary newspapers (available through the Papers Past website).

Māori occupation and use

Ngāti Wairangi were the earliest people to occupy Te Tai Poutini (the West Coast). The tribe came into conflict with Ngāi Tahu of the east coast over the control of pounamu resources at Tai Poutini between 1700 and 1800. After a series of battles, with Ngāti Wairangi making raids on the east coast, particularly around Lyttelton, five leading hapu of Ngāi Tahu of Canterbury crossed the alps and, joining Ngāi Tahu members living on the west coast, defeated Ngāti Wairangi at White Knight Stream in the Paparoa Ranges (Taylor 1952: 188).¹

Previous Archaeological Work

Along the northern end of the track there are only two previously recorded archaeological sites in the vicinity.

- K30/32 is the site of a midden that was exposed during the construction of a building in the area. The site record form for K30/32 indicates that a more thorough investigation of the site would be undertaken but it is not known if this was ever carried out.
- K30/87 is the Inland Pack Track. A heritage assessment and baseline inspection report has been prepared for the Inland Pack Track in 2009 and archaeological recording of the track as a whole was relatively thorough.

Planner's commentary

As the proposed Pike29 Track follows the routes of three historic pack tracks established by early European settlers, with a linking traverse along the Paparoa Range, the route does not directly affect any recorded Maori archaeological sites. It is noted that the recorded midden site (K30/32) is located approximately 3kms from the junction of the Inland Pack Track and the Upper Pororari River Track. There is also another recorded Maori archaeological site, a cave shelter (K30/65) that is less

¹ Taylor, W.A., 1952. *Lore and history of the South Island Maori*. Christchurch, N.Z.: Bascands Ltd.

than 2 km away (near the main road) from the south end of the Inland Pack Track, but will also not be affected by the proposed works.

White Knight Stream is the site of an important historic event. The stream is a tributary of Pike Stream, which it enters just downstream of the mine portal. The side track to the Pike Mine amenities area enters the catchment of Pike Stream at least a kilometre further downstream, near the mine amenities area.

Given the distance of the side track to White Knight Stream, the archaeological assessment advises that *"based on what is known about Māori use and occupation of the area and the proximity of the project area to previously recorded Māori archaeological sites, the likelihood of finding any archaeological material related to Māori occupation of the area during the proposed earthworks is low."*

Key recommendations of the archaeological assessment relating to the management of the archaeological and historical heritage of all three pack tracks are as follows:

- A heritage management plan will be prepared for the Upper Pororari River Track, following the principles outlined in Section 14 of the ICOMOS NZ Charter. This plan will be implemented as a guiding document for the construction of the Upper Pororari section of the Pike29 Track.
- A detailed record of all modifications to each of the sections of existing heritage track – the Inland Pack Track, Upper and Lower Pororari River Track and the Croesus Track – to be made before, during and following the proposed work. This work to be undertaken by the Department and stored in a departmental recording system (AMIS).
- Work on historic pack tracks will proceed under an Accidental Discovery Protocol, to ensure that the correct procedures are followed if any artefacts are disturbed during the earthworks.

The Department of Conservation will be including these requirements in the Pike29 Track construction contracts.

West Coast Plans

Regional Coastal Plan

A Culturally Significant Area (CSA 10) runs between the Punakaiki River and the Pororari River, as designated in the Regional Coastal Plan for the West Coast. Culturally Significant Areas are areas of the coastline that are of special cultural significance to Ngai Tahu, and in this case the particular values within the area are *mahinga maataitai* (traditional seafood gathering area) and *wahi tapu* (sacred site/s).

The Regional Coastal Plan also lists shellfish gathering areas (and the water quality standards to be maintained). A shellfish gathering site is identified at Punakaiki - Dolomite Point.

An *inanga* (whitebait) spawning site is also listed as being on the Pororari River, on the true right bank, downstream of the SH6 bridge.

Pike29 Track proposal: Works on the Pike29 Track will occur on the Inland Pack Track, but will occur more than 1.5kms from the coast. Works will also occur on the Pororari River, but will occur more than 3kms from the coast. Both *inanga* and shellfish are very sensitive to sedimentation, and track construction works will be strictly controlled to manage sedimentation, particularly during the *inanga* spawning season.

Buller District Plan

The Ngai Tahu Claims Settlement Act 1998 provided for a *nohoanga* site on the Pororari River, located on the northern bank of the river where it opens out onto the coast. *Nohoanga* sites are to enable Ngai Tahu to occupy land close to waterbodies so that they have access to that waterbody for fishing and the harvest of other resources.

Pike29 Track proposal: Works on the Pike29 Track will not occur on the Punakaiki-Lower Pororari River walk, only on upper section of the Pororari River Track and therefore no impacts on the *nohoanga* entitlement are anticipated.

SECTION E – CULTURAL VALUES MITIGATION

Ngati Waewae Cultural Values

This report has identified a number of important cultural and spiritual values associated with the Paparaoa, and particular for the Pororari River, and White Knight Stream which are summarised as follows:

- Cultural, historical and archaeological values and sites;
- Source of mahinga kai/mauri of waters.

Pike29 Track Project

The Department of Conservation has acknowledged the values outlined above and is seeking to provide appropriately for these values as follows.

1. The important status of the Pike River Mine site and the White Knight Stream to Ngati Waewae needs to be appropriately acknowledged. Accordingly it would be appropriate for a site blessing ceremony be carried out prior to the mine site redevelopment works commencing.
2. The importance of the White Knight Stream to Ngati Waewae will be represented in the interpretation and education material. The Department of Conservation will work in consultation with Te Runanga o Ngati Waewae in the development of these materials.
3. The Department of Conservation's Accidental Discovery Protocol is to be adopted for the project, to ensure that the correct procedures are followed if any artefacts are disturbed. This Protocol is attached at Appendix 1, and the Department will include it in the construction contracts.
4. Neither the nohoanga site on the Punakaiki River, nor the Culturally Significant Area (CSA 10) along the coastline will be directly impacted by the proposed construction works.
5. Potential adverse impacts on the water quality and associated impacts on aquatic fauna (particularly mahinga kai) will be minimised by limiting the duration and intensity of any in-stream disturbance as far as possible.
6. Any works to occur directly in the water and/or the immediate riparian margins of the following waterways will avoid the relevant spawning times:
Lower Pororari River - Spring for bully, torrentfish and lamprey, as well as glass eel migration; autumn for inanga (galaxiids).
Pike Stream - Spring for bully; autumn for inanga (galaxiids).
7. Pounamu is an important taonga, and is vested in and is the property of Te Runanga o Ngai Tahu, by the Ngai Tahu (Pounamu Vesting) Act 1997. Thus any pounamu found in the course of the works will be returned to Te Runanga o Ngai Tahu, and this requirement will be included in the construction contracts.



White Knight Stream

References

- Draft Paparoa National Park Management Plan (2016)
- Cultural Impact Assessment Report prepared for Pike River Coal Company (2002)
- Ngai Tahu Claims Settlement Act 1998
- Pike29 Track - Archaeological Assessment (2016)

Accidental Discovery Protocol (ADP) for Archaeological Sites

If any archaeological site(s) are uncovered during physical works the Department of Conservation will require the staff/contractor to adopt the following protocol. Evidence of archaeological sites can include oven stones, charcoal, bone, shell midden, ditches, banks, pits, old building foundations, artefacts of Maori and European origin or human remains.

1. Work shall cease in the immediate area. The staff/contractor must shut down all machinery, secure the area and advise the **Site Manager**¹ - Tom Hopkins (VPN 03-756-9116, mobile 027-260-4705).
2. The **Site Manager** shall notify the Department's Area Manager and Technical Advisor Historic, Department of Conservation. The Technical Advisor shall contact Heritage New Zealand *Pouhere Taonga* and, if necessary, the appropriate consent process shall be initiated. Contact: Neville Ritchie Technical Advisor Historic), Department of Conservation, **email: nritchie@doc.govt.nz** or 0275366921.
3. If the site is of Maori origin the **Site Manager** shall notify Te Runanga o Ngati Waewae to determine what further actions are appropriate to safeguard the site or its contents. Contact: Te Runanga o Ngati Waewae, Chair Francois Tumahai.
4. If skeletal remains are uncovered, the **Site Manager** shall advise the Police, Heritage New Zealand *Pouhere Taonga*, the Department's Area Manager and Technical Advisor Historic, and the appropriate mana whenua contact (Francois Tumahai).
5. Works affecting the archaeological site shall not resume until Heritage New Zealand *Pouhere Taonga*, the Police (if skeletal remains are involved) and Te Runanga o Ngati Waewae have each given the appropriate approval for work to continue. This approval shall be transmitted to the **Site Manager** by the Technical Advisor Historic, unless otherwise arranged.

Department of Conservation - Emergency number (if the appropriate contacts above are not available); **0278093360**

Heritage New Zealand *Pouhere Taonga* contact details:
Frank van der Heijden, Regional Archaeologist Canterbury
Phone 03-363-1884
Mobile 027-688-9741

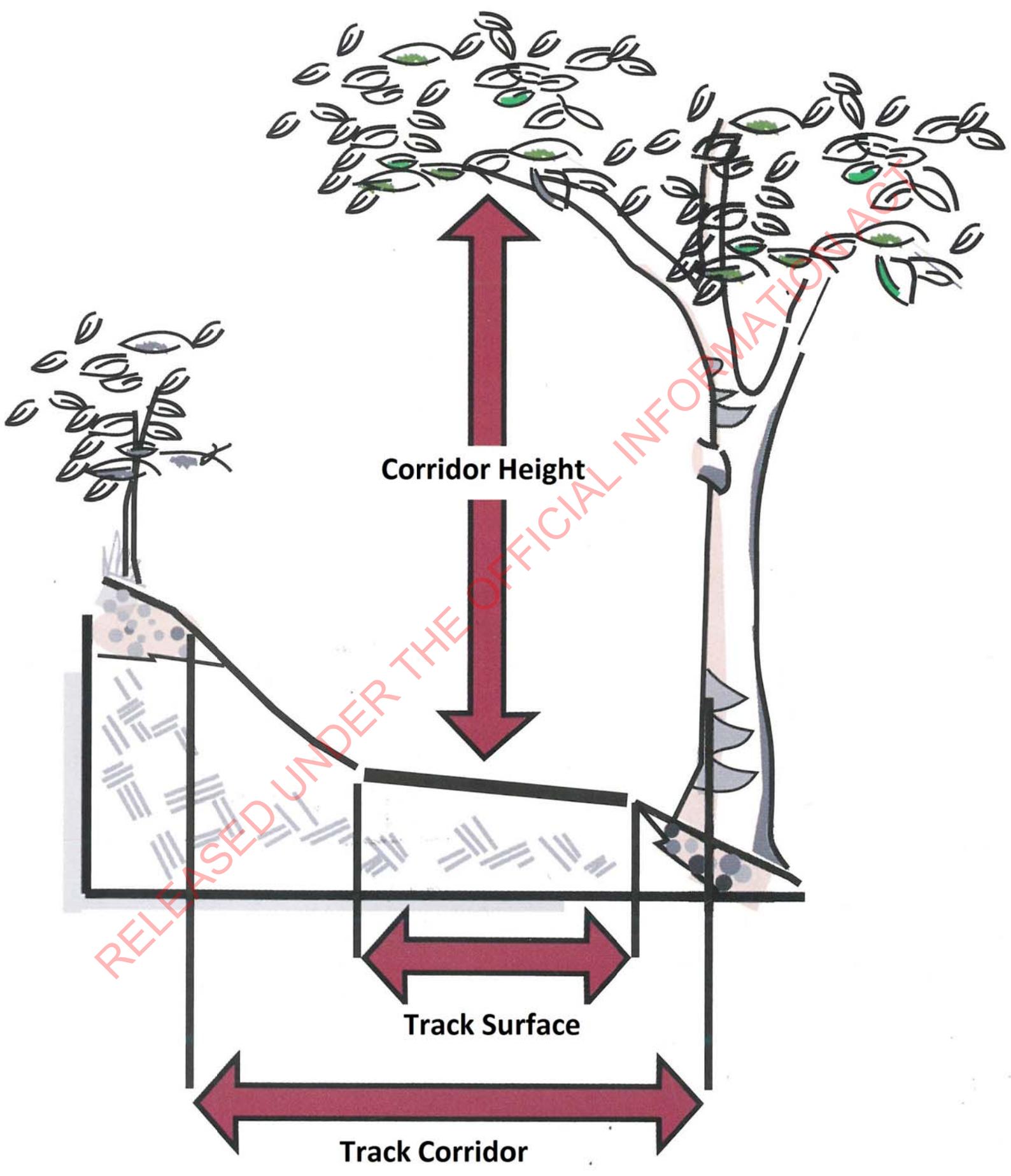
Te Runanga o Ngati Waewae contact details:
Francois Tumahai, Chairman
Mobile 021-425-229

¹ Site Manager will usually be the Programme Manager (or their delegate) responsible for the project.

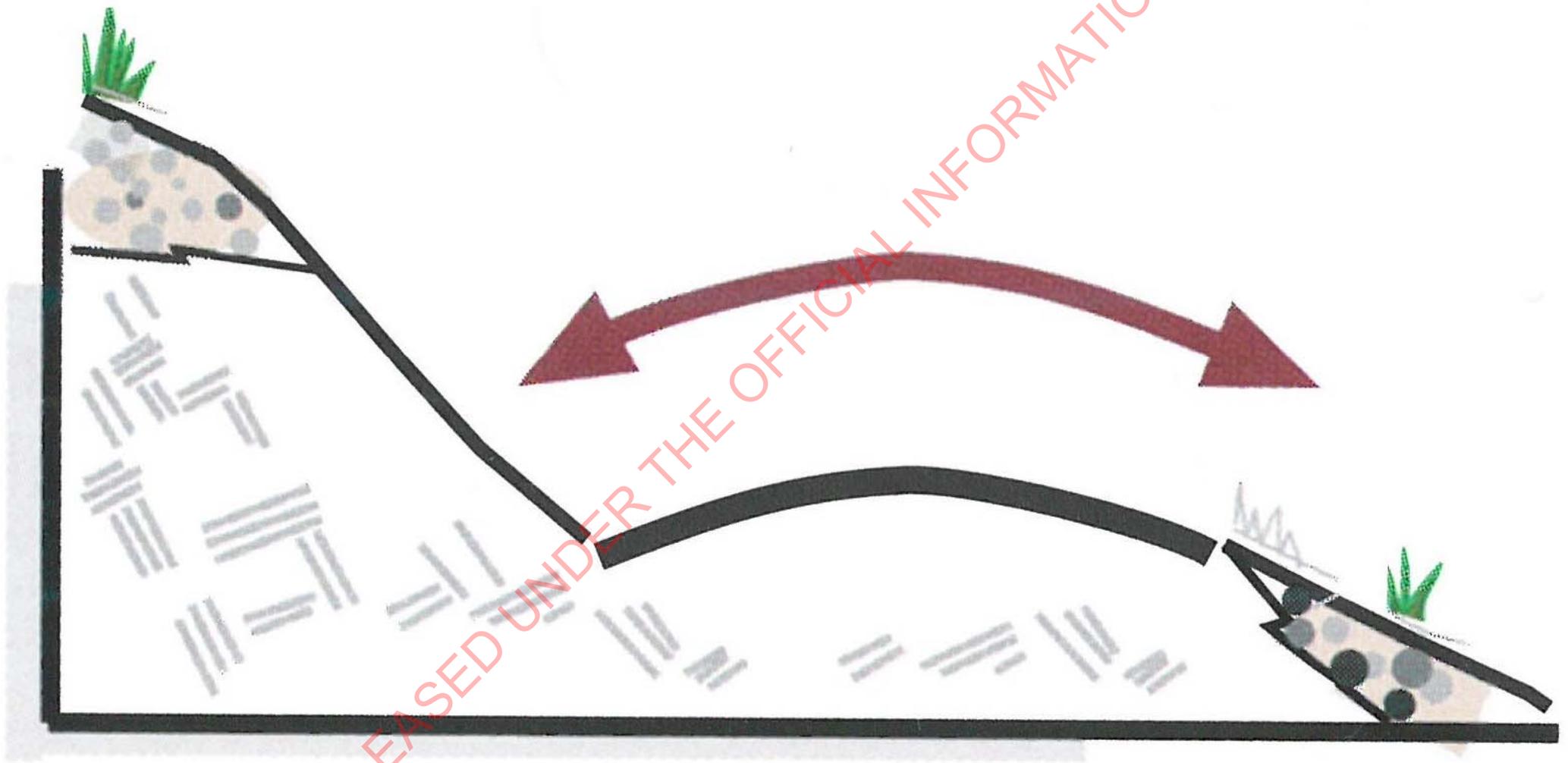
Appendix K – Track Design and Formation Drawings

RELEASED UNDER THE OFFICIAL INFORMATION ACT

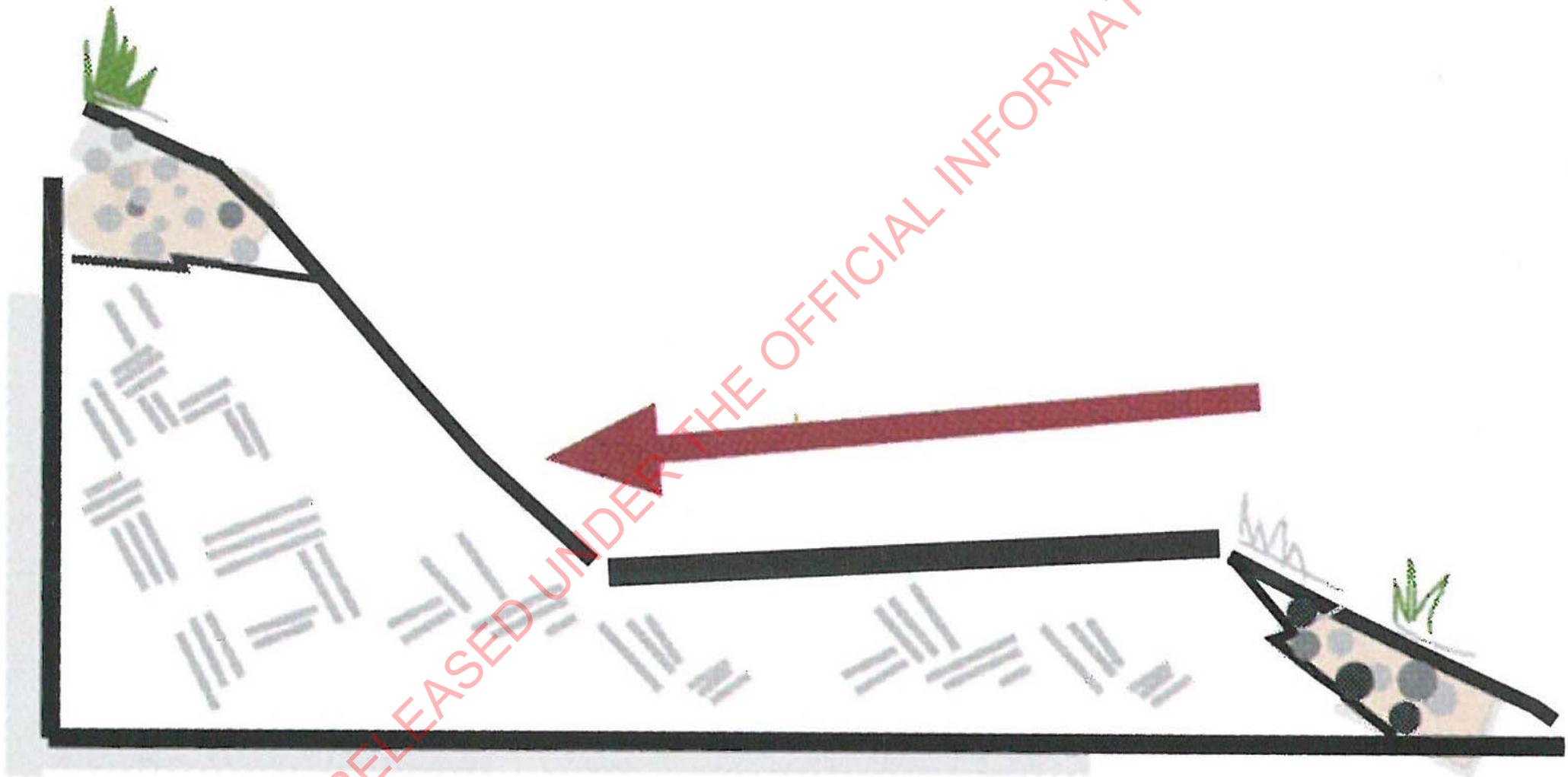
Track Corridor Profile



Crowned Track Profile



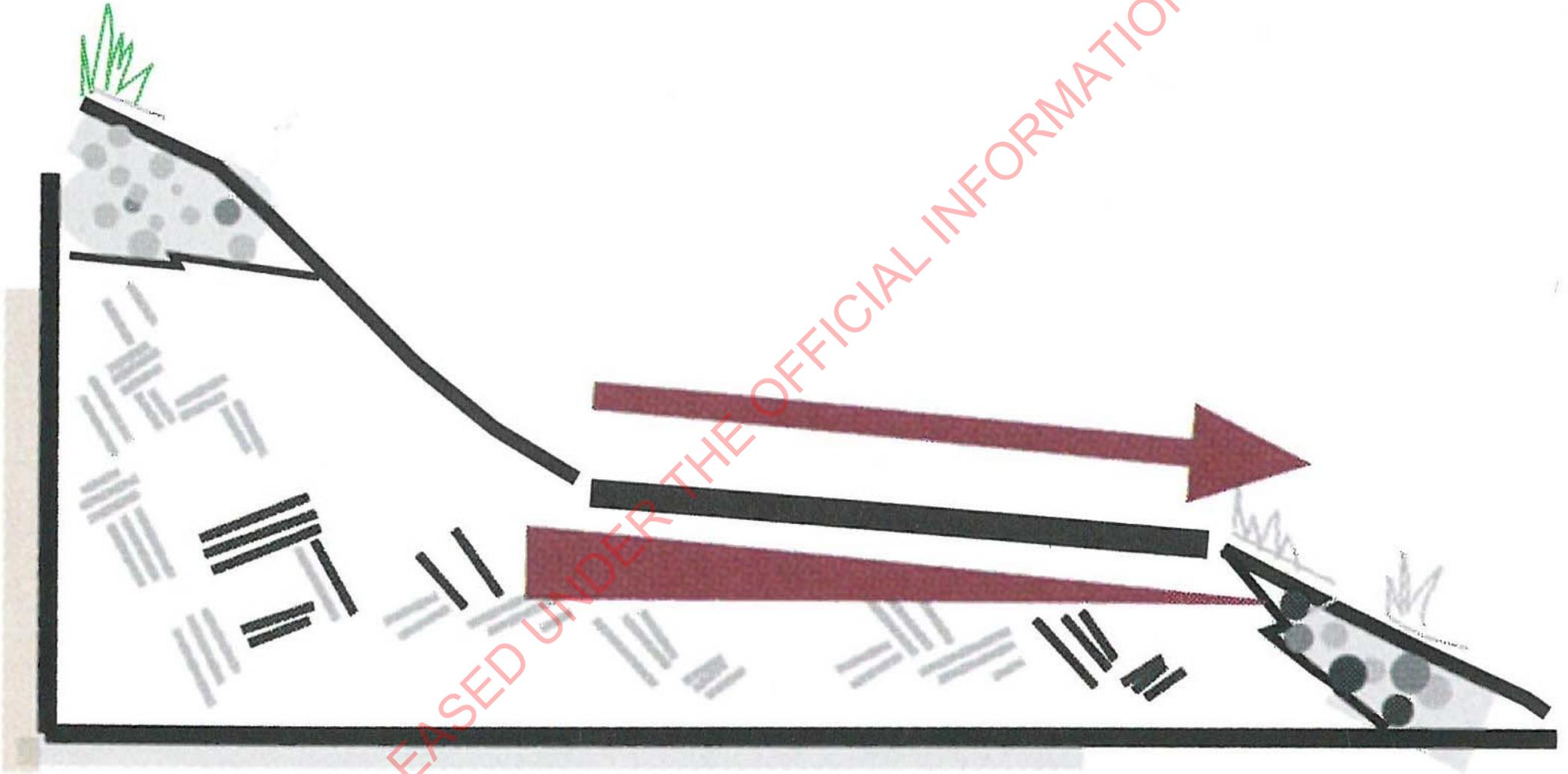
Inslope Track Profile



RELEASED UNDER THE OFFICIAL INFORMATION ACT

Outslope Track Profile

RELEASED UNDER THE OFFICIAL INFORMATION ACT



Sideslope 5 degrees maximum



Grade Reversals

Outslope 2 degrees

RELEASED UNDER THE OFFICIAL INFORMATION ACT



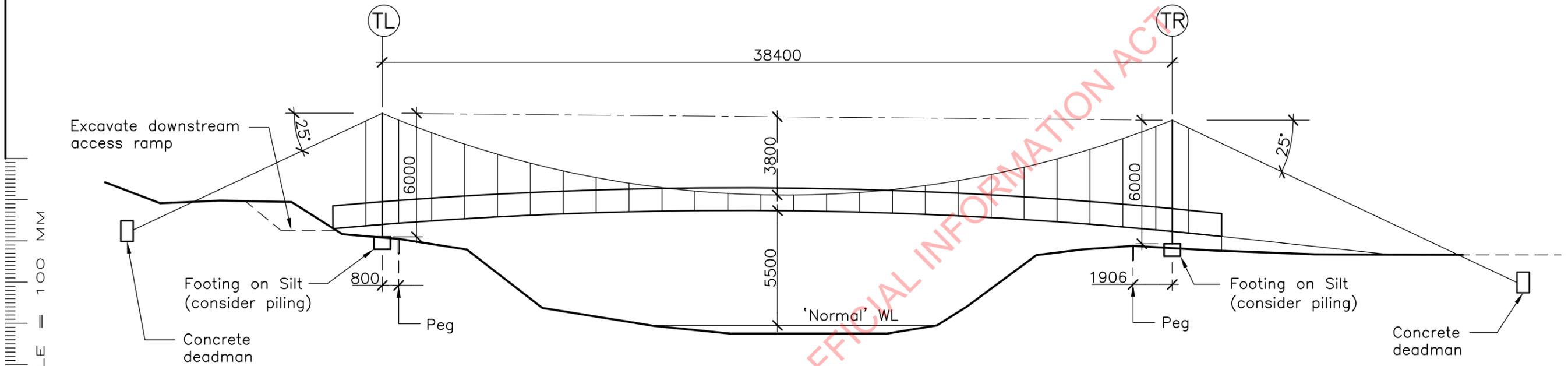


Appendix L – Bridge and Boardwalk Design Drawings

RELEASED UNDER THE OFFICIAL INFORMATION ACT

CAVE CK CONFLUENCE SUSPENSION BRIDGE

ELEVATION (1:200)



RELEASED UNDER THE OFFICIAL INFORMATION ACT



Department of Conservation
Te Papa Atawhai

Conservancy
West Coast
Area
Pike 29 Track
Project Name
Cave Ck Confluence
Suspension Bridge
Drawing Name
Elevation

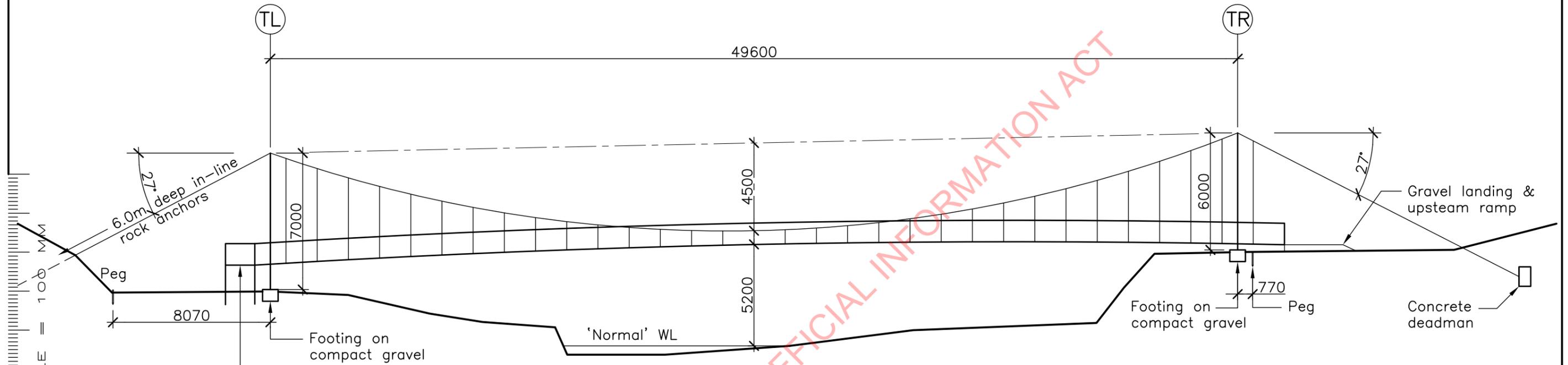
Consultant Jon Calder		
cad file JC16011	scales	drawn JC
Map	Grid Reference east north	
Designed JC	Checked	Approved

STRUCTURE NUMBER			
site no.	asset no.	drawing S1	issue 1

1	12/9/16	CONCEPT	JC
Iss.	Date	Reason For Issue	App.

UPPER PORORARI SUSPENSION BRIDGE

ELEVATION (1:200)



RELEASED UNDER THE OFFICIAL INFORMATION ACT



Department of Conservation
Te Papa Atawhai

Conservancy
West Coast
Area
Pike 29 Track
Project Name
Upper Pororari
Suspension Bridge
Drawing Name
Elevation
Consultant
Jon Calder

cad file	scales	drawn
		JC
Map	Grid Reference	
	east	north
Designed	Checked	Approved
JC		

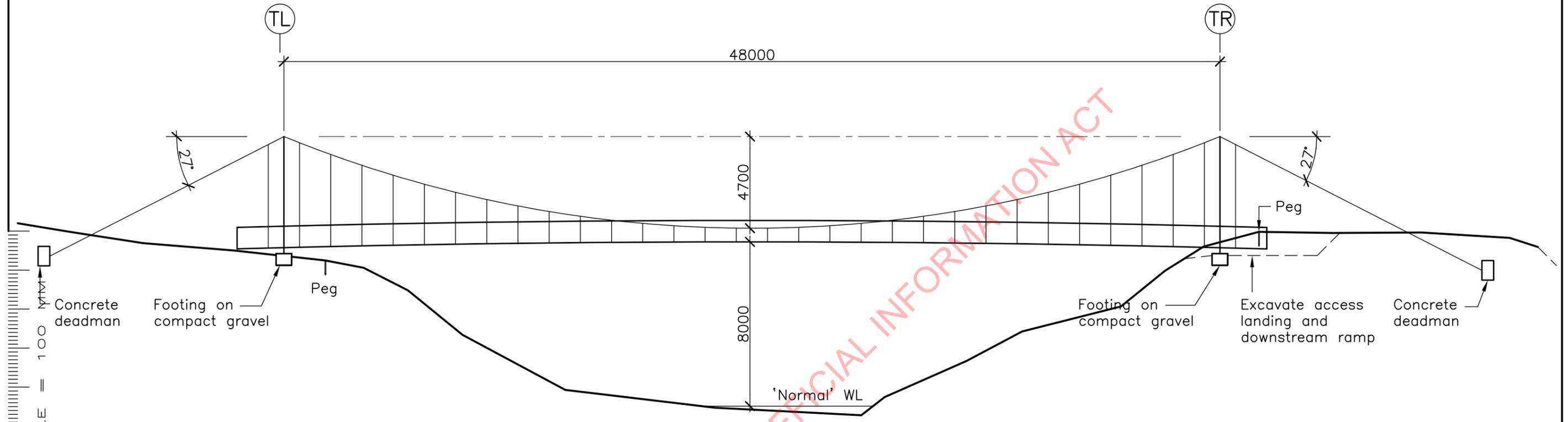
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site no.	asset no.	drawing	issue
		S1	1

1	12/9/16	CONCEPT	JC
Iss.	Date	Reason For Issue	App.

DO NOT SCALE

WATSONS CK SUSPENSION BRIDGE

ELEVATION (1:200)



ORIGINAL SCALE = 100 MM

RELEASED UNDER THE OFFICIAL INFORMATION ACT



Department of Conservation
Te Papa Atawhai

Conservancy
West Coast
Area
Pike 29 Track
Project Name
Watsons Ck
Suspension Bridge
Drawing Name
Elevation

Consultant Jon Calder		
cad file	scales	drawn JC
Map	Grid Reference east north	
Designed JC	Checked	Approved

STRUCTURE NUMBER			
site no.	asset no.	drawing S1	issue 1

1	12/9/16	CONCEPT	JC
Iss.	Date	Reason For Issue	App.

DO NOT SCALE

WATERFALL CK SUSPENSION BRIDGE

ELEVATION (1:200)

Joint in anchor boulder
(Geotech to check)

Rock anchor—plates
on side of rock

Saddle block
or clamp reqd.

Peg

6165

6000

Remove
boulder

Footing on
rock (?)

43200

4400

14000

6000

1450

Concrete
deadman

Footing on
compact gravel

Peg

ORIGINAL SCALE = 100 MM

RELEASED UNDER THE OFFICIAL INFORMATION ACT



Department of Conservation
Te Papa Atawhai

Conservancy
West Coast

Area
Pike 29 Track

Project Name
Waterfall Ck
Suspension Bridge

Drawing Name
Elevation

Consultant
Jon Calder

cad file	scales	drawn
		JC

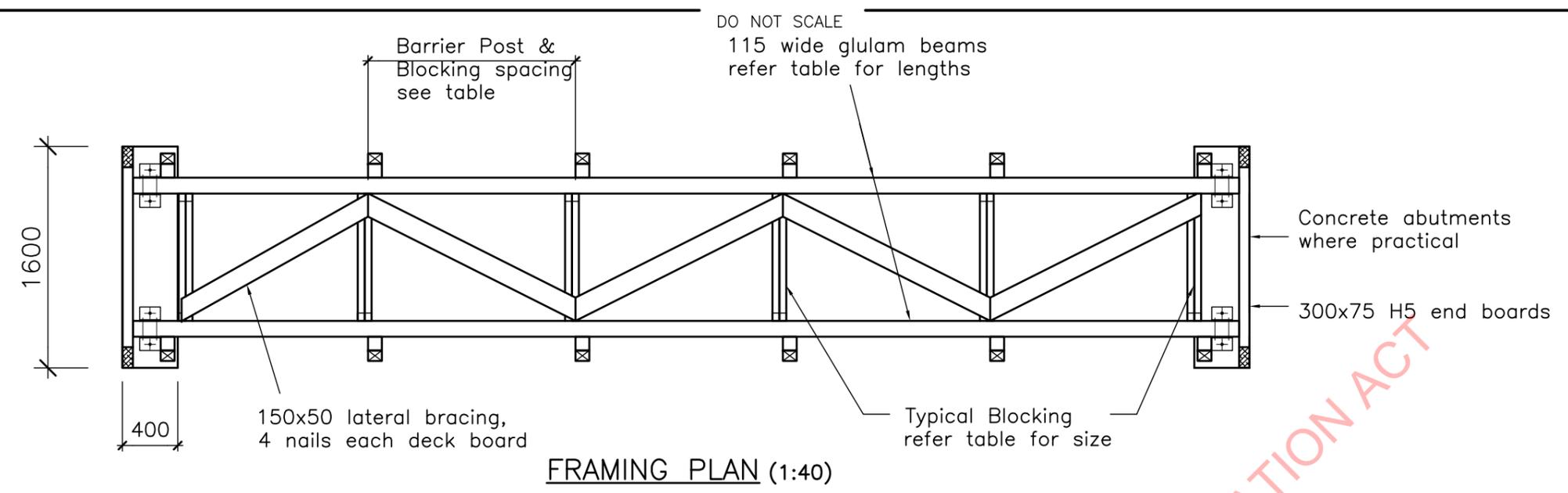
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Designed	Checked	Approved
JC		

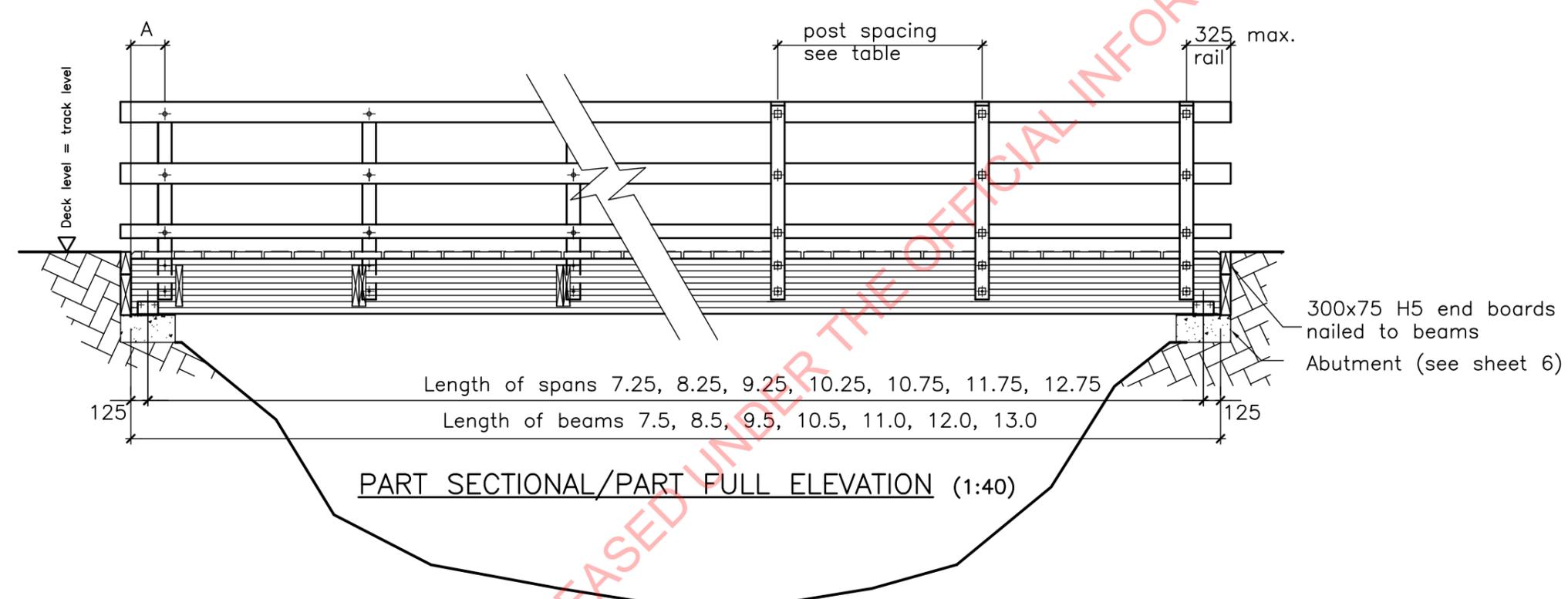
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site no.	asset no.	drawing	issue
		S1	1

1	12/9/16	CONCEPT	JC
Iss.	Date	Reason For Issue	App.

ORIGINAL SCALE = 100 MM



FRAMING PLAN (1:40)



PART SECTIONAL/PART FULL ELEVATION (1:40)

Glulam Beam Bridge Sizes					
Beam Size	Beam Length	Precamber	Blocking Size	Barrier Post Spacing	Dimension A
360 x 115	7.5	30	2/300 x 50	5 posts @ 1750	250
405 x 115	8.5	35	2/300 x 50	6 posts @ 1600	250
450 x 115	9.5	40	360 x 90	6 posts @ 1800	250
495 x 115	10.5	40	360 x 90	7 posts @ 1700	150
540 x 115	11	45	405 x 90	7 posts @ 1750	250
585 x 115	12	50	450 x 90	8 posts @ 1650	225
630 x 115	13	55	495 x 90	8 posts @ 1800	200
675 x 115	14	60	540 x 90	9 posts @ 1700	200

DO NOT SCALE

1	1/9/16	REVIEW	BW
Iss. Date	Reason For Issue	App.	



Department of Conservation
Te Papa Atawhai

Conservancy
Western South Island

Area
Buller

Project Name
Pike29 Memorial Track
Glulam Bridges

Drawing Name
Typical Plan & Elevation,
Table of Dimensions

Consultant
Brad Williamson

Drawing Number
BW16006 drawn **BW**

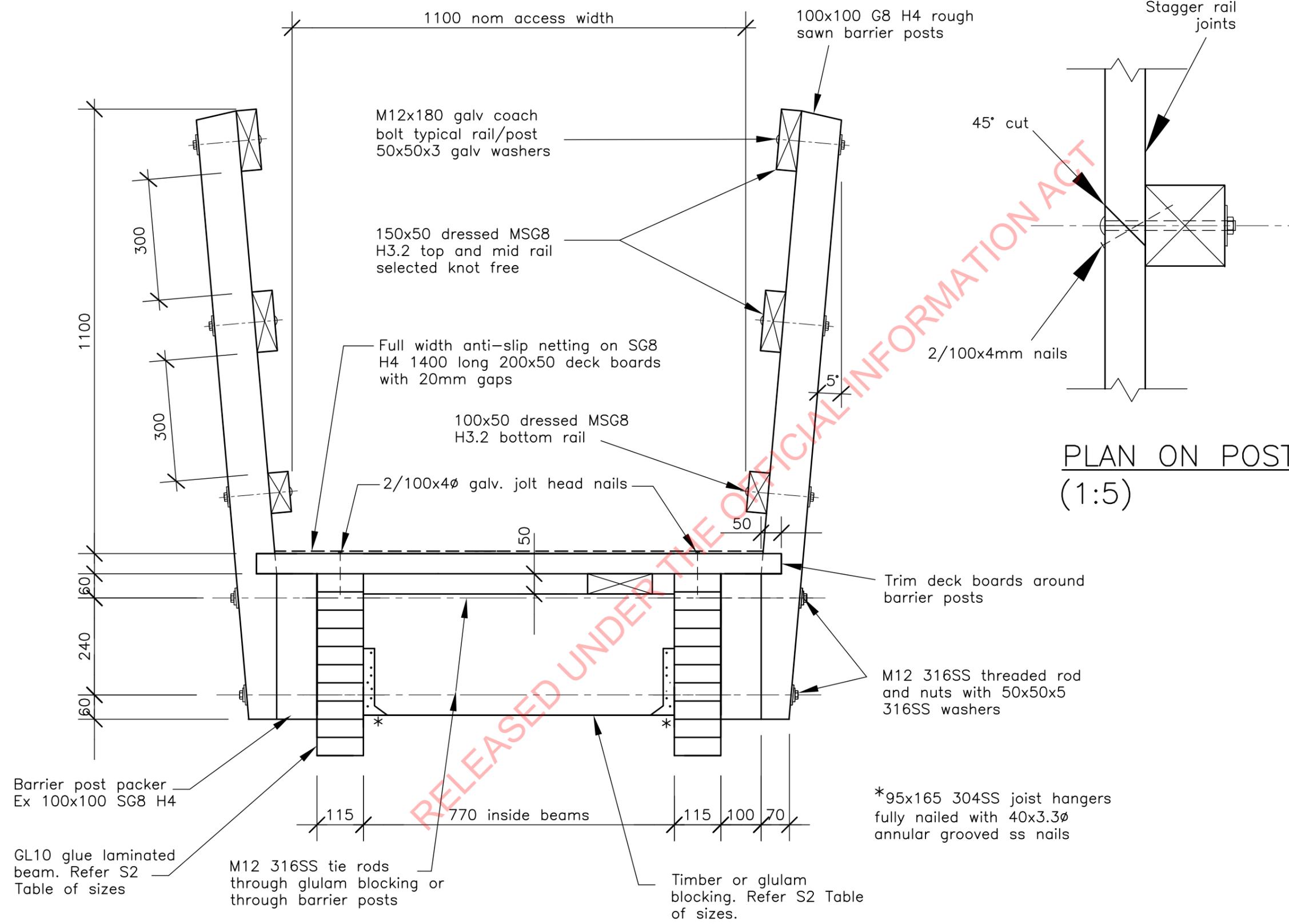
Grid Reference
east north

Designed **BW** Checked **JC** Approved

STRUCTURE NUMBER

Equipment no. drawing **S2** issue **1**

ORIGINAL SCALE = 100 MM



PLAN ON POST (1:5)

TYPICAL DECK SECTION (1:10)

NOTES:

1. All timber shall be pinus radiata of the grades and treatment shown. Metalex all cut ends.
2. Barrier rail coach bolts are galvanised commercial grade with hex head nuts, and 50x50x3 washers. All galv bolts shall be coated with Denso primer paste prior to installation. Bolt hole dia. shall be bolt dia. plus 2mm e.g. 14mmØ for 12mmØ bolt. Bolt head/washers shall not be rebated.
3. Anti-slip netting shall be full width 40x1.4mm galv wire netting fixed with 15mm galv. staples at 150mm centres.

1	1/9/16	REVIEW	BW
Iss.	Date	Reason For Issue	App.



Department of Conservation
Te Papa Atawhai

Conservancy
Western South Island

Area
Buller

Project Name
Pike29 Memorial Track
Glulam Bridges

Drawing Name
Typical Deck Section

Consultant
Brad Williamson

Drawing Number BW16006	drawn BW
----------------------------------	--------------------

Grid Reference
east north

Designed BW	Checked JC	Approved
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STRUCTURE NUMBER

Equipment no.	drawing S3	issue 1
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Department of Conservation

Te Papa Atawhai

PIKE 29

Standard Sawn Timber Bridges

Revision 0 23.08.2016

CONTENTS

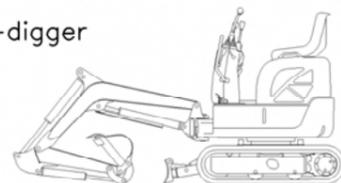
Sheet	Contents
1	Cover & Notes
2	Plan & Elevation
3	Section
4	Foundation Type 1 – Bearer
5	Foundation Type 2 – Post
6	Foundation Type 3 – Concrete
7	Schedule of bridges

REVISION HISTORY

Rev	Date	Amendment
0	23.08.2016	Work in progress

GENERAL

- This design is accordance with SNZ HB 8630:2004 "Tracks and Outdoor Visitor Structures".
- The basic live loads (Qb) from Table 8 are:
 - Distributed = 4.0 kPa
 - Concentrated = 1.8 kN
- Maintenance Live Loads;
 - 1.2T excavator / mini-digger



- Check and verify dimensions and levels on-site before commencing construction or off-site fabrication.
- Anti-slip netting shall be 40x1.4mm galvanised wire netting with 15mm galvanised staples at 150mm ctrs.

TIMBER

- Timber in contact with ground or concrete (e.g. Foundations) shall be H5 treated. All other timber shall be H4 treated.
- Unless noted otherwise, all timber shall be rough sawn, pinus radiata, grade G8 (or VSG8).
- Cut faces of timber shall be treated with Metalex or similar field approved treatment if cutting is carried out after preservation treatment.

FIXINGS

- Bolts shall be galvanised hex heads with 50x50x6 galvanised washers unless noted otherwise. Bolts shall be pre-coated with denso grease. Hole diameters shall be 2mm greater than bolt shank diameter. Bolts shall be grade 4.6/S (Snug tight).
- Bolt heads and nuts shall not be rebated unless noted otherwise.
- All nails shall be galvanised 100x4.0mm Jolt Heads.

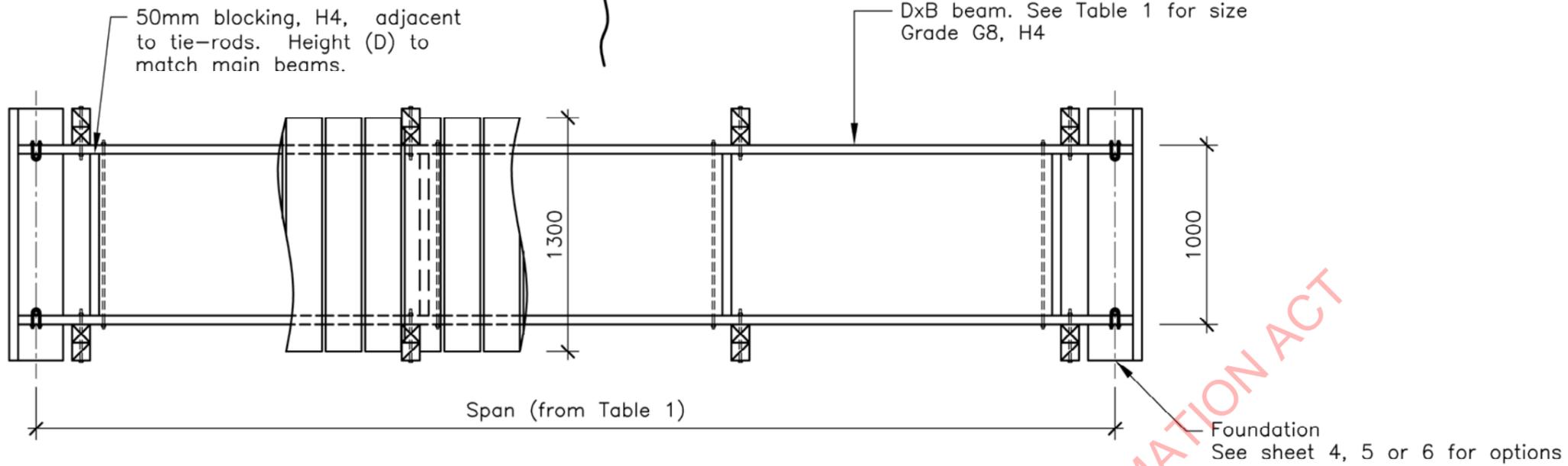
Table 1: Beam Size

Joist Size		Max Span
Height, D (mm)	Width, B (mm)	(mm)
200	50	1550
200	75	2050
250	50	2100
300	50	2750
200	100	2750
250	75	2800
300	75	3750
250	100	3900
300	100	5150
300	150	6400

Table 2: Number of Posts

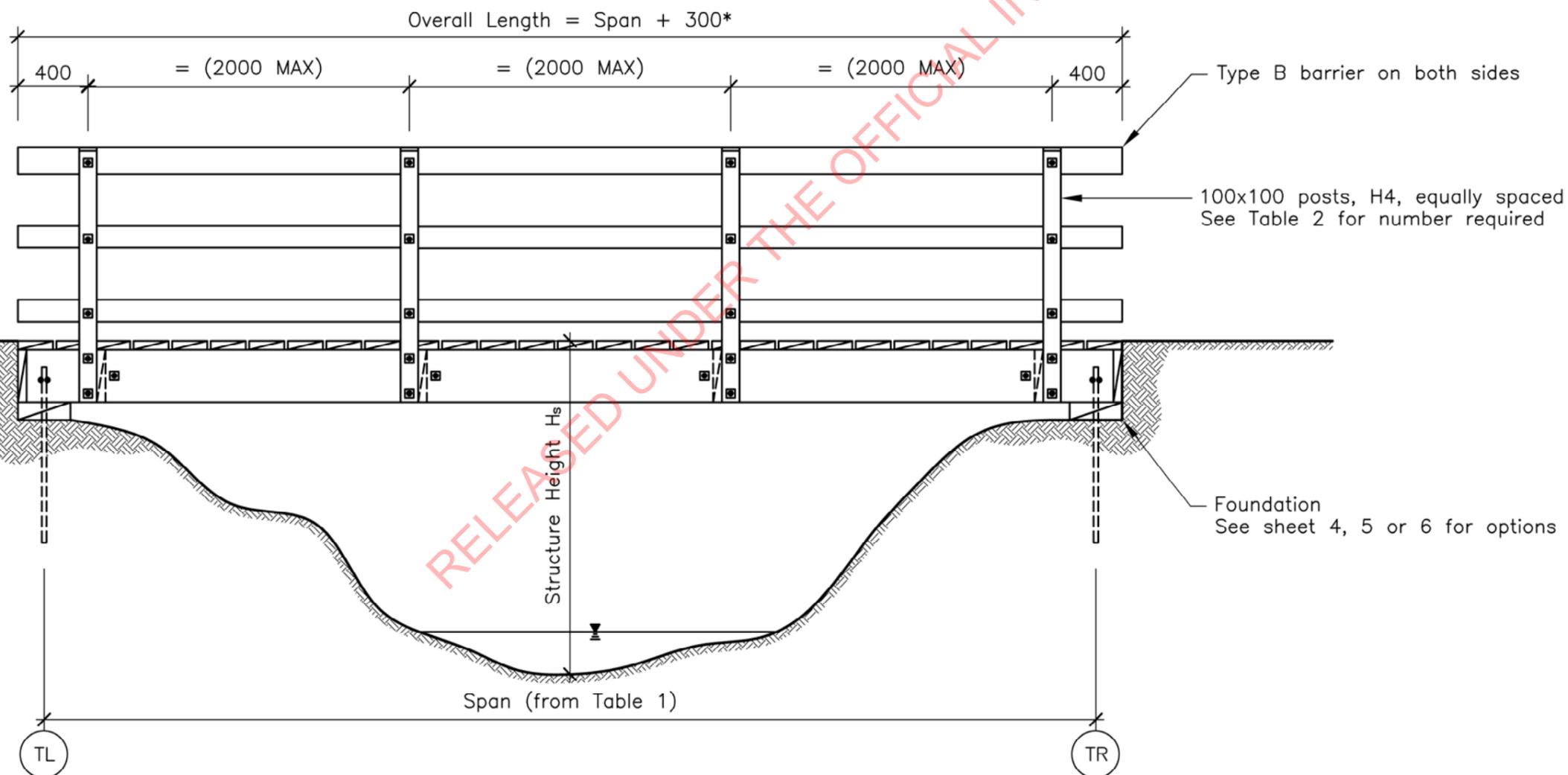
Span	Number
L<2500	2
2550–4500	3
4550–6400	4

DO NOT SCALE



PLAN (1:30)

Note: Indicative Type 1 foundation shown



ELEVATION (1:30)

Note: Varies for Type 2 - Post foundation

DO NOT SCALE

ORIGINAL SCALE = 100 MM

Iss.	Date	Reason For Issue	App.
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Department of Conservation
Te Papa Atawhai

Conservancy

Area

Project Name

PIKE 29
STD SAWN TIMBER BR

Drawing Name

PLAN & ELEVATION

Consultant

Tahu Taylor-Koolen

cad file	scales	drawn
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Map	Grid Reference
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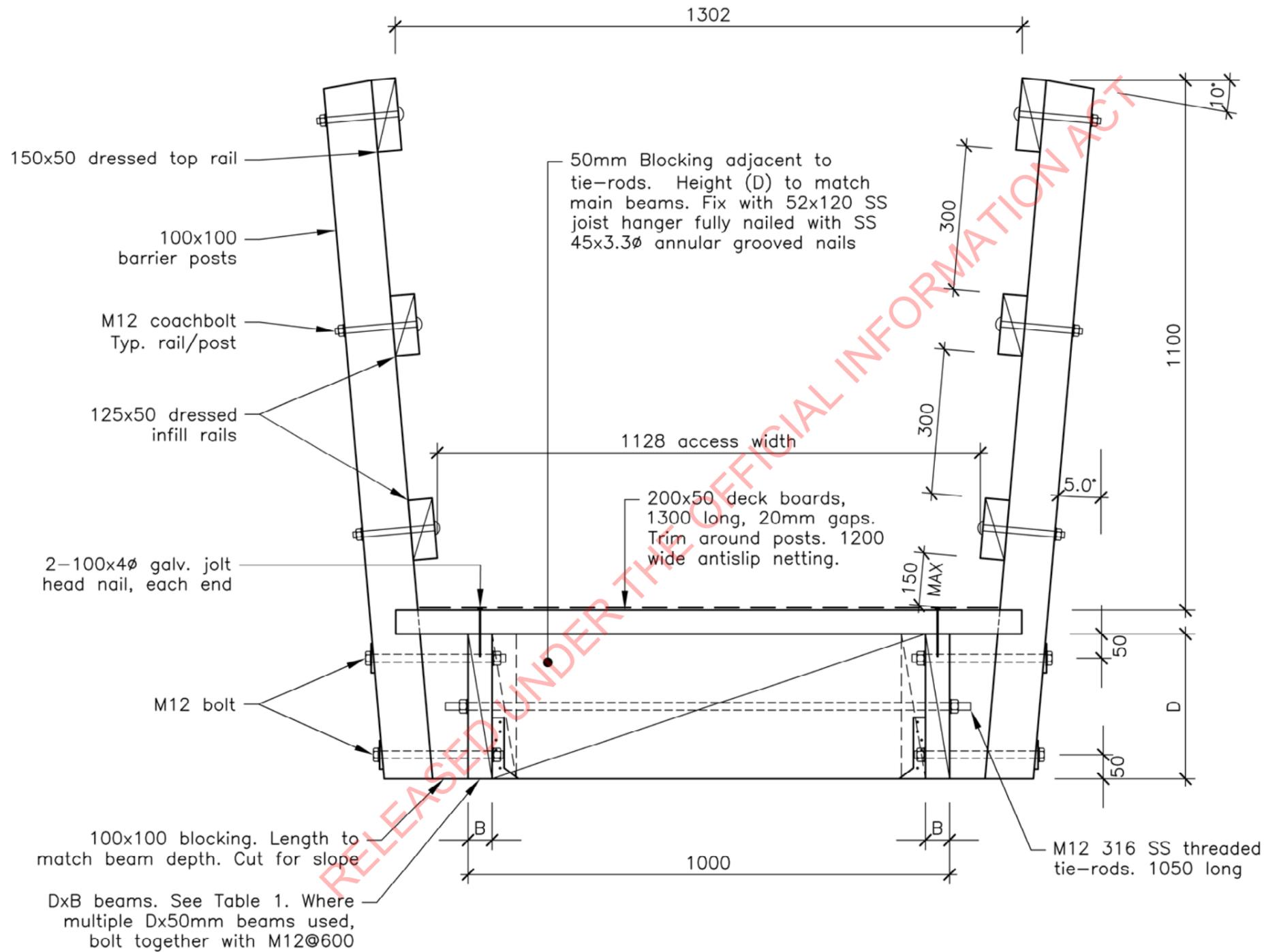
east --- north ---

Designed	Checked	Approved
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STRUCTURE NUMBER

site no.	asset no.	drawing	issue
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2 0



TYPICAL DECK SECTION (1:10)

Iss.	Date	Reason For Issue	App.
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Department of Conservation
Te Papa Atawhai

Conservancy

Area

Project Name

PIKE 29

STD SAWN TIMBER BR

Drawing Name

SECTION

Consultant

Tahu Taylor-Koolen

cad file	scales	drawn
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Map	Grid Reference
	east --- north ---

Designed	Checked	Approved
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STRUCTURE NUMBER

site no.	asset no.	drawing	issue
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3 0

Appendix M – Hut, Toilet and Wastewater System Design Drawings

RELEASED UNDER THE OFFICIAL INFORMATION ACT

Moonlight Tops Hut

for Hokitika Office, Pike 29 Memorial Track, Paparoa National Park.
Project.No:1602

Sheet Index		
Sheet No	Sheet Name	Revision
01	Site Plan	C
02	Floor Plan	C
03	Foundation Plan	A
04	Bracing Plan	C
05	Roof Framing Plan	A
06	Plumbing and Drainage Plan	A
07	Elevations	C
08	Elevations	C
09	Section A-A	C
10	Section B-B	C
11	Section C-C	C
12	Section D-D	C
13	Section E-E	C
14	Section F-F	C
15	Window & Door Schedule	C
16	Fire Safety Plan	C
17	Window Details	A
18	Louvre Details	A
19	Roof Details	A
20	Roof Details	A
21	Roof Details	A
22	Floor Edge Details	A
23	Deck Connection Details	A
24	Deck & Stair Details	A
25	Deck Ballustrade Details	A
26	Cladding Details	A
27	Fixed Seating & Coat Hooks Details	A
28	Bunk Details	A
29	Single Bunk Details	A
30	Platform Bunk Details	A
31	Platform Bunk Details	A
32	Cooking Area Bench	A
33	External Sink Details	A
34	Form Details	A
35	Water Tank Stand	A
36	Water Tank Hold Down Details	A
37	Staff Quarters Joinery Details	A
38	Roof Plan	A
39	Skylight Details	A
40	Master Site Plan	A
41	Toilet Block	A
42	Terraced Steps Details	A
43	Ventillation System	A
44	Ventillation System Flashing	A
45	Damper	A
46	Damper Details	A
47	3D Views 1	C
48	3D Views 2	C



North East

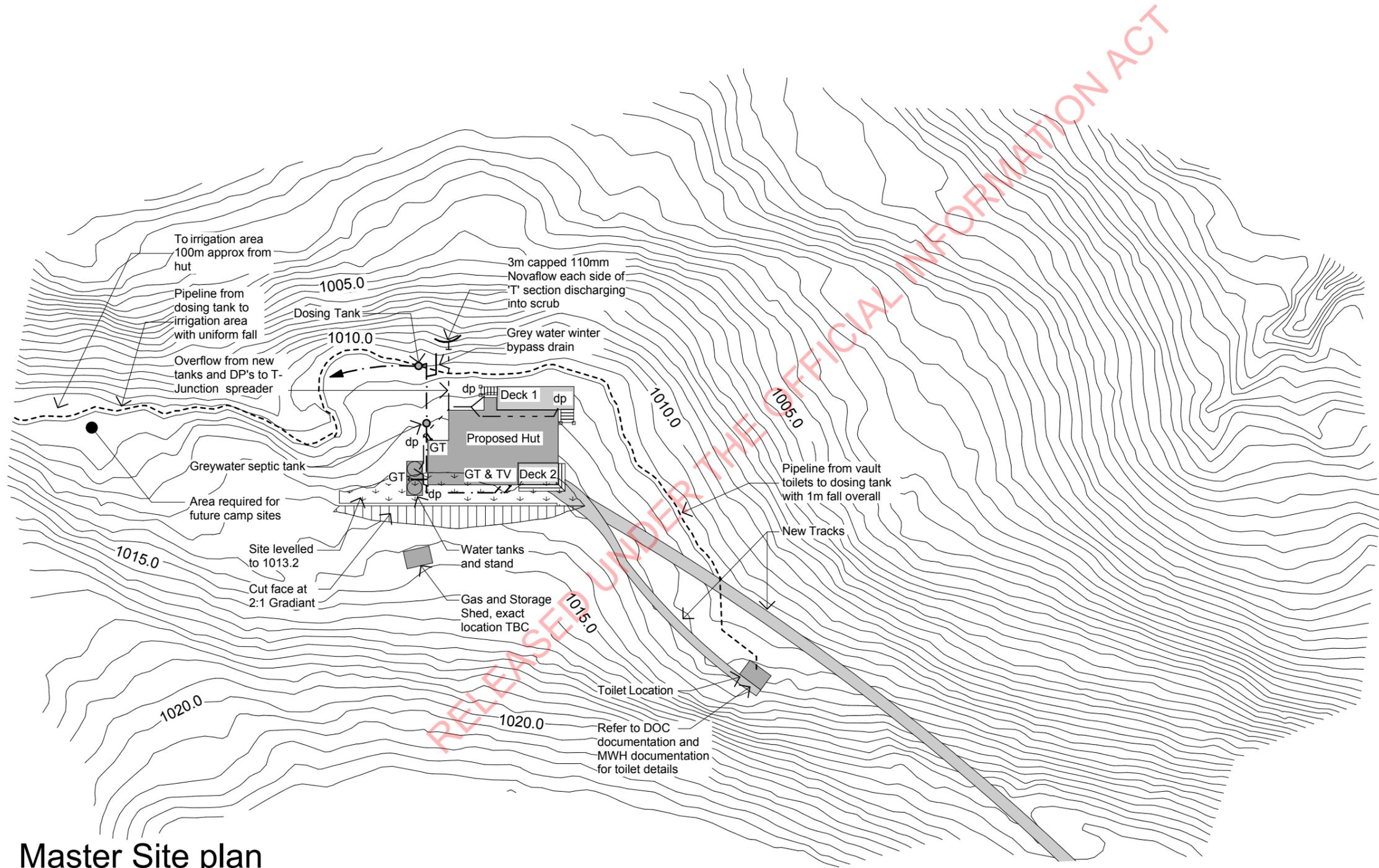


Internal

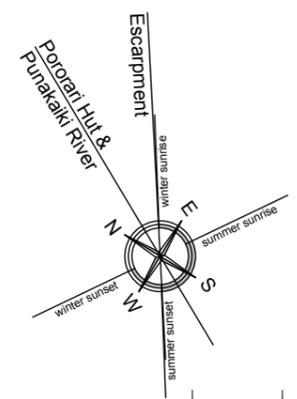
DESIGN CRITERIA:

soil class:	Class C
exposure zone:	D
wind zone:	SED (68m /s)
earthquake zone:	3
floor load bunkrooms:	1.5 kPa
floor load other spaces:	3.0 kPa
deck load:	2.0 kPa
altitude:	1014m
roof snow load:	2.32 kPa N2
ground snow load:	4.15 kPa N2

**Detailed Design
September 2016**



Master Site plan
1:500



REV No	DESCRIPTION	DATE	DWN	CKD
A	Detailed Design	15/09/2016	MW	RP

Drawing Issue and Amendments

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PROJECT **Moonlight Tops Hut**

LOCATION **Pike 29 Memorial Track
Paparoa National Park**

OFFICE **Hokitika**

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	MW	RP	1602	40	A
DATE			Sep 2016		

SHEET CONTENTS: **Master Site Plan**

SCALES: **1:500**

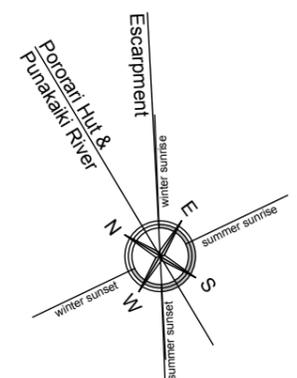
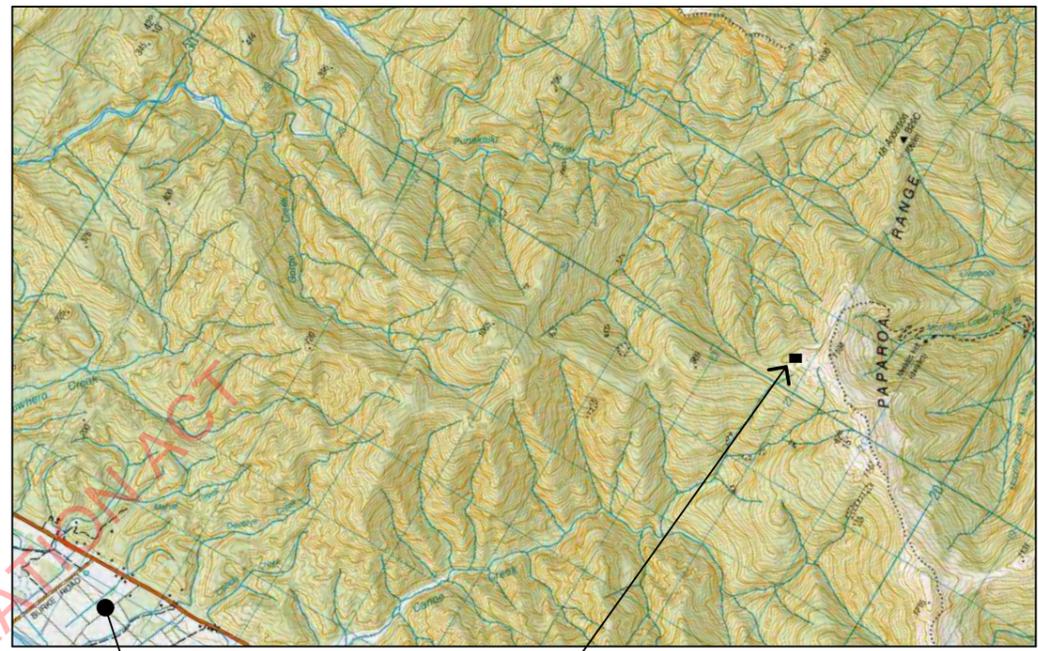
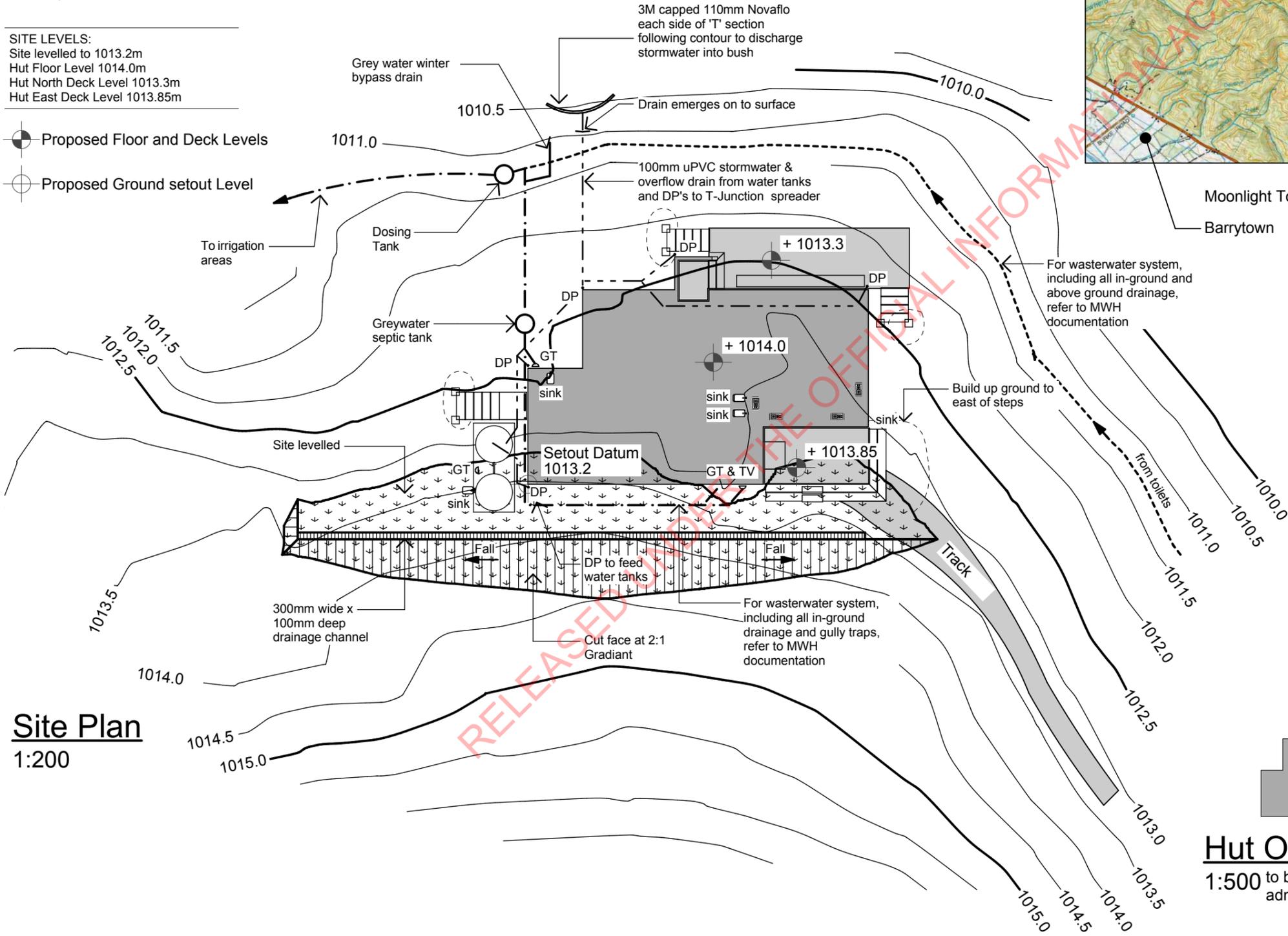
@ A3 SHEET SIZE

LEGEND

-  Minor contour(0.5m)
-  Major contour(2.5m)
-  Ground built up locally to provide 180mm riser for bottom step

SITE LEVELS:
 Site levelled to 1013.2m
 Hut Floor Level 1014.0m
 Hut North Deck Level 1013.3m
 Hut East Deck Level 1013.85m

-  Proposed Floor and Deck Levels
-  Proposed Ground setout Level



REV No	DESCRIPTION	DATE	DWN	CKD
C	Detailed Design	22/09/2016	MW	RP
B	Revised Site Plan	25/07/2016	MW	RP
A	Developed Design	24/06/2016	MW	RP

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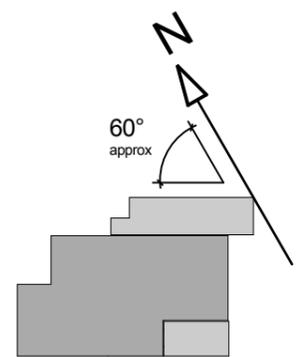
PROJECT Moonlight Tops Hut
LOCATION Pike 29 Memorial Track
 Paparoa National Park
OFFICE Hokitika

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	MW	RP	1602	01	C

DATE: Sep 2016

Hut Orientation

1:500 to be confirmed by contract administrator on site





South East



North West

REV No	DESCRIPTION	DATE	DWN	CKD
C	Detailed Design	22/09/2016	MW	RP
B	Revised Site Plan	25/07/2016	MW	RP
A	Developed Design	24/06/2016	MW	RP

Drawing Issue and Amendments

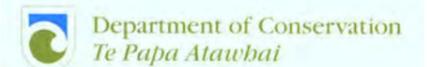


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PROJECT **Moonlight Tops Hut**

LOCATION **Pike 29 Memorial Track
Paparoa National Park**

OFFICE **Hokitika**

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	MW	RP	1602	47	C
DATE	Sep 2016				

SHEET CONTENTS: 3D Views 1

SCALES: @ A3 SHEET SIZE

J:\Clients CAD\1602 Pike huts\1602 Drawing Documents\Moonlight Tops Hut\1602 Pike River Huts Moonlight Tops.pln



South West



Interior

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REV No	DESCRIPTION	DATE	DWN	CKD
C	Detailed Design	22/09/2016	MW	RP
B	Revised Site Plan	25/07/2016	MW	RP
A	Developed Design	24/06/2016	MW	RP

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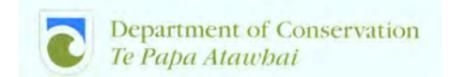


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PROJECT **Moonlight Tops Hut**

LOCATION **Pike 29 Memorial Track
Paparoa National Park**

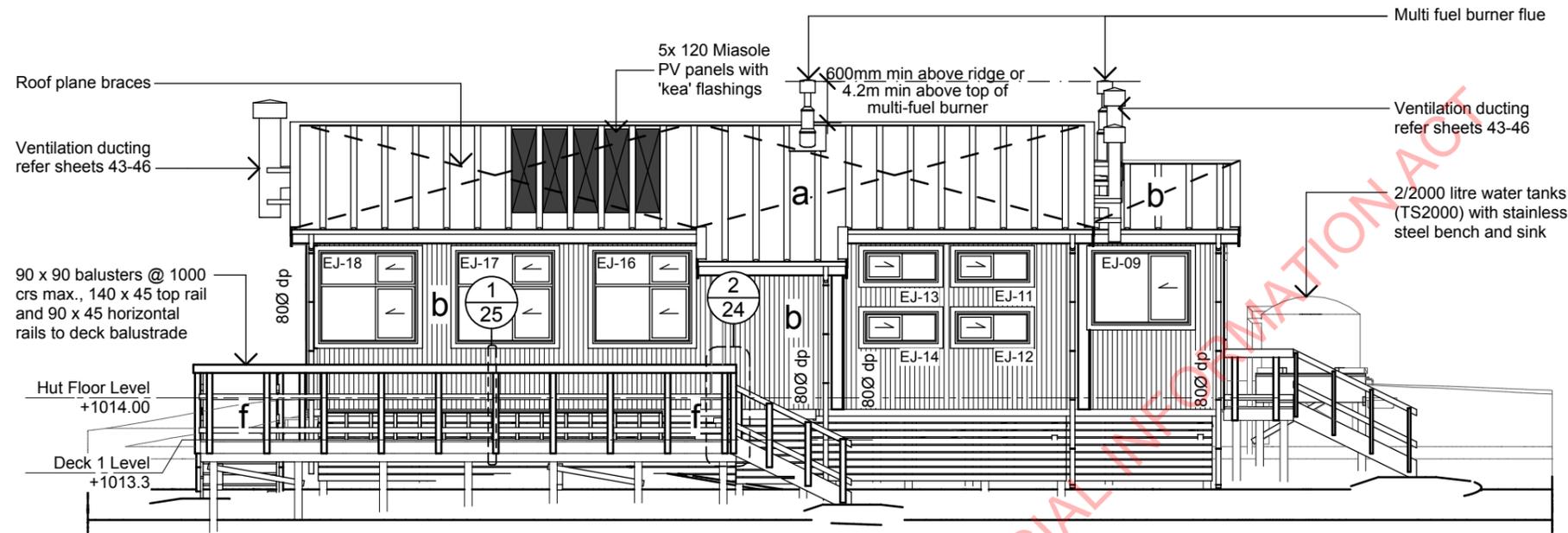
OFFICE **Hokitika**

SHEET CONTENTS
3D Views 2

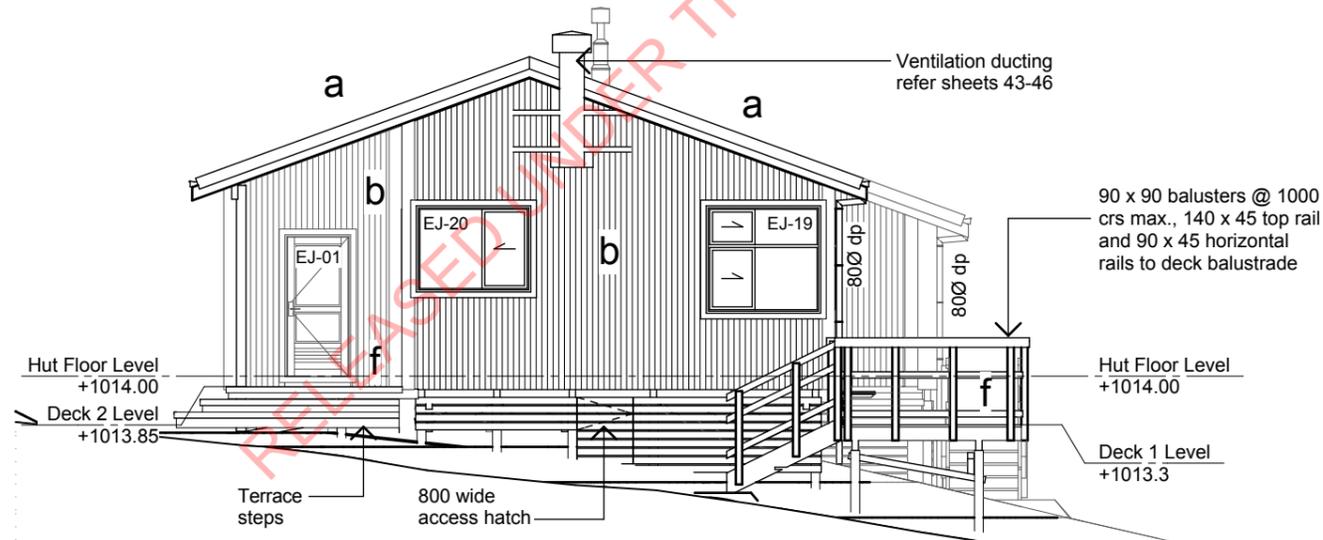
SCALES

@ A3 SHEET SIZE

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	MW	RP	1602	48	C
DATE	Sep 2016				



1 North Elevation
02 Scale 1:100



2 East Elevation
02 Scale 1:100

Material Notes:

- a** CALDER STEWART Solar Rib PROFILE COLORCOTE G300 Zincore roofing over roof underlay over 70 x 45mm H3.2 purlins on flat @ 900/500mm c/c max. Refer Specification for fixings of roofing and purlins
- b** COLORCOTE Zincore 0.55 CORRUGATE PROFILE cladding over 45 x 18mm CAVIBAT cavity battens over Ecoply Barrier RAB system over timber framing
- c** CHH 9mm ECOPLY BD grade untreated ceiling lining over 70 x 35mm H1.2 battens @ 600mm c/c max.
- d** CHH 9mm ECOPLY BD grade untreated wall lining (10mm gap to flooring) except for SE wall of common area and SE wall of lobby to be lined with 12mm Ecoply BD grade linings
- e** CHH 19mm ECOPLY CD grade H3.2 LONGSPAN flooring (2400 x 1200mm) over timber joists. Refer to Foundation Plan to sub floor framing sizes and c/c.
- f** 88 x 32 H3.2 grip tread decking, Premium Grade, grip side up, even nail spacing. 12mm gap between first piece of decking and wall cladding. Refer to foundation plan for sub floor framing sizes & c/c.
- g** FIRE SEPARATION WALL
CHH 9mm ECOPLY BD grade untreated wall lining from floor to U/S ceiling with 10mm gap to flooring over 6mm Villaboard from floor to U/S of roof covering both sides of 140x45 studs @ 600c/c with dwangs @ 800c/c, wall cavity filled with James Hardie 90mm mineral insulation

REV No	DESCRIPTION	DATE	DWN	CKD
C	Detailed Design	22/09/2016	MW	RP
B	Revised Site Plan	25/07/2016	MW	RP
A	Developed Design	24/06/2016	MW	RP

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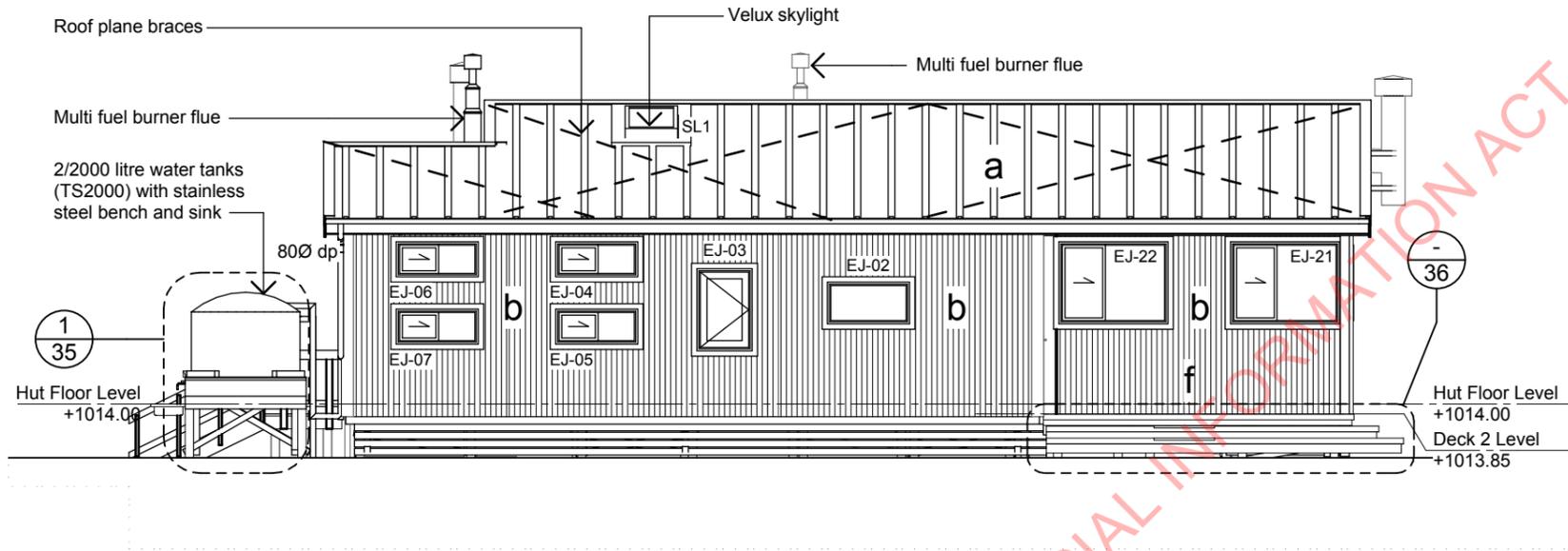
PROJECT Moonlight Tops Hut

LOCATION Pike 29 Memorial Track
Paparoa National Park

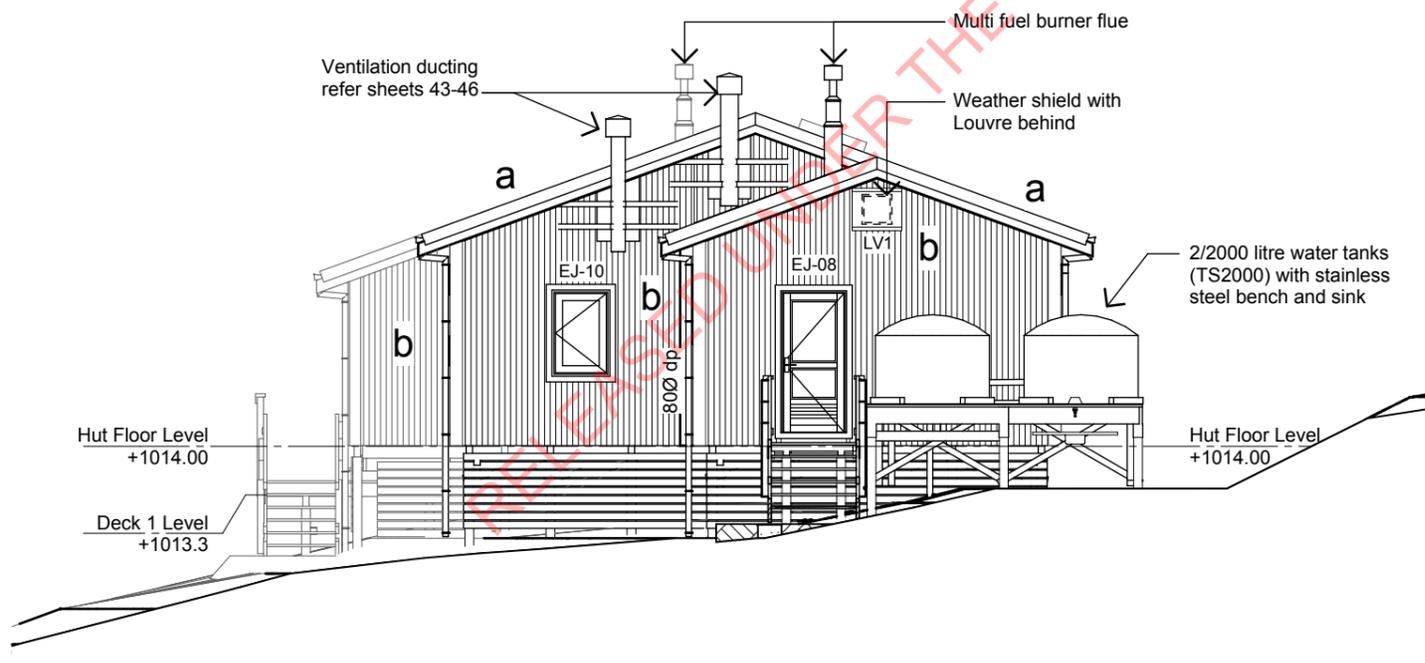
OFFICE Hokitika

SHEET CONTENTS	SCALES
Elevations	1:100, 1:50 @ A3 SHEET SIZE

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	MW	RP	1602	07	C
DATE	Sep 2016				



3 South Elevation
02 Scale 1:100



4 West Elevation
02 Scale 1:100

Material Notes:

- a** CALDER STEWART Solar Rib PROFILE COLORCOTE G300 Zinacore roofing over roof underlay over 70 x 45mm H3.2 purlins on flat @ 900/500mm c/c max. Refer Specification for fixings of roofing and purlins
- b** COLORCOTE Zinacore 0.55 CORRUGATE PROFILE cladding over 45 x 18mm CAVIBAT cavity battens over Ecoply Barrier RAB system over timber framing
- c** CHH 9mm ECOPLY BD grade untreated ceiling lining over 70 x 35mm H1.2 battens @ 600mm c/c max.
- d** CHH 9mm ECOPLY BD grade untreated wall lining (10mm gap to flooring) except for SE wall of common area and SE wall of lobby to be lined with 12mm Ecoply BD grade linings
- e** CHH 19mm ECOPLY CD grade H3.2 LONGSPAN flooring (2400 x 1200mm) over timber joists. Refer to Foundation Plan to sub floor framing sizes and c/c.
- f** 88 x 32 H3.2 grip tread decking, Premium Grade, grip side up, even nail spacing. 12mm gap between first piece of decking and wall cladding. Refer to foundation plan for sub floor framing sizes & c/c.
- g** FIRE SEPARATION WALL
CHH 9mm ECOPLY BD grade untreated wall lining from floor to U/S ceiling with 10mm gap to flooring over 6mm Villaboard from floor to U/S of roof covering both sides of 140x45 studs @ 600c/c with dwangs @ 800c/c, wall cavity filled with James Hardie 90mm mineral insulation

REV No	DESCRIPTION	DATE	DWN	CKD
C	Detailed Design	22/09/2016	MW	RP
B	Revised Site Plan	25/07/2016	MW	RP
A	Developed Design	24/06/2016	MW	RP

Drawing Issue and Amendments



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PROJECT	Moonlight Tops Hut			
LOCATION	Pike 29 Memorial Track Paparoa National Park			
OFFICE	Hokitika			
SHEET CONTENTS	Elevations			SCALES 1:100, 1:50 @ A3 SHEET SIZE
DESIGN RP	DRAWN MW	CHECKED RP	PROJECT No. 1602	SHT No. REV No. 08 C
DATE	Sep 2016			

WALL FRAMING

Wall	Framing Size & Centres
North/South	140x45 @ 600c/c
West/East	140x45 @ 400c/c
Lobby	140x45 @ 600c/c
Internal	140x45 @ 600c/c
Part Height	90x45 @ 600c/c

Dwangs @ 870c/c

SEATING

Dining Area
 6 = 2/1800x300 and 1/800x300 forms + Table = 1800x800
 8 = 1/2100x300 and 1/800x300 forms + Table = 2100x800

Fixed Seating = 6.2m & 2.8m

Lobby Fixed Seating = 3.6m

Exterior Fixed Seating = 5.5m + 5.6m

LINTELS

Span	Framing Size
0-0.8m	2/140x45 SG8
0.81-1.6m	2/190x45 SG8
1.61-2.1m	2/240x45 SG8

Lintels packed to match wall thickness

WALL INSULATION

Wall	Insulation Type
North/South	PINK BATTS R4.0 insulation batts
West/East	PINK BATTS R4.0 insulation batts

VENTILLATION

LIVING:
 Vent Boxes - 2x 400x200 Grilles
 Duct - 350mm SPI - F.P.
 Ceiling Grill - 350 x 350mm

12 BUNK:
 Vent Box - 1x 400x200 Grille
 Duct - 250mm SPI - F.P.
 Ceiling Grill - 250 x 250mm

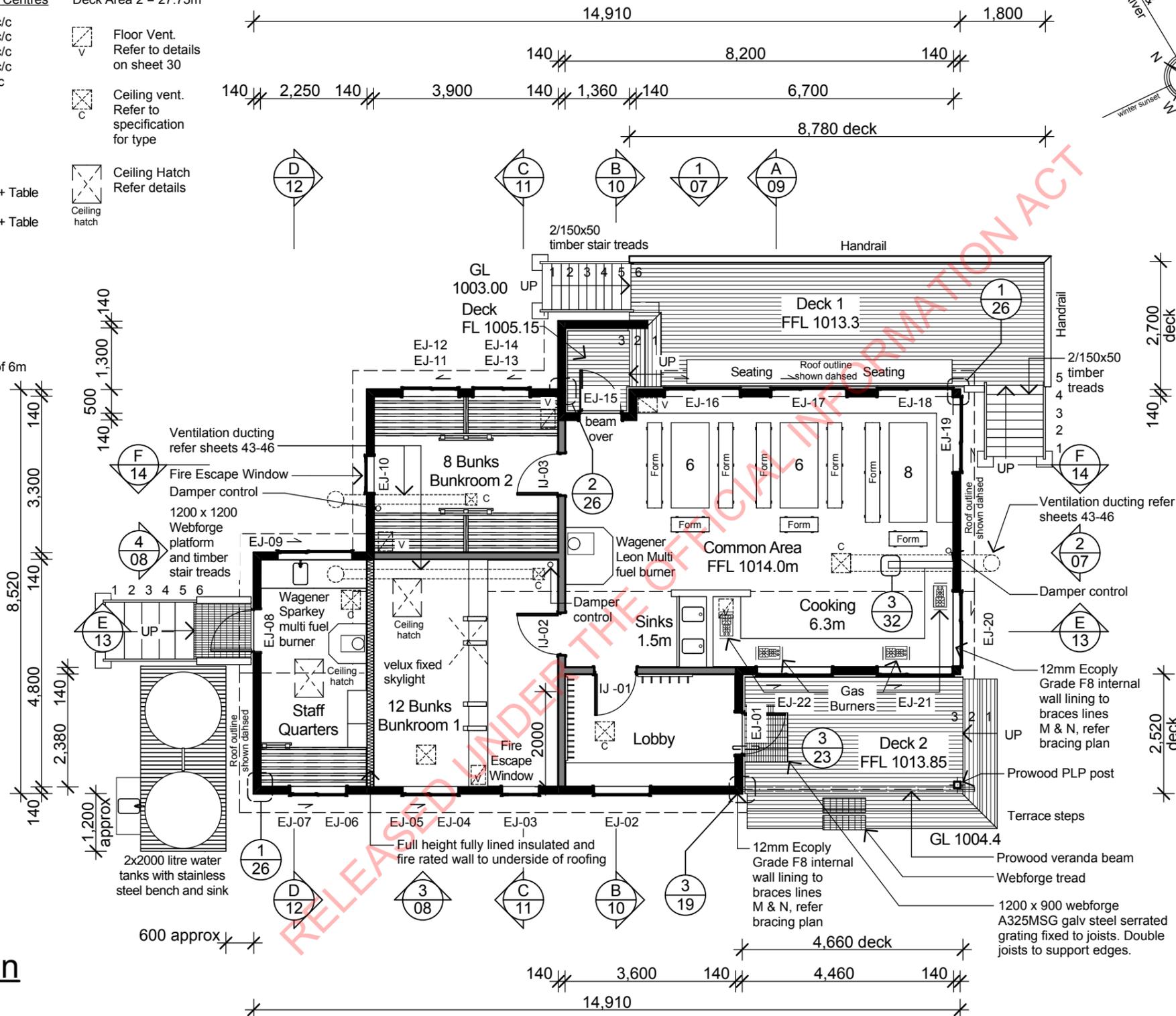
8 BUNK:
 Vent Box - 1x 400x200 Grille
 Duct - 200mm SPI - F.P.
 Ceiling Grill - 200 x 200mm

Floor Area = 106.5m²
 Deck Area 1 = 21.70m²
 Deck Area 2 = 27.75m²

Floor Vent.
 Refer to details on sheet 30

Ceiling vent.
 Refer to specification for type

Ceiling Hatch
 Refer details



Floor Plan

1:100

SITE LEVELS:
 Site levelled to 1013.2m
 Hut Floor Level 1014.0m
 Hut North Deck Level 1013.3m
 Hut East Deck Level 1013.85m

WALL LEGEND

- 140mm H3.2 timber framed walls with 9mm ECOPLY BD grade untreated wall lining and Ecoply Barrier except for SE wall of common area and SE wall of lobby to be lined with 12mm Ecoply BD grade linings
- 140mm H3.2 timber framed internal walls with 9mm ECOPLY BD grade untreated wall lining to both sides
- 1200mm high 90mm H3.2 timber framed wing walls lined with 9mm ECOPLY BD grade untreated wall lining and 140x40 timber capping
- FIRE SEPARATION WALL
 CHH 9mm ECOPLY BD grade untreated wall lining from floor to U/S ceiling with 10mm gap to flooring over 6mm Villaboard from floor to U/S of roof covering both sides of 140x45 studs @ 600c/c with dwangs @ 800c/c, wall cavity filled with James Hardie 90mm mineral insulation

REV No	DESCRIPTION	DATE	DWN	CKD
C	Detailed Design	22/09/2016	MW	RP
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Department of Conservation
 Te Papa Atawhai

PROJECT: Moonlight Tops Hut

LOCATION: Pike 29 Memorial Track, Paparoa National Park

OFFICE: Hokitika

SHEET CONTENTS: Floor Plan
 SCALES: 1:100
 @ A3 SHEET SIZE

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	MW	RP	1602	02	C

DATE: Sep 2016

Pororari Hut

for Hokitika Office, Pike 29 Memorial Track, Paparoa National Park.
Project.No:1602

Sheet Index		
Sheet No	Sheet Name	Revision
01	Site Plan	C
02	Floor Plan	B
03	Foundation Plan	B
04	Bracing Plan	B
05	Roof Framing Plan	A
06	Plumbing & Drainage Plan	B
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09	Sections A-A	B
10	Sections B-B	B
11	Sections C-C	B
12	Sections D-D	B
13	Sections E-E	B
14	Sections F-F	B
15	Window & Door Schedule	B
16	Fire Safety Plan	B
17	Window Details	A
18	Louvre Details	A
19	Roof Details	A
20	Roof Details	A
21	Roof Details	A
22	Floor Edge Details	A
23	Deck Connection Details	A
24	Deck & Stair Details	A
25	Deck Ballustrade Details	A
26	Cladding Details	A
27	Fixed Seating & Coat Hooks Details	A
28	Bunk Details	A
29	Single Bunk Details	A
30	Platform Bunk Details	A
31	Platform Bunk Details	A
32	Cooking Area Bench	A
33	External Sink Details	A
34	Form Details	A
35	Water Tank Stand	A
36	Water Tank Hold Down Details	A
37	Staff Quarters Joinery Details	A
38	Roof Plan	A
39	Skylight Details	A
40	Master Site Plan	B
41	Toilets Block	A
42	3D Views 1	B
43	3D Views 2	B



North East

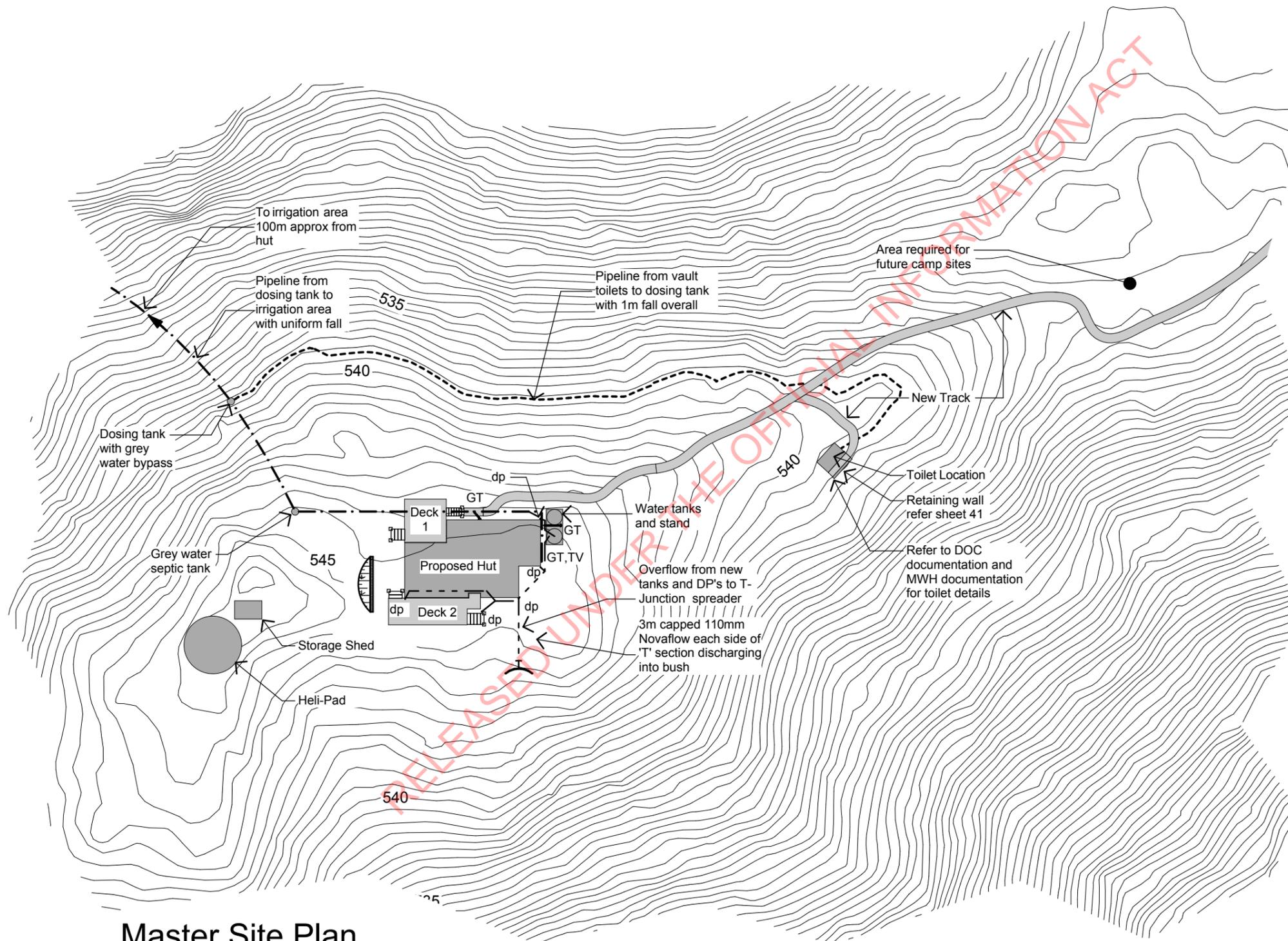


Internal

DESIGN CRITERIA:

soil class:	Class C
exposure zone:	D
wind zone:	EH
earthquake zone:	3
floor load bunkrooms:	1.5 kPa
floor load other spaces:	3.0 kPa
deck load:	2.0 kPa
altitude:	544 m
snow load:	1.5 kPa N2

**Detailed Design
September 2016**



Master Site Plan
1:500

REV No	DESCRIPTION	DATE	Drawn	Check by
B	Detailed Design	23/09/2016	MW	RP
A	Detailed Design	13/09/2016	MW	RP

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PROJECT Pororari Hut

LOCATION Pike 29 Memorial Track
Paparoa National Park

OFFICE Hokitika

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	PL	RP	1602	40	B

DATE Sep 2016

LEGEND

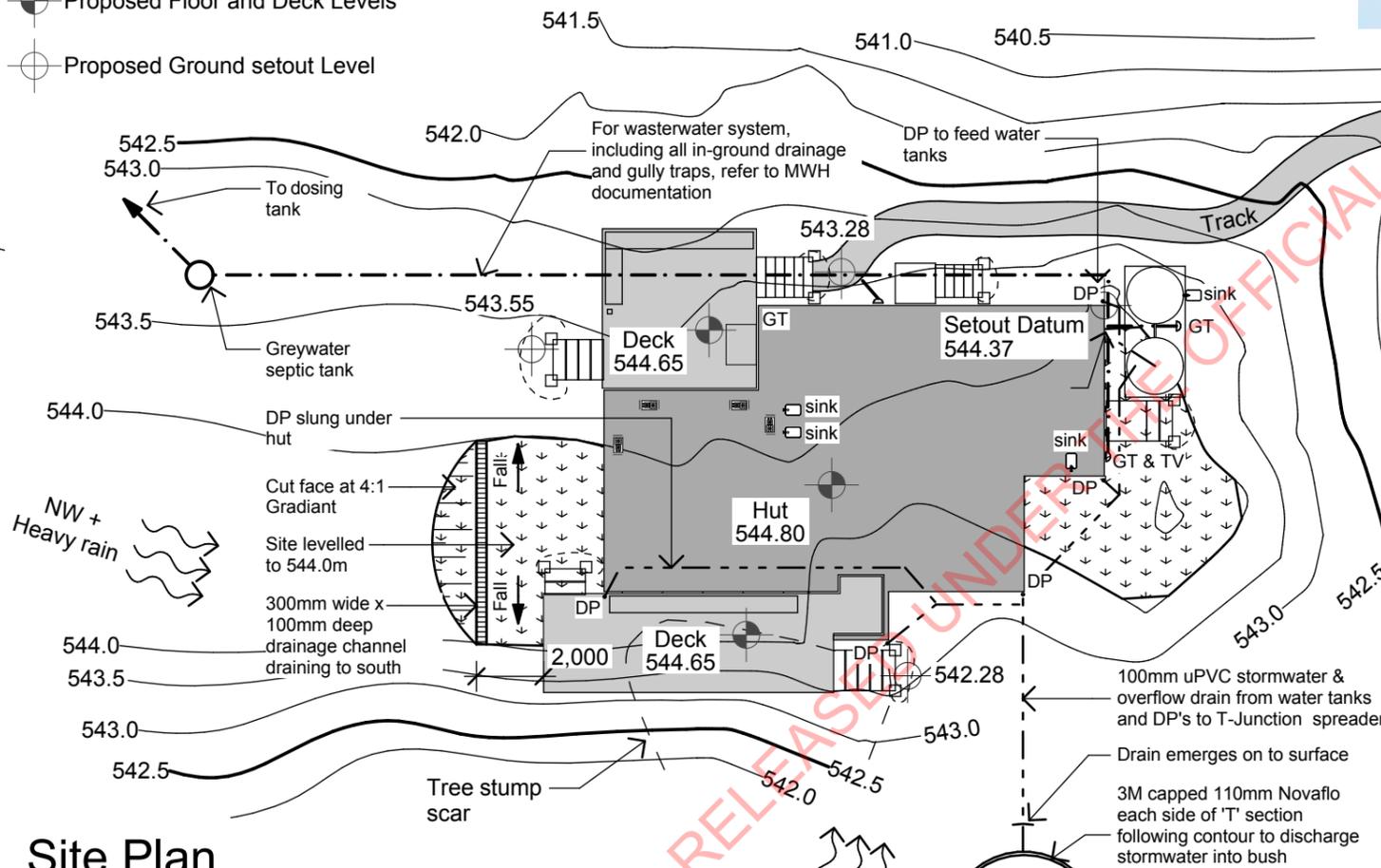
-  Minor contour(0.5m)
-  Major contour(2.5m)
-  Tree Stump Scar
-  Ground built up locally to provide 180mm riser to bottom steep

SITE LEVELS:
 Site levelled to 544.0m
 Hut Floor Level 544.8m
 Hut Deck Levels 544.65m

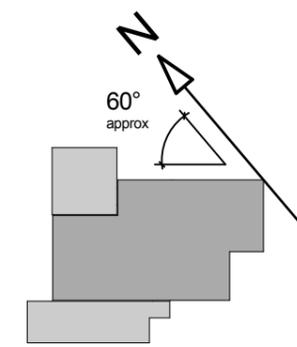
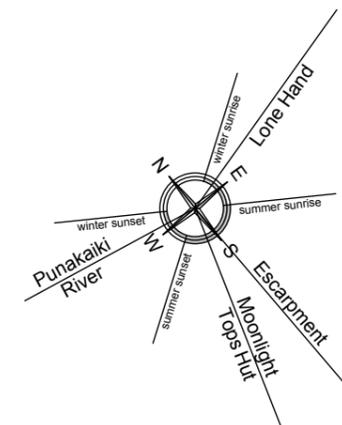
-  Proposed Floor and Deck Levels
-  Proposed Ground setout Level



Pororari Hut Location



Site Plan
 1:200



Hut Orientation
 1:500 to be confirmed by contract administrator on site

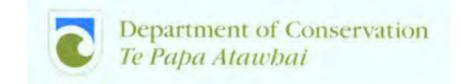
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PROJECT	Pororari Hut			
LOCATION	Pike 29 Memorial Track Paparoa National Park			
OFFICE	Hokitika			
SHEET CONTENTS	Site Plan			SCALES 1:200, 1:100, 1:500 @ A3 SHEET SIZE
DESIGN RP	DRAWN PL	CHECKED RP	PROJECT No. 1602	SHT No. REV No. 01 C
DATE	Sep 2016			



South East



North West

J:\Clients CAD\1602 Pike huts\1602 Drawing Documents\Pororari Hut\1602 Pike River Huts Pororari.pln

REV No	DESCRIPTION	DATE	Drawn	Check by
B	Detailed Design	13/09/2016	MW	RP
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PROJECT **Pororari Hut**

LOCATION **Pike 29 Memorial Track
Paparoa National Park**

OFFICE **Hokitika**

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	PL	RP	1602	42	B
DATE	Sep 2016				

SHEET CONTENTS: 3D Views 1

SCALES: @ A3 SHEET SIZE



South West



Interior

J:\Clients CAD\1602 Pike huts\1602 Drawing Documents\Pororari Hut\1602 Pike River Huts Pororari.pln

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REV No	DESCRIPTION	DATE	Drawn	Check by
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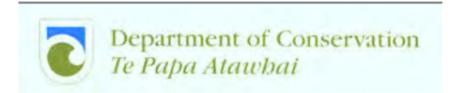


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Canterbury 8841
Ph: 03 - 550 0575

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Contractor shall check all Dimensions on site prior to construction



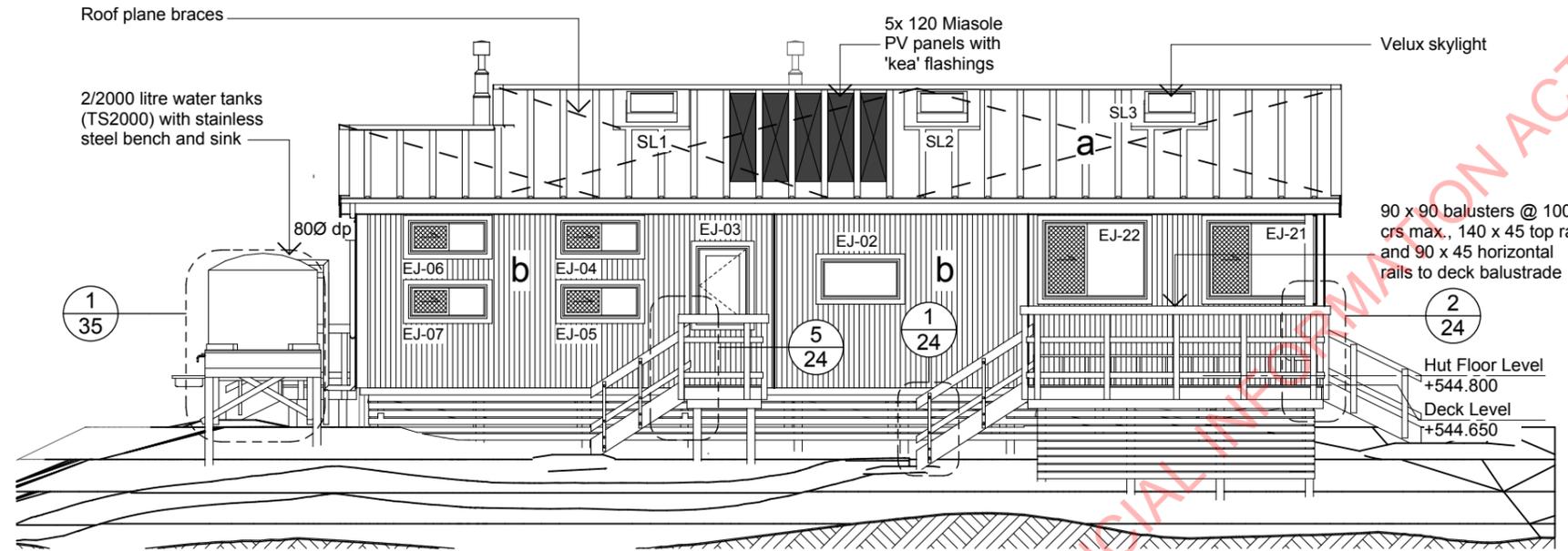
PROJECT **Pororari Hut**

LOCATION **Pike 29 Memorial Track
Paparoa National Park**

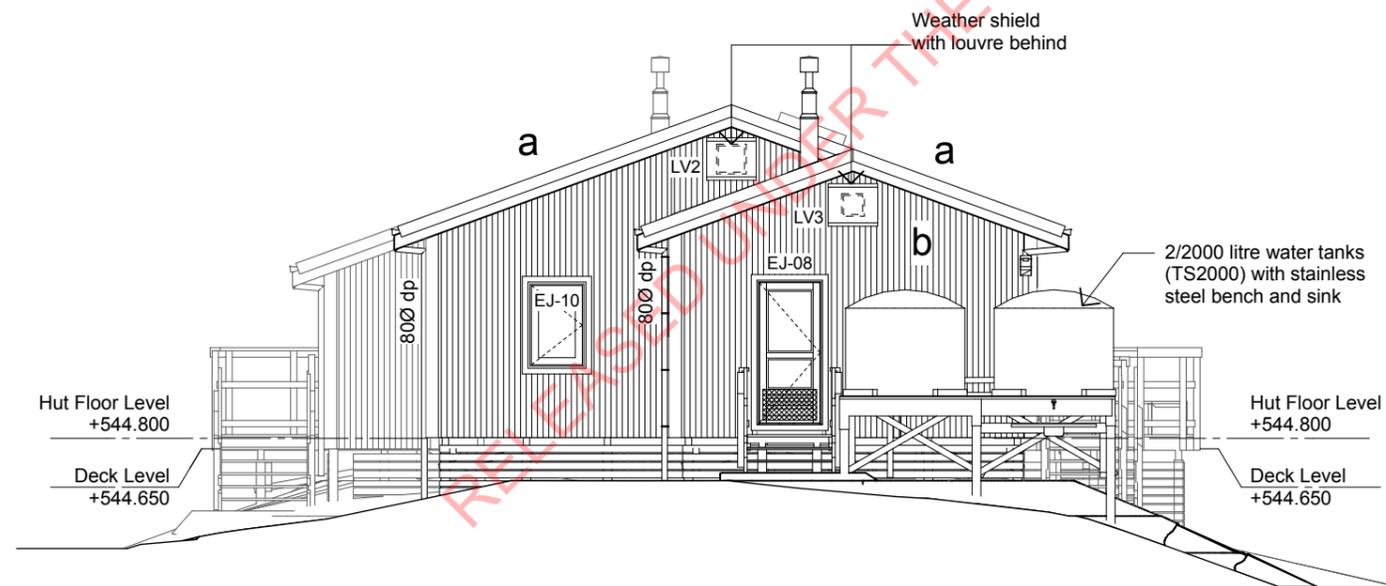
OFFICE **Hokitika**

SHEET CONTENTS	SCALES
3D Views 2	@ A3 SHEET SIZE

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	PL	RP	1602	43	B
DATE	Sep 2016				



1 North Elevation
02 Scale 1:100



2 East Elevation
02 Scale 1:100

Material Notes:

- a** CALDER STEWART Solar Rib PROFILE COLORCOTE G300 Zincore roofing over roof underlay over 70 x 45mm H3.2 purlins on flat @ 900/500mm c/c max. Refer Specification for fixings of roofing and purlins
- b** COLORCOTE Zincore 0.55 CORRUGATE PROFILE cladding over 45 x 18mm CAVIBAT cavity battens over Ecoply Barrier RAB system over timber framing
- c** CHH 9mm ECOPLY BD grade untreated ceiling lining over 70 x 35mm H1.2 battens @ 600mm c/c max.
- d** CHH 9mm ECOPLY BD grade untreated wall lining (10mm gap to flooring)
- e** CHH 19mm ECOPLY CD grade H3.2 LONGSPAN flooring (2400 x 1200mm) over timber joists. Refer to Foundation Plan to sub floor framing sizes and c/c.
- f** 88 x 32 H3.2 grip tread decking, Premium Grade, grip side up, even nail spacing. 12mm gap between first piece of decking and wall cladding. Refer to foundation plan for sub floor framing sizes & c/c.
- g** FIRE SEPARATION WALL CHH 9mm ECOPLY BD grade untreated wall lining from floor to U/S ceiling with 10mm gap to flooring over 6mm Villaboard from floor to U/S of roof covering both sides of 140x45 studs @ 600c/c with dwangs @ 870c/c, wall cavity filled with James Hardie 90mm mineral insulation

REV No	DESCRIPTION	DATE	Drawn	Check by
B	Detailed Design	13/09/2016	MW	RP
A	Developed Design	27/06/2016	MW	RP

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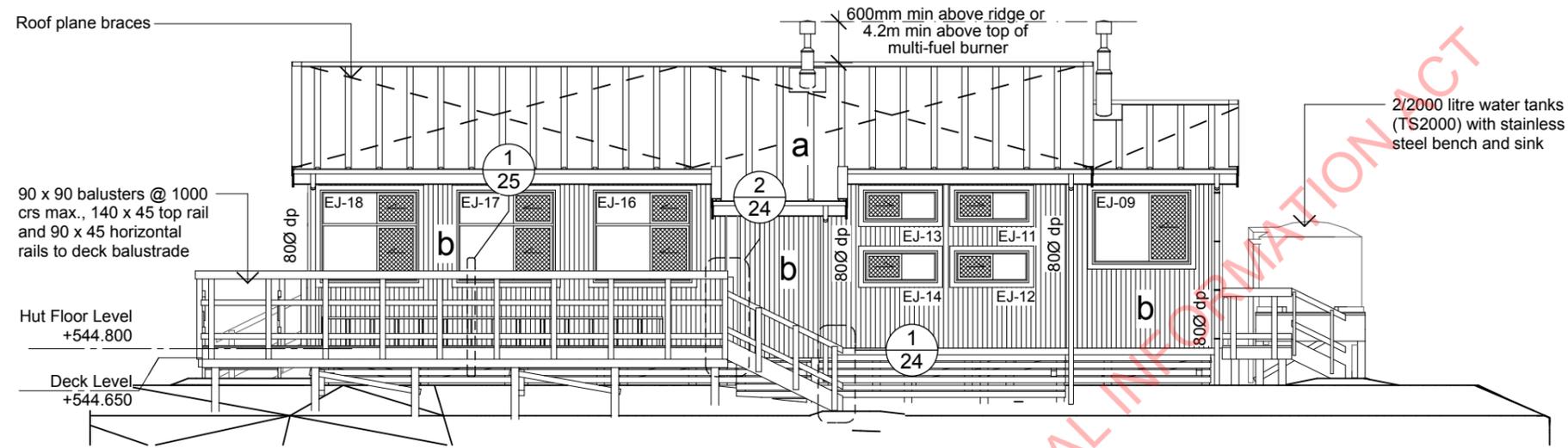
Christchurch Office
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Canterbury 8841
Ph: 03 - 550 0575

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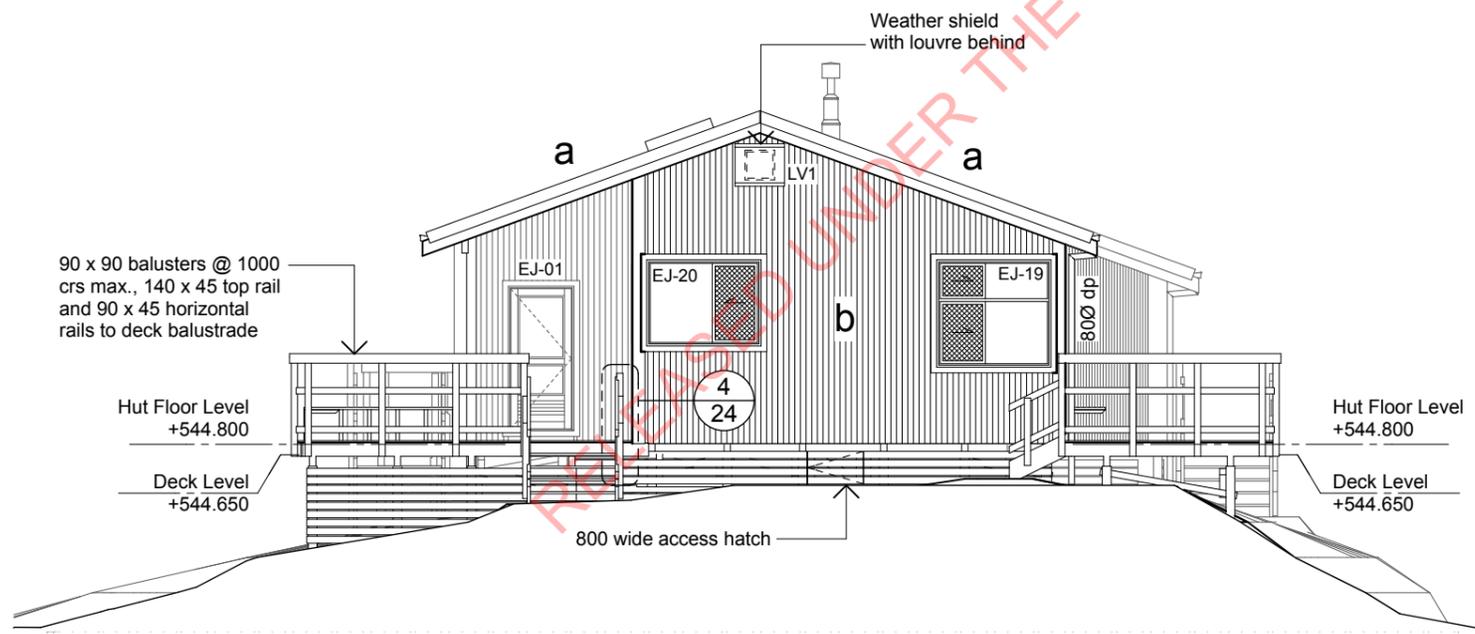


PROJECT	Pororari Hut
LOCATION	Pike 29 Memorial Track Paparoa National Park
OFFICE	Hokitika

DESIGN	DRAWN	CHECKED	PROJECT No.	SHT No.	REV No.
RP	PL	RP	1602	07	B
DATE	Sep 2016				



3 South Elevation
02 Scale 1:100



4 West Elevation
02 Scale 1:100

Material Notes:

- a** CALDER STEWART Solar Rib PROFILE COLORCOTE G300 Zinacore roofing over roof underlay over 70 x 45mm H3.2 purlins on flat @ 900/500mm c/c max. Refer Specification for fixings of roofing and purlins
- b** COLORCOTE Zinacore 0.55 CORRUGATE PROFILE cladding over 45 x 18mm CAVIBAT cavity battens over Ecoply Barrier RAB system over timber framing
- c** CHH 9mm ECOPLY BD grade untreated ceiling lining over 70 x 35mm H1.2 battens @ 600mm c/c max.
- d** CHH 9mm ECOPLY BD grade untreated wall lining (10mm gap to flooring)
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B	Detailed Design	13/09/2016	MW	RP
A	Developed Design	27/06/2016	MW	RP
REV No	DESCRIPTION	DATE	Drawn	Check by

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Contractor shall check all Dimensions on site prior to construction



PROJECT		Pororari Hut	
LOCATION		Pike 29 Memorial Track Paparoa National Park	
OFFICE		Hokitika	
SHEET CONTENTS		Elevations	
SCALES		1:100, @ A3 SHEET SIZE	
DESIGN	DRAWN	CHECKED	PROJECT No.
RP	PL	RP	1602
DATE			SHT No. REV No.
Sep 2016			08 B

WALL FRAMING

Wall	Framing Size & Centres
North/South	140x45 @ 600c/c
West/East	140x45 @ 400c/c
Lobby	140x45 @ 600c/c
Internal	140x45 @ 600c/c
Part Height	90x45 @ 600c/c

Dwangs @ 870c/c

SEATING

Dining Area
 6 = 2/1800x300 and 1/800x300 forms + Table = 1800x800
 8 = 1/2100x300 and 1/800x300 forms + Table = 2100x800

Fixed Seating = 6.2m & 2.8m

Lobby Fixed Seating = 3.6m

Exterior Fixed Seating = 5.5m + 5.6m

LINTELS

Span	Framing Size
0-0.8m	2/90x45 SG8
0.81-1.3m	2/140x45 SG8
1.31-1.8m	2/190x45 SG8

Lintels packed to match wall thickness

WALL INSULATION

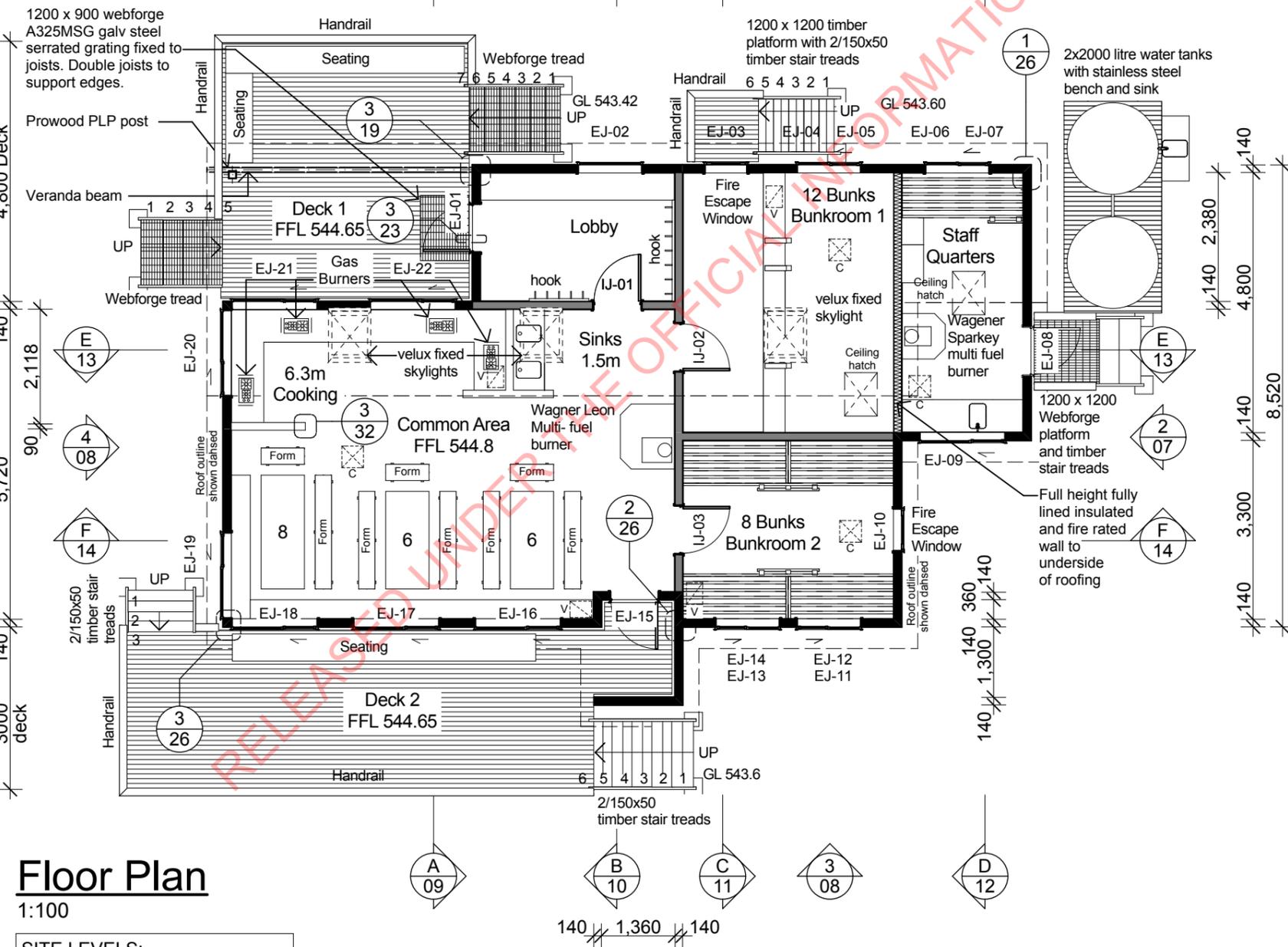
Wall	Insulation Type
North/South	PINK BATTS R4.0 insulation batts
West/East	PINK BATTS R4.0 insulation batts

WALL LEGEND

- 140mm H3.2 timber framed walls with 9mm ECOPLY BD grade untreated wall lining and Ecoply Barrier
- 140mm H3.2 timber framed internal walls with 9mm ECOPLY BD grade untreated wall lining to both sides
- 1200mm high 90mm H3.2 timber framed wing walls lined with 9mm ECOPLY BD grade untreated wall lining and 140x40 timber capping
- FIRE SEPARATION WALL CHH 9mm ECOPLY BD grade untreated wall lining from floor to U/S ceiling with 10mm gap to flooring over 6mm Villaboard from floor to U/S of roof covering both sides of 140x45 studs @ 600c/c with dwangs @ 800c/c, wall cavity filled with James Hardie 90mm mineral insulation

Floor Area = 106.5m²
 Deck Area 1 = 21.70m²
 Deck Area 2 = 27.75m²

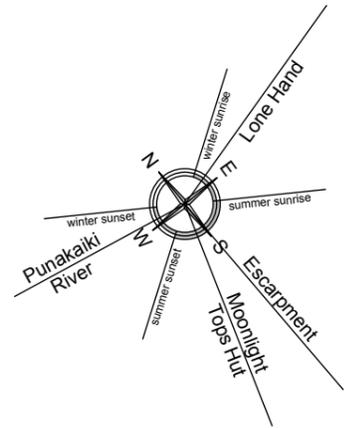
- Floor Vent. Refer to details on sheet 30
- Ceiling vent. Refer to specification for type
- Ceiling Hatch Refer details



Floor Plan

1:100

SITE LEVELS:
 Site levelled to 544.0m
 Hut Floor Level 544.8m
 Hut Deck Levels 544.65m



REV No	DESCRIPTION	DATE	Drawn	Check by
B	Detailed Design	13/09/2016	MW	RP
A	Developed Design	27/06/2016	MW	RP

Drawing Issue and Amendments

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Contractor shall check all Dimensions on site prior to construction



PROJECT	Pororari Hut
LOCATION	Pike 29 Memorial Track, Paparoa National Park
OFFICE	Hokitika

SHEET CONTENTS	SCALES
Floor Plan	1:100
	@ A3 SHEET SIZE
DESIGN: RP	DRAWN: PL
CHECKED: RP	PROJECT No: 1602
DATE: Sep 2016	SHT No: 02
	REV No: B

Drawing Index

Drg No	Title
S01	Drawing Index & General Structural Notes
S02	Plans
S03	Elevations
S04	Cross Section
S05	Long Section
S06	Wall Details
S07	Vent Details
S08	Lifting Eye / Tie Down Details



Notes:

- All work shall comply with NZS 3604:2011.
- Dimensions are in millimeters unless noted otherwise.
- The toilet shall be sited on level ground where possible, or ground to be levelled as required.
- The lifting eye / hold down brackets shall be installed if:
 - Delivering the toilet to site by helicopter.
 - Located in high wind zones where tethering to ground is necessary.
 - Where toilet cubicles are installed in twin arrangement wind cables on outer walls shall be tethered to ground and internal brackets shall tether the toilet cubicles together.
- All timber shall be pinus radiata. All subfloor framing shall be rough sawn, all other timber shall be finished sizes.

General timber grades –

 - Timber above ground H3.2 – SG8 U.N.O. on drawings.
 - Timber in ground or in contact with ground H5 – SG8.
- Bolts in timber shall be installed in bolt diameter plus 2mm diameter holes.
- Bolts / coach screws & threaded rods shall be 316 stainless steel hex head grade 4.6 U.N.O. Washers shall not be recessed unless noted on drgs.
- All framing brackets and multigrips shall be stainless steel. fixed in place with either stainless steel product nails or stainless steel dome head screws as noted on drgs. The exception to this the Lumberlok strip brace to roof – which shall be galv.
- All nails and screws shall be stainless steel unless shown otherwise.
- The following timber items shall be finished as follows:
 - Door and door framing – select paint system finish suitable for outdoor conditions.
 - Ecoply floor (internal and external) – Dulux Maxiproof Gloss polyurethane coating.
 - Ecoply to seat framing and Ecoply on 3 no. internal walls – polyurethane finish.
 - Timber bead and framing surrounding door – select paint system finish suitable for outdoor conditions, as noted on details).

ORIGINAL SCALE = 100 MM



Conservancy
Western South Island
 Area
Buller
 Project Name
Pike 29 Memorial Hut Toilet
 Drawing Name
Drawing Index & General Structural Notes

Consultant
Brad Williamson

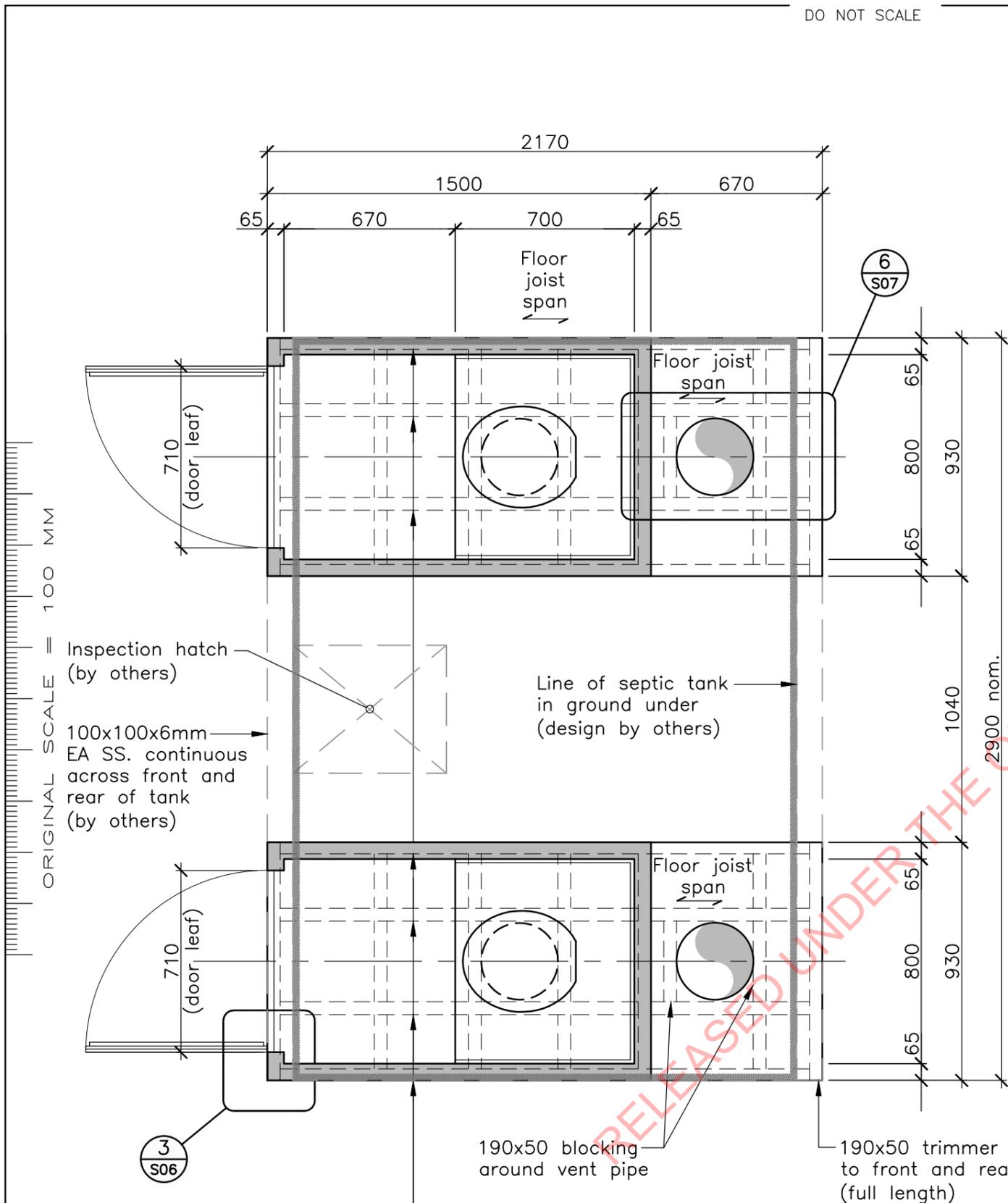
Drawing Number
 drawn
JR

Grid Reference
mE mN

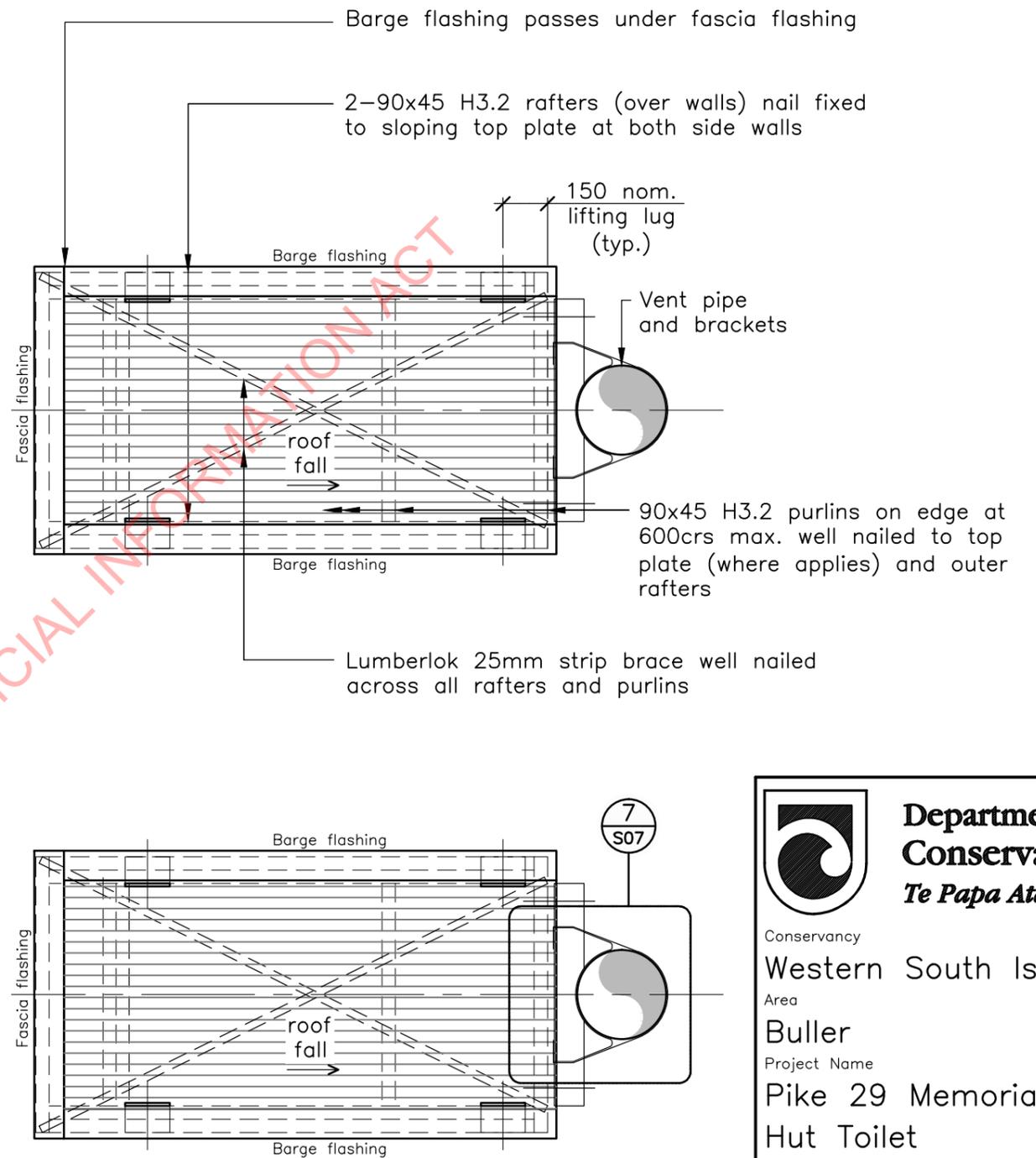
Designed BW	Checked CJ	Approved BW
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Equipment Number	drawing	issue
	S01	1

1	20/09/16	For Construction	BW
Iss. Date	Reason For Issue	App.	



FLOOR PLAN
Scale 1:20



ROOF PLAN – SHOWING FRAMING
Scale 1:20

ORIGINAL SCALE = 100 MM



Department of Conservation
Te Papa Atawhai

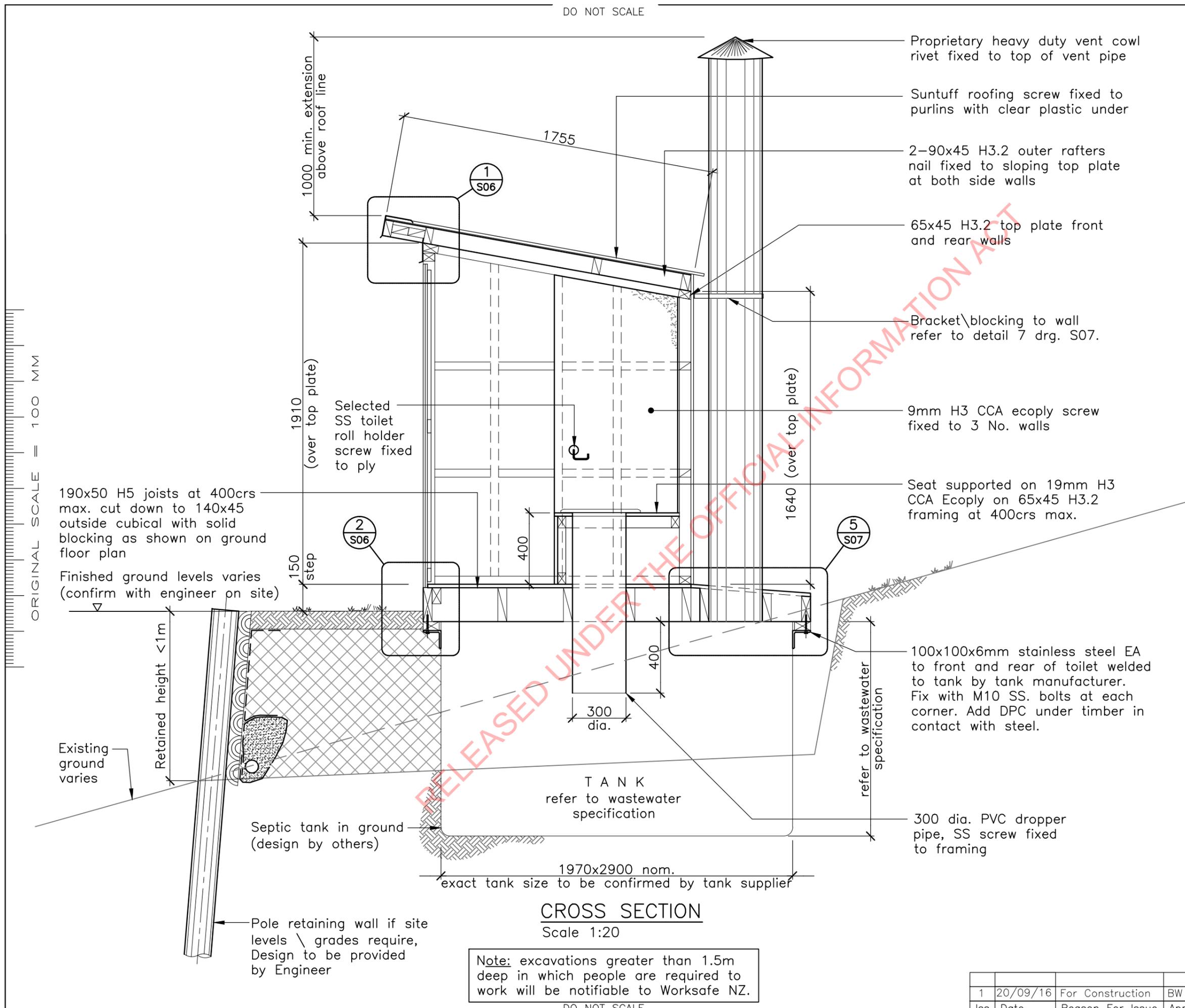
Conservancy
Western South Island
Area
Buller
Project Name
Pike 29 Memorial
Hut Toilet
Drawing Name
Plans

Consultant
Brad Williamson

Drawing Number		drawn BT
Grid Reference mE mN		
Designed BW	Checked CJ	Approved BW
Equipment Number		drawing S02
		issue 1

1	20/09/16	For Construction	BW
Iss. Date	Reason For Issue	App.	

DO NOT SCALE



CROSS SECTION

Scale 1:20

Note: excavations greater than 1.5m deep in which people are required to work will be notifiable to Worksafe NZ.

DO NOT SCALE



Department of Conservation
Te Papa Atawhai

Conservancy
Western South Island

Area
Buller

Project Name
Pike 29 Memorial Hut Toilet

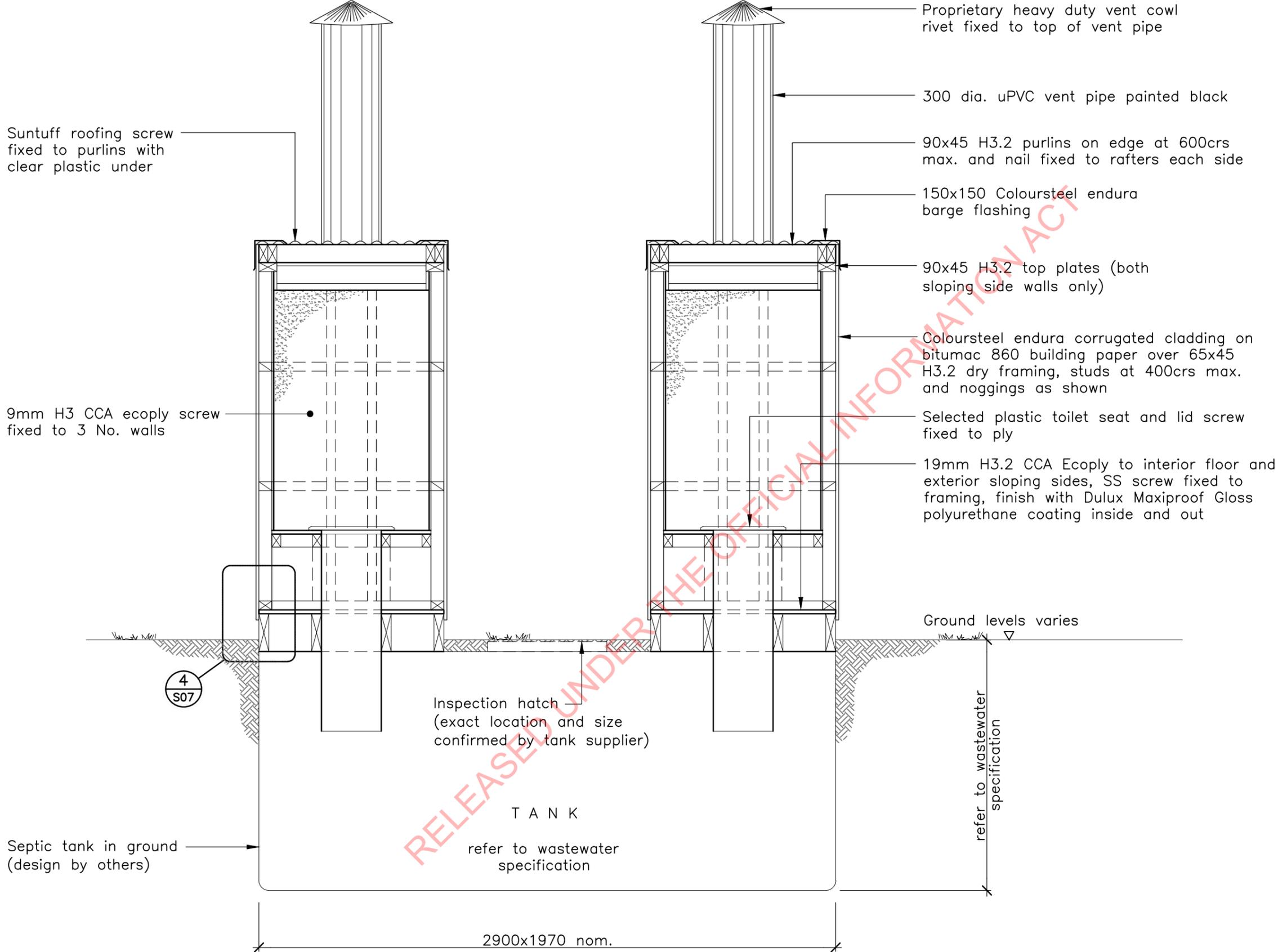
Drawing Name
Cross Section

Consultant
Brad Williamson

Drawing Number	drawn BT	
Grid Reference mE mN		
Designed BW	Checked CJ	Approved BW
Equipment Number		drawing issue S04 1

	1	20/09/16	For Construction	BW
Iss. Date	Reason For Issue	App.		

DO NOT SCALE



ORIGINAL SCALE = 100 MM

LONG SECTION
Scale 1:20

DO NOT SCALE



Department of Conservation
Te Papa Atawhai

Conservancy
Western South Island

Area
Buller

Project Name
Pike 29 Memorial Hut Toilet

Drawing Name
Section Sheet 2

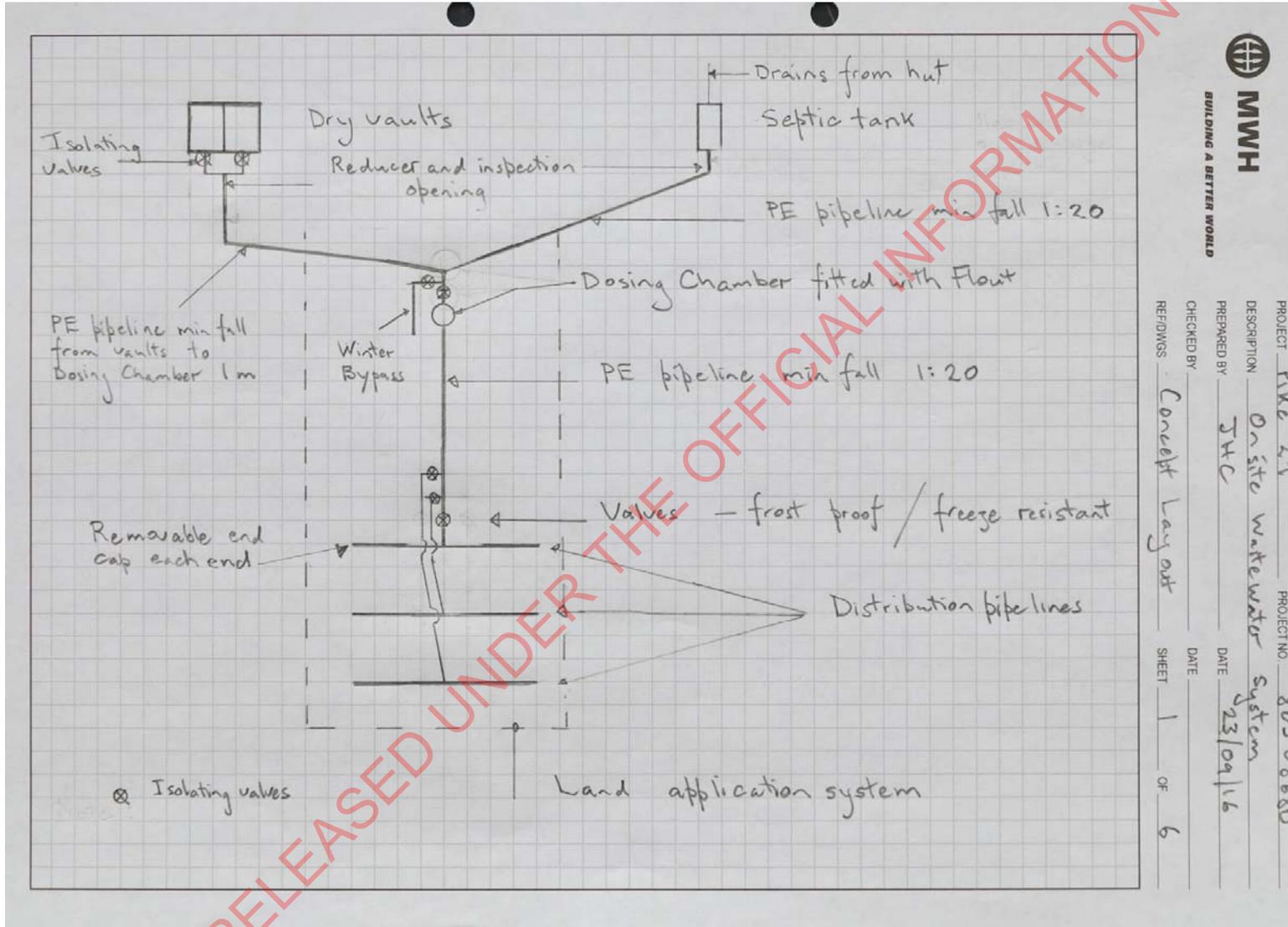
Consultant
Brad Williamson

Drawing Number	drawn BT	
Grid Reference mE mN		
Designed BW	Checked CJ	Approved BW
Equipment Number		drawing issue
		S05 1

	20/09/16	For Construction	BW
Iss. Date		Reason For Issue	App.

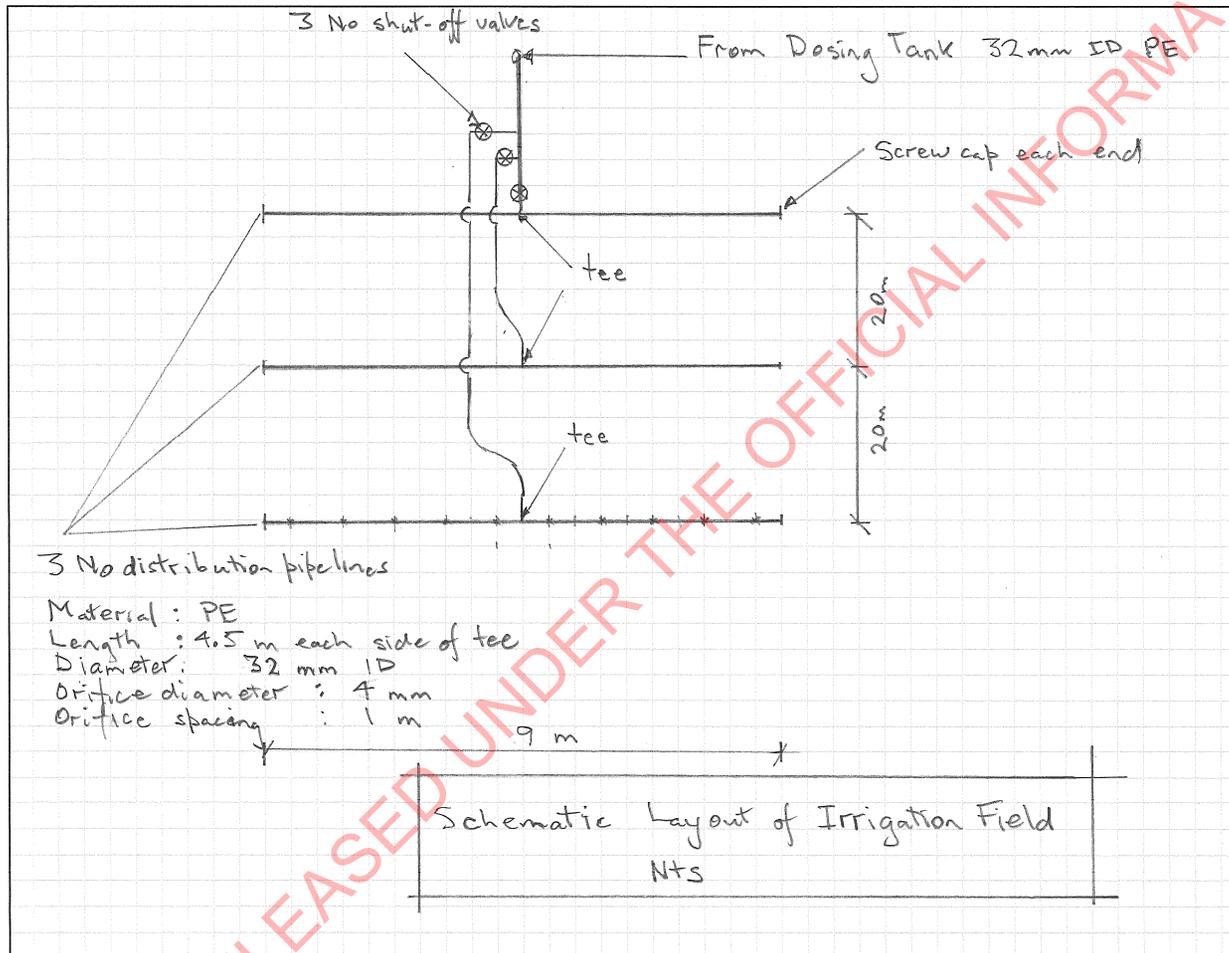
Appendix A: Sketch Drawings

RELEASED UNDER THE OFFICIAL INFORMATION ACT



PROJECT	Pike 29	PROJECT NO	80508680
DESCRIPTION	On site wastewater system	DATE	23/09/16
PREPARED BY	JHC	CHECKED BY	
REFDIMS	Concept Layout	SHEET	1 OF 6

RELEASED UNDER THE OFFICIAL INFORMATION ACT



PROJECT: Pike 29 PROJECT NO: 805 08680

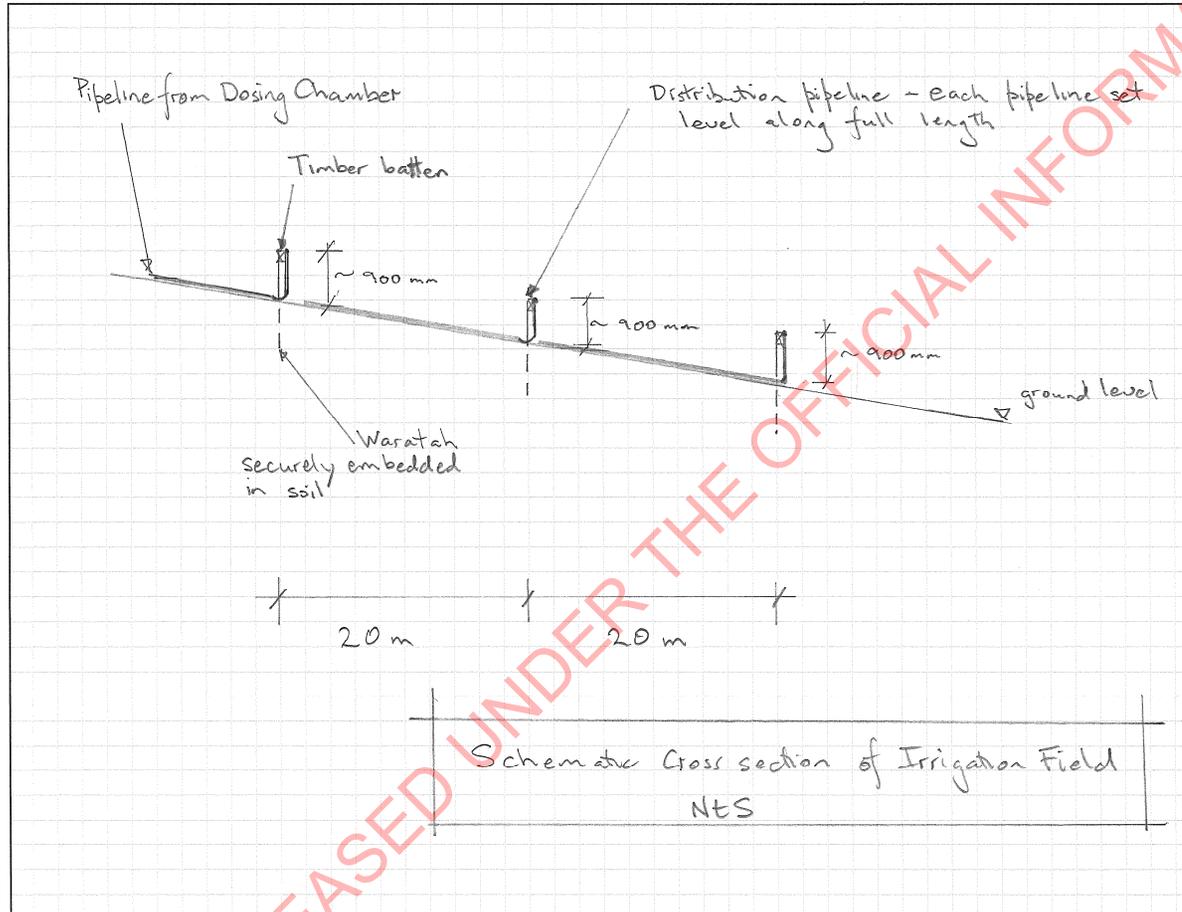
DESCRIPTION: On site Wastewater System

PREPARED BY: ITC DATE: 9/09/16

CHECKED BY: _____ DATE: _____

REVISIONS: Irrigation Field Plan SHEET 2 OF 6

RELEASED UNDER THE OFFICIAL INFORMATION ACT



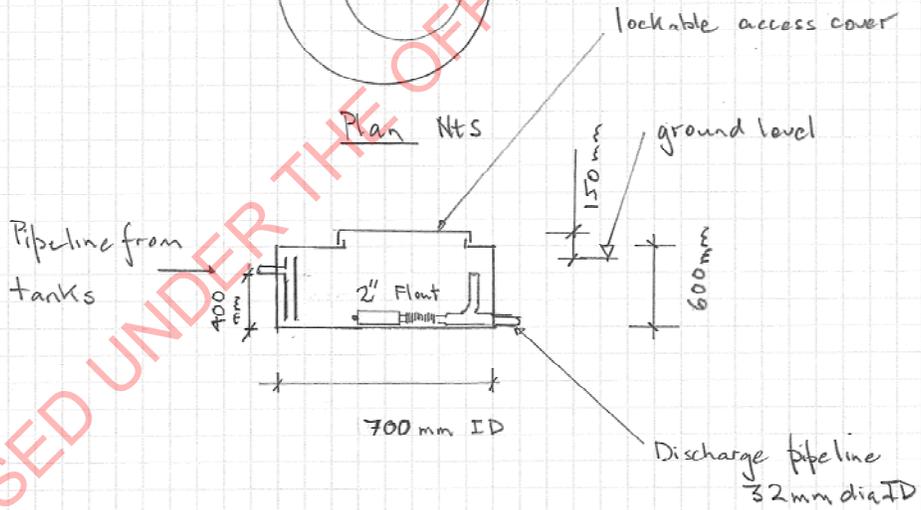
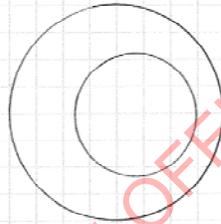
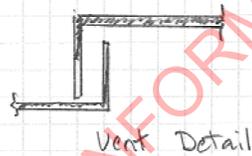
MWH
 BUILDING A BETTER WORLD

RELEASED UNDER THE OFFICIAL INFORMATION ACT

PROJECT Pike 29 PROJECT NO. 805 08680
 DESCRIPTION Onsite wastewater system
 PREPARED BY JHC DATE 09/09/16
 CHECKED BY _____ DATE _____
 REF/DWGS Dosing Chamber SHEET 4 OF 6

Note

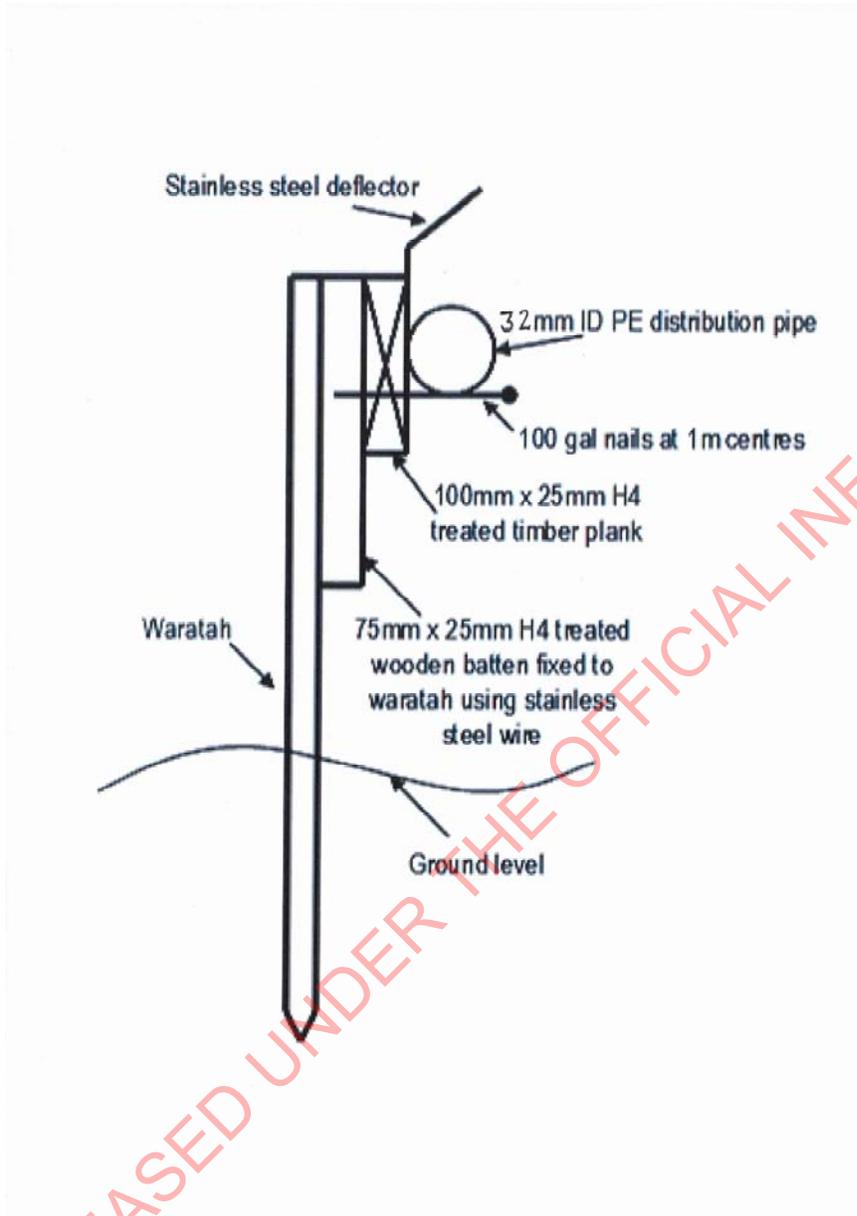
Lid shall be detailed to provide venting of chamber



Section NTS

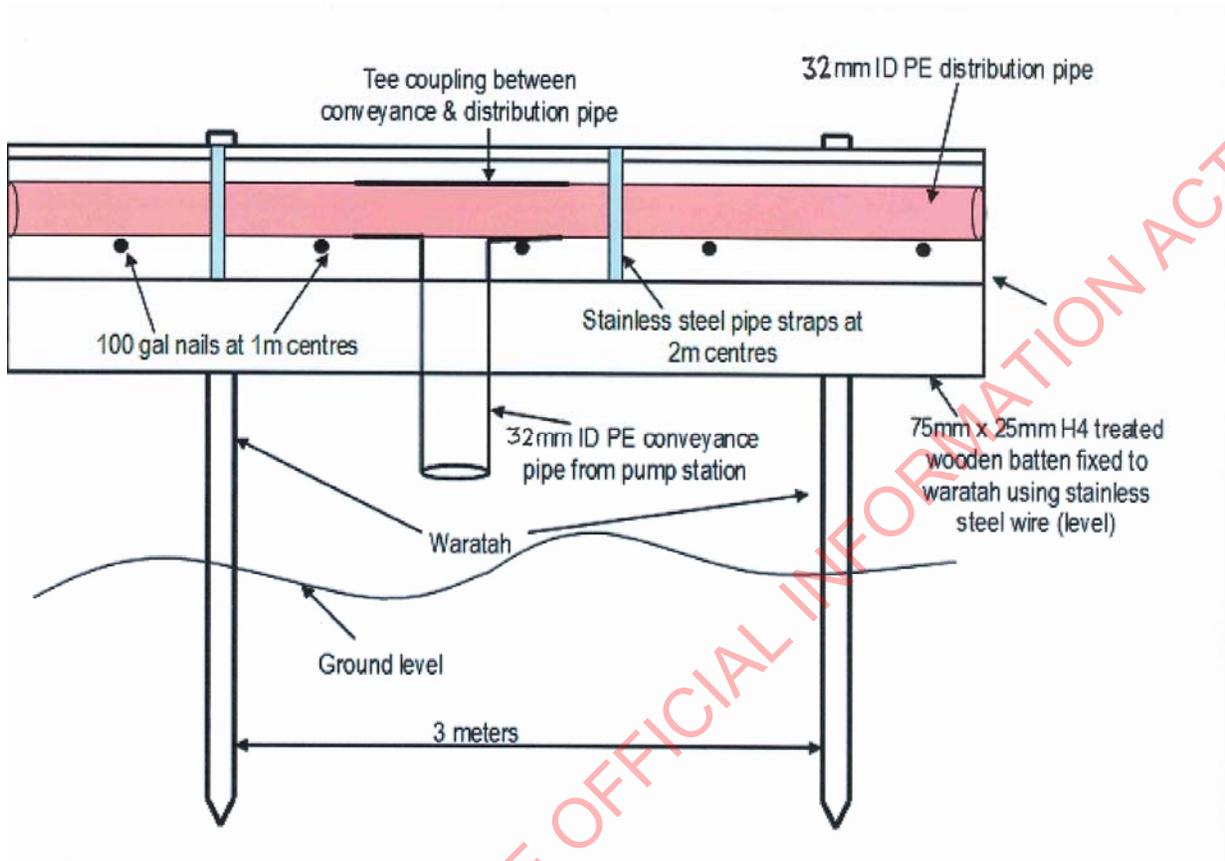
Float Dose Volume = 100 litres approx.

RELEASED UNDER THE OFFICIAL INFORMATION ACT



Drawing Sheet 5 of 6

**Irrigation Field Detail: irrigation pipe fixing side elevation
Not to Scale (NTS)**



Drawing Sheet 6 of 6

Irrigation Field Detail: irrigation pipe fixing front elevation
Not to Scale (NTS)

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Appendix N – Mitigation Measures

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APPENDIX N: MITIGATION MEASURES

1. Design

Huts

- Low, modest single storey buildings with gently pitched roofs to be used to minimise visual impacts.
- Low building proportions (approximately 3-4m height above existing ground level) will help the structures to 'sit down' into the site and appear landscape biased, rather than sky biased.
- Well-modulated buildings generated by a stepped plan, and the use of various decks, porches and eaves that will serve to break up the visual built mass through variable areas and shapes of shadow.
- Siting of buildings on ridge/skylines to be avoided, as far as possible. To this end, the Moonlight Tops Hut will be located as far downslope and 'nestled in' as much as is practicable, to minimise its bulk and appearance.
- Use of natural and recessive colours. Generally speaking, this reduces the apparent size of buildings and helps them achieve a better compatibility within a highly natural environment such as this.
- Built footprints of huts/shelter and associated toilets will be as small as possible.
- Steep building sites requiring excessive amounts of cut and fill (and retaining structures) will be avoided.
- Careful siting of toilet and greywater dispersal facilities to minimise adverse visual impact, as well as the impact of nuisance odours.
- Bike storage is likely to be provided by a simple timber bike rack.
- Where possible, the buildings will be located to avoid the removal of large individual trees with > 400mm DBH (diameter at breast height).
- To minimise light spill, no outside lights to be installed, only dim lighting of the main dining and cooking areas (1 amp LED lights).
- Efficient multi-fuel wood burners to be installed operate in the two huts will minimise light trails of smoke discharges.
- Environmental management plan developed and provided to contractors to support pre-construction briefings.

Track

- Terrestrial ecologist to identify and visit high risk areas for flora and fauna, prior to contractors establishing on site, to inform the development of an environmental management plan and to enable environmental briefings to be given to contractors.
- A heritage management plan will be prepared for the Upper Pororari River Track, following the principals outlined in Section 14 of the ICOMOS NZ Charter. This plan will be implemented as a guiding document for the construction of the Upper Pororari section of the Pike29 Track.

- A detailed record of all modifications to each of the sections of existing heritage track – the Inland Pack Track and Upper Pororari River Track to be made before, during and following the proposed work. This work to be undertaken by the Department and stored on the Asset Management system (AMIS).
- To minimise potential bike related damage to heritage fabric, steep sections of the Inland Pack Track will be avoided by re-routing the track around them.
- The design of the track formation will be undertaken so it does not cause severe ground disturbance such as obvious rutting, channelization or alteration of the natural hydrology, all of which would adversely impact on flora ecosystem viability.
- The route avoids major landslides.
- The route avoids special karst landform features, as far as possible.
- Track drainage design will predominantly be provided by the use of single camber out-slope grade reversals, and designed to shed water evenly. Alternative drainage design methods will be applied, as required, to suit the terrain.
- Two possible sites with cut batters higher than 2m will be subject to detailed ground investigation and site-specific construction methodology.
- Where possible, the track to be located to avoid the removal of large individual trees with > 400mm DBH.
- Where possible, the track to be located to avoid the removal of large 'iconic' snow tussocks.
- A narrow construction track footprint will be applied with a maximum 1.5m x the width of the formed track surface (being 0.6-1.0m), with a minimised construction profile on the Moonlight Tops section.
- The track will be generally be located along natural contours and at an easy walking gradient as far as possible.
- Use of steps will be avoided as far as possible.

Mountain biking features to be incorporated into the track design by -

- Designing good sight lines on corners so mountain bikers will be able to detect a potential hazard and either stop safely, or manoeuvre around it
- Incorporating "chokes" (localised narrowing), gradient reversals and changes in surface type (such as cobbled sections) as design features to improve enjoyment and safety of users, and to slow down cyclists.
- Good track geometry and drainage design to minimise the damage to tracks by bikers.

Structures & Signage

- Professional design advice to be obtained for the road end presentation/signage, viewing platforms and for the siting/design of interpretation panels and other facilities.
- Stewardship signage to be placed at the track heads/ends encouraging best practice from track users, in order to minimise accidental weed spread from boots, bikes and gear.

2. Construction

Huts

- Construction materials to be used in the project will be assessed for ability to be manipulated or damaged by kea, including such construction materials as roof flashings, roof fixings, window seals, other seals, gas hosing, water pipes and so forth. Previously the use of soft edge flashing was a problem, and will not be used in this project. Rubber components can only be used if they are fully protected from kea; the necessary rubber seals around the roof fixing screws will require the use of a Hurricane clip washer on top of the rubber seal.
- Construction materials which would poison or cause harm to kea will not be used or will be well shielded (including such materials as sealants, caulking, any lead fixture or weather proofing, and insulation materials).
- All rubbish (e.g. wrappings, off-cuts of timber, nails, rivet ends etc.) is to be removed from the site at the end of the construction period. Rubbish generated during construction shall be picked up and stored as soon as practical on site in a way that is secure from kea;
- Plant and vehicles will be covered when not in use to prevent damage or harm to kea (particularly ancillary items such as cabling, hydraulic hoses, grease and fuels).
- Helicopters will be used to ferry in heavy machinery and supplies which will lessen the impact on the landscape of transporting items overland.
- All areas around the construction corridor (including the sites where buildings are located) will be rehabilitated using organic matter carefully removed prior to works taking place. Where the use of organic matter is not practical, eco-sourced seedlings will be replanted on disturbed ground.

Track

General track construction mitigation measures -

- Best practice track construction methods are applied [*New Zealand Cycle Trail Design Guide 2015* (4th edition)].
- Track construction will only occur within a tightly controlled construction corridor of no greater than 1.5 x the finished walking/riding surface. Environmental damage outside of this construction corridor is to be repaired at the contractor's expense.
- Track construction is undertaken progressively, so that the movement of machinery and equipment does not occur outside the planned impact footprint.
- Hand labour will be used to build sections of the track in highly sensitive areas.
- Cut and fill will be minimised by battering back to stable ground and or by matching existing ground profiles wherever possible. Cut batter for rock substrate recommended angles of 60-80 degrees. Cut batter for stiff gravelly clay soils recommended angles of 50-65 degrees up to 2m high.

- The track profile along the exposed Moonlight Tops section is minimised, principally by the cut batter design, with a bottom 2/3 cut batter of 65 degrees, and a top 1/3 batter of 50 degrees - which will be covered by the organic vegetation layer.
- Low stacked stone walls recommended for use in some areas to provide stability to the outside/inside of the track, where side slopes are steep and where soils are weak or loose. It is expected that the maximum height of fill batters would be 0.5m and maximum height of cut batters would be 2m.
- The careful management of side-cast and cut vegetation, borrow pits, track drainage, as well as the use of local/matching substrate materials, and a heavy emphasis on rehabilitation post-construction will all minimise potential adverse visual impacts.
- The temporary use of short sections of silt fence, as a backup mitigation, if any areas of particularly erosion prone soils are encountered.
- Fill batter (side cast) and blasting debris (particularly on the open sub alpine sections) will be carefully controlled to minimise both environmental and visual landscape effects. The track in the sub-alpine sections will be constructed in manner that keeps to an absolute minimum the visual scar or impact as seen from a distance. This will be particularly important on any benched sections of track.
- Any pounamu found in the course of the works will be returned to Te Runanga o Ngai Tahu, and this requirement will be included in the construction contracts.
- Stockpile sites will be managed to ensure there are zero impacts outside the construction corridor.
- All areas around the construction corridor will be rehabilitated using leaf litter and other organic material carefully removed prior to works taking place. Where the use of local organic material is not practical, eco-sourced seedlings will be replanted on disturbed ground.
- Strict weed control measures will be implemented during construction, principally by the use of staging area where supervised cleaning protocols will be applied to personnel, gear and machinery.
- During track construction rubbish will be carefully shielded from kea and removed as soon as is practical.
- Plant and vehicles will be covered when not in use to prevent damage or harm to kea (particularly ancillary items such as cabling, hydraulic hoses, grease and fuels).

Ecological mitigation measures during track construction -

- Environmental management plan developed and provided to contractors to support pre-construction briefings.
- Briefings provided to the construction team/s on habitats, flora and fauna by terrestrial ecologist, prior to works on each track section.
- Extreme care to be taken with construction works in the alpine zone where potential rock wren habitat may be (usually rocky screes, rock piles or fragmented rock stacks). The track will primarily skirt these zones and not

remove or modify them. Where it is impractical to skirt these habitat areas, construction will be undertaken by hand to minimise disturbance or damage.

- Alpine rock garden sections of the track will be constructed by hand, which will allow management/relocation of resident fauna such as lizards.
- All practical steps will be made to recreate lizard/invertebrate habitat using displaced rocks and boulders, adjacent to where the track is routed through rock jumbles and screes.
- Vegetation clearance is kept to a minimum, and confined to the immediate track footprint (being a general maximum of 1.5m) and the minimum required to site the new facilities.
- All practicable steps will be taken not to cut down large canopy trees (generally measuring >400mm DBH) or standing dead trees which have potential nesting or roosting holes. A terrestrial ecologist to review the removal of any large canopy/dead standing trees, in accordance with the Bat Protection Protocol.
- Where beech tree removal is required, trees >400mm DBH will be cut into lengths not exceeding 1.5m and added to the forest floor adjacent to the track (thereby reducing the potential for pinhole borer).
- Exposed tree roots along the track route will be protected by the use of gravel applied around the base of large trees, to limit root damage and maintain root health.

Environmental mitigation measures to protect freshwater values -

- Contractors will develop and and comply with an Environmental Management Plan (including provisions for erosion and sediment control) to ensure that sediment does not enter waterways.
- Contractors will follow approved guidelines, such as those in the Builders Pocket Guide (ECan 2014), to ensure that contaminants do not enter waterways.
- Culverts will be laid in a manner that will not impede fish passage, using the best practice guidance on culvert design. (Stevenson and Baker 2009, Boubée *et al.* 1999, NZTA 2013).
- Machinery and vehicles working in and/or passing through waterways will be kept to a practicable minimum.
- Strict aquatic pest control measures will be implemented during construction, principally by the use of a staging area where supervised cleaning protocols will be applied to personnel, gear and machinery.
- Any works to occur directly in the water and/or the immediate riparian margins of the following waterways should avoid the relevant spawning times:

Lower Pororari River - Spring for bully, torrentfish and lamprey; and autumn for galaxiids. Glass eels will also be migrating into these lower reaches during spring.

Pike Stream - Spring for bully; autumn for galaxiids and winter (May to September) for trout.

- Sensitive micro-habitats (frost-heave deflation hollows, wetlands, bogs, tarns, etc), are avoided as far as possible, or protected by the use of boardwalks or hand-stacked rock base course, so that natural surface water flows continue.

Mitigation measures to protect historic pack tracks -

- The works on the Inland Pack Track will proceed under an archaeological work plan, and with a general archaeological authority for minor effects in place.
- Work on the other historic pack tracks will proceed under an Accidental Discovery Protocol.
- Protection of the pack tracks from physical damage, during the construction process, through machinery/heavy plant being carried over the tracks.
- Damage to historic track features to be minimised, by only disturbing those areas necessary to complete the works. No heritage fabric to be removed from any track during the construction process, unless considered absolutely necessary. Any heritage fabric that is removed is to be documented.
- No dumping of earthworks or cleared vegetation will occur on archaeological sites during this work, spill of materials to the side of the track spill will be minimised.
- No fossicking of the sites to be allowed before, during or after the construction process.
- Particular care will be taken in integrating any new track sections with existing historic pack track sections of the route.
- Use of cobbles or other protective track surface on any steep track sections that cannot be avoided.
- Original sections of 'cobbling' on the Inland Pack Track to be preserved by covering with new track surfacing material (rather than removal of cobbles).
- Use of 'natural' barriers (such as boulders) to direct traffic away from fragile track features.
- Covering sections of original track surface with new track surfacing material to prevent erosion, and filling of dips to minimise track damage.

Structures & Signage

- All rubbish (e.g. wrappings, off-cuts of timber, nails, rivet ends etc.) is to be removed from the site at the end of the construction period. Rubbish generated during construction shall be picked up and stored as soon as practical on site in a way that is secure from kea.
- Extreme care is required when filling all plant or machinery with fuel or oil to prevent ground, groundwater or water pollution. No fuelling or refuelling should take place within 20 metres of any water body.
- Extreme care is required with paint. No paint decanting should occur within 10 metres of a waterway and paint decanting should occur on a drop sheet to avoid spilling paint on the ground. Paint spills should be quickly diluted.
- Wherever possible, materials and equipment should be stored in such a way that does not damage any plant life, including the moss on boulders.

3. Ongoing Management

Track usage data gathering measures -

- The hut booking system requires people to identify whether they are tramping or mountain biking the track.
- The link on the Department's website allowing visitor to comment on the facilities is retained, as a way of monitoring potential conflict and allowing people to provide feedback on their experience of the track.
- The Pike29 Track is included as part of the annual Great Walk surveys to compare the quality of the visitor experience with other Great Walks.

General track management -

- A weed control plan and track maintenance schedule to be developed for the Pike29 Track.
- Regular track maintenance to be undertaken, to minimise the damage to the track by water, and both bikers and walkers.
- Good house-keeping, including litter control and maintenance, to be applied to the new huts, shelter and associated facilities.
- Annual monitoring to be undertaken to assess impacts, including any occurrences of problem weed species which could aggressively establish, such as *Juncus squarrosus*, broom, gorse, *Himalayan honeysuckle*, and *Buddlejua* (Belton 2016). None of these species will be permitted to establish, and accordingly a weed monitoring plan will be required.
- If any unexpected outcomes for flora result from the track and facilities construction, a contingency response will be developed.
- Control of browsing species which are damaging understory species along the track route, such as goats, will be undertaken.
- Signage will be provided to warn people not to feed or encourage congregation of kea, or leave vulnerable material available to kea.
- Trapping or other pest control measures to be undertaken along the track.
- The redundant sections of the Inland Pack Track will continue to be conserved. A maintenance plan (via DOC Asset Management System – AMIS) for the Inland Pack Track will be prepared, post-construction, including provision for ongoing vegetation management.

Appendix O – Affected Party Approvals

RELEASED UNDER THE OFFICIAL INFORMATION ACT